



ROLL PLAY

How creating better access to schools in Christchurch could affect school rolls

ROLL PLAY

How creating better access to schools in
Christchurch could affect school rolls

by Steve Thomas

maxim⁺institute

First published in 2007 by Maxim Institute
PO Box 49 074, Roskill South, Auckland 1445, New Zealand
Ph (0064) 9 627 3261 | Fax (0064) 9 627 3264 | www.maxim.org.nz

Copyright © 2007 Maxim Institute
ISBN 978-0-958 2652-8-7

This book is copyright. Except for the purpose of fair review, no part may be stored or transmitted in any form or by any means, electronic or mechanical, including recording or storage in any information retrieval system, without permission in writing from the publisher. No reproduction may be made, whether by photocopying or by any other means, unless a license has been obtained from the publisher or its agent.

Design and typography by Saskia Thorne, Maxim Institute
Printed in New Zealand by RED_i

TABLE OF CONTENTS

EXECUTIVE SUMMARY	ix
SECTION 1 - Introduction	1
Introduction	1
The focus of this research	1
Research design	2
The structure of the report	3
SECTION 2 - Analytical Framework and Research Methods: The geography of education	7
Introduction	7
Research on access to schools	8
The study of improving access to schools in New Zealand	9
Geography and the study of improving access to schools	13
Research methods	18
Summary and conclusion	34
SECTION 3 - The Research Findings: Current access to schools in Christchurch	39
Introduction	39
Residential choice	40
School enrolment policy in New Zealand	41
Current school capacity issues in Christchurch	45
Research findings	45
Conclusion	54
SECTION 4 - The Research Findings: The implications of improving access to schools (if money was no object)	57
Introduction	57
The geographic framework of analysis	57
Research findings	60
Conclusion	73

SECTION 5 – The Research Findings: The implications of improving access to state schools	77
Introduction	77
Research findings	77
Discussion	88
Conclusion	88
SECTION 6 – Discussion	91
Introduction	91
Evaluation of the research findings	91
Patterns of movement between schools	93
Parents' knowledge of the schools they preferred	96
Putting state school capacity to best use	97
Directions for future research	99
Conclusion	100
SECTION 7 – Conclusion and Policy Implications	103
Introduction	103
Making access to schools better	104
Policy implications	106
Conclusion	110
APPENDIX 1 – Improving Access to Schools: An overview of some of the relevant literature	113
Introduction	113
International research on the impact of improving access to schools	113
The study of improving access to schools in New Zealand: A critique of the findings of the Smithfield project and related research	118
Summary and conclusion	129
APPENDIX 2 – Maps Illustrating the Research Findings	139
APPENDIX 3 – Register of Christchurch Secondary and Composite Schools	141
APPENDIX 4 – School Enrolment Zone Boundary Descriptions	145
REFERENCES	149
ACKNOWLEDGEMENTS/ABOUT THE AUTHOR	159

EXECUTIVE SUMMARY

This report looks at the impact of policies which could provide better access to schools for New Zealand children. Policies introduced by *Tomorrow's Schools* between 1989 and 1991 improved access to schools but they came under heavy criticism. These policies were steadily reversed throughout the 1990s, even though New Zealand research shows they improved the educational opportunities of many pupils from a range of backgrounds, allowing them easier access to different and better schools.

The purpose of this research is to move on from the myths, misrepresentations and rhetoric around making access to schools better for children. *Roll Play* takes a fresh look at the issues by examining the practicalities of allowing parents to choose the school they would prefer for their child. It examines the case of Christchurch, a major city in the South Island of New Zealand. In particular, the research focuses on the impact of creating better access to schools on the size of school rolls. Moreover, *Roll Play* explores the possible implications of changing school rolls for managing school capacity in Christchurch.

In looking at these issues, Maxim Institute commissioned the Survey Research Unit at the University of Auckland's School of Population Health to conduct a telephone survey of 424 parents in Christchurch.* The survey targeted parents of children who currently attend a secondary school in Christchurch asking them which schools their children attend, and also whether they would change their child's school under two scenarios where access to schools was improved. The first scenario asked them which secondary school they would change to if they could choose any state, state-integrated or private school and money was no object. The second scenario asked them if they could choose any state secondary school, which one

would they most like to send their child to.

The results of the parental survey were analysed and presented by adapting innovative techniques previously used by a research team working at Cardiff University, combining the disciplines of the social sciences and geography. These techniques have not been applied before to the study of creating better access to schools in New Zealand. In particular, a number of the research findings were illustrated on a series of maps, created using a Geographic Information System (GIS), including the distances parents were willing to send their child to their preferred schools.

Estimates for the proportion of parents at the city level responding to certain survey questions were also calculated, including whether parents would want to change their child's school. To analyse the implications of children changing schools for school network capacity, estimates were determined for the absolute change that would occur to school rolls. Further, projections were made for the amount of movement that could be expected to occur between schools.

The research findings are presented in three sections according to each set of questions parents were asked during the survey. The main findings are described below.

Current access to schools

Examining the relationship between where parents' live and which school they currently send their child to, the survey responses indicate that many parents are already exercising active choice—opting for schools different to their local school or the one they were zoned for.

Findings:

- With 95% certainty, 53% of parents do not choose to send their child to the nearest school to where they live, with an associated margin of error of approximately +/- 4%.
- With 95% certainty, 53% of parents do not send their child to the school they indicated that they were zoned for, also with an associated margin of error of approximately +/- 4%.
- According to calculations completed with GIS, 46% of parents who live in a school zone do not send their child to the school that they are zoned for.
- With 95% certainty, 79% of parents responding knew at the time they moved to their present home that it was in the zone of the school they indicated that they were zoned for, with an associated margin of error of approximately +/- 4%.
- The median distance (calculated with GIS) travelled by children between home and the school they currently attend is 2.8 km.

Better access to schools (if money was no object)

Parents were asked whether, given the opportunity, they would change their child's secondary school if they could choose any secondary school and money was no object. If they wished to do so, they were then asked which secondary school (that is, any state, state-integrated or private school) they would choose for their child.

By applying an analytic framework to the findings, tentative conclusions could be drawn about the expected patterns of pupils moving between schools. In this scenario (where parents could choose any school and money was no object), four distinct groups of schools would probably emerge. The research found that: five schools would be likely to experience a statistically significant gain in demand; another eight schools were shown to experience a gain or loss, but the change was not statistically significant; ten schools showed a statistically significant loss in demand; while four schools showed no change.

Findings:

- If parents could choose any state, state-integrated or private secondary school in Christchurch, and money was no object, with 95% certainty approximately 26% of parents would change their child's school, with an associated margin of error of approximately +/- 4%.
- Stratified by household income level, with 95% certainty, 26% of low-middle income parents and 25% of high income parents would change schools, with an associated margin of error of approximately +/- 6%. The trend detected between income and choice was not statistically significant ($p = 0.249$).
- The main reasons why parents who would change their child's school preferred their favoured school were its values (95%) and reputation (91%), with an associated margin of error of approximately +/- 5%.
- 78% of parents who would change their child's school in this scenario also indicated that they would be willing to pay some amount towards the cost of sending their child to their preferred school, with an associated margin of error of approximately +/- 5%.
- Of parents who would change their child's school in this access scenario, the median distance travelled by children between home and their parents' preferred school is 5.7 km.
- The total number of pupils estimated who would move between schools in this access scenario is approximately 4,200.
- The findings showed that if parents could choose any secondary school and money was no object, parents who would change their child's school would generally prefer to send their children to private or state-integrated schools under this scenario. These schools also experienced statistically significant gains to the size of their school roll. The school that would experience the greatest growth in demand for places is St Andrew's College.
- Generally, parents who would change their child's school were willing to send their child a greater distance to their preferred school than the distance to their child's current school.

Better access to state schools

Parents were asked whether, given the opportunity, they would choose to send their child to a different school to the one they currently attend. If they wished to do so, they were then asked which state school they would most like to send their child to. In this scenario, the analysis again showed four distinct groups of schools would probably emerge. The research found that: two schools would be likely to experience a statistically significant gain in demand; another fourteen schools were shown to experience a gain or loss, but the change was not statistically significant; three schools showed a statistically significant loss in demand; while eleven schools showed no change.

Findings:

- If parents could choose any state secondary school in Christchurch, with 95% certainty, approximately 10% of parents would change their child's school, with an associated margin of error of approximately +/- 3%.
- Stratified by household income level, with 95% certainty, 11% of low-middle income parents and 9% of high income parents would change their child's school, with an associated margin of error of approximately +/- 4%. The trend detected between income and choice was not statistically significant ($p = 0.411$).
- The main reasons why parents who would change their child's school preferred their favoured state school were its reputation (87%) and values (85%), with an associated margin of error of approximately +/- 5%.
- Examining parents who would change their child's school, the median distance travelled by children between home and their parents' preferred state school is 5.3 km.
- The estimated total number of pupils who would move between schools in this access scenario is approximately 2,300.
- The findings showed that if parents could choose any state secondary school, parents who would change their child's school would be likely to send their children to one of two state schools with good NCEA performance. These schools also experienced statistically

significant gains to the size of their school roll. The state school that would experience the greatest growth in demand for places is Christchurch Boys' High School.

- Generally, parents who would change their child's school if they could choose any state secondary school were willing to send their child a greater distance to their preferred state school than the school their child currently attends.

The research presented in *Roll Play* therefore establishes which schools in Christchurch parents would really prefer to send their children to. The current education system distorts the real demand for popular schools because enrolment legislation limits how many pupils they can take each year. Further, the research has also found some evidence to suggest that parents in Christchurch have a reasonable working knowledge of which schools are better or worse than others. Parents are also willing to send their children long distances to access their preferred schools.

By examining the amount of change that could be expected to occur under an open enrolment scheme this research also examines how improving access to schools would affect school rolls in Christchurch. This allows some discussion of how capacity in the state sector would need to be managed under such a scheme.

The most important implication of the research, however, is that if many of the current restrictions parents face when choosing a school, like school enrolment zones, were removed, the amount of change to school rolls in Christchurch would be manageable. Although this research only considers the choices of parents whose children already attend secondary school—not how open enrolment would affect the choices of parents with children in their final year of primary school—in relation to the scenario where parents could choose any state school in Christchurch, the research examined how greater demand for popular state schools could be managed. Notwithstanding this issue, most school rolls across the state system would remain relatively stable.

In light of these findings, the following measures are suggested to help manage demand for schools in the state sector so that more parents have a greater opportunity to access the schools they prefer for their children:

1. Collect and make available information about schooling at the pupil and school level

- (i) The Ministry of Education should expand the range of information it already collects about pupils and schools, and make this information available to the general community.

2. Abolish school home enrolment zones

- (i) The requirement in the Education Act 1989 that a school's enrolment scheme must define a home zone for the school should be removed.
- (ii) The requirement in the Education Act 1989 that schools must be "reasonably convenient" for pupils to attend should be removed.

3. Grant schools more freedom to manage their capacity

- (i) School boards should be able to set their school's maximum roll.
- (ii) The requirement that school capacity should be managed subject to the "best use of the network of state schools in the area" in the Education Act 1989 should be amended.
- (iii) The roll caps on state-integrated schools should be abolished.
- (iv) The Ministry of Education should provide capital funding grants to schools that need to expand.

4. Allocate places at over-subscribed schools fairly

- (i) Where schools experience greater demand than there are places for pupils applications should be decided by a random ballot.

5. Schools should have more freedom to co-operate

- (i) Over-subscribed schools should be encouraged to form partnerships with schools that have excess capacity.
- (ii) Successful schools should be encouraged to assist schools which are under-performing.

6. Make it easier to establish alternative schools to regular state schools

- (i) The power of the Minister of Education to decide whether designated character schools can be established should be reduced.
- (ii) School boards should be given the freedom to grant leases or licenses so that alternative education providers can establish schools using their premises.

7. Make transportation to schools more accessible

- (i) School boards should be responsive to the needs of parents whose children attend their school, or who are seeking to attend their school, by providing transport if necessary for children who live further away.

Improving families' access to schools has the potential to make every state school a better state school. It is also fairer than the current rigid education system that reinforces elitism and privilege. An open enrolment system that allows families greater opportunity is fairer to lower socio-economic status (SES) parents especially, as it breaks down the power of income and residential choice as the primary determinants of access to schools. The research detailed in *Roll Play* shows that were access to schools in Christchurch to be improved, the change to the size of school rolls would probably be small enough that school capacity could be managed across the city, allowing time for schools to adjust to parental demand for schools under an open enrolment scheme.

* The Survey Research Unit was not responsible for commissioning the survey or for any interpretations made from the analysis and the findings.

SECTION 1

Introduction

INTRODUCTION

Getting a good education is essential for getting a good start in life. One of the most important contributors to getting a good education can be the school you attend. The reality is, however, that New Zealand's children have limited access to popular state schools because school enrolment policy restricts access to schools which become over-subscribed. Furthermore, access to alternatives to regular state schools is severely restricted. State-integrated schools cannot expand to meet demand because of roll caps, and private schools are limited in number because they receive subsidies of only 25% to 30% of the cost of education at state schools (and this proportion is falling with the cap placed on total government funding for private schools).¹ Enrolments at private schools therefore only represent approximately 4% of the total number of school enrolments.² Each year the media also reports stories of parents flocking to popular state schools, putting pressure on enrolments and requiring many to introduce enrolment schemes to limit enrolment growth.³ Parents who can afford to, buy access to popular schools by purchasing a house inside their preferred school's home enrolment zone.⁴

Creating better access to schools is a major concern for social equity in another sense, as New Zealand also has wide disparity between its highest and lowest achievers in reading, mathematics and science, according to international benchmarking tests.⁵ Maori and Pasifika pupils in particular are over-represented in this tail-end.⁶ A critical issue then is how to raise achievement within the majority of schools so that this disparity is reduced. As well as increasing access to popular schools, which parents want to send their children to, it is also imperative to find ways of encouraging every state school to

become better. Such measures may help to reduce the present disparity between pupils.

THE FOCUS OF THIS RESEARCH

This research is concerned with examining schooling policies that may help to address these broad problems facing the New Zealand education system, and looks at how the state school system can be made better for every pupil. Better for parents in that access to the schools they prefer is fairer; and better for pupils, in that improving the quality of schools which the majority of pupils attend means they can have the opportunity to attend a good state school. This research is premised on the assumption that giving children better access to schools can play a major part in improving the quality of their education.

The changes introduced between 1989 and 1991 by *Tomorrow's Schools*, briefly gave parents access to schools different to their local school by relaxing school enrolment zone regulations. A lot of the debate about creating better access to schools in New Zealand has therefore been concerned with the impact of this policy. The debate has often been politically charged and the reality that many parents were able to access schools different to the ones they could before is glossed over. Nevertheless, critics—in particular the authors of a major piece of research on the effects of *Tomorrow's Schools* on social segregation and school performance, the Smithfield project—still argue that making access to schools better had mainly negative effects on schooling.⁷ They argue that lower socio-economic status (SES) parents were systematically locked out of popular schools, and that this created “sink”

schools, with declining rolls and surplus teaching space. They claim the pupils who remained in these schools were more disadvantaged than before zones were relaxed, despite much evidence to the contrary that the situation was better after regulations that limited families access to schools were changed.⁸

Roll Play seeks to move on from the rhetorical debate surrounding the issue of improving better access to schools in New Zealand. The purpose of the research is not merely to recite again the ideas about what a school system might look like where parents better access to schools, but to start to investigate the practical effects of introducing such a system. Consequently, *Roll Play* considers what might happen if restrictions which may currently prevent parents from accessing their preferred school for their child were reduced or removed, like school enrolment zones, the distance from home to school and lack of transportation.

While many effects could be studied, the issue which *Roll Play* primarily focuses on is the impact that creating better access to schools for parents and children would have on school rolls and, consequently, school network capacity in the secondary school system. This question is considered by examining what might happen to the school system if parents could change their child's school and access the secondary school they most prefer in Christchurch (a city in the South Island of New Zealand).

Only a small selection of New Zealand studies have previously looked at the impact of creating better access to schools in Christchurch. Generally, the studies shared similar presuppositions to the Smithfield project but were of a smaller scale and used different methods to the ones used in *Roll Play* to evaluate changes to school enrolment policies in Christchurch. In 1993, two different studies were published through Canterbury University. Val Ainsworth and her colleagues at the Education Policy Research Unit studied whether dezoning caused a drift of children to schools with a high SES make-up, and whether schools in poorer areas faced declining rolls.⁹ The other study, by Mike Fowler, was more comprehensive, looking at the factors influencing choice of four secondary schools, among a group of 461 families of Form 2 (Year 8) pupils.¹⁰ More recently, a study produced in 1997 by Wendy Stockwell and Sally Duckworth for AC Neilsen, commissioned by the Ministry of Education, examined parents' patterns of choice for secondary schools in Christchurch and how

satisfied parents of children who already attended secondary school were with Christchurch secondary schools.¹¹

Roll Play differs from this handful of studies because it combines multiple methods from the social sciences, including the use of a Geographic Information System (GIS), to investigate how parents might access schools in Christchurch and how school rolls might change, if policies were introduced that gave parents better access to schools. In particular, this research adapts a framework from geography to organise and present the findings, allowing a systematic appraisal of what demand for schools in Christchurch might *actually look like* under a change of enrolment policy. Mapping helps to illustrate the schools parents from across the city would prefer to send their children to, compared to the schools they currently do. It also helps to investigate the relationship between distance and the schools parents send their children to.

The overall objective of the research is to see which schools might grow or decline in size and to draw some tentative conclusions about how capacity in the state school system could be put to best use under an open enrolment scheme, so that as many families as possible could access a school that would best meet the educational needs of their children.

RESEARCH DESIGN

Christchurch was selected as the case study for this research, because it reflects in miniature the traits of the wider school system. It has a range of different secondary schools which parents may access, including seventeen state secondary schools, ten state-integrated schools and four private schools. There is heavy pressure to access some of the state schools which operate enrolment zones. By contrast, there are several state schools which are looking at reorganising to reduce their capacity, a fact that did not escape the attention of media in Christchurch earlier this year.¹² Another advantage of Christchurch is its size. Christchurch has a population of approximately 350,000 people and it covers an area of approximately 453 square kilometres.¹³ This means its boundary is relatively compact compared to New Zealand's largest major city, Auckland, which covers 1,086 square kilometres. For the purposes of this study, it is easier to observe the effect of making access to schools better over a smaller area.

To discover which schools parents would prefer if they could access a different school to the one they currently send their child to, Maxim Institute commissioned the Survey Research Unit at the University of Auckland's School of Population Health to conduct a telephone survey of 424 parents in Christchurch.*

In order to investigate how parents would respond if they had better access to schools, the survey firstly gathered information about which schools parents currently sent their eldest child to, and whether this school was their local school. This helped to establish the degree of choice being exercised by parents already. After that, two scenarios were put to parents, offering them different degrees of access to schools. The first access scenario discussed in this report asked parents whether or not they would continue to send their child to their current secondary school. Parents who would change their child's school were asked to indicate which state, state-integrated or private school they would prefer to send their child to if money was no object. The second access scenario also asked parents whether they would change their child's school, but constrained their choice by asking them which state school they would most like to send their child to. The purpose of looking at these two access scenarios was to see which schools parents preferred in a hypothetical situation, where they faced few or no constraints on which schools they could access, and which schools they would prefer in a situation more closely reflecting reality, where their access to schools was more constrained by factors such as money and more limited access.

The results of the parental survey were subsequently analysed by biostatisticians from the Clinical Trials Research Unit at the University of Auckland using a variety of statistical techniques. Estimates were calculated to determine the proportion of parents at the city level responding to certain survey questions, including the questions which asked parents whether they would change their child's school. To analyse the implications of parents changing their child's school on school capacity, estimates were also determined for the absolute change that would occur to school rolls. Further, projections were made to estimate the number of pupils that could be expected to move between schools.

Using research techniques pioneered in Britain to examine the introduction of policies which

improved access to schools, this research also used a GIS software package (ArcGIS 9.1) to present certain survey results, as well as selected findings from the post-survey statistical analyses for the estimated change to school rolls, on a series of maps. Parents were geo-coded to a point location in space, deduced by matching the telephone numbers called in the survey to Statistics New Zealand census meshblocks to illustrate the schools children from across the city would attend. The maps, as well as a series of related distance calculations, help to explore the geography of allowing parents better access to schools for their children; in particular the distance between home and parents' preferred schools (more details on the methods used in this research are described in section 2).

THE STRUCTURE OF THE REPORT

Following this introduction, the report is structured in the following way:

- Section 2 outlines the methods and the analytical framework used to carry out each part of the research and to analyse the findings.
- Sections 3, 4 and 5 present the results of the survey and the findings of the post-survey statistical analysis, looking at which schools Christchurch parents choose.
- Section 3 discusses the current situation surrounding access to schools in New Zealand, and in light of this discussion, presents the research findings which look at the schools parents currently choose for their children. It also measures the amount of active choice made, where parents choose a different school for their child to their local school or the school which they responded that they were zoned for.
- Section 4 examines the first access scenario, presenting the research findings which look at the magnitude of change and the number of pupils who would probably move between schools, if parents could choose any secondary school for their child and money was no object. Using this data, the expressed patterns of pupils moving between schools are analysed.
- Section 5 examines the second access scenario

in the same way, presenting the research findings for the schools parents would choose for their child if they could choose any state school.

- Section 6 discusses the strengths and weaknesses of the research findings, summarises the main findings and critiques, where relevant, some of the findings of previous New Zealand research on access to schools. Based on the findings of this research it also discusses how school network capacity could be put to best use in Christchurch, and how access to schools could be made better for parents and children.
- Section 7 concludes by establishing the unique contribution made by this research to the study of improving access to schools in New Zealand. Moreover, it sets out a series of policy implications that could help to improve access to schools under an open enrolment scheme. It specifically considers how school network capacity could be effectively managed in such a situation so that families could access a better range of state schools.

Several appendices are also included in this report. One contains the series of maps that illustrate the various research findings referred to individually within each section. Others provide background information relevant to how this research was carried out and to a number of the arguments made within the report. One of these is an overview of the associated research on creating better access to schools, both in New Zealand and overseas. It focuses in particular on a critique of the presuppositions and major findings of the Smithfield project, pointing out several errors and misleading interpretations of the findings, and criticises it for examining access to schools from the perspective of class analysis and social conflict theory.

* The Survey Research Unit was not responsible for commissioning the survey or for any interpretations made from the analysis and the findings.

ENDNOTES

- ¹ M. Harrison, *Education Matters. Government, markets and New Zealand schools* (Wellington: Education Forum, 2004), 171.
- ² The proportion of the New Zealand school population attending private schools as at 1 July 2006 was 3.9% (29,895 students). This is a slightly higher proportion than in 2005, at 3.8% (29,358 students). Education Counts, *Student Numbers as at 1 July 2006* (Ministry of Education, New Zealand, 2007), <http://educationcounts.edcentre.govt.nz/statistics/schooling/student-numbers-at-july-2006.html>.
- ³ For example, see the following stories of pressure on the Auckland Grammar School zone and conflict between the school and the Ministry of Education over which parents should have access to the school. "Zoning's Perverse Effects," *New Zealand Herald*, August 31, 2006; "Grammar Could Go to Court," *New Zealand Herald*, August 31, 2006.
- ⁴ S. McClay and R. Harrison, "The Impact of School Zoning on Residential House Prices in Christchurch, Paper presented at the 2003 meetings of the New Zealand Association of Economists" (2003).
- ⁵ Ministry of Education, "Student Outcome Overview 2001-2005" (Wellington: Research Division, Ministry of Education, New Zealand, 2006), 4.
- ⁶ It is not just disparity between different pupils that is of concern, but also disparity between pupils within schools. J. Hattie, "New Zealand Education Snapshot. With specific reference to Yrs 1-13 years. Presentation to "Knowledge Wave 2003 - the Leadership Forum"" (2003). Also see Ministry of Education, "Student Outcome Overview 2001-2005"; Ministry of Education, "Focus on Achievement in Reading Literacy - PISA 2000" (Wellington: Comparative Education Research Unit, Ministry of Education, New Zealand, 2004).
- ⁷ The Smithfield project reports are: H. Lauder et al., "The Creation of Market Competition for Education in New Zealand. Phase one, first report to the Ministry of Education in New Zealand," *The Smithfield Project* (Wellington: Ministry of Education, New Zealand, 1994); S. Waslander et al., "An Overview of Research Activities. Phase one, second report to the Ministry of Education," *The Smithfield Project* (Wellington: Ministry of Education, New Zealand, 1994); H. Lauder et al., "Trading in Futures: The nature of choice in educational markets in New Zealand. Phase one, third report to the Ministry of Education," *The Smithfield Project* (Wellington: Ministry of Education, New Zealand, 1995); D. Hughes et al., "Markets in Education: Testing the polarisation thesis. Phase two, fourth report to the Ministry of Education," *The Smithfield Project* (Wellington: Ministry of Education, New Zealand, 1996); D. Hughes et al., "A question of ethnicity: The meanings of 'New Zealander'. Phase two, fifth report to the Ministry of Education," *The Smithfield Project* (Wellington: Ministry of Education, New Zealand, 1996); D. Hughes et al., "School Effectiveness: An analysis of differences between nineteen schools on four outcome measures using hierarchical linear modelling. Phase two, sixth report to the Ministry of Education," *The Smithfield Project* (Wellington: Ministry of Education, New Zealand, 1997); D. Hughes et al., "Values or Social Class: Competing explanations for changing secondary school rolls in a market context. Phase two,

seventh report to the Ministry of Education," *The Smithfield Project* (Wellington: Ministry of Education, New Zealand, 1998); S. Watson, A. Hughes and H. Lauder, "'Success' and 'Failure' in the Educational Marketplace. Phase two, eighth report to the Ministry of Education," *The Smithfield Project* (Wellington: Ministry of Education, New Zealand, 1998). An important journal article by the Smithfield authors looking at social segregation and choice of school is S. Waslander and M. Thrupp, "Choice, Competition and Segregation: An empirical analysis of a New Zealand secondary school market, 1990-1993," *Journal of Education Policy* 10 no.1 (1995). Another is D. Hughes et al., "Ethnicity and School Choice," *New Zealand Annual Review of Education* 7 (1997): 95-109. The book length summary of the reports is: H. Lauder et al., *Trading in Futures: Why markets in education don't work* (Buckingham: Open University Press, 1999).

- ⁸ R. Hipkins and E. Hodgen, "National Survey of Secondary Schools" (Wellington: New Zealand Council for Educational Research (NZCER), 2004), 170.
- ⁹ V. Ainsworth et al., "Tomorrow's Schools and Freedom of Choice - A Recipe for Disaster. A study of the effects of roll changes on Christchurch state schools" (Christchurch: Education Policy Research Unit, University of Canterbury, 1993).
- ¹⁰ M. Fowler, *Factors Influencing Choice of Secondary School: A case study* (Christchurch: Education Department, University of Canterbury, 1993).
- ¹¹ W. Stockwell and S. Duckworth, "'Drivers of Choice' and Customer Satisfaction with Christchurch Secondary Schools. Report prepared for the Ministry of Education" (Wellington: 1998).
- ¹² "White Flight Skews Lopsided School Rolls" *Christchurch Press*, July 16, 2007.
- ¹³ These figures refer to the population and area of Christchurch city defined by the Christchurch Territorial Local Authority boundary.

SECTION 2

Analytical Framework and Research Methods: The geography of education

INTRODUCTION

This section describes the general approach and analytical framework used in the *Roll Play* research. One of the objectives of this section is to show that researchers from different fields have expanded the range of techniques used to study the impact of improving access to schools. Their contributions have pushed research in this area beyond the boundaries of the first generation of studies which primarily outlined the ideas and principles for how such an education system might work (see appendix 1 for more background on these studies).

In this context, the case is made that geography is another field that can help with studying the effects of improving access to schools. This is because applying the tools and concepts of geography allows researchers to observe the choices that parents make about schools in the real world. This means researchers now have a more impartial set of techniques available to answer important questions about improving access to schools like: whether parents prefer schools which are nearer or further away from where they live; whether movement between schools when parents have a choice is structured according to any patterns; or whether the range of schools parents can access is related to their social position.

This research endeavours to use geography to organise and discuss the findings of a telephone survey of 424 parents whose children currently attend secondary school. It asked participants to consider which schools they would send their child to if there were fewer restrictions on their choice of school. In particular, the research uses a tool known as a Geographic Information System (GIS). GIS allows relationships between various spatial data to be explored, like parents and schools, and to present the

results of these investigations in various ways.

One way a GIS helps to analyse data is by allowing the production of maps which display the data spatially. This research makes special use of maps to illustrate which parents would choose a different school for their child, which schools could expect their rolls to grow or decline and which schools parents who would change their child's school would prefer. The way the research uses GIS spatial analysis makes it unique among contributions to the study of improving access to schools in New Zealand. Furthermore, by using these techniques and asking which schools parents would really like to send their children to, the research also presents an analysis of improving access to schools that does not presuppose that parental choice of school is invariably structured by socio-economic status (SES) or ethnicity.

This section is structured as follows. This first part describes briefly the various ways in which research on improving access to schools has developed since the late 1980s. In particular, it mentions research which has originated from disciplines as varied as sociology, economics and political science. However, as this study examines how to make access to schools better in Christchurch, the second part of this section briefly describes the major longitudinal research carried out in New Zealand on the impact of relaxing zones under *Tomorrow's Schools*, the Smithfield project. This is important as the Smithfield project's findings are referred to throughout the research (a much fuller explanation and critique of the research carried out during the Smithfield project is contained in appendix 1).

In this context, the second part of the section also includes a brief summary of a handful of studies which have examined parental choice of school in

Christchurch. The limitations of the Christchurch studies are also discussed.

The third part of this section then looks at the way geography has added to the empirical literature on this subject and improved understanding of the effects of improving access to schools. It also moves on to describe in more detail the contribution that geography can make to understanding the dynamics of how parents choose schools, and the geographic framework of analysis used in this research. The fourth part of this section describes the particular methods used to collect, analyse and present the findings of the research. Lastly, the case is made for the unique contribution that this research makes to the study of improving families' access to schools in Christchurch and the analysis of its implications for school capacity.

RESEARCH ON ACCESS TO SCHOOLS

Second generation studies of access to schools

A growing dissatisfaction in the United States with the reality that increased education spending was not raising pupil achievement motivated policymakers there to find different solutions to improve schools.¹ This translated into an explosion of programmes to increase children's access to education, and also parents' involvement in their child's education (as research shows that parental involvement has an important effect on educational outcomes).²

The rise of these various initiatives created the opportunity for original research, analysing their impact and their implications so that schooling policy could be further enhanced. Beginning in the late 1980s with the work of two American political scientists, John Chubb and Terry Moe (see appendix 1 for more details),³ researchers from economics, political science, sociology and even geography began to look closely at the impact of each kind of programme or reform. Case studies have included schemes in the United States, Britain, various European countries, countries in the developing world and other territories where reforms, initiatives or programmes have been implemented.⁴ The cases vary from limited programmes to wide-scale reforms across national school systems.

Furthermore, the proliferation of programmes designed to give parents better access to schools has meant that access to a greater range of schools—often funded by public money through targeted education credits—is now a reality. Consequently, the debate

in the research literature has moved on from the question of whether or not to give families better access to schools in these countries. Rather, it is now about what kind of programmes should be implemented. It is to these matters that more recent research has tended to turn, offering insight to education policymakers. This research is positioned among studies within this general trend. The various kinds of research produced mean it is possible to construct a typology of studies concerned with increasing parents' access to schools.

A typology of studies on access to schools

Categories established by Simon Burgess, Helen Slater and Adam Briggs distinguish between different kinds of studies and their contribution to contemporary research.⁵

In two papers, published in 2006, they note that recent empirical contributions divide into different areas:

- those studying targeted access schemes, including partial equilibrium research, which looks at the impact on pupils who participate in education credit programmes;
- those studies which focus on the impact of increased access to schools on the performance of pupils and school systems as a whole; and
- those studies that model the general equilibrium of residential and school choice, meaning studies that take into account as many mediating features of the economy as possible that affect people's decisions, like school quality, school funding, house prices, and more.⁶

To this list of categories established by Burgess, Slater and Briggs, the following relevant research areas can be added:

- those studies examining the processes that parents engage in when choosing schools and their attitudes to schooling policies;
- those studies which have been concerned with how equitable access is to schools, and whether popular schools skim off the best pupils, thereby causing social segregation; and
- those studies that use geography to understand the decision-making processes of parents, and

the techniques of geography, to understand the allocation of pupils to schools and school segregation.

Examples of specific studies that may be included in each category of this typology are discussed in appendix 1. The obvious observation to make is that the literature on improving access to schools has grown and diversified remarkably with the rise of new programmes, better datasets created from them and the application of more sophisticated research techniques from the social sciences. Each kind of research uses varying methods and techniques to understand the dynamics behind how parents choose schools. Consequently, better conclusions can now be drawn from the research literature about the impact of these programmes to ascertain the effects of better access to schools upon pupils and schools. Many of these studies also make the case that better access leads to better outcomes for pupils, parents and schools, including better achievement and greater parental engagement with children's learning.

Building a typology of studies also helps to show more clearly how the research in this report fits within the overall study of access to schools.

It also shows how this research adds to this growing body of literature. However, it differs from most of the kinds of studies described, because it capitalises on the relatively new application of methods from *geography* to education. The purpose is to better understand the implications for school capacity of policies which give parents more freedom to choose the school of their choice. As this research looks specifically at Christchurch it also adds to the literature on improving access to schools in New Zealand. Consequently, attention now briefly turns to the New Zealand research base, providing a brief analysis of its strengths and weaknesses and ultimately pointing to where the research in this report can help shed light on the New Zealand situation.

THE STUDY OF IMPROVING ACCESS TO SCHOOLS IN NEW ZEALAND

The Smithfield project

The research literature is heated on improving access to schools in New Zealand as a result of the *Tomorrow's Schools* reforms of the late 1980s. This is because the New Zealand experience of relaxing school enrolment zones from 1991 until 2000,

with a minor modification to the legislation in 1998 to ensure pupils could attend a "reasonably convenient school," is usually considered as causing increased social segregation and declining school performance.

The segregation debate is a very sensitive political subject because it touches on issues of fairness in education. Research from New Zealand, including research from the Smithfield project commissioned by the Ministry of Education, is often cited in international literature in support of the argument that allowing families better access to schools leads to social exclusion for pupils and that schools which serve lower socio-economic communities decline.⁷ However, this body of evidence has also attracted criticism, pointing out numerous defects in the analysis and the conclusions drawn from it.

The major focus of the Smithfield project was to examine whether social segregation increased as a result of relaxing school zones and whether schools improved in quality. As the research presented in this report is primarily concerned with changes to school rolls, it is dissimilar to the objectives of the Smithfield project. This means there are few instances where the results directly address the Smithfield project's findings.

The findings of the Smithfield project authors are misleading. They claim that relaxing school enrolment zones did not help lower socio-economic status (SES) and ethnic minority parents to access better schools. In fact, their data showed the opposite. Its shortcomings and misleading conclusions need to be addressed in a discussion of making access to schools better in New Zealand, in order to correct the myths which are often perpetuated about giving parents more freedom to choose schools. A critique of the Smithfield project is contained in appendix 1.

Critiquing the Smithfield project also provides a context for the discussion of the findings of this research, which although of a different nature detected a trend that parents who would choose a different school to their child's current school, do so in similar proportions across each level of household income.

Previous studies of access to schools in Christchurch

As mentioned in the introductory section, a small selection of studies has looked at the impact of improving access to schools in Christchurch. Looking

at these studies helps to provide a more specific context for the findings of this research, as well as illustrating its novel approach to the study of accessing schools in New Zealand. In general, the studies share similar presuppositions to the Smithfield project, but were smaller in scale and used different methods.

• School type or school mix? Lauder and Hughes

Prior to the Smithfield project, in 1990, two of the Smithfield authors, Hugh Lauder and David Hughes reported the outcome differences of twenty Christchurch secondary schools in terms of success in the secondary school exam system and school leaver destinations.⁸ The idea was to test whether school mix or school type made any difference to pupil outcomes. From 1983, the researchers tracked the academic achievement and scores from standardised tests for each pupil in the sample. Data on their SES was also determined and their school leaver destination recorded, where available. Their findings showed that pupils in high SES schools gained higher qualifications after controlling for intake characteristics. Further, they claim that a balanced mix of socio-economic groups was more important than school type in explaining greater academic success in some schools, although this claim is disputed (see Appendix 1). Hence, Lauder and Hughes make an early case in this study for balancing the social mix of school intakes. Consequently, while Christchurch schools were the source of the data for this research, it looked primarily at the effect of different school types, rather than the school system or particular schools in Christchurch.

• Gains and losses to school rolls

In 1993, two different studies were published through Canterbury University. A group of researchers at the Education Policy Research Unit studied whether de-zoning caused a drift of children to schools with a high SES composition, and whether schools in poorer areas faced declining rolls.⁹ The methodology of this research was crude, however. A simple survey questionnaire was distributed to 134 principals of all primary and secondary schools in Christchurch. 110 surveys were returned. It asked principals to answer four questions:

1. what their type of school was;

2. the roll on 1 March for five years between 1989 and 1993;
3. the SES composition and cultural profile of the school; and
4. an explanation for any significant roll change during those five years.

The latter two questions were open-ended. The main findings were that:

- eighteen out of 29 schools with populations in the lowest SES group experienced declining rolls of more than 10% in the preceding five years. Only three schools experienced a growth of more than 10%;
- of the 32 schools with rolls declining by more than 10%, only one listed its population as predominantly of a middle-high SES; and
- all four schools in the highest SES group experienced increases in their rolls.

While conceding other demographic factors play a part in roll changes, the study still concluded that there was middle class flight occurring. It is very difficult to take the findings of this study seriously as evidence of "white flight" or increasing segregation in Christchurch, since the gains and losses only show the absolute change each year to school rolls. The study did not break school rolls down by their ethnic or social composition; there was no attempt to consider neighbourhood variables to show whether segregation was increasing; and, there was no attempt to determine which families were choosing a school different to their current school or nearest school. Moreover, the analysis relied largely on anecdote, and its claim for "white flight" was supported ultimately by correlation with rhetoric from overseas research. Perhaps the most serious educational assumption that the study makes is that the impact on schools of relaxing zones is more important than the opportunities it gives to families to choose different and better schools.

• Patterns of parental choice in Christchurch

The other 1993 study, by Mike Fowler of Hornby High School, and published by the Canterbury University Education Department, was much more comprehensive. It looked at the factors influencing

choice of secondary school among a group of 461 families of Form 2 (Year 8) pupils.¹⁰ Parents of children in feeder schools of four co-educational secondary schools, (representing their potential intake), were asked to appraise the public image of each secondary school, and also what they knew about the schools. The schools appraised were three urban schools, Riccarton, Hillmorton and Hornby High Schools, and one high school with a rural-urban intake, Lincoln High School. Fowler found that the three most important factors affecting parents' choice of secondary school were:

1. how close the school was to home;
2. the family experience of the school, including their impression of it and recommendations from outside of the family; and
3. perceived educational benefits, like academic performance and the curriculum.

Fowler also discovered that families made general statements about schools when they described what influenced their decisions. Furthermore, 75% of the families had decided on a school before the end of the first term of the school year, with 83% finding the decision relatively easy. Families from all SES groups considered schools other than their nearest school, although parents judged negatively some schools in lower SES areas because of their location or their intake.¹¹ Interestingly, Fowler also detected that lower SES parents accessed information from both official school sources and through informal networks, in contrast to the findings of overseas research.¹²

These findings are important, because they show that some parents in this small sample of Christchurch parents were active choosers and made positive choices for their children's education. Proximity was not as important to them as school quality. Fowler's interpretation of these findings suggested parents wanted to send their children to a school which had a community atmosphere that appealed to them.

Therefore, Fowler's study is particularly useful as a point of comparison to this research, as this research also considers the reasons why parents favour schools and finds some similar reasons. It is also useful since it indicates that when parents choose schools, the decision-making process is not a calculated cost benefit analysis, but takes into

account the characteristics of schools. That said, Fowler's study shows parents do take the trouble to consider carefully which school their child will attend and that they will often choose a school different to the local school, just as the Smithfield data shows.

• 'Drivers of choice' and satisfaction with Christchurch secondary schools

Four years after Fowler's research was produced, in 1997 the Ministry of Education commissioned survey research from AC Nielsen to understand the 'drivers of choice' and customer satisfaction with Christchurch secondary schools.¹³ Two researchers, Wendy Stockwell and Sally Duckworth wrote up the findings. The research came about after a seminar in May 1997 involving the Ministry and leaders of fourteen Christchurch secondary schools. A need was identified to investigate the reasons why parents favoured schools in Christchurch, to help with planning towards the Ministry's provision of secondary schooling in Christchurch between 1998 and 2005.¹⁴ The research had two elements: a preliminary qualitative phase using two focus groups of parents with children in Years 3, 4, 7 and 8, and Years 9 and 10, and a quantitative one, being the survey of parents with children in Years 3, 4, 7, 8, 9 and 10.

The qualitative research identified the triggers and barriers that influenced parents' choice of secondary school, and helped the researchers to prepare a telephone survey questionnaire. This was the second component of the research. The telephone survey gathered the responses of 603 parents with children in those school years listed above to learn more about the triggers and barriers that influence secondary school choice and satisfaction with Christchurch secondary schools.

Consequently, the research investigated parents' beliefs and attitudes about:¹⁵

- different types of schooling, including new models of schooling, middle schools and single-sex schools, among others, as well as the influence of location on parents' choice of school.
- the patterns of choice for secondary schools in Christchurch; and
- the level of satisfaction with schools of parents whose children already attended secondary school in Christchurch.

The major findings of the survey research regarding the patterns of parents' choices were that:¹⁶

- the majority of parents (87%) had already decided, or had thought about but not yet decided, on a secondary school for their child;
- local schools were the most popular choice of school favoured by parents who had already decided or thought about a secondary school;
- for those parents, the schools that were most popular were single-sex schools;
- local schools were also favoured by parents of Year 9 and 10 pupils in parts of the suburbs of Brighton and Riccarton; and
- the majority of parents (79%) with children in Years 9 and 10 responded that the school their child was attending was their first choice. Parents' first choice of school was generally for single-sex schools. One of the main reasons why parents did not get their first choice was because of zoning (32%).

Further, the research found that:¹⁷

- parents had a high rate of satisfaction (93%) with the school their child was currently attending. Parents who did not get their first choice were almost as satisfied (90%) with their child's current school;
- close proximity and easy accessibility of the school to home (48%), and the school's reputation, both general (27%) and academic (16%), were the most frequently mentioned reasons for why parents chose schools;
- parents generally preferred co-educational schools (52%) to single-sex schools (32%);
- the most important attributes, overall, of a school for parents were that it provided encouragement to pupils (97%) and focused on their needs (96%); and
- awareness of schools among parents was highest for single-sex schools, Burnside High School, Hagley Community College and Aranui High School.

The AC Nielsen survey, like Fowler's earlier research, gives a further illustration of what

Christchurch parents value in a school, and the kind of schools parents are interested in choosing. The research showed that parents of school children in Christchurch place a high emphasis on the supply side of education, given that reputation and how the school treated pupils were very important reasons for why parents chose a school. It is also an interesting contradiction that parents preferred co-educational schooling but still preferred their children to attend single-sex schools.¹⁸ The location of home and school and the accessibility of schools were also important factors influencing parents' choices.

• The influence of school zones on residential choice

Another Christchurch study comprised a small piece of qualitative research completed in 2002, by Susan Bridges through the Christchurch College of Education.¹⁹ The study looked at 150 New Zealand families and families of permanent residents who had moved their children to primary schools within the home enrolment zones of popular Christchurch secondary schools. The purpose was to find out how zoning impacted on their choice of residence. Approximately one-third stated that zoning had been a factor in the decision. Interestingly, families from overseas considered zoning more important than New Zealand families. Bridges thought this was perhaps because the time overseas families arrived was out of sequence with school enrolment dates. Co-educational schools were also desired twice as often as single-sex schools. Of most interest is that this study again showed parents were prepared to move home as much as a year in advance to get their children into their preferred high school. Christchurch parents who care about their children's education appear to be active choosers of schools, in spite of legislation that is meant to moderate access.

Summary

Generally, the Christchurch studies described here are different to the original research presented in this report either in their methods or their approach to understanding parental choice of school. One correct observation the New Zealand research has made is that the implementation of *Tomorrow's Schools* led to mixed results for parents and schools, including the reality that schools lacked the necessary freedom and support to respond to parental demand by being

able to increase capacity.²⁰

Roll Play looks primarily at this problem and is concerned with predicting what changes might happen to school rolls if open enrolment was allowed again and how capacity issues like those experienced under *Tomorrow's Schools* might be remedied. This is a subject no New Zealand research has yet considered. However, because this research uses a sample to generalise to a population, claims cannot be made about many of the social outcomes that the Smithfield project and other New Zealand research have discussed (see appendix 1).

GEOGRAPHY AND THE STUDY OF IMPROVING ACCESS TO SCHOOLS

This research uses concepts and methodological techniques from geography to help organise and discuss the findings. By taking advantage of this approach, this research avoids a class-based analysis of education policy, which was identified in the previous part as being typical of much of the New Zealand research. Class-based analyses of how parents access schools assume that a parent or child's position in society conditions the range of schools that they may access. They also assume that parents are prejudiced in the way they choose schools.

Furthermore, in a practical way, being able to represent the findings of the research visually on maps is helpful for seeing the relationship between the different information collected during the parental survey: for example, the types of schools favoured by parents and the nature of the neighbourhoods where they live. Consequently, geography is helpful to this research for understanding the relationship between parents and schools and the possible outcomes for the school system in Christchurch.²¹ It puts parents' preferences for schools and their opinions about schooling into a geographic context. This next part, therefore, outlines the key literature which this research draws on to establish a geographic framework for analysing parental choice of school. In doing so, it also explains what the geography of education is and distinguishes it from the other sorts of research described in appendix 1.

Exploring the link between geography and education: Adapting Taylor's approach

The approach from the geography of education adopted in this research draws its inspiration from

the methods and techniques developed by one of the Cardiff study scholars, Chris Taylor. Taylor's work, published in peer-reviewed journals and also a book length work,²² was primarily aimed at developing a link between geography and educational research with reference to the 1988 reforms that gave parents better access to schools examined by the Cardiff study.²³ Taylor's research was extensive and innovative. It detailed the ways that parents' choice of schools were constrained by discussing the different ways access to schools was structured, according to the types of schools available within each Local Education Authority (LEA) and how parents went about choosing them. Taylor also focused on the skimming debate that has been significant in the study of the English reforms.²⁴ Skimming is the argument that good schools select the best pupils in order to maintain or improve their performance in examinations to enhance their reputation.

To accomplish these aims, Taylor analysed the admissions data in one school year of 34,178 pupils transferring between primary and secondary schools in 198 LEA maintained schools in eight LEAs. A mixture of inner-city, metropolitan and rural (county) LEAs were studied, each with differing social and geographical characteristics.²⁵ Much of the data analysis involved the use of a GIS to conduct a spatial analysis of the pupils moving between schools. This was possible because Taylor had the home postcodes for each child transferring school, meaning they could be located to a specific point for the spatial analysis.

This research picks up on the second aspect of Taylor's research—the way in which parents choose schools under a system of better access to schools, and the impact that these policies have on the demand for different types of schools. Adapting Taylor's approach to answer these questions allows this research to estimate the way schools would gain or lose pupils under two different open enrolment scenarios. Another similarity shared with Taylor's study is the application of a GIS as an aid to presenting the findings and informing the analysis of the interaction between parents and schools.

The analyses presented in this research are more limited than those undertaken by Taylor, however. One of the reasons for this is that this research does not have access to the kind of pupil and school level data that was available to Taylor through the Pupil Level Annual School Census (PLASC) carried out in

England. Without data for the whole population it is impossible to make fuller claims about the precise changes to school rolls and whether policies that would increase children's access to schools would cause skimming.

Further, one of the objectives of this research was to learn which schools in Christchurch parents would choose if they faced fewer restrictions. It was not possible to analyse a limited programme of choice, or any other active policy intervention that would improve children's access to schools, however, because none is currently in operation in Christchurch. Consequently, as this research looks into the future, it can only make predictions for what might happen for the entire population of the city based on statistical inferences from the sample collected during the parental survey. This means there are limitations to how the data can be used with GIS techniques, because only data at the household level can be mapped, and not estimates for change at the city level.

In summary, this research takes Chris Taylor's techniques for analysing and presenting data concerning the patterns of gains and losses between schools. It adapts them to present the findings from a random sample survey which asked parents of secondary school-aged children in Christchurch which secondary schools they would choose for their child. Attention now turns to reviewing and establishing the relevant theory that underpins this analysis, and how it is different to previous class-based analyses.

The geography of education

Taylor's contribution to the study of the geography of education is perhaps the most comprehensive to date, but it was not the first to consider it. In Britain, a handful of researchers have attempted to take into account a geographical perspective, but unlike Taylor they did not set it as their main objective. For example, Richard Bowe and Stephen Ball explain that the "politics of space" structures possibilities for choice, but at the same time they claim class as a more important framework for determining the relationship between geography and choice of school, arguing the "lived environment is not equally available to all, it is classed, it is gendered and it is racially grounded."²⁶ Taylor notes that Sharon Gewirtz and colleagues also used a socio-spatial model of analysis to conceptualise the constraints that parents faced when choosing a school.²⁷

Similarly, Stephen Ball and colleagues developed the notion of "circuits of schooling" (also used in the Smithfield project research) as part of their class-based analysis of patterns of schooling in the Greater London area after the 1988 reforms.²⁸ They identified four circuits:

1. a circuit of community comprehensive schools, whose intake came from the immediate locality and had highly localised reputations;
2. a circuit of cosmopolitan, high-profile, elite maintained schools, which recruited some or many pupils from outside their immediate locale, with reputations which extended well beyond their home LEA;
3. a circuit of independent schools that competed with the state maintained schools; and
4. a circuit of Catholic schools, which had its own pattern of competition.

Ball and colleagues contended that different class groups of parents 'plug into' each of the circuits, and that each circuit empowered pupils differently in terms of life outcomes.²⁹ Consequently, they see the post-1988 English education system as unfair, arguing that only middle-class parents took full advantage of the reforms to sustain or re-assert their class advantage, reproducing existing class structures as a result.

However, neither of these studies incorporated a model of the geography of the school system as a whole, including rural and suburban locations.³⁰ Furthermore, while Ball's analysis uses geography to organise the findings, and finds a hierarchy of schools operating with inner city LEAs as the primary context, it is not clear from this work whether the circuits identified existed before 1988 and whether the disadvantage claimed for lower SES parents was greater or worse before 1988. A framework which is based in the geography of access to schools needs to be subtle. It should take into account that access to schools is likely to be more complicated than allowed for by those researchers, like Ball, who start with class-based assumptions. For instance, it may be that certain schools are drawing on the same catchment area, meaning the number of failing schools, and therefore disadvantaged parents, might be less than critics of improving access to school argue. Taylor's

large scale research while finding similar hierarchies to Ball, did not indicate that parents would be disadvantaged because of schools going into spirals of decline.³¹

Taylor makes a distinction at this point between studies that merely incorporate geography as a means of understanding and organising the findings, and those, like his, which consider the various processes of choice, the constraints that underpin them and which, most importantly, can analyse them at different spatial scales. In this way, Taylor's research takes into account the relationship and behaviour of the actors that influence and constrain access to schools in the real world. Sietske Waslander and Martin Thrupp, two of the Smithfield researchers, called this set of relationships and behaviour the "lived market."³²

Taylor accomplishes this through a comprehensive conceptual framework derived from geography, which consolidates all the features of the "lived market," allowing reasoned generalisations to be drawn based on the real choices of parents.³³ This is different to the sociological work of Gewirtz, Ball and others whose research is constructed and interpreted through a class-based lens, and whose findings were derived from interviews with parents in small localised areas, therefore limiting their ability to make absolute statements about the impact of policies which give parents more choice of schools.

The theoretical basis for Taylor's research, and the one which informs this research, is the notion of the "education market place." Taylor describes it as a spatial tool, rather than in the traditional sense of conceptualising supply and demand. Instead, the market place is defined by Taylor as:³⁴

... the physical locale of where most schools (compete) with each other, and where the majority of children (attend) schools. It is the "spatial arena" in which the education system currently operates.

Taylor deems it a reasonable framework for analysing the processes and dynamics of parental choice in education because it can take into account features of diversity, differentiation and hierarchy.³⁵ Further, the framework is based in reality, as the concepts in it were derived from earlier work that observed the intakes and patterns of competition in the secondary school system in semi-urban East Midlands county.³⁶ Taylor identified four key

components of the "education market place." They are adapted as follows:³⁷

1. the institution space;
2. schools;
3. the household, i.e. parents and children; and
4. the "competition space."

Hence, the components of Taylor's geographical framework ranged from the level of the LEA to the household level.³⁸ These components are considered in order, explaining what they are and how they fit into the framework of this research.

Taylor describes the institution space as "the bureaucratically defined area in which education has traditionally been administered, the LEA."³⁹ Hence, this component is particular to England because the LEAs have authority over school admissions and responsibility for providing support to school management. The LEA therefore has an important role in influencing the provision of education within a defined area and how parents access schools. In New Zealand there is no such comparable level within the education system, as currently legislation permits central government to govern the operations of state and state-integrated schools. Furthermore, state schools that are over-subscribed are required by legislation to define a school zone and fill spare places for out of zone applicants by ballot. Nonetheless, as the area of this research is bound in space by the Christchurch city boundary, in effect the size of the space in which schools and parents may interact is limited. Consequently, the city space serves as a proxy for the institution space in this research, but is not a formal institutional component as it is in Taylor's research.

Schools and households are, however. A brief explanation of these is useful for describing how they fit into the overall framework of the "education market place." Schools represent a distinct level in the market place because they are the site at which education is delivered. Each school has distinct characteristics, and an ethos regarding the delivery of education. These may include strengths in various subjects or sport, the culture and values supported by the school, performance in examinations, or the safety of the environment at the school. These factors represent the product side of education.⁴⁰ In New Zealand, Education Review Office reports in 2006

and 2007 have indicated that there is variation in the degree of quality displayed in school leadership,⁴¹ with reference to employing best practice in pupil assessment and the management of school finances.⁴² In this way, schools may also be differentiated by the way each school is managed by its principal and head teachers as well as by the quality of the governance by the board of trustees. These are process factors of education. Whether product or process factors are considered, the point is that schools are different in their focus and quality, and they earn a reputation for the education they deliver among the community.⁴³

When scenarios that increase children's access to schools are considered, the spatial location of each school is another very important factor that affects whether a school can attract parents or not. Taylor identified five ways in which the location of a school may influence the way a school operates and performs in the "education market place":⁴⁴

1. the proximity of each school to other schools may affect how it responds to the others;
2. the community role of the school, as a school can appeal to parents in its local area that it is the best for their children;
3. each school's traditional local intake, as the prior attainment of pupils can influence product factors like examination performance and the school's reputation;
4. environmental and aesthetic conditions of each school's location; and
5. the accessibility of the school to parents, including the quality of public transport to and from the school.

To these five, one more should be added when considering for the current situation of New Zealand education policy:

6. whether a school operates an enrolment zone.

Enrolment zones will influence the diversity of school intakes and the dimensions of education in a particular area, as a consequence of house prices determining which schools parents can access for their children.

The household is of critical importance as a level of the "education market place," because decisions made about schooling by parents and their children

occur at this level. The decisions made by parents about which school to send their child to cannot be considered without an appreciation of the various constraints which affect their options.

The most important constraint on schooling options is the number of schools that can reasonably be accessed.⁴⁵ In this respect, if parents live close to several schools they have more options. It is also likely that they will have a good knowledge of the characteristics of those schools. Another constraint related to proximity is how accessible each school is. Can children reach the school they attend by walking, or are bussing or car the only realistic forms of transport? In major New Zealand cities like Christchurch and Auckland transportation can be a big problem, as road and public transport infrastructure struggle to keep pace with a growing population.⁴⁶ It is reasonable to assume that these transportation problems could constrain many parents' choices now and in the future. This may partly depend on other factors affecting parents' lives, for example whether parents have to work, and cannot take their children to school if necessary, or whether they can afford different transport options if their children need to travel a distance to school.

Household location is not just important for determining which schools might be more, or less, easy to access. To a degree, location will influence how much information parents get about schools, depending on what other parents in the neighbourhood know and do to obtain information about schools. As already indicated, this is because the quality of the information parents share with each other about schools varies with how active parents are at finding out information about schools. Nevertheless, information from a collective group of parents may help produce more informed decisions among more parents. In spite of all these issues, the number of schools parents can reasonably access will also be determined by how many places are available at schools parents might consider sending their child to.⁴⁷

By bringing together these various levels, a spatial picture of the "education market place" can be formed (figure 2.1). What this means is that households and schools interact with each other at different scales. Taylor describes these different scales as the macro and the micro-scale. The micro-scale involves the individual decisions of parents. By contrast, the macro-scale is more at the level of the

school, and relates to the patterns of competition which exist between different schools, and how they respond to different parents. In the case of this research, being a study of secondary schools, the perspective of the schools is at the higher end of the macro-scale because secondary schools engage with parents over a wider area of a city. This point becomes clear when secondary schools are compared with other smaller educational institutions, like primary schools, which are more numerous, and tend to have a stronger relationship with their immediate neighbourhood, rather than drawing pupils from a wide area.

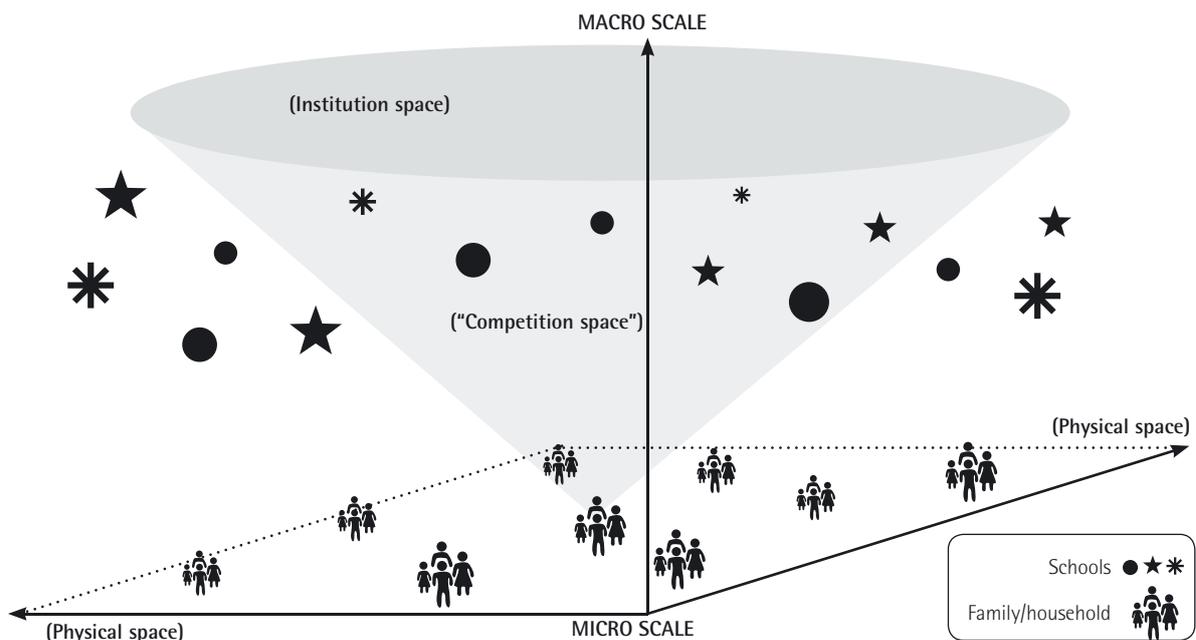
Returning to the micro-level, another basic factor of the framework for analysis is that where parents live constrains the number of schools parents can reasonably access and choose between for their children. In other words, based on their proximity to schools, parents view an area from which they can choose a school.⁴⁸ The area, defined by the relationship between parents and schools creates a "competition space" in which choice occurs. As Taylor notes, the idea of the "competition space" has its origins in studies of the retail market, in terms of understanding the spatial relationships between suppliers, retailers and customers.⁴⁹ When school zones and other constraints on parents' access to

schools are eliminated or reduced, arguably these actions have an impact on the spatial relationships between parents and schools in the "education market place." One of the objectives of this research is to begin to discern the relationships between parents and schools that exist under the current system of school enrolment, and how these relationships might change with different possibilities for accessing a school.

In summary, a "competition space can be described as the area of interaction between schools in the market place."⁵⁰ The areas can vary in size, depending on the number of schools considered. The area of a "competition space" can be determined by identifying the gains and losses of pupils occurring between certain schools. This measure was used by Taylor, who determined the gains and losses between schools by establishing a surrogate 'local' catchment intake for each school using GIS.⁵¹

It is possible to have several different "competition spaces" within an institution space, depending on how complicated the interaction among the different levels of the market place is.⁵² Lastly, as "competition spaces" consider interaction between schools, naturally, they also vary in the intensity of competition that may be experienced between schools. The intensity of competition is due

Figure 2.1. Conceptualisation of the "education market place"



Source: C. Taylor, *Geography of the 'New' Education Market*, 10.

to the number and distribution of both schools and children vying for places at those schools within a "competition space" (figure 2.2).⁵³ For example, the constraints of distance and accessibility influence the intensity of competition between schools, as well as how many schools are in a "competition space." Another factor is the range of school types (such as single-sex schools, private schools, or religious schools), since different types of schools may be favoured by different parents

To determine the nature and extent of the "competition space," for the purposes of this research, the notion of gains and losses is adapted by looking at the relative flow of pupils between schools using data from each of the access scenarios in the survey.

The advantage of using this conceptualisation of the "education market place" is that it provides a framework for investigating what Taylor calls "the reality" of the interaction between parents and schools, with respect to their different vantage points in the space.⁵⁴ As the discussion of the findings of this research will show, there is considerable variation between the current demand for schools in Christchurch and what could be expected to happen when constraints around parents' choice of school are reduced.

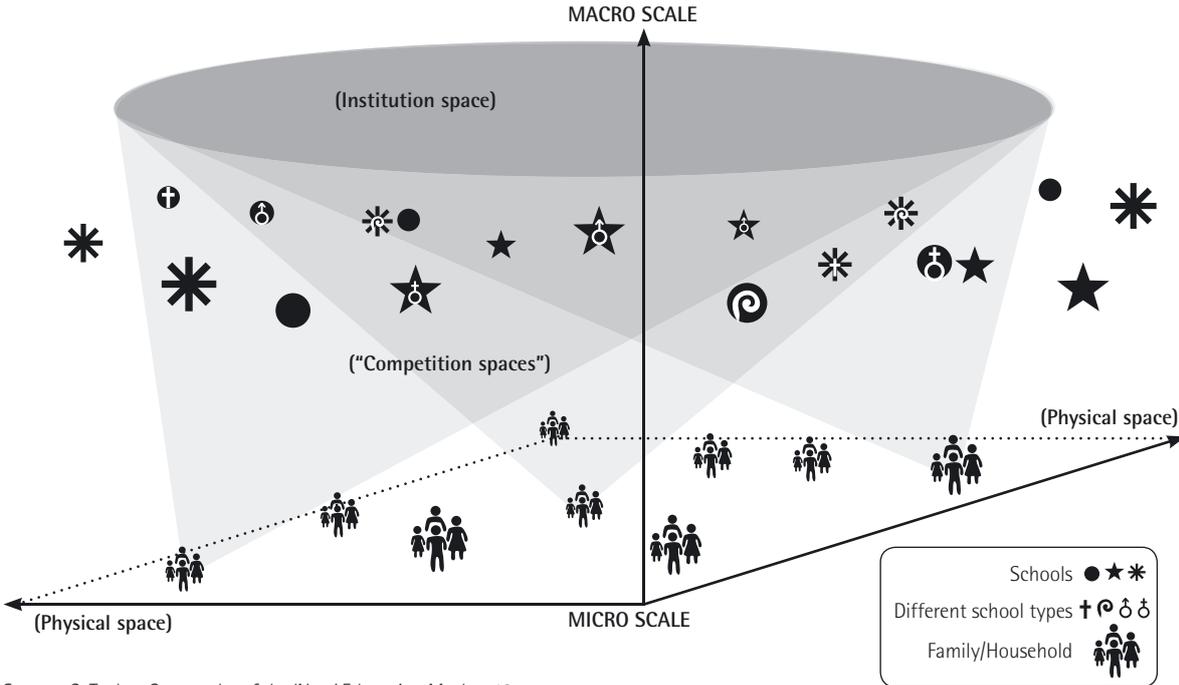
Summary

The conceptual framework outlined here therefore helps to show that different schools are likely to have different relationships with different parents. Additionally, the framework is helpful for understanding the nature of competition between schools in Christchurch. This is because it actually shows how schools and parents interact, and organises those interactions into an interpretive framework in which other factors can be considered that influence and constrain schools, as well as parents' choices.⁵⁵ In short, it allows conclusions to be drawn about the geography of improving access to schools based on observing the choices parents would make in the real world, rather than approaching the issue, as other research has done, through the politically charged lens of class analysis.

RESEARCH METHODS

This research brought together three distinctive research techniques to investigate which schools in Christchurch parents most wanted to send their children to, and how their choices might affect school rolls and school network capacity: a telephone survey of 424 parents of children who attended secondary

Figure 2.2. Interaction between parents and schools in "competition spaces"



Source: C. Taylor, *Geography of the 'New' Education Market*, 13

school at the time of the survey (July-August 2006); statistical analysis of the survey findings to generate estimates for survey responses to specific questions at the city level; and GIS spatial analyses, including the creation of fifteen maps and various kinds of distance calculations. Each particular methodology and the techniques used to either collect or analyse the data discussed in this report is described below.

Data Collection: Telephone survey

• Survey design

In order to investigate the research questions described above, a dataset of parents' current and preferred choice of schools in Christchurch had to be created. There were two reasons why a new dataset was needed:

- Firstly, central records for each pupil that are accessible to researchers (including where they attend school, their residential address and their background characteristics), equivalent to the English Pupil Level Annual School Census (PLASC) database, do not exist in New Zealand. In England, the PLASC is part of the National Pupil Database (NPD) maintained by the Department for Education and Skills (DfES). It covers all pupils in primary and secondary state schools and may be linked to each pupil's Key Stage curriculum test score history and a residential postcode.
- Secondly, the nature of this research was to investigate two hypothetical scenarios in order to create projections about what might happen to the school system if parents had better access to schools. This objective meant it made sense to conduct an original survey of which schools Christchurch parents would prefer to send their children to.

• Target population

As the focus of this research was on access to secondary schools, the target population was defined as parents whose children currently attend secondary school, aged between twelve and eighteen years old.

• Sampling strategy

A telephone survey was chosen to sample the target population in order to collect a random representative

sample. Computer Assisted Telephone Interviewing (CATI) procedures were used to carry out the survey.

CATI interviewing procedures were preferred as they possess several advantages over other surveying approaches:

- firstly, CATI is a reliable means of randomly sampling the relevant population, as a large number of interviews can be controlled from a central location meaning the quality and consistency of interviews can be maintained;
- telephone numbers, selected from the electronic New Zealand White Pages telephone directory, can be loaded into the system at the outset of fieldwork, increasing the likelihood of producing a representative sample of the population;
- CATI is more cost and time efficient than face-to-face interviews. An automatic dialling system is utilised to increase call efficiencies; and
- CATI maximises accuracy by limiting non-response and data entry errors inherent in paper response methods. A sample management system may also be used to ensure participants included in the sample are called at specified times.

• Sample size

A sample size of 400 parents whose children currently attend secondary school was chosen so that the sample would be representative of the choices the target population of parents would make. A sample size of 400 gives an expected margin of error, or confidence interval, of approximately +/- 5% at the 95% confidence level. A confidence interval of +/- 5% at the 95% confidence level means the true proportion of parents in the total population responding could vary by five percentage points higher or lower than the estimate produced in the survey.

• Study area (the institution space)

The study area, or institution space as sometimes referred to in the research, is defined by the Christchurch City Council Territorial Local Authority boundary (see The Study Area map in appendix 2). This boundary was chosen so that it would be consistent with the boundaries used by the Ministry of Education

to determine which schools are Christchurch schools. These boundaries are also used by Statistics New Zealand at the city and sub-city levels in the Census of Population and Dwellings, conducted every five years. The boundary was also used to determine which household telephone numbers were called during the survey.

- **The characteristics of Christchurch composite and secondary schools**

Christchurch was selected as the case study for this research, because it reflects in miniature the traits of the wider school system. The first way Christchurch reflects the wider school system is because there are a range of different schools in the city, representing the major different types of school available in New Zealand (table 2.1). Altogether there are seventeen state schools, four private schools and ten state-integrated schools which secondary school-aged pupils may attend. There is also heavy pressure from parents for access to some of these state schools which operate enrolment zones. By contrast, there are several state schools which have plans to reorganise, to reduce their capacity.

Based on the 2006 roll return figures from the Ministry of Education, there were 23,011 secondary school pupils attending the 31 schools in Christchurch (table 2.1). Of these, 72% attended regular Year 9 to 15 state secondary schools, while 1% attended specialist state schools. 12% of pupils attended a private school, compared to approximately 4% of pupils nationally. The remaining pupils attended state-integrated schools, representing 15% of pupils attending Christchurch secondary schools. It should be noted that thirteen secondary schools are composite schools or teach pupils at Years 7 and 8. For the purposes of this research only these schools' Year 9 to 15 roll capacity is considered.

Of the seventeen state schools, there are four single-sex schools and thirteen co-educational schools. Two state schools are special character *kura kaupapa* Maori schools that teach in Maori language and offer a curriculum that specialises in the Maori worldview. There is also one other special character school, Unlimited Paenga Tawhiti, which specialises in discovery learning. Further, Hagley Community College differs slightly from other state schools because it offers a wider curriculum and programmes in full-time adult education.

Among the Year 9-15 state schools, the average school decile rank 6.1, indicating a range of schools serving communities of both greater and lesser social disadvantage. There are only two inner-city decile 10 schools, Christchurch Boys' High School and Christchurch Girls' High School. The two schools have a strong reputation for academic and sporting achievement. Christchurch Boys' High School is also one of the oldest schools in the city, being founded in 1881. Consequently, it is popular with families whose forefathers attended the school. Burnside High School, a decile 9 school, is the largest secondary school in Christchurch. In July 2006, at the approximate time of the parental survey, it had a roll of 2,605 pupils. Its pupils tend to achieve well academically, and it is well regarded for its focus on music.

The lowest decile schools in Christchurch are two decile 2 schools, Aranui High School and Linwood College. Hornby High School is the only regular state school that is a decile 3 school. Aranui has been innovative, introducing a Senior Academy system of classes in 1997. The academy classes offer a wider range of sporting and vocational skills, and qualifications. A bilingual unit for Maori language also exists at the school.

The rest of the schools are equivalent in description, with rolls ranging from Year 9 to Year 15. Of these schools, however, Papanui High School had one of the largest rolls in 2006, at around 1,400 pupils, and its school zone extended well into the northern outskirts of the city. Similarly, Cashmere High School, located in the south, had about 1,600 pupils in 2006 and a large zone that caters for pupils as far as the Port Hills.

At the time of this research, nine schools in Christchurch operated a home enrolment zone, representing 64% of regular Year 9 to 15 state secondary schools and 29% of all schools in Christchurch. This meant that 79% of pupils attending regular state secondary schools attended a school with a zone, while 56% of pupils attending all schools in Christchurch in 2006 were at schools that had a school zone. School enrolment schemes are therefore highly prevalent in Christchurch, and have an impact on which schools many families can access, especially for those who can only choose a regular state school.

The four private schools are mainly single-sex schools, and each is located near the centre of the city. Only one, St Andrew's College, offers co-education;

School	School type	Definition	Authority	Gender of students	Decile	Secondary school roll (July 2006)
Aranui High School	Year 9-15	N/A	State	Co-Ed.	2	761
Avonside Girls' High School	Year 9-15	N/A	State	Girls' School	6	1187
Burnside High School	Year 9-15	N/A	State	Co-Ed.	9	2605
Canterbury Christian College	Composite	N/A	State-integrated	Co-Ed.	7	37
Cashmere High School	Year 9-15	N/A	State	Co-Ed.	8	1606
Catholic Cathedral College	Year 7-15	N/A	State-integrated	Co-Ed.	4	219
Christchurch Adventist School	Composite	N/A	State-integrated	Co-Ed.	7	63
Christchurch Boys' High School	Year 9-15	School with Boarding Facilities	State	Boys' School	10	1339
Christchurch Girls' High School	Year 9-15	School with Boarding Facilities	State	Girls' School	10	1089
Christ's College	Year 9-15	School with Boarding Facilities	Private	Boys' School	-	647
Hagley Community College	Year 9-15	N/A	State	Co-Ed.	6	1545
Hillmorton High School	Year 9-15	N/A	State	Co-Ed.	5	778
Hillview Christian School	Composite	N/A	State-integrated	Co-Ed.	6	72
Hornby High School	Year 9-15	N/A	State	Co-Ed.	3	418
Linwood College	Year 9-15	N/A	State	Co-Ed.	2	910
Mairehau High School	Year 9-15	N/A	State	Co-Ed.	5	591
Marian College	Year 9-15	N/A	State-integrated	Girls' School	7	442
Middleton Grange School	Composite	N/A	State-integrated	Co-Ed.	9	681
Papanui High School	Year 9-15	N/A	State	Co-Ed.	6	1403
Rangi Ruru Girls' School	Year 7-15	School with Boarding Facilities	Private	Girls' School	-	612
Riccarton High School	Year 9-15	N/A	State	Co-Ed.	7	935
Rudolf Steiner School	Composite	N/A	State-integrated	Co-Ed.	7	114
Shirley Boys' High School	Year 9-15	N/A	State	Boys' School	6	1314
St Andrew's College	Composite	School with Boarding Facilities	Private	Co-Ed.	-	912
St Bede's College	Year 9-15	School with Boarding Facilities	State-integrated	Boys' School	9	788
St Margaret's College	Composite	School with Boarding Facilities	Private	Girls' School	-	561
St Thomas of Canterbury College	Year 7-15	N/A	State-integrated	Boys' School	8	352
Te Kura Kaupapa Maori O Te Whanau Tahī	Composite	Kura Kaupapa Maori	State	Co-Ed.	3	11
Te Kura Kaupapa Maori O Waitaha	Composite	Kura Kaupapa Maori	State	Co-Ed.	3	28
Unlimited Paenga Tawhiti	Year 9-15	Character School	State	Co-Ed.	6	282
Villa Maria College	Year 7-15	N/A	State-integrated	Girls' School	9	709
Total						23,011

Source: Data Management Unit, Ministry of Education

in fact it is the only private co-educational primary and secondary school in the South Island.

The state-integrated schools have a wide range of sizes and decile ranks, ranging from 4 to 9. The schools are distributed throughout Christchurch. Eight of the schools are either composite schools or teach Year 7 and 8 pupils too, meaning a proportion of their intake at Year 9 is from pupils continuing from primary school. The largest state-integrated school is St Bede's College. It had a secondary school roll of 788 pupils in 2006. Four of the state-integrated schools are also single-sex schools. St Bede's College and St Thomas' College are boys' schools, while Marian College and Villa Maria College are both girls' schools. Counting all of the single-sex schools together means that approximately a third of all Christchurch schools are single-sex schools.

Another advantage of using Christchurch as a case study is the city's size. The population of the city within the Territorial Local Authority (TLA) boundary is approximately 350,000 people. Further, the TLA boundary covers an area of approximately 453 square kilometres. This means it is geographically compact compared to New Zealand's largest major city, Auckland, which covers 1,086 square kilometres. For the purpose of this research, observing of the changes that would occur to schools is made easier by using a smaller study area.

• Register of Christchurch schools

A register of the 31 Christchurch secondary and composite schools in the study area was prepared from data available to the general public from the Ministry of Education, listing the address, school roll and school enrolment zone boundary at the time of the survey, July-August 2006 (appendix 3). The register of schools was used to create a pre-coded list of all the possible secondary or composite schools parents could send their secondary-school aged children to in Christchurch.

Eight special education schools were excluded as they provide special needs education different to other secondary schools. Further, their rolls are relatively small. Their average Year 9 to 15 roll was 41 pupils in July 2006, ranging in size from nine to 86 pupils. Changes to their school rolls would not affect the general distribution of pupils across the school network, either.

• Questionnaire Design

An item-response questionnaire was designed, which asked parents to respond to three different scenarios regarding their choice of school and collected other information about what factors influenced their choices. Data was collected for the eldest and second eldest child in the family for each access scenario, however only data for the eldest child was analysed. This was because of the low number of families who had a second child and the high degree of correlation between the choices parents made for the eldest and second eldest child.

• Survey procedures

Maxim Institute commissioned the Survey Research Unit at the University of Auckland's School of Population Health to conduct the CATI survey. The Survey Research Unit played no role in the design of the survey questions, except to suggest technical revisions, such as suggesting question skips. The Survey Research Unit was not responsible for commissioning the survey or for any interpretations made from the analysis and the findings.

The survey questionnaire was approved by the University of Auckland Human Participants Ethics Committee (UAHPEC) in June 2006 (Ethics Reference 2006 / Q / 029) prior to the commencement of fieldwork. Ethics Committee approval ensured the questionnaire conformed to accepted standards for an anonymous telephone survey and standards for research with human participants in the social sciences approved by the Ethics Committee Council, including the principles of informed and voluntary consent and respect for the privacy rights of participants.

The UAHPEC inspected a copy of the script of the explanatory information given over the telephone to potential participants at the beginning of the interview. The script explained to potential participants the reasons why the research was being conducted by Maxim Institute and the role of the Survey Research Unit as the contractor for the telephone survey. Potential participants were also asked whether they agreed to participate in the research on the understanding that it was a voluntary survey and that their identity would remain anonymous. Finally, at the end of the survey, interviewers were instructed to thank the participant, and participants were given

the contact telephone number of the Survey Manager to address any inquiries or complaints.

- **Main survey**

To ensure the validity and reliability of the questions prior to commencing the main survey, the questionnaire was pilot tested between 21 and 24 July 2006. The main survey commenced on 26 July 2006, and was completed on 23 August 2006. Surveying was carried out over weeknights, between 4pm and 9pm, and weekends, between 10am and 8pm, to maximise the likelihood of contacting possible participants within the target population.

Number of telephone numbers	
Total number of telephone numbers purchased	15,000
Type of call	
Complete calls	426
Schedule callback	554
Refused	347
Terminated early	4
Government/business	69
Answering machine	2,652
Language/hearing impaired	107
Screened out	7,297
Over quota	9
Non-working	583
Busy	1,223
No answer	4,402
Fax	0
Total Calls	17,673

Potential participants were contacted by consecutively dialling each telephone number from a list of 15,000 residential telephone numbers applicable to the target population, which were pre-purchased from Telecom New Zealand. A total of ten attempts were allowed to contact each individual number. Not all completed interviews took ten attempts. After ten attempts the household was assumed to be unoccupied or the residents were unavailable.

These numbers were removed to avoid recalling them. Only 460 numbers required ten attempts and were subsequently taken out of the database. Most numbers took two to three attempts before contact with a potential participant could be made. Usually if the person contacted was eligible and willing to do the survey, the interview took only one call to complete. If the participant had to suddenly go, the interview was suspended and a time to call back was arranged. The interview was completed at the specified call back time.

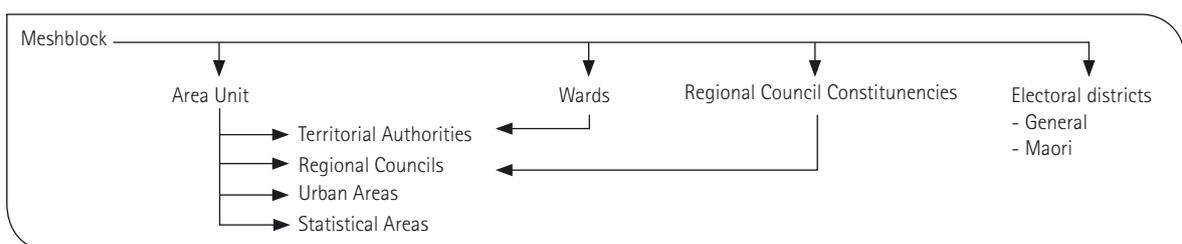
Summary statistics for the main survey showed that 7,751 phone numbers were called to complete 408 interviews. 7,297 potential participants were screened out because they did not meet the criteria of the survey (table 2.2); i.e. they were not a parent of a child currently attending secondary school living in Christchurch. 347 eligible participants refused to complete the survey. 107 were rejected because of either a language barrier or were hearing impaired. 554 outstanding call backs remained uncompleted as participants were not available when they were called back for various reasons.

408 participants had been surveyed by the conclusion of the main survey. As sixteen responses for the pilot testing were also valid responses to the complete survey, they were included in the final dataset, making the final sample size 424 participants.

- **Geo-coding of participants**

As mentioned, English researchers Chris Taylor and Simon Burgess and colleagues not only had data for which schools pupils attended, but also the location of each household according to a home postcode.⁵⁶ In order to precisely locate the residence of each participant so that each of the maps and distance calculations presented in this research could be

Figure 2.3. Statistics New Zealand geographic hierarchy



Source: Statistics New Zealand, *Geographic Hierarchy*, <http://www.stats.govt.nz/statistics-by-area/regional-statistics/geography-mapping/default.htm>.

completed, a similar geo-coding scheme was devised.

This was a challenge, as one of the conditions for ethical approval of the research was that the identity of participants had to remain anonymous. Thus each participant's location had to be determined so that it was precise enough to permit accurate calculations to be completed such as the distance travelled by children between home and school, but also general enough so that participants' addresses could not be traced through the raw data.

A solution was reached whereby participants were coded to a Statistics New Zealand census meshblock, using meshblocks from the 2006 Census of Population and Dwellings. According to Statistics New Zealand, a "meshblock is the smallest area used to collect and present statistics."⁵⁷ The advantage of geo-coding to a meshblock was that they were small enough so that the mid-point of a meshblock could be used as a proxy for the true location of each parent's residence. Geo-coding to a meshblock was possible as the Survey Research Unit was able to obtain a concordance of telephone numbers to meshblocks from Telecom New Zealand for each of the numbers used in the survey. The geo-coding was completed by the Survey Research Unit after the data collection was completed.

As a secondary measure to geo-coding to a meshblock, the Survey Research Unit also geo-coded participants to a census area unit. Area units are roughly equivalent in size to city suburbs. Figure 2.3 illustrates how both census meshblocks and area units fit into the Statistics New Zealand geographic hierarchy.

At the conclusion of the survey and geo-coding, the Survey Research Unit supplied Maxim Institute with a clean dataset in Microsoft Excel format so that it could analyse and interpret the data.

Post-survey statistical analysis

In order to infer results from the survey to the Christchurch population, the Clinical Trials Research Unit (CTRU) at the University of Auckland was commissioned by Maxim Institute to undertake a series of statistical analyses involving weightings to provide overall estimates at the city level for responses to various survey questions, and to calculate the estimated change to school rolls in each access scenario. The CTRU was only involved in the statistical interpretation of the survey results.

• Comparing the survey population to the target population

To determine whether post-weighting to the Christchurch population should be carried out, an evaluation of the sample was completed to judge whether it was representative of the target population.

Data across the demographic indicators collected in the survey (ethnicity, age, education level, and the number of people living in each household) was obtained from the 2001 Census of Population and Dwellings from Statistics New Zealand. Upon becoming available, data for household income was obtained from the 2006 census to judge the sensitivity of the sample to income level. The proportions of each participant across the various strata collected in each indicator in the survey were compared against the equivalent strata in the census. Some differences between the sample and the target population were observed.

- The sample under-represented participants with lower education qualifications (no qualification, survey, 10%; target population, 22%) and over-represented more highly educated participants (tertiary, bachelor or post-graduate degree, survey, 57%; target population, 26%). See table 2.3.
- The sample under-represented families that only had one child (survey, 32%; target population 63%). See table 2.4.

Compared to the 2006 census results for household income:

- The sample under-represented families with a household income of less than \$30,000 per year (survey, 10%; target population, 14%) and over-represented families with a household income over \$70,000 per year (survey, 46%; target population, 38%). See table 2.5 below.

The comparison of the survey population against the target population indicated that adjustments would be required for income and education to make inferences to the Christchurch population from the sample.

Table 2.3. Education level in sample compared with census*

Qualification	Sample		Census	
	N	%	N	%
No qualification	43	10	3,855	22
Secondary school	140	33	8,031	45
Tertiary	241	57	4,563	26
Not known	0	0	1,239	7
Total	424	100	17,688	100

* based on data from 2001 census.

Table 2.4. Number of children aged 12–18 living with parents in sample compared with census*

Number of children aged 12 - 18 years	Sample		Census	
	N	%	N	%
One child	134	31.6	11,235	63.4
Two children	176	41.5	5,487	31.0
Three children	82	19.3	870	4.9
Four children	26	6.1	78	0.4
Five children	4	0.9	18	0.1
Six children	1	0.2	6	0.03
Seven or more	1	0.2	0	0
Total	424	99.8**	17,694	99.8**

* based on data from 2001 census.

** Total is 99.8 due to rounding of percentages.

Table 2.5. Household income in sample compared with census*

Total Household Income	Sample		Census	
	N	%	N	%
≤ \$30,000	43	10.1	2,859	13.7
\$30,001 - \$70,000	147	34.7	6,108	29.2
≥ \$70,001	193	45.5	7,854	37.6
Not stated	41	9.7	4,062	19.5
Total	424	100	20,883	100

* based on data from 2006 census.

• Statistical methods

Four kinds of statistics were generated from the analysis: overall estimates at the city level for survey questions involving the entire sample; analyses stratified by income for those questions, with income being a basic indicator of SES; the gains and losses analyses calculating the change to school rolls in each of the access scenarios; and descriptive statistics, or frequencies, for survey questions where weightings could not be applied. Analyses were carried out only for the survey data collected for the eldest child in each family.

All statistical analyses were performed using SAS version 9.1.3 (SAS Institute Inc. Cary NC). Statistical tests were two-tailed and a 5% significance level was maintained throughout the analyses. All confidence intervals were presented at the 95% level.⁵⁸

Data collected on survey questions were used to provide statistical analyses and make inferences at the city level. Using these data, estimates of proportions were calculated, with margins of error and confidence intervals.

The SURVEYMEANS procedure was used to calculate estimates for questions at the city level. The SURVEYMEANS procedure is an SAS procedure commonly used for sample survey data that computes descriptive statistics including means, proportions, margins of error, and confidence intervals. The method allows for a variety of analyses utilising sampling weights to better infer to a population.

• Choice of sampling weights

Sampling weights were derived for all weighted analyses by comparing the data collected for the school children currently attended to the 2006 secondary school roll returns for the 31 schools, obtained from the Ministry of Education. Data collected from demographic questions about education and annual household income were compared with 2001 and 2006 census data to assess the sensitivity of the calculations to the choice of post survey stratification variable.

• Calculation of sampling weights to current school rolls

Table 2.6 shows how the survey sample was broken down by the school currently attended and how weights were calculated using the roll for each school in Christchurch. The weights to the school roll used throughout the analyses were calculated by dividing the school roll by the number of parents sampled from each school.

• Subgroup analyses

All analyses were stratified by household income (except for the gains and losses analyses). A test of whether the responses significantly differed across income was carried out using a chi-square test.⁵⁹ A chi-square test allowed responses to be assessed to see if they were independent of household income or whether they were related in some way. A chi-square test involves comparing the frequency counts with

Table 2.6. Sampling weights for schools
(current school roll* as a ratio to number of participants sampled from each school currently attended)

School	School Survey ID	No. of participants sampled	School roll (July 2006)	Weight
Aranui High School	1	8	761	95
Avonside Girls' High School	2	22	1187	54
Burnside High School	3	81	2605	32
Cashmere High School	4	32	1606	50
Christchurch Boys' High School	5	23	1339	58
Christchurch Girls' High School	6	15	1089	73
Hagley Community College	7	14	1545	110
Hillmorton High School	8	7	778	111
Hornby High School	9	1	418	418
Linwood College	10	9	910	101
Mairehau High School	11	19	591	31
Papanui High School	12	26	1403	54
Riccarton High School	13	18	935	52
Shirley Boys' High School	14	34	1314	39
Te Kura Kaupapa Maori O Te Whanau Tahī	15	-	11	-
Te Kura Kaupapa Maori O Waitaha	16	1	28	28
Unlimited Paenga Tawhiti	17	9	282	31
Christ's College	18	5	647	129
Rangi Ruru Girls' School	19	4	612	153
St. Andrew's College	20	12	912	76
St. Margaret's College	21	7	561	80
Canterbury Christian College	22	-	37	-
Catholic Cathedral College	23	1	219	219
Christchurch Adventist School	24	1	63	63
Hillview Christian School	25	1	72	72
Marian College	26	10	442	44
Middleton Grange School	27	13	681	52
Rudolf Steiner School	28	3	114	38
St. Bede's College	29	18	788	44
St. Thomas of Canterbury College	30	15	352	23
Villa Maria College	31	15	709	47

- No data collected for participants whose children attend this school.

* Secondary school roll as at July 2006 (the time of the survey). These figures exclude primary school pupils in composite schools (pupils not in Years 9-15).

what would be expected if there was no association. When applying this test, a significant p -value ($p < 0.05$) provides evidence of an association. Confidence intervals and margins of error were also presented for each income level.

Sub-group analyses were completed comparing parents in the high income category (\$70,001 or more), against low (\$0-\$30,000) and middle income families (\$30,001-\$70,000) grouped together. This was done to reduce the margin of error on questions dealing with families with a lower household income, since these families were under-sampled.

• Inferring to the Christchurch population

The SURVEYMEANS procedure was used to provide estimates of the proportion of parents, at the level of the Christchurch population, responding to several survey questions where weightings could be applied.⁶⁰ The analysis provided confidence intervals at the 95% confidence level and therefore a margin of error in generalising from the sample to the population. Sensitivity to the choice of appropriate stratification variables was also considered including income, education, the number of children in the family, and

current school roll size. However, the main analysis involved post-survey weights based on the current school roll. Unweighted analyses were also carried out to compare against the weighted analyses.

- **Gains and losses analyses**

Two "gains and losses analyses" were undertaken to determine the estimated redistribution of pupils across schools within Christchurch under the two access scenarios. This also involved applying the SURVEYMEANS procedure to the data collected in the choice of any secondary school if money was no object access scenario and the choice of any state secondary school access scenario to calculate projected rolls for each school.

The projected school roll was compared to the current school roll and the differences used to estimate the gains and losses of pupils between schools. Uncertainty limits (95% confidence intervals) were calculated directly from the procedure to provide a range of reasonable estimates for each school's expected roll when inferring to the Christchurch school population. The figure produced by the mean of the estimates was taken as the best estimate of the projected school roll.

Some participants on the choice of any secondary school if money no object scenario and the choice of any state secondary school scenario (42 and 21 participants, respectively) answered they were undecided or did not know whether they would change their child's school. The data for these participants was handled for these analyses by assuming they would continue to send their child to the school they currently attended.

- **Allocation of children where preferred school was unknown**

It was necessary to develop a way of allocating each school a share of the participants who would change schools but did not know which school they would choose. There were 25 for the choice of any secondary school if money was no object access scenario and one participant who responded this way for the choice of any state secondary school scenario. As the problem involved allocating missing data, two different procedures were used to ensure the data had been treated thoroughly and to see if there were similar results when different methods were used.

Firstly, the data for these participants was handled on the gains and losses analyses by categorising their responses as "school unknown," and then re-distributing these responses across the schools using two different methods: a multiple imputation method, involving re-sampling data according to probabilities; and a secondary method of proportional allocation.⁶¹ The proportional allocation method involved allocating participants who did not know which school they would choose proportionate to the observed gains and losses to school rolls.

Multiple imputation method

On the choice of any secondary school if money was no object access scenario, both of these methods for allocating missing data were used. The first method used was the multiple imputation procedure, which involved randomly allocating unknown responses based on the observed responses of other participants whose children currently attended the same school.

Table 2.7. Possible responses to sample from

Participant ID	Current school(ID)	Possible Schools (ID)
46	12	3, 20
64	13	19, 20
92	12	3, 20
101	9	99
102	10	5, 18, 20
106	11	5, 14, 20, 27
107	5	18, 20, 27
120	4	19, 20, 27, 29
135	31	99
136	1	99
178	3	6, 17, 18, 19, 20, 21, 31
195	3	6, 17, 18, 19, 20, 21, 31
197	11	5, 14, 20, 27
223	2	19, 20, 21
259	4	19, 20, 27, 29
267	10	5, 18, 20
297	4	19, 20, 27, 29
303	7	3, 19, 31
307	4	19, 20, 27, 29
318	1	99
329	8	19
344	14	3, 18, 20, 27, 29
394	11	5, 14, 20, 27
410	3	6, 17, 18, 19, 20, 21, 31
418	12	3, 20

Table 2.8. Probability of school being selected

Current school	Preferred school	n	Probability (%)*
Avonside Girls' High School	Rangi Ruru Girls' School	4	40
	St Andrew's College	1	10
	St Margaret's College	5	50
Burnside High School	Unlimited Paenga Tawhiti	2	14
	Christ's College	3	21
	Rangi Ruru Girls' School	1	7
	St Andrew's College	5	36
	St Margaret's College	1	7
	Villa Maria College	1	7
	Christchurch Girls' High School	1	7
Cashmere High School	Rangi Ruru Girls' School	1	14
	St Andrew's College	4	57
	Middleton Grange School	1	14
	St Bede's College	1	14
Christchurch Boys' High School	Christ's College	3	60
	St Andrew's College	1	20
	Middleton Grange School	1	20
Christchurch Girls' High School	Rangi Ruru Girls' School	1	14
	St Andrew's College	1	14
	St Margaret's College	5	71
Hagley Community College	Rangi Ruru Girls' School	1	33
	Burnside High School	1	33
	Villa Maria College	1	33
Hillmorton High School	Rangi Ruru Girls' School	1	100
Linwood College	Christ's College	1	25
	St Andrew's College	2	50
	Christchurch Boys' High School	1	25
Mairehau High School	Shirley Boys' High School	1	25
	St Andrew's College	1	25
	Middleton Grange School	1	25
	Christchurch Boys' High School	1	25
Papanui High School	St Andrew's College	1	50
	Burnside High School	1	50
Riccarton High School	Rangi Ruru Girls' School	2	50
	St Andrew's College	2	50
Shirley Boys' High School	Christ's College	4	36
	St Andrew's College	3	27
	Middleton Grange School	1	9
	St Bede's College	2	18
	Burnside High School	1	9
Christ's College	Christ's College	1	100
St Andrew's College	Burnside High School	1	100
St Margaret's College	Marian College	1	100
Christchurch Adventist School	Middleton Grange School	1	100
St Thomas of Canterbury College	Christ's College	3	50
	St Andrew's College	3	50

*Probability that school is selected for imputing unknown value

Imputation is a process where missing values in a dataset are estimated from the remaining data, for the purpose of allowing statistical procedures to be performed on a complete dataset. Consequently, multiple imputation is a method whereby an imputation approach is repeated to generate more than one dataset. Each of the imputed datasets was analysed by standard methods, and the results were combined to produce estimates and confidence intervals that incorporate missing-data uncertainty. This method is illustrated in tables 2.7 and 2.8.

Table 2.7 shows the school currently attended by children of the 25 participants who answered they did not know which school they would send their child to. The table shows the data that were available from other participants from the same school who also answered they would change their child's school. The table also indicates four participants (101, 135, 136 and 318) where it was not possible to re-sample data (code 99). This was because there was no other data from participants with children in these schools to select from.

The following is an example of how an unknown participant at Avonside Girls' High School was assigned to a school. According to the data in table 2.7, schools 19, 20, and 21 could potentially be used to impute the missing data for the child of participant 223 whose child currently attends Avonside Girls' High School (school number two). Table 2.8 summarises this data in a different way. Following the same example, we can see that there were four, one and five complete responses from parents whose children attended Avonside Girls' High School. Therefore, under the imputation procedure used for this analysis, there was a 40%, 50% or 10% probability of selecting a response of school 19, 20, and 21 respectively for the unknown school for participant 223.

On the choice of any state secondary school scenario, only one participant was classified as "school unknown." This participant was able to be allocated to a school by re-sampling according to the choices made by other participants whose children currently attend the same school as this participant. There was only one school to choose from (Burnside High School), meaning there was no uncertainty about which school this participant's child would be likely to attend.

Proportional allocation method

The second method used to handle the missing data

for the choice of any secondary school if money was no object access scenario was to allocate each school a share of the parents who did not know which school they would choose proportionate to the observed gains and losses to school rolls estimated on the complete dataset (table 2.9). This approach was used as an additional sensitivity analysis to the multiple imputation method, and to show that more than one way was used to determine which schools parents who did not know which schools they would choose might send their child to.

Schools which gained pupils	Proportional increase	Actual net roll increase (no. of pupils)
Unlimited Paenga Tawhiti	0.0183	34
Christ's College	0.1688	310
Rangi Ruru Girls' School	0.1967	362
St Andrew's College	0.2960	544
St Margaret's College	0.1652	304
Marian College	0.0229	42
Middleton Grange School	0.0684	126
St Bede's College	0.0364	67
Villa Maria College	0.0273	50

• **Estimated change to some school rolls could not be calculated**

For certain schools, mainly the ones with smaller school rolls, there were small numbers of participants who reported they would not change their child's current school. Furthermore, for these schools, there were no other participants in the sample indicating they would change to these schools. Due to the limited data for these schools, estimates were unstable and so exact estimates and confidence intervals could not be calculated. The gains and losses analyses result for these schools is therefore consistent with no change to their school roll.

For one school in the choice of any state secondary school scenario and three schools in the choice of any secondary school if money was no object access scenario, there was either no available data or very limited data and therefore no estimate could be presented for the expected change to the rolls of these schools. Only further sampling of parents from these schools would enable the gains and losses to their rolls be calculated for these schools.

Spatial Analysis: GIS mapping and distance calculations

- Purpose

The purpose of the spatial analysis was to visually present the findings from the survey and the statistical analyses. The spatial analysis involved two kinds of analyses using a GIS software package, ArcGIS 9.1. The first was the creation of fifteen maps that illustrated the raw data collected by the survey as well as data produced by the statistical analysis, such as the gains and losses analysis. The second was the completion of several kinds of distance calculations using raw data from the survey, primarily to investigate the relationship between distance and choice of school.

The GIS techniques which were used with the raw data and the findings of the statistical analysis are discussed first, describing how methods from previous studies were adapted for the purposes of this research. The requirements for the GIS analysis are subsequently followed by an explanation of how the various maps and distance calculations were completed.

- The application of GIS techniques to the study of access to schools

Approaches used by Taylor and Burgess

The application of GIS techniques in this research project are based on two earlier pieces of research that looked at the impact of open enrolment schemes in England which gave parents better access to schools, produced by Taylor and Burgess.⁶² The geo-coding methods described previously are similar to those used by Taylor, who geo-coded parents to a point-location according to home postcodes, collected when parents enrolled their children in a school.

Another method was adapted from Taylor's research to measure distances between home and school. Taylor used "GIS computer software ... to calculate the distances between every pupil's home and all the schools' locations within each LEA" (there were six Local Education Authorities (LEA) included in Taylor's study).⁶³ He "assumed that pupils would, without open enrolment, have attended their nearest school as measured by a straight line from their home."⁶⁴

From these measurements, Taylor determined the

proportion of pupils who did not attend their nearest school. He also identified the amount of movement between schools by examining the number of pupils who avoided their nearest school and attended other schools within the region, and presented these results as a matrix of the number of pupils gained and lost by each school. The idea for the gains and losses analysis used in this research project is an adaptation of Taylor's model. Different to this research, however, Taylor was also able to investigate more sophisticated problems like whether there was a relationship between location and the type of school chosen and whether choice led to social exclusion, as he had access to a complete dataset for every parent and the background characteristics of every pupil, including their SES, in the LEAs studied.

Using these methods, Taylor was able to identify the extent to which parents within a region were responding to an open enrolment scheme. In Taylor's research, the institution space was defined by the boundary of each LEA. This boundary was artificial, however, since parents were not restricted from choosing schools in different LEAs to the one where they lived. Consequently, a weakness of this method is that it only accounts for movement within one institution space; it does not consider movement across multiple jurisdictions. This limitation did not apply in this research however, as movement within only one institution space was considered.

Adapting Taylor's approach

As mentioned previously, various aspects of Taylor's methods have been adapted for the GIS component of this project. The gains and losses analyses presented in the research findings of this report are based on the principle of Taylor's approach, to estimate the absolute gain or loss each school would be likely to experience under each access scenario. The distance calculations are also based on the distance between home and school, or between schools. The distance calculations carried out were also influenced by the relationship between distance and choice of school by particular parents explored by Burgess.⁶⁵ These included home to school distances, the excess distance parents were prepared to have their children travel to their preferred school or the number of schools parents could access within a radius of their home.

The scope for applying GIS techniques in this

research, however, was more limited than either of those pieces of research because the data was collected through a random sample survey. This meant that it was only possible to map the responses of each individual participant and perform simple distance calculations. Without the responses for the entire population, GIS techniques could not be used to determine the true proportion of parents choosing schools at the city level or to calculate the gains and losses to school rolls.

Nevertheless, it was possible to model the relative flow of pupils leaving their current school for their parents' preferred school in each access scenario by using the sampling weights developed for the statistical analyses. This was done by multiplying the number of pupils leaving each school by the sampling weight for each school. Using the weights this way helped make the flow of pupils more representative of the expected absolute change to school rolls at the city level shown in the gains and losses analyses (the findings are presented in maps 4.4, 4.5 and 5.3).

- **Geo-coding data**

In order to produce the maps and distance calculations, a GIS software package with an accurate geo-coding database and street network dataset for Christchurch called Quickmap Professional Enterprise, was used with ArcGIS. Other data was also obtained to locate each previously geo-coded participant and all the schools on each map. 2006 Level 2 census meshblock boundaries for Christchurch were purchased from Terralink International, while census area unit boundaries were obtained from Statistics New Zealand, and inputted into ArcGIS.

The location of each school (the school layer) was exported from the Quickmap software database into ArcGIS. The school point features on each map were created by geocoding from Quickmap's address point feature, which was based on Land Information New Zealand (LINZ) address points. The LINZ address point could only be placed generally within the correct land parcel, as the accuracy of the address point was limited. This means that the location of each school (on the maps presented in this report) is not greater or less than the size of the school.

School enrolment zone boundaries (the school zone layer) were exported from the Quickmap software database. These boundaries were checked against the descriptions published by schools in 2006 for their

school enrolment zone (see appendix 4). Each school enrolment zone exported from Quickmap had the same description as the school's published zone.

The survey responses for each participant were also inputted into ArcGIS. A point-location for each participant was determined by taking the mid-point of the meshblock as a proxy for the true location of each participant's residence.

Some participants were geo-coded to the same meshblock, however, and consequently occupied the same location in space, causing a problem for representing these participants individually on each map. To solve this problem, a distance of +/- 200 metres was applied in either horizontal (x) or vertical (y) distances to cluster each participant around the centre of the meshblock. The accuracy of the distance calculations for each participant treated in this way was not affected, however, as the calculations were completed using the original location of each participant.

- **Method for calculating distances**

Distances were measured in ArcGIS by using a distance theorem to calculate the length of a straight line between the centre of each meshblock (the meshblock centroid), representing the location of each participant, to the centre of each school (the centroid of the school).

The distance theorem

The distance theorem used is a simple Euclidean calculation often applied in GIS research to determine distances. It is derived from Pythagoras' theorem.⁶⁶ The method involves drawing a line between the end points of two points, and then creating a right-angled triangle based on the horizontal and vertical intersection of two other lines extending from either point. The theorem is sometimes referred to as the "straight line" method.

Pythagorean geometry is used to calculate the length of the hypotenuse of the triangle, which is the line between the two points. This is done by subtracting the smaller coordinates from the larger. The result of this calculation is the distance between the two points.⁶⁷

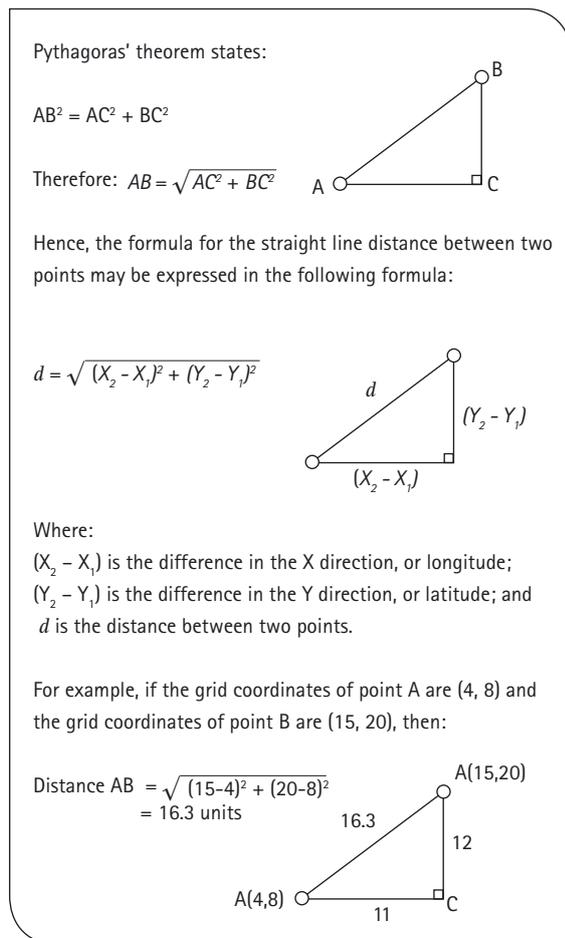
Using Pythagoras' theorem in this way allows the relative distance between two points to be measured, which is also the distance for the shortest path between the two points.

The method is illustrated in figure 2.4. The calculations completed using ArcGIS compared the difference in distance between the coordinates of participants' residence and schools, or between different schools.

Strengths and weaknesses of the distance theorem

While it is an accurate measure of the distance between two points, the Pythagorean straight line method does not take route restrictions into account when calculating distances between points, such as city blocks, one way streets or speed limits. This is a problem for accuracy in the sense that it is impossible to travel diagonally through natural obstacles, like city blocks, malls, rivers, and so on. These factors can affect the actual distance people travel and therefore travel times.

Figure 2.4. The "straight line" distance theorem



Nevertheless, the straight line method is still a reasonably accurate measure of the distances for the purposes of this research. Firstly, the location

of each participant's residence is an approximation (to preserve their anonymity) making each distance calculation from home to school a reasonable estimate.

Secondly, the straight line method was used in both of the studies previously cited by Taylor and Burgess to calculate distances.⁶⁸ It was preferred by them as a simpler way to calculate the distances travelled by large cohorts of pupils.

Thirdly, both Taylor and Burgess considered the straight line method was an accurate approximation of the actual distances travelled by pupils. Burgess verified the accuracy of the straight line method by comparing it with the more precise distance measurements that took into account road restrictions in three areas: a rural area, an urban area outside London and in a London LEA. When each pupil's nearest school was identified using both methods in each of the areas, the correspondence between the different distance measurements was 85%. Hence, this result may be taken as evidence that the straight line method is reasonably accurate for calculating street distances for this kind of research.

• Analysis and presentation of GIS results: Mapping and distance calculations

Using the findings from the statistical analysis

Findings from the statistical analyses were presented in three maps. Sampling weights based on school rolls were used in two maps. However, data generated by the multiple imputation procedure in one of the gains and losses analyses was not used in either the maps or the distance calculations. This was because this procedure only produced a probability for how likely it was that a child would attend a particular school if their parents did not know which school they would choose. In other words, it was not possible to say with complete certainty these children would attend the school their parents were assigned to by the multiple imputation procedure, so this data could not be mapped.

One exception was the single participant assigned to Burnside High School in the choice of any state secondary school access scenario, since this was the only possible school this participant could attend based on the observed choices of other participants who sent their child to the same school.

Parents excluded from certain maps

A full description of each map and its content, including details of the scale and any excluded participants, is presented in boxes and tables associated with each map. Participants living in the outer suburbs of Christchurch were sometimes excluded so that the size of the maps did not need to be shrunk. Excluding these participants made it easier to distinguish the majority of participants in the inner suburbs on the affected maps. Additional details relating to which participants were excluded from maps 4.1 and 5.1 are presented here however, as this information could not be displayed on these maps.

Map 4.1. Parents who would change their child's secondary school or not if money was no object:

- Fourteen parents have been excluded from display on this map.
- The ID number and location of each excluded parent is listed in table 2.10., according to the census meshblock and the census area unit they were geo-coded to.

Map 5.1. Parents who would change their child's secondary school or not given a choice of any state school

- Fourteen parents have also been excluded from display on this map.
- The details of the excluded parents are the same as for map 4.1, as noted in table 2.10.

Table 2.10. Parents excluded from maps 4.1 and 5.1

ID	Meshblock number	Census area unit number and name
274	2485701	587903 Kennedy's Bush
275	2485701	587903 Kennedy's Bush
313	2494300	587902 Mclean's Island
309	2494400	587820 Templeton
19	2496002	587820 Templeton
384	2496004	587820 Templeton
147	2496005	587820 Templeton
349	2502302	590604 Styx
3	2502700	590604 Styx
39	2513501	590400 Belfast
216	2514000	590400 Belfast
240	2514000	590400 Belfast
21	2515000	590400 Belfast
43	2515103	590400 Belfast

Distance calculations

Several kinds of straight line distance calculations were completed to look at the relationship between distance and participants' choice of school. Descriptive statistics were produced based on the results, including the mean, median, first quartile, and third quartile for each set of calculations. Proportions of participants travelling certain distances were also calculated for certain GIS queries.

Home-to-school distances

To establish how long the average distance was that pupils travelled from home to school, the median, mean and percentile distances that pupils commute under the status quo and each access scenario were calculated.⁶⁹

Home to school distances were calculated from the centre of each meshblock, which represents the location of the residence of each participant, to the school they currently attend, or chose to attend under each access scenario.

Distance travelled and choice of school

The extra distance travelled by pupils compared to the school they currently attend and the school they are zoned for (identified in ArcGIS) and their parents' preferred school in each access scenario were calculated to show the excess distance that parents are willing to have their children travel.

One calculation compared the distance to the school currently attended with the state school preferred by those participants who would change their child's state school. The difference in distance between the two schools was calculated.

One calculation compared the distance to the school currently attended with the school preferred by those participants who would change their child's school if money was no object. The difference in distance between the two schools was calculated.

One calculation compared the distance to the school participants were zoned for with the distance to the school they preferred if money was no object. The school zoned for was identified with ArcGIS, not the survey results, and compared to the responses of participants. The difference in distance between the two schools was calculated.

To show the proportion of participants whose children attend one of their nearest three schools,

the nearest three schools to each participant were identified by searching according to the nearest point in ArcGIS.

- 225 participants were identified as having children who attended one of their nearest three schools, by comparing the three nearest schools found and the school participants responded their child currently attended.
- This calculation revealed the proportion of pupils who already attend a school further away than one of their closest three.

Feasibility of access

How feasible access to schools was for participants was illustrated by calculating how many participants had a choice of three schools within a 2 km, 4 km or 6 km radius of their home under the current situation and each choice scenario.

The current situation:

- Data was searched in ArcGIS according to the nearest point to identify the nearest three schools to each of the 424 participants.
- The straight line method was used to calculate the distance to the third nearest school.
- The minimum distance to reach three schools was summarised with cumulative percentages up to and including the distance to the third nearest school in increments of distance of 2 km, 4 km and 6 km.

Choice of any secondary school if money was no object access scenario:

- Data was searched in ArcGIS according to the nearest point to identify the nearest three schools to the 81 participants who would change their child's school if money was no object.
- The straight line method was used to calculate the distance to the third nearest school.
- The minimum distance to reach three schools was summarised as cumulative percentages up to and including the distance to the third nearest school in increments of distance of 2 km, 4 km and 6 km.

Choice of any state secondary school access scenario:

- Data was searched in ArcGIS according to the nearest point to identify the nearest three state schools to the 40 participants who chose to change their child's state school.
- The straight line method was used to calculate the distance to the third nearest school.
- The minimum distance to reach three schools was summarised as cumulative percentages up to and including the distance to the third nearest school in increments of distance of 2 km, 4 km and 6 km.

Comparing distance to the nearest school and school actually attended

Calculations were completed comparing the distance travelled to the nearest school and the school actually attended, for pupils for whom the actual school attended was not the nearest school. The purpose of these calculations was to help describe the distance parents are willing to transport their children to school.⁷⁰

- 219 participants who chose a school different to the nearest school were identified by comparing participants' survey responses for the nearest school and the school currently attended.
- The nearest school to each of the 219 participants was identified in ArcGIS and the difference in distance between the nearest school and school attended was calculated.
- The difference in distance between the next nearest school was also calculated.

The findings of each of these kind of distance calculations above are presented in sections 3, 4 and 5.

SUMMARY AND CONCLUSION

This section has accomplished a number of different purposes. Firstly, it has presented a typology of the research literature for how various researchers from a number of different disciplines have investigated the impact of policies which allow parents better access to schools for their children. In doing so, it has noted the particular contribution of economics and sociology, as well as political science. It has argued

that the latest studies, with their greater rigour, have advanced our empirical understanding of the way various access programmes and initiatives have worked overseas. It has also pointed to New Zealand research on the effects of removing school zones in the 1990s, indicating that there are weaknesses and errors in the research and the authors' interpretation of the findings. This has meant policies which improve parents' access to schools are often cast in a negative light, when in fact they can have positive effects for pupils, parents and schools. Within this part, a handful of studies of Christchurch were described which provide additional context for the findings of this research.

This section has also presented the analytical framework of this research through a review of the literature on the geography of education, showing how methods and techniques from this discipline can contribute to understanding the dynamics of the "lived market" for schools. The methods described here allow the reality of parents' choices to be examined, and reasonable generalisations to be made about improving access to schools based on the likely observed changes to the size of school rolls and patterns of pupil movements between schools.

The overall unique contribution of this research to New Zealand studies about improving access to schools is that it moves the analysis beyond what has happened into the area of what might reasonably happen if parents were allowed better access to schools. It gives a snapshot of the magnitude of demand for each school in Christchurch, suggesting with a degree of confidence what the implications would be for school capacity across the school network. What is more, unlike the Smithfield project, it analyses the results with a conceptual framework that is not derived from social conflict theory. Social conflict theory, like all ideologies, presupposes people's actions must fit a structural pattern. This is not the case in reality, as real life is more complicated.

For this reason, the research presented in this report begins with parents and households as actors whose choices are constrained and influenced by space. Much more will be said about parents' preferences for schools and what the patterns of pupils moving between schools might be if parents had better access to schools in Christchurch in the following sections, beginning with the current situation of access to schools.

ENDNOTES

- ¹ H.J. Walberg and J.L. Bast, *Education and Capitalism* (Stanford: Hoover Institution Press, 2003), xix. Also note analysis by Myron Lieberman, who describes how the emphasis of education policy in the United States was directed towards reducing racial segregation in schools, and teacher unionisation. In some southern states, programmes were adopted to give African-Americans access to schools to avoid racial integration. However, by the 1970s and 1980s, it was clear that these policies were not leading to significant improvements for pupils, and so ideas about reducing state involvement in the education system became popular again, and were reconciled with other various agendas. These included allowing better access to schools as a moral issue, an equity issue and also as a civil rights issue. M. Lieberman, "Free-market Strategy and Tactics in K-12 Education," in *Liberty and Learning. Milton Friedman's Voucher Idea at Fifty*, eds. R.C. Enlow and L.T. Ealy (Washington D.C.: Cato Institute, 2006), 88.
- ² Sociologist James S. Coleman made an early case that parents need to become involved as co-educators in their children's learning because research had established that it was important to their educational success. It was part of his double-edged argument that improving access to schools would create a "win-win" situation where parents would have greater power over decisions about their children's schooling, and that pupils would be released from segregated schools and neighbourhoods, thereby fostering social integration. J. Coleman, "Choice, Community and Future Schools," in *Choice and Control in American Education*, eds. W. Clune and J. Witte, vol. 1 (New York: Falmer Press, 1990); J. Coleman, *Equality and Achievement in Education* (Boulder, Colorado: Westview Press, 1990). Research which finds parental involvement in their child's education leads to positive outcomes, such as greater involvement in school activities, their child's class work and homework, and higher achievement includes: A.T. Henderson, "Parent Participation-Student Achievement: The evidence grows" (Columbia: National Committee for Citizens in Education, 1981); B. Schneider and J. Coleman, *Parents, their Children and Schools* (Boulder, Colorado: Westview Press, 1993); A.T. Henderson, "The Evidence Continues to Grow: Parent involvement improves student achievement" (Columbia: National Committee for Citizens in Education, 1987); A.T. Henderson, "Parents are a School's Best Friends," *Phi Delta Kappan* 70, no. 2 (1988): 148-153; H.J. Walberg, "Families as Partners in Educational Productivity," *Phi Delta Kappan* 65, no. 6 (1984): 397-400; A.T. Henderson and N. Berla (eds.), "A New Generation of Evidence: The family is crucial to student achievement (A report from the National Committee for Citizens in Education)," *National Committee for Citizens in Education* (Washington D.C.: Center for Law and Education, 1994); J.L. Epstein, "Theory to Practice: School and Family Partnerships Lead to School Improvement and Student Success," in *School, Family and Community Interaction: A view from the firing lines*, eds. C.L. Fagano and B.Z. Werber (Boulder, Colorado: Westview, 1994), 39-52; J.L. Epstein, "Perspectives and Previews on Research and Policy for School, Family and Community Partnerships," in *Family School Links: How do they affect educational outcomes?* eds. A. Booth and

- J.F. Dunn (New Jersey: Erlbaum, 1996), 209-246; E.H. Berger, *Parents as Partners in Education: Families and schools working together* (Englewood Cliffs, New Jersey: Prentice Hall, 1995); and D. Ravitch, "Somebody's Children: Educational opportunity for all American children," in *New Schools for a New Century*, eds. D. Ravitch and J. Viteritti (New Haven: Yale University Press, 1997), 251-274. From New Zealand, F. Biddulph, J. Biddulph and C. Biddulph, "The Complexity of Community and Family Influences on Children's Achievement in New Zealand" (Wellington: Ministry of Education, New Zealand, 2003).
- ³ J.E. Chubb and T.M. Moe, "Politics, Markets and America's Schools," *American Political Science Review* 82 (1988): 1065-1089; J.E. Chubb and T.M. Moe, *Politics, Markets and America's Schools* (Washington D.C.: Brookings Institution, 1990); and J. Chubb and T.M. Moe, "Should Market Forces Control Educational Decision-Making?" *Political Science Review* 84 (1990): 558-567.
- ⁴ Studies of improving access to schools are numerous. The following are a select few of the studies available on various foreign countries and territories, and in the developing world. On the Netherlands, J. Dronkers, "The Existence of Parental Choice in The Netherlands," *Educational Policy* 9, no. 3 (1995): 227-243; and S. Karsten and C. Teelken, "School Choice in the Netherlands," *Oxford Studies in Comparative Education* 6, no. 1 (1996). On Belgium, V. Vandenberghe, "Combining Market and Bureaucratic Control in Education: An answer to market and bureaucratic failure?" *Comparative Education* 35, no. 3 (1999): 271-282. On Sweden, G. Miron, "Choice and the Quasi-Market in Swedish Education," in *School Choice and the Quasi-Market*, ed. G. Walford (Wallingford, Oxfordshire, United Kingdom: Triangle Books, 1996), 33-47; A. Lidström, "Local School Choice Policies in Sweden," *Scandinavian Political Studies* 22, no. 2 (1999): 137-156; C.R. Hepburn, "The Case for School Choice: Sweden," in *The Case for School Choice: Models from the United States, NZ, Denmark and Sweden, Critical Issues* (Canada: The Fraser Institute, 1999); F. Bergström and F.M. Sandström, "School Choice Works! The case of Sweden," *School Choice Issues in Thought*, Vol. 1, No. 1 (Indianapolis: Milton & Rose D. Friedman Foundation, 2002); S. Gorard and E. Smith, "An International Comparison of Equity in Education Systems," *Comparative Education* 40, no. 1 (2004): 15-28; and F. Bergström and M. Blank, "A Survey on the Development of Independent Schools in Sweden" (London: Reform; The Swedish Research Institute of Trade (HUI), 2005). On Canada, R. Manzer, *Public Schools and Political Ideas* (Toronto: University of Toronto Press, 1994). On Scotland, M. Adler, A. Petch and J. Tweedie, *Parental Choice and Educational Policy* (Edinburgh: Edinburgh University Press, 1989). On the application of parental choice policies in the developing world see, J. Tooley, *The Global Education Industry: Lessons from developing countries - IEA, 2001* (London: Institute for Economic Affairs (IEA), 2001); J. Tooley, P. Dixon and J. Stanfield, *Delivering Better Education: Market solutions for educational improvement* (London: Adam Smith Institute, 2003); and J. Tooley and P. Dixon, "Private Education is Good for the Poor: A study of private schools serving the poor in low-income countries," *White Paper* (Washington D.C.: Cato Institute, 2005).
- ⁵ S. Burgess and A. Briggs, "School Assignment, School Choice and Social Mobility," *Working Paper*, 06/157 (Bristol: Centre for Market and Public Organisation (CMPO); University of Bristol, 2006), 3-4; S. Burgess and H. Slater, "Using Boundary Changes to Estimate the Impact of School Competition on Test Scores," 06/158 (Bristol: Centre for Market and Public Organisation (CMPO), 2006), 4-5.
- ⁶ General equilibrium analyses are discussed and presented in T.J. Nechyba, "Introducing School Choice into Multidistrict Public School Systems," in *The Economics of School Choice*, ed. C.M. Hoxby (Chicago: National Bureau of Economic Research (NBER), University of Chicago Press, 2003), 145-194.
- ⁷ G. Whitty, *Making Sense of Education Policy* (London: Paul Chapman, 2002); C. Lubienski, "Innovation in Education Markets: Theory and evidence on the impact of competition and choice in charter schools," *American Educational Research Journal* 40, no. 2 (2003): 395-443.
- ⁸ H. Lauder and D. Hughes, "Social Inequalities and Differences in School Outcomes," *New Zealand Journal of Educational Studies* 25, no. 1 (1990): 37-60.
- ⁹ V. Ainsworth et al., "Tomorrow's Schools and Freedom of Choice - A Recipe for Disaster. A study of the effects of roll changes on Christchurch state schools" (Christchurch: Education Policy Research Unit, University of Canterbury, 1993).
- ¹⁰ M. Fowler, *Factors Influencing Choice of Secondary School: A case study* (Christchurch: Education Department, University of Canterbury, 1993).
- ¹¹ M. Fowler, *Factors Influencing Choice of Secondary School: A case study*, 108.
- ¹² M. Fowler, *Factors Influencing Choice of Secondary School: A case study*, 113.
- ¹³ W. Stockwell and S. Duckworth, "'Drivers of Choice' and Customer Satisfaction with Christchurch Secondary Schools. Report prepared for the Ministry of Education" (Wellington: 1998).
- ¹⁴ W. Stockwell and S. Duckworth, "'Drivers of Choice' and Customer Satisfaction with Christchurch Secondary Schools. Report prepared for the Ministry of Education," 1-2.
- ¹⁵ W. Stockwell and S. Duckworth, "'Drivers of Choice' and Customer Satisfaction with Christchurch Secondary Schools. Report prepared for the Ministry of Education," 4.
- ¹⁶ W. Stockwell and S. Duckworth, "'Drivers of Choice' and Customer Satisfaction with Christchurch Secondary Schools. Report prepared for the Ministry of Education," 10-11.
- ¹⁷ W. Stockwell and S. Duckworth, "'Drivers of Choice' and Customer Satisfaction with Christchurch Secondary Schools. Report prepared for the Ministry of Education," 11-13.
- ¹⁸ W. Stockwell and S. Duckworth, "'Drivers of Choice' and Customer Satisfaction with Christchurch Secondary Schools. Report prepared for the Ministry of Education," 14.
- ¹⁹ S.J. Bridges, "Pupil Mobility and Zoning: Out-of-synchronisation enrolments in primary schools located near high school 'home zones' - An initial survey" (Christchurch: Christchurch College of Education, 2002).
- ²⁰ E.B. Fiske and H.F. Ladd, *When Schools Compete: A cautionary tale* (Washington, D.C.: Brookings Institution Press, 2000), 309-313. Cf. R. Crawford, "Commentary," in *The Tomorrow's Schools Reforms: An American perspective*, ed. G. Sullivan, *IPS Policy Paper*, 6 (Wellington: Institute of Policy Studies; Victoria University of Wellington, 2000), 12-13.
- ²¹ S. Waslander and M. Thrupp, "Choice, Competition and Segregation: An empirical analysis of a New Zealand

- secondary school market, 1990-1993," *Journal of Education Policy* 10, no. 1 (1995): 1-26.
- ²² C. Taylor and S. Gorard, "The Role of Residence in School Segregation: Placing the impact of parental choice in perspective," *Environment and Planning A* 33, no. 10 (2001): 1829-1852; C. Taylor, "The Geography of Choice and Diversity in the 'New' Secondary Education Market of England," *Area* 33, no. 4 (2001): 368-381; C. Taylor, "Hierarchies and 'Local' Markets: The geography of the 'lived' market place in secondary education provision," *Journal of Education Policy* 16, no. 3 (2001): 197-214; C. Taylor, *Geography of the 'New' Education Market* (Aldershot: Ashgate Publishing, 2002); C. Taylor, J. Fitz and S. Gorard, "Diversity, Specialisation and Equity in Education," *Oxford Review of Education* 31, no. 1 (2005): 47-69.
- ²³ C. Taylor, *Geography of the 'New' Education Market*, 6.
- ²⁴ C. Taylor, *Geography of the 'New' Education Market*, 6.
- ²⁵ C. Taylor, *Geography of the 'New' Education Market*, 5, 89.
- ²⁶ R. Bowe, S.J. Ball and A. Gold, *Reforming Education and Changing Schools. Case studies in policy sociology*, (Routledge: New York and London, 1992), 35-37.
- ²⁷ S. Gewirtz, S.J. Ball and R. Bowe, "Parents, Privilege and the Education Marketplace," *Research Papers in Education* 9, no. 1 (1994): 3-29, cited in C. Taylor, *Geography of the 'New' Education Market*, 4.
- ²⁸ Originally published as, S.J. Ball, R. Bowe and S. Gewirtz, "Circuits of Schooling - a Sociological Exploration of Parental Choice of School in Social-Class Contexts," *Sociological Review* 43, no. 1 (1995): 52-78. Republished as S.J. Ball, R. Bowe and S. Gewirtz, "Circuits of Schooling: A sociological exploration of parental choice of school in social-class contexts," in *Education Policy and Social Class*, ed. S.J. Ball (London & New York: Routledge, 2006). See page 160.
- ²⁹ S.J. Ball, R. Bowe and S. Gewirtz, "Circuits of Schooling - a Sociological Exploration of Parental Choice of School in Social-Class Contexts, republished in S.J. Ball, R. Bowe and S. Gewirtz, "Circuits of Schooling: A sociological exploration of parental choice of school in social-class contexts," 160.
- ³⁰ C. Taylor, *Geography of the 'New' Education Market*, 4.
- ³¹ C. Taylor, "Hierarchies and 'Local' Markets: The geography of the 'lived' market place in secondary education provision, 211-212.
- ³² S. Waslander and M. Thrupp, "Choice, Competition and Segregation: An empirical analysis of a New Zealand secondary school market, 1990-1993," 2.
- ³³ C. Taylor, "Hierarchies and 'Local' Markets: The geography of the 'lived' market place in secondary education provision," 199.
- ³⁴ C. Taylor, *Geography of the 'New' Education Market*, 7.
- ³⁵ C. Taylor, *Geography of the 'New' Education Market*, 7. See also Ron Glatter and colleagues for more discussion of the conceptualisation of the "education market place." R. Glatter, P.A. Woods and C. Bagley, "Diversity, Differentiation and Hierarchy: School choice and parental preferences," in *Choice and Diversity in Schooling: Perspectives and prospects*, eds. R. Glatter, P.A. Woods and C. Bagley, (London: Routledge, 1997).
- ³⁶ R. Glatter, P.A. Woods, and C. Bagley, *Choice and Diversity in Schooling: Perspectives and prospects*.
- ³⁷ Components based on C. Taylor, *Geography of the 'New' Education Market*, 7.
- ³⁸ C. Taylor, *Geography of the 'New' Education Market*, 5.
- ³⁹ C. Taylor, *Geography of the 'New' Education Market*, 8.
- ⁴⁰ V. Jacobsen, A. Duncan and A. Hunt, "The Structure and Dynamics of Schools and Businesses: Do they face similar issues?" 99/11 (Wellington: The Treasury, New Zealand, 1999), 62.
- ⁴¹ Education Review Office, "The Collection and Use of Assessment Information in Schools" (Wellington: Education Review Office (ERO), 2007).
- ⁴² Education Review Office, "Schools' Use of Operational Funding" (Wellington: Education Review Office (ERO), 2006).
- ⁴³ In survey work, conducted as part of Chris Taylor's research, reputation and examination results were consistently used by parents to define their choice of school, when they were asked to describe verbally why they chose a particular school. C. Taylor, *Geography of the 'New' Education Market*, 172-173. Ball also discusses how widespread school reputations are depending on the circuit of schooling which parents can access. S.J. Ball, R. Bowe and S. Gewirtz, "Circuits of Schooling: A sociological exploration of parental choice of school in social-class contexts."
- ⁴⁴ C. Taylor, *Geography of the 'New' Education Market*, 8-9.
- ⁴⁵ C. Taylor, *Geography of the 'New' Education Market*, 9.
- ⁴⁶ "Editorial: Only tolls can ration road use," *New Zealand Herald*, 2006; Minister of Transport and Associate Minister of Transport, "Auckland Road Pricing: Next steps," *Memorandum*, WGT A6685 (Wellington: Ministry of Transport, 2006); Christchurch City Council, *Resource Catalogue for Schools. Transportation student resource kit* (2007), <http://www.ccc.govt.nz/publications/ResourceCatalogueForSchools/Transport/> (accessed 16 July 2007).
- ⁴⁷ C. Taylor, *Geography of the 'New' Education Market*, 9-10.
- ⁴⁸ C. Taylor, *Geography of the 'New' Education Market*, 11.
- ⁴⁹ T. Marsden, M. Harrison and A. Flynn, "Creating Competitive Space: Exploring the social and political maintenance of retail power," *Environment and Planning A* 30 (1998): 481-798; A. Hughes, "Constructing Competitive Spaces: On the corporate practice of British retailer-supplier relationships," *Environment and Planning A* 31, no. 5 (1999): 819-839, cited in C. Taylor, "Hierarchies and 'Local' Markets: The geography of the 'lived' market place in secondary education provision," 199; C. Taylor, *Geography of the 'New' Education Market*, 11.
- ⁵⁰ C. Taylor, "Hierarchies and 'Local' Markets: The geography of the 'lived' market place in secondary education provision," 199.
- ⁵¹ C. Taylor, *Geography of the 'New' Education Market*, 91.
- ⁵² C. Taylor, "Hierarchies and 'Local' Markets: The geography of the 'lived' market place in secondary education provision," 199.
- ⁵³ C. Taylor, "Hierarchies and 'Local' Markets: The geography of the 'lived' market place in secondary education provision," 199; C. Taylor, *Geography of the 'New' Education Market*, 11.
- ⁵⁴ C. Taylor, *Geography of the 'New' Education Market*, 12.
- ⁵⁵ C. Taylor, *Geography of the 'New' Education Market*, 14.
- ⁵⁶ For Chris Taylor see, C. Taylor, *Geography of the 'New' Education Market*; C. Taylor, "Hierarchies and 'Local' Markets: The geography of the 'lived' market place in secondary

- education provision." For Simon Burgess, see S. Burgess et al., "School Choice in England: Background facts," *Working Paper*, 06/159 (Bristol: Centre for Market and Public Organisation (CMPO); University of Bristol, 2006); and S. Burgess et al., "Sorting and Choice in English Secondary Schools," *Working Paper*, 04/111 (Bristol: Centre for Management and Public Organisation (CMPO); University of Bristol, 2004).
- ⁵⁷ Statistics New Zealand, *Geographic Hierarchy* (2006), <http://www.stats.govt.nz/statistics-by-area/regional-statistics/geography-mapping/default.htm>.
- ⁵⁸ C. Wild and G. Seber, *Introduction to Probability and Statistics* (Auckland: Auckland University Press, 1993).
- ⁵⁹ C. Wild and G. Seber, *Introduction to Probability and Statistics*.
- ⁶⁰ A.N. Anthony and W. Donna, "New SAS Procedures for Analysis of Sample Survey Data. SUGI proceedings" (1998).
- ⁶¹ R.J.A. Little and D.B. Rubin, *Statistical Analysis with Missing Data* (New York: Wiley, 2002).
- ⁶² See note 56.
- ⁶³ C. Taylor, "Hierarchies and 'Local' Markets: The geography of the 'lived' market place in secondary education provision," 201.
- ⁶⁴ C. Taylor, "Hierarchies and 'Local' Markets: The geography of the 'lived' market place in secondary education provision," 200.
- ⁶⁵ S. Burgess et al., "School Choice in England: Background facts."
- ⁶⁶ S. Wise, *GIS Basics* (London and New York: Taylor and Francis, 2002), 54-55; I. Heywood, S. Cornelius and S. Carver, *An Introduction to Geographic Information Systems* (Edinburgh: Pearson Education, 2002), 110-112; M.N. Demers, *Fundamentals of Geographic Information Systems*, Third ed. (New Mexico: John Wiley Sons Inc., 2005).
- ⁶⁷ I. Heywood, S. Cornelius and S. Carver, *An Introduction to Geographic Information Systems*, 111; M.N. Demers, *Fundamentals of Geographic Information Systems*.
- ⁶⁸ S. Burgess et al., "School Choice in England: Background facts," 4; C. Taylor, "Hierarchies and 'Local' Markets: The geography of the 'lived' market place in secondary education provision.
- ⁶⁹ Cf. S. Burgess et al., "School Choice in England: Background facts," 17, table 1.
- ⁷⁰ Cf. S. Burgess et al., "School Choice in England: Background facts," 28, table 12a.

SECTION 3

The Research Findings: Current access to schools in Christchurch

INTRODUCTION

This section presents the first series of results from this research. Its purpose is to describe the nature of the "lived market" for schooling—the schools parents choose and the various factors which influence the schools they can access—before the impact of an open enrolment scenario is considered. According to Sietske Waslander and Martin Thrupp, the "lived market" is conditioned by formal rules and regulations, established by legislation, and the more informal relationships that exist between parents and schools.¹ How parents and schools respond to the formal regulations which constrain the schools they can access is one factor that influences the overall demand for schools. This is important because one of the objectives of this research is to discern the relationship between parents and schools that exists under the current school system of enrolment.

In a way, the findings presented in this section provide a yardstick for comparing the effect of giving parents better access to schools examined in subsequent sections. It describes which secondary schools parents currently send their children to in Christchurch, showing which schools are in demand. In particular, this section reports the findings of some simple statistical analysis at the city level, allowing judgements to be made about whether parents generally prefer to send their children to the nearest school to where they live and also the extent to which school enrolment zones constrain the choices of parents. By examining these issues under the current policy of school enrolment, it is possible to see first of all to what extent residential choice is being exercised by parents as a way of choosing a school. Secondly, it allows some conclusions to be drawn about how

much proximity to school matters for parents who currently send their children to secondary school.

These issues are important to understand because the current school enrolment policy, introduced by the Education Amendment Act 2000 and the Education Standards Act 2001, is premised on the assumption that parents should have absolute right of access to their local school. While this may seem fair and reasonable at face value, its application has serious social consequences for parents and for their children's education. School zoning often means that the range of schools parents can access for their children is constrained more than would otherwise be the case if enrolment policies were more flexible. In a very real way, zoning can lead to social exclusion: parents who want to get their children into a school they believe will provide the best education for them, sometimes have to pay a premium to do so through higher house prices.

This section is structured in the following way. The first part of this section provides some brief context around two key themes that shall be discussed: the issues of residential choice and proximity of home to school as factors influencing access to schools. Secondly, school zoning policy in New Zealand is briefly described to illustrate the way school enrolments are constrained by legislation. The third part describes the research findings for the questions asked in the parental survey which relate to the choices parents currently make about schooling in Christchurch. The final part of this section makes some brief observations about the degree of active choice currently being exercised by parents, to draw some conclusions about the nature of the current

extent of access to schools in Christchurch.

RESIDENTIAL CHOICE

Research on residential choice

Residential choice is an important issue because all households make choices about where they live. Residential choice is one of the simplest ways parents can access a school. Research from overseas and New Zealand shows a number of parents from different backgrounds make active choices to access different schools, given the opportunity (see appendix 1).² That aside, it is difficult to determine how strongly residential choice is associated with parents' decision-making processes. The price of the area, available amenities and proximity to work are all other factors that play a role in determining choices.

Jacqui Croft declares the literature on school choice is inconclusive around the role of residence and that on residence is inconclusive around schooling.³ In England, it has not been investigated properly as a pull factor for choosing a school. Croft does note, however, that while "selection by mortgage," the practice of families moving nearby to the school they consider best to ensure entry, is an issue, evidence on the significance of schooling in mobility decisions is not clear. The research cited earlier about general equilibrium modelling also indicates that mobility significantly improves the equity outcomes of targeted education credits.⁴ Perhaps the issue which influences residential choice the most then is whether enrolment schemes for state schools are determined by geographic boundaries. Whether a school is accessible constrains parents' choices. School enrolment zones make decisions about where to live even more important for parents who have a preferred school they wish their children to attend.

In the United States, for example, Caroline Hoxby explains that residential choice depends greatly on the number, size, and residence patterns of the public school districts in the area where adults are also employed.⁵ Further, school districts vary in quality. Sometimes there will be comparable urban school districts within 30–45 minutes drive from where parents live, expanding the range of schools to choose from (although in rural areas options can be few). The way that housing markets work however, means that in urban areas lower income parents are unlikely to be able to afford a house in parts of town where schools are over-subscribed. The result is that

parents sort themselves into different districts based on where they can afford to live. Low income parents therefore have reduced access to schools because they cannot afford to choose schools in districts that have higher house prices.

Residence has also been found to be important for determining access to schools in England. In 2006, Simon Burgess and Adam Briggs estimated the chances of poor and non-poor children getting places in good schools in England, using the PLASC dataset.⁶ They found that children from poor families are less likely to attend good schools, controlling for location, within street variation and background characteristics. Their analysis demonstrates that location does matter in the assignment of pupils to schools in England. They looked at the strategies used by the non-poor to enrol their children into a good school, and how significant residential choice is in the enrolment system, as parents attempt to use location as a strategy to make their child's background and ability more apparent to schools and LEAs. Location accounted for a 2% difference in the likelihood that a poor child would attend a good school. Burgess and Briggs take heart that the importance of location suggests that better access to schools might have a role in narrowing the admissions gap between poor and non-poor pupils.⁷

In a related study in 2006, Burgess, Briggs and others also looked at whether parents chose the nearest school to where they lived.⁸ Their findings showed that 46% of pupils attended their nearest school. In London, the proportion was only 25%. Further, 28% of pupils did not attend one of the nearest three schools to their home. The distances parents were prepared for their children to travel to school were "not trivial" either. The average home to school distance was calculated to be 1.7 km. On average, though, pupils travelled an extra 2.3 km to their parents' preferred school. What is more, when the researchers looked at disadvantaged pupils, about half were found to commute to reach schools with better standardised test scores.⁹ Even though Burgess and Briggs' research shows disadvantaged pupils get to access better schools less often than better off pupils, a number of the parents in their research chose a different school to the local school if it was not suitable for them. Attending the local school because it was the local school was not what mattered most for just over half of English parents.

Evidence of residential choice in Christchurch

In Christchurch some parents have moved into the zones of schools that they want their children to attend in response to the re-introduction of enrolment zones in 2000.¹⁰ What is more, it is apparent that school zones have pushed up the marginal price for houses in at least four separate school zones. Two economists, Scott McClay and Robert Harrison, produced research in 2003 which showed that house buyers can expect to pay hefty premiums to buy a house in four school zones in Christchurch. This was also true for two areas where the zones of Burnside High School or Riccarton High School overlapped with Christchurch Boys' High School's zone.¹¹ Their modelling indicated that the premium for selling in the Christchurch Boys' High School zone would be approximately \$79,000. The premium for the Christchurch Girls' High School zone was even higher, at approximately \$137,000.¹²

A reason for this substantial difference may be that the Christchurch Girls' High School zone is completely enclosed by the Christchurch Boys' High School zone. McClay and Harrison also argue that the cost of sending a daughter to Christchurch Girls' High School is similar in magnitude to the cost of sending a daughter to one of the private girls' schools, such as Rangi Ruru Girls' School, although the premium would be recoverable if the house was sold later on. The zone premiums were also significantly large for Burnside High School (approximately \$29,000) and Riccarton High School (approximately \$41,000), but not as high as Christchurch Boys' High School or Christchurch Girls' High School. While the study admitted that data limitations meant the analysis was not perfect, it still shows strong indications that residential choice is a feature of the "education market place" in Christchurch.

Susan Bridges' research on parents' mobility and the importance of zoning also showed that planning educational opportunities for their children played a major part in determining whether parents moved to particular locations.¹³ Families from Christchurch tended to plan ahead, and timed their move so that their children could settle in an area before beginning secondary school. Of parents who had stated zoning was a reason for moving, Bridges found that 83% were successful in accessing the co-educational schools they were zoned for, but their chances of accessing single-sex schools were lower.

The inequitable access was related to smaller home zones around girls' schools and fewer places available at boys' schools.

Summary

Stories of families cheating enrolment schemes are relatively common in New Zealand.¹⁴ Families that have the resources to exercise residential choice can, and do, move to get their children into their preferred school. School enrolment policies that encourage residential choice may actually discourage social mixing in schools and communities, as families buy their child's enrolment and become "segregated by mortgage." This is the opposite intention of the policy. Furthermore, the argument that zoning is necessary to foster higher achievement among disadvantaged pupils or under-performing schools through peer effects is spurious.¹⁵

The promise of making access to schools better is that it can reduce, if not sever, the link between location and school quality, as families are no longer limited by proximity to a school to be eligible for a place.

SCHOOL ENROLMENT POLICY IN NEW ZEALAND

Key developments in enrolment policy

Historically, the New Zealand school system promoted freedom for parents to choose a school. Clarence Beeby said in 1956, "In New Zealand there is no selection at all for secondary education, and, within the State system, every child, whatever his ability is free to go to the secondary school of his parents' choice."¹⁶ Further, Beeby said:¹⁷

A growing egalitarianism has influenced the school system, as it has the rest of our social structure, and almost any movement towards freer entrance to any school would be assured of strong popular and political support. ... It is certain that any attempt to re-impose selection for secondary schools in New Zealand would be met by a storm of protest from parents.

Consequently, when school enrolment zones for state schools appeared in the 1950s, they were established to provide for the fair treatment of newly established schools and their pupils during a time when the number of secondary schools was growing. In other words, enrolment schemes were

intended to limit the size of a school's roll to prevent over-crowding. But, as Gary McCulloch's study of Auckland illustrated, the system of zoning tended to maintain the established image and privileges of the grammar schools.¹⁸

The school enrolment zones cultivated the notion of the local neighbourhood school in New Zealand. The first priority of all secondary schools became to serve the local neighbourhood. In 1960, the Minister of Education P. Skoglund said:¹⁹

Basically every child should have the right to enrol at the school which is nearest to his home. This implies that schools will undertake to accept enrolments from pupils in their vicinity, and if it is necessary to restrict the intake.

Since the changes introduced by *Tomorrow's Schools*, school enrolment policy has become the subject of even more heated debate.²⁰ The issue is about what is the fairest way to allocate pupils to schools, in situations where schools are over-subscribed. This tension can be seen in the way legislation has changed over time, from devolving authority to schools to manage their own capacity and enrolment policy back to a situation where the Secretary of Education has considerable authority over schools:²¹

• The Education Act 1989

In 1989, the Education Act introduced more flexibility into the design of enrolment schemes:

- the key change was to allow pupils the opportunity to attend any school that they could secure a place at;
- the Secretary of Education was able to prescribe maximum rolls, and each school had to devise an enrolment zone if it appeared it would exceed its maximum capacity, specifying how many out of zone applicants it would take; and
- these places were filled by ballot, and pupils who lived in zone still had right of access to over-subscribed schools.

• The Education Amendment Act 1991

In 1991, in the Education Amendment Act, more amendments were made to enrolment policy:

- school boards were given more power over the content of their schemes; and
- enrolment schemes could only be used to manage over-crowding.

• The Education Amendment Act (No. 2) 1998

In 1998, the regulations were modified again with the Education Amendment (No. 2) Act:

- schools were required to have regard to the capacity of the existing network of state schools;
- school boards were required to consult with the community when developing their enrolment scheme;
- the power to approve schemes was returned to the Secretary;
- pupils had to be able to attend a "reasonably convenient school"; and
- the Secretary was granted the power to make sure enrolment schemes promoted the "best use of the network of state schools in the area."

• The Education Amendment Act 2000

The Education Amendment Act 2000 swept away the discretion that school boards had to determine their own school enrolment schemes:

- the legislation enshrined the absolute right of pupils to attend their local school;
- enrolment schemes had to specify a geographic home zone to determine which pupils had absolute access;
- where over-subscribed schools were adjacent, zones had to be contiguous so that no pupils would be left out of a zone;
- the legislation also specified precisely how schools were to prioritise out of zone enrolments, and ballots were prescribed as the mechanism to allocate spare spaces at each school; and
- school boards were also given the power to annul enrolments for pupils at the school who were not in zone, with these procedures being toughened and tightened further in the Education Standards Act 2001.

In summary, the current legislation means that pupils who live in a school zone have an absolute right of entry to that school, no matter how full that school is. Under this scheme, it can only be argued that parents have good access to state schools insofar as they can apply for places in state schools which they are not zoned for, but only if there are enough spare spaces. Furthermore, access is constrained because the Education Act 1989 lays down a strict priority for how excess places should be filled. The order that pupils are selected in is as follows: pupils in special programmes are first, followed by siblings of current pupils, siblings of former pupils, children of board employees, and then after those places have been filled, every other pupil who is admitted is selected by a ballot.

Other implications of current enrolment policy

- **Reasonable convenience is unreasonable**

Besides these direct implications, current enrolment policies have several other implications. Firstly, the meaning of "reasonably convenient school" is perhaps one of the vaguest parts of the Education Act:²²

Reasonably convenient school means a state school that a reasonable person living in the area in which the school is situated would judge to be reasonably convenient for a particular student, taking into account such factors as the age of the student, the distance to be travelled, the time likely to be spent in travel, the reasonably available modes of travel, common public transport routes, and relevant traffic hazards.

This definition of reasonably convenient school means that what is reasonably convenient may vary between different schools so that pupils can access an appropriate school, depending on the type of school it is and the education offered. Further, school boards have to take into consideration many issues like the age of pupils, distance travelled and transportation. Section 11E, part 2 also requires schools to take the definition of reasonably convenient school into consideration when determining their home zone so that best use can be made of the school network and so any area may be excluded for which another school is also reasonably convenient for a pupil living in that area to attend. Consequently, this provision is open to multiple interpretations about what is reasonably

convenient, and is ultimately unhelpful as a fair guideline for determining who can access a school.

- **Access to state-integrated schools is limited**

Another issue is the constraints which limit enrolments at state-integrated schools. Integrated schools, special character schools and *kura kaupapa* Maori schools may operate enrolment schemes if excess demand is likely to occur. More importantly, enrolments at integrated schools are also constrained by the requirement that no more than 5% of enrolments at integrated schools can be "non-preference" pupils.²³ That is, the school cannot enrol more than 5% of pupils who do not meet the special character requirements of the school. Integrated schools are also frustrated by caps on the maximum number of pupils that they can enrol. The roll caps can only be raised by negotiation with the Ministry of Education, taking into account whether there is spare capacity or not in the state system:²⁴

Maximum roll increases are very unlikely to be approved in areas where there is surplus accommodation in other state schools, unless it can be shown that there is unmet demand for school places of the particular special character of the school, for instance, with siblings unable to enrol.

Further, the non-preference quota of schools may not be increased if there are stable or declining rolls elsewhere in the state school system.

- **Under-performing schools are unfairly protected**

A further implication of school zoning under the current enrolment system is that it can lead to under-performing schools being unfairly protected, since schools have a guaranteed catchment of pupils. It is harder to detect poorer performance among schools when families cannot vote with their feet because they are restricted to sending their child to one school. A case in point is helpful to consider. The Education Review Office (ERO) reported in 1996 that the majority of schools in two areas of social disadvantage, Mangere and Otara, were seriously under-performing, so much so that ERO felt that the community could not have confidence in the educational outcomes for children attending schools in these two districts.²⁵ More flexible enrolment regulations in the 1990s probably helped reveal some of these problems as they allowed pupils the opportunity to leave those

schools.²⁶ Arguably, forcing pupils to attend schools like the ones ERO found in Mangere and Otara is not a way to encourage better achievement or educational opportunities for pupils who may have to attend such schools.

In spite of this basic logic, the authors of the Smithfield project were still happy to recommend the re-introduction of zoning as a key policy recommendation resulting from their research.²⁷ The point was to ensure that schools would have a broad SES mix of pupils. However, they did not specify what an optimal mix of pupils would be, or how that mix might be achieved when school rolls became imbalanced, especially if higher SES parents congregated around the schools they prefer, as occurs now. Again, there is also the problem that segregation was higher under zoning than without zones according to their data. Furthermore, their recommendation contradicts their appraisal that zoning did not give ethnic minority or low SES families a better chance of accessing different and better schools.²⁸

- **Balloting of limited places makes access to schools fairer**

The Smithfield authors also recommended balloting places for out of zone pupils at over-subscribed schools, as occurs now.²⁹ But balloting these places does not have much of an effect on school mix because of the relatively small number of pupils who enrol in a school this way.³⁰ For instance, in 1991, 85% of schools had at least 10% more capacity than they needed. School rolls also remained relatively static over the following five years,³¹ meaning balloting would not have been common place, even though greater proportions of parents chose adjacent schools (see appendix 1). This also meant balloting would not have helped lower SES parents to access adjacent schools perhaps as much as less rigid enrolment schemes allowed between 1991 and 1998. Nevertheless, when schools are over-subscribed, balloting is the only fair way to allocate places so that neither a parent's income nor a pupil's prior attainment influences whether they can access a school with limited available places.

- **Zoning does not promote social mixing**

The school enrolment system specified in the Education Act 1989 does not encourage social

cohesion, or reduce segregation by SES. Giving priority to local pupils may increase segregation and make enrolment less fair for schools in more well off areas, as well as for the families who cannot afford to buy a house in the school zone.³² The current education system therefore, remains characterised by selection according to who can pay a premium for schooling. A further implication of the current zoning laws is that they do not make best use of school network capacity, since some parents ignore the intent of zoning laws and simply move near to their preferred school. Making best use of capacity as a policy imperative also ignores the issue of school quality. Again, this stance prioritises the needs of schools over the needs of children.³³

Summary

The net effect of the current school enrolment policy is that a mismatch often occurs between the demand for places at state schools, and the total available capacity in the school system.³⁴ The right to attend a local school would be reasonable if it were true that all schools are of the same quality and the needs of each child the same. But the fact is that while state schools are subject to the same regulatory controls, they differ widely in quality and so in popularity among parents.³⁵ Parents also have different expectations of schools. Parents who want to send their children to the schools they think are best for them vie for places, even to the extent of exercising residential choice, while other state schools operate under capacity.

Moreover, the current enrolment policy does more than avoid over-crowding in schools; it micro-manages demand and allocation of pupils to schools. Schools that would gladly take more pupils, including some state-integrated schools, cannot because of the limits of legislation. While it might sound fair to ensure everyone can access the local school, and that places should be allocated in a systematic way for out of zone applicants, the legislation is far too prescriptive and does not give schools enough flexibility to deal with the needs of parents and children. In this way, zoning laws contribute to homogenous schooling, rather than a range of more diverse options.³⁶

A more flexible system that recognises the needs of parents and pupils could be beneficial for creating more opportunities for pupils to access the school that suits them. This is especially important for children's

secondary education where wider curricular options are a reality, and with more pupils staying longer in school, specialisation could better serve pupils with interests in non-academic subjects. In conclusion, enforcing the right to attend the local school only encourages "segregation by mortgage," intensifying the relationship between location and school quality. This perpetuates a situation of differentiated access to schools.

CURRENT SCHOOL CAPACITY ISSUES IN CHRISTCHURCH

Ministry of Education data arguably shows that state secondary school capacity is not being put to best use (table 3.1). Firstly, figures show that seven state schools are currently operating at over 100% capacity. These seven schools operate a school enrolment zone. Operating over and above capacity in this way has serious financial implications for schools, as extra property, classrooms or other resources are not provided for out of zone enrolments when a school is full and takes more pupils above its maximum roll. School boards are responsible for accommodating these pupils.³⁷ More alarming, however, is the number of schools that are operating at levels which are drastically under capacity. Three regular state schools have utilisation levels of between 60% and 70%, meaning together they contribute several hundred spare places across the school system. Each of these schools has plans to rationalise the number of spare classrooms that they have.³⁸

Further, the popular single-sex state secondary schools generally take smaller numbers of out of zone enrolments than other state secondary schools. For example, Christchurch Boys' High School took 275 pupils in 2006; 80 pupils from out of zone in Year 9 and 195 from within the school zone. Christchurch Girls' High School enrolled 231 girls at Year 9 in 2006, of which 93 were from outside the school zone. By contrast, Avonside Girls' High School took 290 girls at Year 9 in 2006; 206 of whom were from outside of the school zone. For Shirley Boys' High School the figures were 334 and 243, respectively. These differences in the number of out of zone enrolments show the pressure Christchurch Boys' High School and Christchurch Girls' High School are under to accommodate home zone enrolments at the expense of out of zone enrolments.

The stark difference between those schools that

are full to over-flowing and those which are planning to reduce the number of classrooms they have suggests that those places could be put to better use in some way. One wonders what the situation would be for these schools if zoning laws were relaxed again, as it seems reasonable that schools operating at extreme levels of under-utilisation are being protected, in part, from further decline by zoning regulations operating at other schools.

RESEARCH FINDINGS

- With 95% certainty, 53% of parents do not choose to send their child to the nearest school to where they live, with an associated margin of error of approximately +/- 4%;
- According to calculations completed with ArcGIS, 47% of parents do not send their children to a school that is one of the nearest three schools to where they live;
- With 95% certainty, 53% of parents do not send their child to the school they indicated that they were zoned for, with an associated margin of error of approximately +/- 4%;
- According to calculations completed with ArcGIS, 46% of parents who live in a school zone do not send their child to the school that they are zoned for; and
- With 95% certainty, 79% of parents responding knew at the time they moved to their present home that it was in the zone of the school they indicated that they were zoned for, with an associated margin of error of approximately +/- 4%.

SUMMARY OF KEY FINDINGS

Having outlined the relevant issues regarding residential choice and the current school enrolment policy, this part presents the results which illustrate the schools parents in Christchurch currently choose, as well as how important proximity to school, residential choice and school zones are to parents. This part also describes the nature of the "lived market" for schools in Christchurch before choice of a different school is examined. Within this discussion, the role that

Table 3.1. Christchurch secondary school capacity (state and state-integrated schools)

School	Enrolment scheme (Y/N)	Secondary school roll (July 2006)	Teaching spaces	Max. secondary school roll	Difference (no. of pupils)	Utilisation (%)	No. of pupils in Year 9 (July 2006)	No. of out of zone enrolments	No. of Year 9 out of zone enrolments
State schools									
Aranui High School	N	761	63	1233	-472	62	141	-	-
Avonside Girls' High School	Y	1187	59	1200	-13	99	290	697	206
Burnside High School	Y	2605	112	2359	246	104	513	469	110
Cashmere High School	Y	1606	71	1421	185	113	407	177	52
Christchurch Boys' High School	Y	1339	63	1274	65	105	275	549	80
Christchurch Girls' High School	Y	1089	60	1106	-17	98	231	369	93
Hagley Community College	Y	1545	75	1436	109	108	96	987	96
Hillmorton High School	N	778	50	844	-66	92	178	-	-
Hornby High School	N	418	37	699	-281	60	95	-	-
Linwood College	N	910	67	1369	-459	66	239	-	-
Mairehau High School	N	591	45	787	-196	75	127	-	-
Papanui High School	N	1403	66	1313	90	107	348	-	-
Riccarton High School	Y	935	48	885	50	106	184	87	-
Shirley Boys' High School	Y	1314	62	1297	17	101	334	622	243
Te Kura Kaupapa Maori O Te Whanau Tahī	N	11	9	23	-12	48	5	-	-
Te Kura Kaupapa Maori O Waitaha	N	28	11	40	-12	70	6	-	-
Unlimited Paenga Tawhiti	Y	282	0	285	-3	99	63	-	-
State-integrated schools									
Canterbury Christian College	N	37	0	42	-5	88	12	-	-
Catholic Cathedral College	N	219	0	219*	0	100	42	-	-
Christchurch Adventist School	N	63	0	79	-16	80	17	-	-
Hillview Christian School	N	72	0	76	-4	95	26	-	-
Marian College	N	442	0	430	12	103	110	-	-
Middleton Grange School	Y	681	0	591	90	115	135	-	-
Rudolf Steiner School	N	114	0	131	-17	87	29	-	-
St Bede's College	N	788	0	746	42	106	165	-	-
St Thomas of Canterbury College	N	352	0	368	-16	96	84	-	-
Villa Maria College	N	709	0	676	33	105	150	-	-

* Adjusted roll data unavailable for Catholic Cathedral College.

Source: Data Management Unit, Ministry of Education

proximity of home to school plays is important, as it is assumed that if parents are choosing a school that is not the nearest one or not the one parents responded that they were zoned for, it indicates a degree of active choice by parents.³⁹

Schools pupils currently attend

The parental telephone survey gathered responses from parents from all but two of the 31 schools identified as being Christchurch secondary schools

(table 3.2). The two schools for which no data were collected were Te Kura Kaupapa Maori O Te Whanau Tahī and Canterbury Christian College. Consequently, this research cannot make predictions about what would happen to the size of the rolls of these schools in later scenarios. Parents from Burnside High School were over-represented in the sample, based on the number of pupils who attended the school in 2006. On the other hand, only one participant was sampled from Hornby High School, meaning little if nothing can be said from this research about parents'

Table 3.2. School currently attended (eldest child in family)

Current school attended	Decile	Secondary school roll (July 2006)	School zone (Y/N)	Frequency	%	Cumulative frequency	Cumulative %
State schools							
Aranui High School	2	761	N	8	1.9	8	1.9
Avonside Girls' High School	6	1187	Y	22	5.2	30	7.1
Burnside High School	9	2605	Y	81	19.1	111	26.2
Cashmere High School	8	1606	Y	32	7.6	143	33.8
Christchurch Boys' High School	10	1339	Y	23	5.4	166	39.2
Christchurch Girls' High School	10	1089	Y	15	3.5	181	42.7
Hagley Community College	6	1545	Y	14	3.3	195	46.0
Hillmorton High School	5	778	N	7	1.7	202	47.7
Hornby High School	3	418	N	1	0.2	203	47.9
Linwood College	2	910	N	9	2.1	212	50.0
Mairehau High School	5	591	N	19	4.5	231	54.5
Papanui High School	6	1403	Y	26	6.1	257	60.6
Riccarton High School	7	935	Y	18	4.3	275	64.9
Shirley Boys' High School	6	1314	Y	34	8.0	309	72.9
Te Kura Kaupapa Maori O Te Whanau Tahī	3	11	N	0	0.0	309	72.9
Te Kura Kaupapa Maori O Waitaha	3	28	N	1	0.2	310	73.1
Unlimited Paenga Tawhiti	6	282	N	9	2.1	319	75.2
Private schools							
Christ's College	-	647	N	5	1.2	324	76.4
Rangi Ruru Girls' School	-	612	N	4	0.9	328	77.3
St Andrew's College	-	912	N	12	2.8	340	80.1
St Margaret's College	-	561	N	7	1.7	347	81.8
State-integrated schools							
Canterbury Christian College	7	37	N	0	0.0	348	81.8
Catholic Cathedral College	4	219	N	1	0.2	348	82.0
Christchurch Adventist School	7	63	N	1	0.2	349	82.2
Hillview Christian School	6	72	N	1	0.2	350	82.4
Marian College	7	442	N	10	2.4	360	84.8
Middleton Grange School	9	681	Y	13	3.1	373	87.9
Rudolf Steiner School	7	114	N	3	0.7	376	88.6
St Bede's College	9	788	N	18	4.3	394	92.9
St Thomas of Canterbury College	8	352	N	15	3.5	409	96.4
Villa Maria College	9	709	N	15	3.5	424	99.9*

* Percentages rounded to 1 decimal place, meaning the total cumulative percentage is 99.9 not 100.

schooling preferences at this school.

In light of the capacity issues highlighted above at Christchurch secondary schools, it is interesting to see the degree of choice being exercised by parents in Christchurch already. The first way this is examined is by looking at the proportions of parents surveyed who chose a school different to the nearest school.

Choosing the nearest school

As discussed previously, it is important to determine whether parents choose to send their children to the local school because current enrolment policy places such a high emphasis on guaranteeing parents who live near schools right of access. The question is to what extent proximity to school matters to parents, as shown by whether they access their nearest school or an adjacent school.

The first way this question is examined is by comparing the responses of parents to two survey questions, one which asked them which was the nearest secondary school to where they were living, and one which asked them which secondary school their child currently attends. The results are presented with overall estimates at the city level at the 95% confidence level. In this way, the proportion of parents who send their child to a school which is not their nearest school was determined (table 3.3).

The estimate shows with 95% certainty that 53% of parents already choose to send their child to a different school to the nearest school to where they live, with an associated margin of error of approximately +/- 4%. Also with 95% certainty, 46% of parents send their child to the same school as the one that was nearest to where they lived, with an associated margin of error of +/- 4%. These underlying proportions strongly suggest that many parents generally do not choose a school which is their nearest school.

Since the survey asked parents whether they knew which school was nearest to where they lived, choice of a school near to home was also analysed another way, using ArcGIS. The point location of each parent was used to calculate the distance between their residence and the nearest school. The distances were calculated using the straight line distance theorem, described in section 2. The proportion of parents in the sample whose children attended one of their nearest three schools was then determined. Pupils were apportioned to potential schools, controlling for their sex, so that boys could only attend boys' schools and girls could

only attend girls' schools. Pupils of either sex were considered able to attend co-educational schools. This independent method found that 53% of parents (225) send their child to one of their nearest three schools, meaning 47% do not. This is a slightly smaller proportion than the survey found, but still represents a large proportion of parents not choosing to send their child to one of their nearest three schools.

Stockwell and Duckworth's research of Christchurch parents also found that although the location of a school was frequently mentioned as a reason why parents chose a particular school, it was one of the less important attributes they favoured in a school. 57% of parents thought that it was important that the school was easy to get to, while only 50% thought that it was important that the school was close to home.⁴⁰

The survey results of this research were also analysed with estimates at the city level by household income at the 95% confidence level (table 3.3). Roughly similar proportions were found to be choosing a school different to the nearest school across each household income level. 52% of low-middle income parents (\$0 to \$70,000) were likely to send their child to a different school to the nearest school, with a margin of error of approximately +/- 7%. For high income parents (\$70,001 or more), the proportions were slightly less, at 49%. The margin of error was the same as for low income parents. No statistically significant relationship was found between household income level and the proportions of parents choosing to send their child to a school different to the nearest school ($p = 0.912$). That these proportions are so similar gives a good measure of confidence that the majority of parents in both income groups have either not felt compelled or have not considered sending their child to the nearest school.

Following the nearest school question, parents were asked whether they knew how far the nearest school to where they lived was from their home (table 3.4). The responses to this question show that the majority of parents lived between 1 km and 4 km from the nearest school. Specifically, the estimates at the city level showed that 33% of parents lived within 1 km to 2 km of the nearest school, with an associated margin of error of approximately +/- 5%, while 25% of parents thought that the nearest school was between 1 km to 2 km from home, with an associated margin of error of approximately +/- 4%.

When the results were stratified by household

income, a similar pattern was revealed for low-middle income parents (table 3.4). The findings showed that 37% of low-middle income parents (\$0 to \$70,000) lived within a distance of 1 km to 2 km of the nearest school, with an associated margin of error of approximately +/- 7%. Lower proportions of low-middle income parents, however, lived within 5 km to 6 km, or greater than 6 km of the nearest school, compared to high income parents. No statistically significant relationship was found between household income level and the proportions of parents living within a particular distance of the nearest school ($p = 0.356$).

Overall estimate	Preferred school	N	%	Margin of error	Lower limit	Upper limit
Overall estimate	Nearest school	205	45.7	4.0	41.7	49.7
	Different school	214	52.7	4.2	48.4	56.9
	Unsure/Don't know	5	1.7	1.6	0.1	3.2
	Total	424	100			
Low-middle income ($\leq \$70,000$)	Nearest school	90	47.4	7.1	40.2	54.5
	Different school	98	51.6	7.1	44.4	58.7
	Unsure/Don't know	2	1.1	1.5	0	2.5
	Total	190	100			
High income ($\geq \$70,001$)	Nearest school	96	49.7	7.1	42.6	56.9
	Different school	95	49.2	7.1	42.1	56.3
	Unsure/Don't know	2	1	1.4	0	2.5
	Total	193	100			
Not stated	Nearest school	19	46.3	15.5	30.4	62.3
	Different school	21	51.2	15.5	35.2	67.2
	Unsure/Don't know	1	2.4	4.8	0	7.4
	Total	41	100			

Results for test of relationship between household income level and whether children attended their nearest school:
Chi-square = 2.07, df = 6, $p = 0.912$

The extra distance was also calculated using ArcGIS, between the nearest school to home and the school that children currently attended, according to the survey data, for those children whose parents

sent them to a school different to the nearest school (table 3.5). 219 parents in the sample were in this situation. The findings showed that the median excess distance their children travelled was 0.6 km. Further, a quarter of the excess distances being travelled were over 1.2 km, with the maximum distance being 3 km. Overall then, 25% of the excess distances children in this sample were travelling were between 1.2 km and 3km to school each day.

Overall estimate	Distance	n	%	Margin of error	Lower limit	Upper limit
Overall estimate	< 1 km	86	21.3	4.3	17	25.6
	1-2 km	143	34.0	4.6	29.3	38.6
	3-4 km	108	24.6	4.3	20.2	28.9
	5-6 km	43	9.9	3.0	6.8	12.9
	> 6 km	32	6.9	2.4	4.4	9.3
	Don't know	11	3.4	2.1	1.3	5.8
	Total		423*	100		
Low-middle income ($\leq \$70,000$)	<1 km	39	20.6	5.8	14.8	26.5
	1-2 km	70	37	6.9	30.1	44
	3-4 km	50	26.5	6.3	20.1	32.8
	5-6 km	14	7.4	3.7	3.6	11.2
	> 6 km	11	5.8	3.3	2.5	9.2
	Don't know	5	2.6	2.3	0.3	5
Total		189**	100			
High income ($\geq \$70,001$)	< 1 km	40	20.7	5.7	15	26.5
	1-2 km	64	33.2	6.7	26.5	39.9
	3-4 km	44	22.8	5.9	16.8	28.8
	5-6 km	24	12.4	4.7	7.7	17.1
	> 6 km	17	8.8	4	4.8	12.8
	Don't know	4	2.1	2	0	4.1
Total		193	100			
Not stated	< 1 km	7	17.1	11.7	5	29.1
	1-2 km	9	22	12.8	8.7	35.2
	3-4 km	14	34.1	14.7	19	49.3
	5-6 km	5	12.2	10.1	1.7	22.7
	> 6 km	4	9.8	9.2	0.3	19.2
	Don't know	2	4.9	6.7	0	11.8
Total		41	100			

* One missing response reduced the sample from 424 to 423 for this question.

** One missing response reduced the sample from 190 to 189 for low-middle income parents answering this question.

Results for test of relationship between household income level and the distance between home and school:

Chi-square = 19.59, df = 18, $p = 0.356$

These may not appear huge distances, but in a city the size of Christchurch, even an extra 1 km further can increase the number of schools that can be accessed.

Table 3.5. Excess distance travelled between the nearest school and the school currently attended
(parents whose children attend a different school to the nearest school to where they live, $n = 219$)

Statistic	Distance (km)
mean	0.9
first quartile	0.3
median	0.6
third quartile	1.2
inter-quartile range	0.9
minimum	0.08
maximum	3.0
range	3.0
mode	0.3

Distance and access to the school currently attended

Choosing a different school to the nearest school is not the only indicator of access to schools. The distance between home and school can also be used as a measure of how much access parents have to different schools. The distances between parents' residence and the school their child currently attended were examined in several ways with ArcGIS.

The first issue examined the distance between home and the school children currently attended (table 3.6). The findings show that the median distance travelled by children from home to their current school is 2.8 km. A quarter of the distances children travelled to school were over 5.2 km. A reasonable proportion of parents are therefore already willing to send their children longer distances to school.

Table 3.6. Distance from home to school currently attended
($N = 424$)

Statistic	Distance (km)
mean	3.7
first quartile	1.6
median	2.8
third quartile	5.2
inter-quartile range	3.6
minimum	0.3
maximum	15.1
range	14.7
mode	1.8

To give an indication of how far it is necessary for children to travel before they can access a number of schools, the distance to access three schools from home was calculated (table 3.7). The findings show

that the median distance children have to travel to access three schools is 2.6 km from their home. A quarter of the distances children had to travel were less than 2.0 km. Nevertheless, a quarter of the distances children had to travel were more than 3.6 km in order to be able to access three schools.

Table 3.7. Feasibility of access to schools
(distance to reach the nearest three schools from home, $N = 424$)

Statistic	Distance (km)
mean	3.0
first quartile	2.0
median	2.6
third quartile	3.6
inter-quartile range	1.6
minimum	0.7
maximum	11.8
range	11.1
mode	5.4

Presented as cumulative percentages (table 3.8), approximately a quarter of all parents could access a school within 2 km of where they lived. It was not until a distance of 4 km from home was reached that a majority of parents could reach three schools.

Table 3.8. Proportion of parents with three schools within a radius of distance from their home ($N = 424$)

Distance (km)	%	Cumulative %
2 km	26.4	26.4
4 km	55.7	82.1
6 km	14.8	96.9
> 6 km	3.1	100.0

These findings show that parents would need to travel a distance greater than the median distance to the nearest school in order to access a range of schools. In light of the longer distances many parents already send their children to school, the message is that proximity is not necessarily a factor that appears to dictate which schools parents choose.

The effect of school enrolment zones on access to schools

Having established that a large proportion of parents already choose a school different to the nearest school, and are prepared to send their children a distance in order to access their current school, the amount of active choice is now considered with respect to school enrolment zones. The question is

whether parents are already choosing to access a school different to the school they are zoned for.

• **Do parents choose the school they are zoned for, for their children?**

In the survey, parents were asked to indicate whether they knew which state secondary school they were zoned for. The responses to this question were compared to the school their children actually attended in order to determine estimates for the proportion of parents at the city level who send their child to a school different to the one they thought they were zoned for (table 3.9).

The findings show that with 95% certainty, 53% of parents currently send their child to a different school to the one they are zoned for, with an associated margin of error of approximately +/- 4%. Approximately 39% of parents reported that they send their child to the state school that they thought they were zoned for, with a margin of error of approximately +/- 4%.

These findings should be treated with some care as a number of parents answered that they knew which school they were zoned for, but indicated a school which in reality does not have a zone. 31 parents surveyed responded this way. This is likely to be the case for many parents in any city where home enrolment zones operate, however, as parents have differing information levels about schooling.⁴¹ Hence, parents in the survey are probably reflecting what would be expected at the city level. When interpreting the results for this data, any inference should take into account that it reflects parents' perception of school zoning rather than what is the actual case.

The results were also stratified by household income (table 3.9). The findings show that with 95% certainty, 52% of low-middle income parents (\$0 to \$70,000) send their child to a school different to the one they responded that they were zoned for, with a margin of error of approximately +/- 7%. This was greater than the proportion of high income parents (\$70,000 or more), as only 46% send their child to a different school to the one they responded that they were zoned for, with a margin of error of +/- 7%. No statistically significant relationship was found between household income level and the proportions of parents choosing a different school to the one they responded that they were zoned for ($p = 0.454$). Nonetheless, similar proportions of parents in each

income group chose to send their children to the school they responded they were zoned for.

Table 3.9. Children attending the school they are zoned for (overall estimates at the city level and estimates at the city level stratified by household income with margins of error at the 95% confidence level)

	School Attended	n	%	Margin of error	Lower limit	Upper limit
Overall estimate	Zoned school	174	39.1	3.6	35.5	42.7
	Different school	213	53.0	3.7	49.3	56.8
	Unsure/ Don't know	37	7.9	2.6	5.3	10.4
	Total	424	100			
Low-middle income ($\leq \$70,000$)	Zoned school	79	41.6	7.0	34.5	48.7
	Different school	99	52.1	7.1	44.9	59.3
	Unsure/ Don't know	12	6.3	3.5	2.8	9.8
	Total	190	100			
High income ($\geq \$70,001$)	Zoned school	82	42.5	7.0	35.5	49.5
	Different school	89	46.1	7.1	39	53.2
	Unsure/ Don't know	22	11.4	4.5	6.9	15.9
	Total	193	100			
Not stated	Zoned school	13	31.7	14.4	16.8	46.6
	Different school	25	61.0	15.1	45.4	76.6
	Unsure/ Don't know	3	7.3	8.1	0	15.6
	Total	41	100			

Results for test of relationship between household income level and whether children attended the school they are zoned for:
Chi-square = 5.72, df = 6, $p = 0.454$

One reason why high income parents chose a different school to the zoned school less often may be that these parents have bought in a school zone. This means they would be more likely to choose the school they are zoned for. On the other hand, low-middle income parents are not as likely to be able to exercise residential choice, and may try to get their children into other schools if they do not think the school they are zoned for is the best one for their child. Irrespective of the difference in response across household income group, the direction of the responses is similar to the overall estimate at the city level. Consequently, according to the survey findings, it can be stated with a measure of certainty that the

majority of Christchurch parents actively choose a school different to the school they are zoned for.

This conclusion was also tested using ArcGIS. Firstly, from the survey results, 167 parents were eliminated who were not in a school enrolment zone. This meant 257 parents were identified as living in the zone of one of the nine state schools in Christchurch with a school enrolment zone.

The assignment of parents to school zones in ArcGIS was also corrected to account for each pupil's sex, since if the nearest school with a zone was a single-sex school this meant a pupil might not be able to be zoned for that school. For example, if a parent with a son was zoned for Christchurch Girls' High School according to where they live, but they chose to send their son to Christchurch Boys' High School, then they were not considered to be zoned for Christchurch Girls' High School. This meant that three parents of boys in the Avonside Girls' High School zone had to be excluded completely from the sub-sample of parents identified by ArcGIS who lived in a school zone. Consequently, the actual size of the sub-sample of parents who live inside a school zone is 254.

Taking into account the sex of each pupil, so that boys could only attend boys' schools, girls could only attend girls' schools, and pupils of either sex were considered able to attend co-educational schools, the pupils were then apportioned to potential schools they could attend. This exercise showed that 118 parents lived within the zone of a school that has a school enrolment zone. Thus, 46% of parents who live in a school zone chose a different school to the school they were zoned for, according to the calculations completed in ArcGIS. This is slightly less than the proportion of parents choosing a school according to the survey results, but is still quite a high proportion of the total number of parents who actually live within a school zone.

Map 3.1 illustrates the results of this exercise showing parents identified in ArcGIS who live in the zone of a state school, to account for the variation in responses from parents about whether they knew they lived in a school zone. The school parents were zoned for was taken to be the nearest state secondary school to where they lived within a school zone as identified in ArcGIS. The parents presented in map 3.1 are located according to the point-location of their home, and they are colour-coded according to

the school their child currently attends, which is also indicated using a colour code.

• Do school enrolment zones influence residential choice?

As well as investigating whether parents send their child to the school they are zoned for, estimates at the city level were determined for two questions which asked parents whether they knew about the school zone when they moved into their home, and how important the school zone was to them. If parents knew their home was in a school zone when they moved house, this would support the idea that parents might be exercising residential choice.

Table 3.10 shows that with 95% certainty, 79% of parents responding to this question, knew at the time they moved to their present home that it was in the zone of the school they indicated that they were zoned for. This proportion has an associated margin of error of approximately +/- 4%. It would seem, perhaps that a degree of residential choice is occurring already in Christchurch.

When the results were stratified by household income (table 3.10), the proportions of parents responding who knew their home was in the school zone at the time they moved were almost the same. With 95% certainty, and a margin of error +/- 6%, the proportions were 79% for low-middle income families and 80% for high income families. No statistically significant relationship was found between household income level and the proportions of parents who knew that their home was in the zone of the school they were zoned for ($p = 0.219$).

As discussed, there are many reasons affecting where people decide to live. A further question was asked to determine how important the school zone was to parents when they decided to move to their present home. Estimates at the city level for these results show that with 95% certainty, 66% of parents responding did not really consider the zone or thought it was not at all important, while 34% thought that it was quite or very important. The margin of error for both findings was approximately +/- 5% (table 3.11).

According to the parental survey, generally school zones do not seem to have been an important consideration for parents when they moved into their home. However, estimates with 95% certainty showed that 53% of parents sampled had also lived at their present address for over six years, with a

margin of error of approximately +/- 5%. Living at the present address for this amount of time would also mean these parents moved at a time when zoning regulations were more flexible. This reason perhaps accounts for why school zones matter less to the parents in this survey, even though residential choice can be seen through the high premiums on house prices in popular school zones and through the cases of zone cheats being discovered.

Table 3.10. At the time you moved to your present home, did you know it was in the (school zoned for) school zone? (overall estimates at the city level and overall estimates at the city level stratified by household income with margins of error at the 95% confidence level)

	Response	n	%	Margin of error	Lower Limit	Upper Limit
Overall estimate	Yes	304	78.7	4.3	74.4	83.0
	No	83	21.3	4.3	17.0	25.6
	Total	387	100			
Low-Middle Income (≤ \$70,000)	Yes	140	78.7	6.0	72.6	84.7
	No	38	21.3	6.0	15.3	27.4
	Total	178	100			
High income (≥ \$70,001)	Yes	137	80.1	6.0	74.1	86.2
	No	34	19.9	6.0	13.8	25.9
	Total	171	100			
Not stated	Yes	27	71.1	14.6	55.9	86.2
	No	11	28.9	14.6	13.8	44.1
	Total	38	100			

Results for test of relationship between household income level and whether parents knew when they moved to their present home whether it was in the zone of the school they were zoned for: Chi-square = 8.25, df = 6, $p = 0.219$

Nonetheless, estimates at the city level stratified by household income reveal an interesting difference between the responses of low-middle income parents and high income parents (table 3.11). The findings show that with 95% certainty 39% of high income parents thought the zone was quite or very important when they moved, with a margin of error of approximately +/- 8%. In contrast, a smaller proportion of low-middle income parents responding thought the zone was very or quite important, at 35%, also with a margin of error of approximately +/- 8%. No statistically significant relationship was found between household income level and the proportions of parents who thought the zone was quite or very important when they decided to move to their present home ($p = 0.302$). This small difference between the different groups of parents

may be illustrative of the reality that high income parents can, and do, buy in a school zone to access their preferred school.⁴²

Table 3.11. How important was the school zone when you decided to move to your present home? (overall estimates at the city level and overall estimates at the city level stratified by household income with margins of error at the 95% confidence level)

	Response	n	%	Margin of error	Lower limit	Upper limit
Overall estimate	Didn't consider/ Not important	191	65.8	4.8	61.1	70.6
	Quite/Very important	111	33.6	4.7	28.8	38.3
	Can't remember/ Don't know	2	0.6	0.8	0	1.4
	Total	304	100			
Low-Middle income (≤ \$70,000)	Didn't consider/ Not important	90	64.3	8.0	56.3	72.3
	Quite/Very important	49	35.0	7.9	27	43
	Can't remember/ Don't know	1	0.7	1.4	0	2.1
	Total	140	100			
High income (≥ \$70,001)	Didn't consider/ Not important	83	60.6	8.2	52.3	68.9
	Quite/Very important	54	39.4	8.2	31.1	47.7
	Total	137	100			
Not stated	Didn't consider/ Not important	18	66.7	18.1	47.7	85.7
	Quite/Very important	8	29.6	17.6	11.2	48
	Can't remember/ Don't know	1	3.7	7.3	0	11.3
	Total	27	100			

Results for test of relationship between household income level and how important parents considered the school zone when they decided to move to their present home: Chi-square = 17.27, df = 15, $p = 0.302$

In summary, school enrolment zones are meant to be the major mechanism by which school capacity is managed throughout the state school system. However, the findings of this part suggest that some parents do not want to send their child to the school they are zoned for. Out of zone enrolments and a degree of residential choice are already features of the "lived market" for schools in Christchurch.

Transport to school currently attended

One final issue to be discussed in relation to how accessible a school is, is how parents choose to transport their children to school. Research published

by the New Zealand Council for Educational Research (NZCER) in 2004 also looked at factors influencing parents' choice of school. The research found that not quite half the pupils walked or cycled to school. "The rest were almost evenly divided between those who travelled by car—with a few having their own vehicle—and those who travelled by public transport or school buses."⁴³

This research produced similar findings. Parents were asked in the survey how their children normally get to the school they currently attend (table 3.12). The proportions are presented at the 95% confidence level, with an associated margin of error approximately +/- 5%. The results showed that one quarter of parents choose to bus their children to school, making it the most popular form of transport. Walking, going with the parent and cycling were the next most popular ways pupils got to school.

Table 3.12. How does he/she normally get to school? School currently attended
(frequencies presented at the 95% confidence level, with an associated margin of error +/- 5%)

	Income						All	
	Not stated		Low-Middle income (≤ \$70,000)		High income (≥ \$70,001)		N	%
	n	%	n	%	n	%		
Bus	9	21.9	57	30.0	41	21.2	107	25.2
Cycle	5	12.2	29	15.3	28	14.5	62	14.6
Walk	7	17.1	37	19.5	49	25.4	93	22.0
Car-pool	7	17.1	17	9.0	14	7.3	38	9.0
With parent	11	26.8	32	16.8	38	19.7	81	19.1
Own car	2	4.9	13	6.8	21	10.9	36	8.5
Other	.	.	4	2.1	2	1.0	6	1.4
Don't know	.	.	1	0.5	.	.	1	0.2
Total	41	100	190	100	193	100	424	100

CONCLUSION

In conclusion, while the survey findings show that zoning does not constrain many Christchurch parents from sending their child to their preferred school, some still are. There is a mismatch occurring between the number of places available at schools and demand. The data presented here suggests that the majority of parents in Christchurch are already active choosers, not constrained by the distance of schools from home or by school zones.

There is a notable degree of active choice occurring already in Christchurch. The biggest implication of these findings is that the current enrolment policy for deciding places at over-subscribed state schools is not making best use of the capacity in the existing network of state schools. The majority of parents responding did not consider the zone important when they decided where to live, and they do not always choose the school they are zoned for. The result is some schools become stretched to beyond capacity by parents applying from out of zone, while others languish with spare teaching space. Schools in the latter situation are perhaps propped up in part by parents who send their child to these schools because zoning regulations prevent them from accessing their preferred school.

Access to schools can be constrained by formal regulations. Nevertheless, there is a tendency towards the majority of parents being active choosers. Even now, demand for certain schools has created problems which the current enrolment system cannot adequately handle, meaning that school network capacity is not being put to best use. The following sections examine what might happen if parents had fewer constraints on their choice of school.

ENDNOTES

- ¹ S. Waslander and M. Thrupp, "Choice, Competition and Segregation: An empirical analysis of a New Zealand secondary school market, 1990-1993," *Journal of Education Policy* 10, no. 1 (1995): 1-2, and H. Lauder et al., *Trading in Futures: Why markets in education don't work* (Buckingham: Open University Press, 1999), 84.
- ² Also note S. Gorard, "Well. That about wraps it up for school choice research: A state of the art review," *School Leadership and Management* 19, no. 1 (1999): 25-47, cited in J. Croft, "Positive Choice, No Choice or Total Rejection: The perennial problem of school catchments, housing and neighbourhoods," *Housing Studies* 19, no. 6 (2004): 936.
- ³ J. Croft, "Positive Choice, No Choice or Total Rejection: The perennial problem of school catchments, housing and neighbourhoods," 942.
- ⁴ T.J. Nechbya, "Introducing School Choice into Multidistrict Public School Systems," in *The Economics of School Choice*, ed. C.M. Hoxby (Chicago: National Bureau of Economic Research (NBER), University of Chicago Press, 2003), 145-194.
- ⁵ C.M. Hoxby, "Analysing School Choice Reforms that Use America's Traditional Forms of Parental Choice," in *Learning from School Choice*, eds. P.E. Peterson and B.C. Hassel (Washington D.C.: Brookings Institution, 1998), 135-137.
- ⁶ S. Burgess and A. Briggs, "School Assignment, School Choice and Social Mobility," *Working Paper*, 06/157 (Bristol: Centre for Market and Public Organisation (CMPO); University of Bristol, 2006).
- ⁷ S. Burgess and A. Briggs, "School Assignment, School Choice and Social Mobility," 23-24.
- ⁸ S. Burgess et al., "School Choice in England: Background facts," *Working Paper*, 06/159 (Bristol: Centre for Market and Public Organisation (CMPO); University of Bristol, 2006).
- ⁹ S. Burgess et al., "School Choice in England: Background facts," 11.
- ¹⁰ S.J. Bridges, "Pupil Mobility and Zoning: Out-of-synchronisation enrolments in primary schools located near high school 'home zones' - An initial survey" (Christchurch: Christchurch College of Education, 2002), 3. Scott McClay and Robin Harrison reported the following stories of residential choice and zone cheating: "Burnside High School employs inspectors to check on the validity of the addresses provided by applicants" ("Schools Firm on Zones," *The Christchurch Press*, 3 April 2002). A recently reported tactic used by parents to enrol their children into a school with an enrolment scheme is the staging of marriage break-ups, so that one of them can temporarily move into the home zone, before reconciling and moving back to their original dwelling after the child has been enrolled ("Parent in Break-up Tactics," *The Christchurch Press*, 6 August 2002)." S. McClay and R. Harrison, "The Impact of School Zoning on Residential House Prices in Christchurch, Paper presented at the 2003 meetings of the New Zealand Association of Economists" (2003), 5.
- ¹¹ The school zones which Scott McClay and Robin Harrison calculated the premium on house prices for were Burnside High School, Christchurch Boys' High School, Christchurch Girls' High School and Riccarton High School. The premiums in two areas where zones overlapped at the time of the research for Christchurch Boys' High School and Burnside High School, and Christchurch Boys' High School and Riccarton High School were also calculated. S. McClay and R. Harrison, "The Impact of School Zoning on Residential House Prices in Christchurch, Paper presented at the 2003 meetings of the New Zealand Association of Economists," 19, table 3.
- ¹² S. McClay and R. Harrison, "The Impact of School Zoning on Residential House Prices in Christchurch, Paper presented at the 2003 meetings of the New Zealand Association of Economists," 19-20.
- ¹³ S.J. Bridges, "Pupil Mobility and Zoning: Out-of-synchronisation enrolments in primary schools located near high school 'home zones' - An initial survey," 9.
- ¹⁴ "Zoning's Perverse Effects," *New Zealand Herald*, August 31, 2006; "Grammar Could Go to Court," *New Zealand Herald*, August 31, 2006.
- ¹⁵ R. Harker and R. Nash, "Academic Outcomes and School Effectiveness: Type 'A' and type 'B' effects," *New Zealand Journal of Educational Studies* 31, no. 1 (1996): 13-28; J. Hattie, "What is the Nature of Evidence that Makes a Difference to Learning? Presentation to the ACER *Using Data to Support Learning Research Conference*" (Camberwell, Victoria: Australian Council for Educational Research (ACER), 2005), 2.
- ¹⁶ C.E. Beeby, "New Zealand - An Example of Secondary Education without Selection," *International Review of Education* 2, no. 4 (1956): 396, cited in G. McCulloch, "Secondary School Zoning: The case of Auckland," in *Political Issues in New Zealand Education*, eds. J. Codd, R. Harker and R. Nash (Palmerston North: Dunmore Press, 1990), 283.
- ¹⁷ C.E. Beeby, "New Zealand - An Example of Secondary Education without Selection," 396.
- ¹⁸ G. McCulloch, "Secondary School Zoning: The case of Auckland," 285.
- ¹⁹ P.O.S. Skogland, August 30, 1973, cited in G. McCulloch, "Secondary School Zoning: The case of Auckland," 289.
- ²⁰ "Zoning's Perverse Effects," *New Zealand Herald*; N. LaRocque, "School Zoning: Locking kids out or letting them in?" (Wellington: Education Forum, 2005). Also see L. Gordon and G. Whitty, "Giving the 'Hidden Hand' a Helping Hand? The rhetoric and reality of neoliberal education reform in England and New Zealand," *Comparative Education* 33, no. 3 (1997): 453-467; and L. Gordon, "School Choice and the Social Market in New Zealand: Education reform in an era of increasing inequality," *International Studies in Sociology of Education* 13, no. 1 (2003): 17-34. Naturally, the debate about whether school rolls became polarised with the relaxing of school zone regulations in New Zealand is also relevant to this point, which is covered in appendix 1. Of these contributions several reviews and critiques are critical including: S. Gorard and J. Fitz, "Under Starters Orders: The established market, the Cardiff Study and the Smithfield Project," *International Studies in Sociology of Education* 8, no. 3 (1998): 299-316; M. Harrison, "Review of the Policy Recommendations from the Smithfield Project Reports" (Wellington: Ministry of Education, New Zealand, 1999), and E.B. Fiske and H.F. Ladd, "The Tomorrow's Schools Reforms: An American perspective," *IPS Policy Paper*, 6 (Wellington: Institute of Policy Studies; Victoria University of Wellington, 2000).
- ²¹ N. LaRocque and J. Kaye, "Enrolment Scheme Provisions in

- New Zealand," *Briefing Papers*, 3 (Wellington: Education Forum, 2002).
- ²² Education Act 1989, Part 2, S 11B.
- ²³ N. LaRocque, "School Zoning: Locking kids out or letting them in?" 2.
- ²⁴ Ministry of Education, "Maximum Roll Guidelines. Increase in maximum roll. Appendix 22A" (Wellington: Ministry of Education, New Zealand, 2007).
- ²⁵ Education Review Office, "Improving Schooling in Mangere and Otara" (Wellington: Education Review Office (ERO), 1996).
- ²⁶ R. Crawford, "Commentary," in *The Tomorrow's Schools Reforms: An American perspective*, ed. G. Sullivan, *IPS Policy Paper 6* (Wellington: Institute of Policy Studies; Victoria University of Wellington, 2000), 13; N. LaRocque, "School Zoning: Locking kids out or letting them in?" 8.
- ²⁷ H. Lauder et al., "Trading in Futures: The nature of choice in educational markets in New Zealand. Phase one, third report to the Ministry of Education," *The Smithfield Project* (Wellington: Ministry of Education, New Zealand, 1995), 55; H. Lauder et al., "The Creation of Market Competition for Education in New Zealand. Phase one, first report to the Ministry of Education in New Zealand," *The Smithfield Project* (Wellington: Ministry of Education, New Zealand, 1994), 65; H. Lauder et al., *Trading in Futures: Why markets in education don't work*, 136-137.
- ²⁸ H. Lauder et al., "The Creation of Market Competition for Education in New Zealand. Phase one, first report to the Ministry of Education in New Zealand," 57-58, 60-61 and M. Harrison, "Review of the Policy Recommendations from the Smithfield Project Reports," 56-57.
- ²⁹ H. Lauder et al., "Trading in Futures: The nature of choice in educational markets in New Zealand. Phase one, third report to the Ministry of Education," 55; H. Lauder, et al., *Trading in Futures: Why markets in education don't work*, 136-137.
- ³⁰ M. Harrison, "Review of the Policy Recommendations from the Smithfield Project Reports," 58.
- ³¹ R. Crawford, "Commentary," 13.
- ³² M. Harrison, "Review of the Policy Recommendations from the Smithfield Project Reports," 56.
- ³³ Education Forum, "Submission on the Education Amendment Bill, 2000" (Wellington: 2000), S 3.14.
- ³⁴ N. LaRocque, "School Zoning: Locking kids out or letting them in?" 1.
- ³⁵ Education Forum, "Submission on the Education Amendment Bill, 2000," S 3.21.
- ³⁶ Education Forum, "Submission on the Education Amendment Bill, 2000," S 3.15, 3.21-22.
- ³⁷ Ministry of Education, "Christchurch State Secondary Schools' Capacity," Media Request (Wellington: Data Management Unit, Ministry of Education, New Zealand, 2007).
- ³⁸ Ministry of Education, "Christchurch State Secondary Schools' Capacity."
- ³⁹ Cf. C. Taylor, "Hierarchies and 'Local' Markets: The geography of the 'lived' market place in secondary education provision," *Journal of Education Policy* 16, no. 3 (2001): 200; C. Taylor, *Geography of the 'New' Education Market* (Aldershot: Ashgate Publishing, 2002), 207.
- ⁴⁰ W. Stockwell and S. Duckworth, "'Drivers of Choice' and Customer Satisfaction with Christchurch Secondary Schools. Report prepared for the Ministry of Education" (Wellington: 1998), 38-40, 47.
- ⁴¹ M. Schneider, P. Teske and M.J. Marschall, *Choosing Schools. Consumer choice and the quality of American schools* (Princeton Et Oxford: Princeton University Press, 2000); M.J. Marschall, "The Role of Information and Institutional Arrangements in Stemming the Stratifying Effects of School Choice," *Journal of Urban Affairs* 22, no. 3 (2000): 349-50; P. Teske and M. Schneider, "What Research Can Tell Policymakers About School Choice," *Journal of Policy Analysis and Management* 20, no. 4 (2001): 613-15.
- ⁴² Some further data which may support this contention is the length of time that high income parents have lived at their present address. 71 parents of high income (16% of the sample) lived at their present address for less than five years, compared to 122 parents of high income (29% of the sample) who had lived 5 years or more at their present address.
- ⁴³ R. Hipkins and E. Hodgen, "National Survey of Secondary Schools" (Wellington: New Zealand Council for Educational Research (NZCER), 2004), 188.

SECTION 4

The Research Findings:

The implications of improving access to schools (if money was no object)

INTRODUCTION

The previous section illustrated the extent to which parents already choose different schools for their children to the one which is their nearest school or the one they are zoned for; irrespective of the constraints they face under the current education system. This section explores the issue of active choice much further by looking at the results of the question at the heart of this research: which school would parents want to send their child to, if obstacles that currently prevent them from accessing their preferred school were removed. The answer to this question is important because it helps to describe what the implications might be for capacity across the school network in Christchurch if parents had better access to schools. Consequently, one of the most vital questions to answer is how many parents might change their child's schools—the magnitude of change—if zoning was relaxed or an open enrolment scheme became reality.

Besides that, analysing the responses to this question can provide a tentative picture of what the geography of the "education market place" might look like in Christchurch under this access scenario. The key issues are: how parents who would choose a different school are distributed across Christchurch; which schools might gain or lose pupils; whether it is only certain schools that would gain or lose pupils between each other; and, if so, whether a structure is apparent in the way schools are gaining or losing pupils.

These questions may be answered by applying the geographic framework outlined in section 2, which describes the "lived market" for schools as a number of inter-related levels. Lastly, which schools parents

would prefer in the abstract is an important question to consider because the Smithfield project also examined it and found that parents had a reasonably good working knowledge of which schools they wanted to send their children to—contrary to the findings of Stephen Ball's research (see appendix 1).¹

This section is structured in the following way. The first part outlines how the dynamics of the "education market place" shall be analysed. The second part then discusses the research findings which show the magnitude of choice for schools in Christchurch, and describes which schools parents prefer. It then considers the gains and losses that would occur to school rolls, and which schools would gain or lose pupils from each other. Lastly, it looks at related issues such as the reasons why parents would favour the schools they would choose, as well as the feasibility of accessing a different school in terms of how much money parents would be willing to contribute towards the cost of their child's education. The findings presented in this section, and the one which follows, lead to a better informed discussion about the impact of schooling policies that give parents a better choice of schools.

THE GEOGRAPHIC FRAMEWORK OF ANALYSIS

Conceptualising patterns of pupils moving between schools

Before discussing the research findings, a method is needed for analysing the changes to school rolls and the relative movement between schools. It is also necessary to consider the impact that making it easier for parents to access their preferred schools would have on capacity in the Christchurch school

system. In section 2, the idea of the "competition space" was introduced as a way of breaking down the "lived market" for schools to see how parents and schools interact within a space (figures 2.1 and 2.2).² According to Chris Taylor, "competition spaces" may vary in size and character.³ For example, several "competition spaces" might be apparent within an institution space, and they may also overlap.

A basic spatial model of the "education market place" can be devised in the following way. Similar to the findings presented in section 3, the first assumption of the framework is that parents who choose to access a different school are choosing a school which is not their nearest school.⁴ The "education market place" may therefore be considered as a structure which is divided into various local arenas, where "the 'local' refers to a particular competition space and at a particular scale."⁵ This model works on the basis of proximity; i.e. that most schools are adjacent to each other, and movement between them will be based on the differing preferences of parents within the vicinity of those schools. Proximity is important because current New Zealand legislation requires schools to operate zones which are adjacent.⁶ Further, proximity can also influence whether a school might attract or lose pupils from other schools with adjacent or overlapping enrolment zones.⁷ Proximity also affects how accessible a school is for parents, given restraints like the distance from home to school and available forms of transport.

However, because some parents favour different types of schooling, not all movement between schools is based on schools being adjacent to one another.⁸ Schools like private schools, religious schools or single-sex schools might not necessarily be competing with neighbouring schools. When parents choose a different school, however, pupils may be moving between schools at a different level of the "education market place" than between two schools which are geographically adjacent.

What this means is that access to schools is either determined by local patterns of movement between different schools, or movement at different scales. In relation to this research, different patterns of movement between schools are likely to result when parents have better access to schools. This means some gains and losses are likely to be localised, but others may occur across town, and may also be determined by the kind of schooling that parents prefer.

Conceptualising gains and losses between schools

Having defined how patterns of movement might be structured, it is necessary to specify how these patterns can be identified. For example, one of the studies that looked at Christchurch, by Ainsworth and others, looked indirectly at this question by asking school principals to explain all the factors that might have led to changes in their school's roll over five years.⁹ This is, however, an imprecise way to determine what is influencing changes to a school's roll. Changes in demographics will cause some natural fluctuations, as well as the presence of adjacent schools and the regulatory environment structuring the allocation of pupils to schools. Moreover, the self-report methods used in Ainsworth's research are likely to miss indirect competition beyond the perception of principals.¹⁰

This research employs some methods developed by Taylor to look at the gains and losses schools might experience to the size of their rolls and the nature of the movement of pupils between schools. The methods are briefly described below, followed by an explanation of how they have been adapted to analyse some of the survey results presented in this section.

• Taylor's methods

Among the issues Taylor investigated was the degree of choice parents exercised for different schools, and more importantly how movement between schools could be interpreted in the various LEAs that he studied. The purpose of the latter technique is important for discerning how the "lived market" for schools might be organised. It is also important for the purposes of this research because quantifying and classifying the movement between schools can help to describe which schools and what kind of schooling is in demand. This is information which may be helpful for determining the best use of school capacity.

Working on the assumption stated above that any deviation from choice of the local school was evidence of active choice, Taylor posited that an active choice was made between two schools if one of those schools attracted pupils from the other school's 'local' pool of pupils.¹¹ By looking at each school in each LEA, Taylor generated a matrix of gains and losses of pupils between the schools. The

matrices provided a useful tool to pinpoint which schools appeared to be drawing on pupils in the same area. The patterns of movement were determined by identifying the gains and losses of pupils occurring between schools in an LEA.¹²

In this way, Taylor was able to calculate the size of the "competition spaces," the localised areas of interaction between parents and schools.¹³ The degree of competition was calculated as a ratio. Further, the amount of active choice was calculated by looking at the proportions of parents not choosing their nearest school in each LEA. Taylor found that the number of schools gaining pupils from each other was not dependent on the total number of schools in each LEA.

Next, Taylor looked at the characteristics of schools according to the size of their "competition space." The characteristics considered were:¹⁴

- exam performances;
- whether the schools were state or private; and
- the size of their catchments.

The findings showed that:

- the larger the space of interaction between schools and parents, the worse exam performance was;
- private schools tended to gain pupils from more state schools according to the size of the space of interaction between schools and parents; and
- the larger the area of that space the less competition there was between schools.¹⁵

The matrices on their own did not illustrate the spatial patterns of movement between schools. To see if there was an organising principle that determined which particular schools competed with one another, Taylor discussed three ways schools lost or gained pupils to each other. The focus was on the processes by which gains and losses occurred between schools. They included gains from:¹⁶

- the nearest alternative school;
- school exam results; and
- whether a school was a state school or a private school.

Taylor's results showed that nearest alternative school gains were based on rejecting the local school in favour of the nearest alternative school, meaning "competition spaces" formed distinct units in the "education market place." On the other hand, assuming parents wanted to get their children into a school that would help them to pass their exams, examination results indicated that schools could be sorted into distinct groups. Examination performance helped distinguish the pattern in which state schools in certain groups of schools gained or lost pupils. Furthermore, whether a school was a private or a state school indicated another way in which schools gained or lost pupils from each other. In other words, parents first chose the kind of schooling they desired and then selected their preferred school from the available schools that provided that kind of education; i.e. among groups of private schools, religious schools and so on. The latter type of gains of this nature suggested a flat space of interaction between schools and parents. In this way, several spaces were able to operate simultaneously and different patterns of movement between schools were apparent at different levels of the "education market place."

The last step in Taylor's analysis was to categorise each kind of space of interaction between schools and parents based on the patterns of exchange described above and the intakes of each school. This determined their relative importance in the "education market place." Three forms of interaction in space between schools and parents were identified:¹⁷

- one formed by private schools;
- one that sorted schools into distinct groups ("hierarchical "competition spaces"); and
- one that did not sort schools into distinct groups ("non-hierarchical "competition spaces").

• Adapting Taylor's methods

A major difference between Taylor's research and this research is that Taylor examined patterns and trends from one school year to the next with data for the entire population of schools, pupils and households in the LEAs of interest. Consequently, the range and depth of his analyses was much greater. This research is limited as it relies on a random telephone survey sample of the parents of

secondary school-aged children in Christchurch, to make predictions about what could happen under different enrolment scenarios. Further, a comprehensive database equivalent to the PLASC data is absent in New Zealand. This kind of database could supply information on school intakes and the background of pupils.

Consequently, this research can only take advantage of some of the methods Taylor used to analyse parents' preferences for schools; in particular with the application of a Geographic Information System (GIS). This is because only statistical estimates can be used to describe trends at the city level. The conclusions, therefore, that can be drawn from this research about the nature of the patterns of pupil movement between schools and the gains and losses to school rolls in Christchurch are more tentative. Lastly, this research only considers changes in one institution space, whereas Taylor's research had a comparative element as six LEAs were studied.

Notwithstanding these limitations, a number of Taylor's methods have been adapted:

- Firstly, the degree of choice exercised by parents is determined. This is accomplished by using estimates from the parental survey for the question which asked parents if they would change their child's secondary school.
- Secondly, absolute gains and losses to school rolls are estimated at the city level, based on which schools parents who would change their child's school preferred.
- Thirdly, the nature of the space of interaction between schools and parents is determined using data for the relative flow of pupils between schools.
- Fourthly, by looking at the relative flow of pupils between schools that would gain or lose pupils, the processes which structure parents' preferences can be discerned by two of the ways identified by Taylor.

From the findings of these various analyses, some conclusions can be drawn about the way parents choose schools in Christchurch and the geography of the "education market place," according to how movement between schools might be organised if parents could change the school they currently send their child to.

RESEARCH FINDINGS

SUMMARY OF KEY FINDINGS

- If parents could choose any state, state-integrated or private secondary school in Christchurch, and money was no object, with 95% certainty approximately 26% of parents would change their child's school, with an associated margin of error of approximately +/- 4%;
- Five secondary schools would be likely to experience a statistically significant gain to the size of their school roll; another eight schools would experience a gain or loss, but the change was not statistically significant; ten schools showed a statistically significant loss in demand; while four schools showed no change to the size of their roll;
- The main reasons why parents who would change their child's school preferred their favoured school were its values (95%) and reputation (91%), with an associated margin of error of approximately +/- 5%; and
- 78% of parents who would change their child's school in this access scenario also indicated that they would be willing to pay some amount towards the cost of sending their child to their preferred school, with an associated margin of error of approximately +/- 5%.

The first access scenario considered here asked parents to indicate which school out of any state, state-integrated or private school they would choose if they could choose a different school, and money was no object. The object of the question was to find out which schools parents would prefer, hypothetically speaking, if they were not constrained by school enrolment zones, limited places available at schools or the cost of education. The findings reveal which schools Christchurch parents favour.

The magnitude of change

Before asking which schools parents would choose for their children, the survey asked parents to respond to the following situation: "Just suppose

you could choose any school you wish and money was no object. That is any state, integrated or private school." Parents were then asked whether they would continue to send their child to the school they currently attended or if they would choose a different school.

Table 4.1. If money was no object, would you continue to send your child to their current school or would you choose a different school?

(overall estimates at the city level and overall estimates at the city level stratified by household income with margins of error at the 95% confidence level)

	Response	N		Margin of error	Lower limit	Upper limit
		N	%			
Overall estimate	Continue with current school	276	63.1	4.5	58.6	67.6
	Send to different school	106	26.3	4.1	22.2	30.5
	Undecided/ Don't know	42	10.6	3.0	7.6	13.6
	Total	424	100			
Low-middle income (≤ \$70,000)	Continue with current school	117	61.6	6.9	54.6	68.6
	Send to different school	50	26.3	6.3	20	32.6
	Undecided/ Don't know	23	12.1	4.7	7.4	16.8
	Total	190	100			
High income (≥ \$70,001)	Continue with current school	133	68.9	6.5	62.3	75.5
	Send to different school	48	24.9	6.1	18.7	31
	Undecided/ Don't know	12	6.2	3.4	2.8	9.7
	Total	193	100			
Not stated	Continue with current school	26	63.4	14.9	48	78.8
	Send to different school	8	19.5	12.3	6.8	32.2
	Undecided/ Don't know	7	17.1	11.7	5	29.1
	Total	41	100			

Results for test of relationship between household income level and whether parents would change school: Chi-square = 7.85, df = 6, $p = 0.249$

With 95% certainty, the estimated proportion of parents at the city level who would change their child's school was approximately 26%, with a margin of error of +/- 4% (table 4.1). On the other hand, with 95% certainty, approximately 63% of parents would continue to send their child to the same school, with a margin of error of +/- 5%.

Map 4.1 shows the point location of each parent surveyed and whether they would change

their child's school or not, or if they did not know. The most interesting feature of the map is the even distribution of parents who would change their child's school across the city; they are not confined to one or two suburbs.

Table 4.2. If you could choose any secondary school of your choice at all, and money was no object, which school would you most like to send your child to? (frequencies)

	Income						All	
	Not stated		Low-middle income (≤ \$70,000)		High income (≥ \$70,001)			
	n	%	n	%	n	%	n	%
State schools								
Burnside High School	1	12.5	1	2.0	2	4.2	4	3.8
Christchurch Boys' High School	.	.	.	.	2	4.2	2	1.9
Christchurch Girls' High School	.	.	.	.	1	2.1	1	0.9
Shirley Boys' High School	.	.	.	.	1	2.1	1	0.9
Unlimited Paenga Tawhiti	.	.	1	2.0	1	2.1	2	1.9
Private schools								
Christ's College	2	25.0	3	6.0	9	18.7	14	13.2
Rangi Ruru Girls' School	.	.	6	12.0	5	10.4	11	10.4
St Andrew's College	1	12.5	12	24.0	11	22.9	24	22.6
St Margaret's College	1	12.5	4	8.0	6	12.5	11	10.4
State-integrated schools								
Marian College	.	.	.	.	1	2.1	1	0.9
Middleton Grange School	2	25.0	2	4.0	1	2.1	5	4.7
St Bede's College	.	.	3	6.0	.	.	3	2.9
Villa Maria College	.	.	1	2.0	1	2.1	2	1.9
Don't know	1	12.5	17	34.0	7	14.5	25	23.6
Total	8	100	50	100	48	100	106	100

The results were also estimated at the city level, stratified by household income (table 4.1). The findings showed very similar proportions of parents would change their child's school if money was no object. With 95% certainty, for high income families (\$70,001 or more), the proportion was approximately 25%, with a margin of error of +/- 6%. Low-middle income families (\$0 - \$70,000) were slightly more likely to change schools, however, as approximately 26% of families would change their child's school, also with a margin of error of +/- 6%. There was no statistically significant relationship between choosing a different school and household income ($p = 0.249$).

The proportion of parents who would change their child's school across household income level is very similar to the proportion of parents who would change their child's schools at the city level. This indicates that the desire to change their child's school among parents of different household incomes is likely to be similar to the total population of parents. More importantly, the findings show that the magnitude of change under this scenario would be manageable. Not every parent would change their child's school. This point will be discussed in more detail later.

Schools parents would choose if money was no object

Parents who said they would change their child's school were then asked to indicate which school they would most like to send their child to, if they could choose any secondary school and money was no object. Because of the smaller proportion of parents answering this question, the results were not directly estimated at the city level. Nonetheless, descriptive frequencies are presented in table 4.2. They are also broken down by household income level.

Given the nature of the question, it is not surprising that parents chose the four Christchurch private schools with the greatest frequency. If money is no object, then private school fees disappear as a moderating factor on the demand side of education. The most popular school was St Andrew's College, chosen by 23% of parents who would change. Furthermore, the high proportion of parents choosing private schools for their children might also be explained by the fact that 12% of parents already send their children to private schools. State-integrated schools were the second most popular type of school. The greatest proportion of parents who would change their child's school (24%) did not know which school they would choose, even though they were willing to change schools.

Maps 4.2 and 4.3 use this data, and the data for the school currently attended, to show which school these parents send their child to and which ones they would choose if money was no object. A straight line, which also indicates the distance between home and school, shows which schools parents in the sample would choose. Distances were calculated using the straight line distance theorem in ArcGIS, described in section 2. Comparing map 4.2 and 4.3 immediately

shows the turn away from local schools. There is an influx of pupils who would attend the inner city private schools, travelling in some cases distances of over 5 km so that they could attend the school their parents prefer.

Gains and losses: Calculating the estimated change to school rolls

While interesting, the figures discussed so far only indicate the degree of choice and which schools are most popular. They say nothing about what gains these schools would actually make at the city level. The redistribution of pupils across the city was estimated with sample weights based on the July 2006 Christchurch secondary school roll returns. Limits of certainty at the 95% confidence level were calculated directly from the procedure to provide a range of plausible estimates for inferring to the Christchurch population (these procedures were described in more detail in section 2). These confidence intervals were applied to the survey results for parents who would change schools and which schools they would choose (table 4.2). This procedure produced upper and lower values for the estimated change to school rolls, allowing an estimated school roll to be calculated, which was the mean of the estimates. This figure was compared directly to the 2006 school roll to determine the estimated change to each school's roll.

It was assumed that parents who were undecided about whether they would choose a different school would continue to send their child to the same school. For the 24% of parents who would change their child's school but did not know which school they would choose, their children were redistributed to schools based on the choices made by the parents who did know.¹⁸ Given that this approach involved probabilities, the redistribution and the gains and losses to school rolls were calculated using two different statistical methods in order to be as certain as possible about what the likely impact of parents choosing a different school would be at the city level.¹⁹

The first method involved calculating a probability that parents who would change their child's school, but did not know which school they would choose, would select a particular school. The probability was calculated based on the choices of other parents whose children attended the same school as the parents who did not know which school they would

Table 4.3. Estimated change to school rolls for Christchurch secondary schools if parents could change schools and money was no object (multiple re-sampling strategy)

School	Percent roll achieving ≥ 80 NCEA credits (2004–05 mean)	Year 9–15 school roll (July 2006)	Estimated school roll	Roll stability index (estimated roll/ July 2006 roll)	% change	Change	Lower confidence interval of change	Upper confidence interval of change
Statistically significant gain								
St Andrew's College	44.8	912	2423	2.657	165.7	1511	795	2226
Rangi Ruru Girls' School	46.9	612	1486	2.428	142.8	874	378	1370
Christ's College	47.5	647	1388	2.145	114.5	741	362	1120
St Margaret's College	41.5	561	1230	2.193	119.3	669	252	1086
Middleton Grange School	39.9	681	988	1.451	45.1	307	92	522
Gain								
St Bede's	35.2	788	925	1.174	17.4	137	-14	288
Villa Maria College	41.6	709	828	1.168	16.8	119	-160	398
Marian College	35.8	442	523	1.183	18.3	81	-75	238
Unlimited Paenga Tawhiti	5.4	282	347	1.230	23.0	65	-22	152
Loss								
Burnside High School	37.9	2605	2514	0.965	-3.5	-91	-593	410
Christchurch Boys' High School	34.0	1339	1183	0.883	-11.7	-156	-597	286
Aranui High School	14.6	761	572	0.752	-24.8	-189	-432	54
Hillmorton High School	22.0	778	577	0.716	-28.4	-221	-502	59
Statistically significant loss								
St Thomas of Canterbury College	26.5	352	212	0.602	-39.8	-140	-229	-52
Mairehau High School	19.0	591	374	0.633	-36.7	-217	-347	-87
Riccarton High School	32.0	935	677	0.724	-27.6	-258	-456	-61
Papanui High School	17.4	1403	1136	0.810	-19.0	-267	-483	-52
Shirley Boys' High School	24.5	1314	883	0.672	-32.8	-431	-651	-211
Hagley Community College	17.2	1545	1106	0.716	-28.4	-439	-818	-61
Christchurch Girls' High School	44.6	1089	614	0.564	-43.6	-475	-765	-185
Cashmere High School	26.0	1606	1056	0.658	-34.2	-550	-816	-283
Avonside Girls' High School	26.8	1187	595	0.501	-49.9	-592	-844	-340
Linwood College	15.8	910	304	0.334	-66.6	-606	-902	-310
No change								
Te Kura Kaupapa Maori O Waitaha	-	28	-	-			no change	
Catholic Cathedral College	22.1	219	-	-			no change	
Hillview Christian School	-	72	-	-			no change	
Rudolf Steiner School	9.8	114	-	-			no change	
No data								
Hornby High School	14.2	418	-	-			no data	
Te Kura Kaupapa Maori O Te Whanau Tahī	-	11	-	-			no data	
Canterbury Christian College	30.7	37	-	-			no data	
Christchurch Adventist School	20.5	63	-	-			no data	
Unknown school			657*				397	917

Proportion roll achieving ≥ 80 NCEA credits data sourced from: New Zealand Qualifications Authority, National Qualifications Framework Statistics. Canterbury regional schools. School profiles (2007), <http://www.nzqa.govt.nz/qualifications/ssq/statistics/region-schools.do?year=2006&tr=14>.

No data: Either there was no or insufficient data to estimate variability around the point estimate.

* Estimated number of parents reporting they would change schools but uncertain of where they would send their child.

Table 4.4. Estimated change to school rolls for Christchurch secondary schools if parents could change schools and money was no object (proportional allocation strategy)

School	Percent roll achieving ≥ 80 NCEA credits (2004-05 mean)	Year 9-15 school roll (July 2006)	Estimated school roll	Roll stability index (estimated roll/ July 2006 roll)	% change	Change	Lower confidence interval of change	Upper confidence interval of change
Statistically significant gain								
St Andrew's College	44.8	912	2508	2.750	175.0	1596	1103	2089
Rangi Ruru Girls' School	46.9	612	1672	2.732	173.2	1060	630	1491
Christ's College	47.5	647	1557	2.406	140.6	910	576	1244
St Margaret's College	41.5	561	1452	2.588	158.8	891	510	1272
Middleton Grange School	39.9	681	1050	1.542	54.2	369	191	547
St Bede's College	35.2	788	984	1.249	24.9	196	53	340
Unlimited Paenga Tawhiti	5.4	282	381	1.351	35.1	99	11	186
Gain								
Villa Maria College	41.6	709	856	1.207	20.7	147	-96	390
Marian College	35.8	442	565	1.278	27.8	123	-34	280
Loss								
Aranui High School	14.6	761	572	0.752	-24.8	-189	-433	55
Christchurch Boys' High School	34.0	1339	1124	0.839	-16.0	-215	-535	106
Hillmorton High School	22.0	778	557	0.716	-28.4	-221	-503	60
Burnside High School	37.9	2605	2342	0.899	-10.1	-263	-635	109
Statistically significant loss								
St Thomas of Canterbury College	26.5	352	284	0.807	-39.8	-140	-229	-52
Mairehau High School	19.0	591	374	0.633	-36.2	-214	-346	-83
Riccarton High School	32.0	935	677	0.724	-27.2	-254	-453	-54
Papanui High School	17.4	1403	1136	0.810	-18.5	-260	-477	-43
Shirley Boys' High School	24.5	1314	883	0.672	-32.3	-425	-647	-203
Hagley Community College	17.2	1545	1106	0.716	-28.4	-439	-819	-59
Christchurch Girls' High School	44.6	1089	614	0.564	-43.6	-475	-766	-184
Cashmere High School	26.0	1606	1056	0.658	-34.2	-550	-817	-283
Avonside Girls' High School	26.8	1187	595	0.501	-49.9	-592	-845	-339
Linwood College	15.8	910	304	0.334	-66.4	-604	-903	-305
No change								
Te Kura Kaupapa Maori O Waitaha	-	28	-	-			no change	
Catholic Cathedral College	22.1	219	-	-			no change	
Hillview Christian School	-	72	-	-			no change	
Rudolf Steiner School	9.8	114	-	-			no change	
No data								
Hornby High School	14.2	418	-	-			no data	
Te Kura Kaupapa Maori O Te Whanau Tahī	-	11	-	-			no data	
Canterbury Christian College	30.7	37	-	-			no data	
Christchurch Adventist School	20.5	63	-	-			no data	

Proportion roll achieving ≥ 80 NCEA credits data sourced from: New Zealand Qualifications Authority, National Qualifications Framework Statistics. Canterbury regional schools. School profiles (2007), <http://www.nzqa.govt.nz/qualifications/ssq/statistics/region-schools.do?year=2006&tr=14>.
No data: Either there was no or insufficient data to estimate variability around the point estimate.

choose. The procedure was repeated multiple times in order to generate the estimated school roll and calculate confidence intervals around what the likely change might be. The findings of this analysis are presented in table 4.3. Schools are sorted by the kind of gain or loss they would experience. As an aid, map 4.4 uses the data in table 4.3 to illustrate the proportional change to the size of each school roll.

The second method involved allocating each school a share of the pupils whose parents did not know which school they would choose for their child proportionate to the observed gains and losses to school rolls estimated for the complete dataset. This approach is simpler than the re-sampling strategy above, but nonetheless provides a way of assessing the sensitivity of the re-sampling strategy for handling the "missing" responses for which schools parents would choose.

The findings of the proportional allocation strategy are presented in table 4.4. As an aid, map 4.5 uses the data in table 4.4 to illustrate the proportional change to the size of school roll.

For each gains and losses analysis, a significant gain or loss was determined by whether the range between the upper and lower confidence intervals crossed zero, meaning it was certain the estimate showed that a school would experience either an absolute gain or an absolute loss to its roll.

Gains and losses: Main findings

- **Methodological considerations relating to gains and losses analyses**

The first point to note is that the two strategies used to analyse the estimated change to school rolls revealed similar findings. For only one school, Unlimited Paenga Tawhiti, was a statistically significant net gain found under the proportional allocation strategy that was not found in the multiple re-sampling one, for allocating pupils where the preferred school was unknown. As the issue of missing responses further reduced the sample size of parents who knew the school they would change to, the findings generated by the multiple re-sampling strategy are more reliable. As a statistical technique it tends to be more conservative and therefore more likely to produce reliable trends. This is reflected in the size of the confidence intervals for the estimated gain or loss, as in some cases they are smaller

than the confidence intervals in the proportional allocation method.

It should be noted that the multiple re-sampling strategy could not allocate every parent who did not know which school they would send their child to because no other parents at those schools knew either, or they preferred to send their child to the same school (i.e. there was no conditional data to re-sample from). Consequently, 657 parents still fall within the category of "unknown school," an equivalent number to the roll of a medium-sized Christchurch secondary school.

For certain schools, mainly the smaller ones like the religious character state-integrated schools and the *kura kaupapa* Maori schools, there were small numbers of parents who said they would not change their child's school. Furthermore, for these schools, there were no other parents in the sample who indicated they would change to these schools. This means that the result for these schools is consistent with "no change." Because of the limited data for these schools, the precision of the estimates were unstable, meaning it was not possible to calculate estimates and confidence intervals for these schools. Furthermore, for three schools (Canterbury Christian College, Christchurch Adventist School and Te Kura Kaupapa Maori O Te Whanau Tahī), there was either no available data or very limited data and, therefore, no estimate or confidence intervals could be calculated for these schools either.

- **Schools that gained pupils**

As with the findings of any survey, it is important to emphasise that there is always a level of uncertainty when attempting to extrapolate results from the sample to the target population. That aside, the gains and losses analyses confirmed and quantified the results presented in table 4.2: private schools made the greatest gains and the gains they made were statistically significant at the city level. The findings show that the four private schools could expect their secondary school rolls to more than double in size if parents could choose any school for their child and money was no object. The greatest gain was made by St Andrew's College. Its secondary school roll would increase from 912 pupils to an estimated 2,423, with 95% certainty that the true underlying value for change lies between 795 and 2,226, according to the multiple re-sampling strategy.

Of all the other secondary schools in Christchurch, the only other schools that would experience a gain were the larger state-integrated schools, Marian College, Middleton Grange School, St Bede's College, and Villa Maria College. Only the gains for Middleton Grange School and St Bede's College were statistically significant, however, as determined by the various estimates. The specialist school, Unlimited Paenga, would also experience a gain; but it was only statistically significant using the proportional allocation strategy.

• Schools that lost pupils

Every regular Year 9 to 15 state school would be likely to lose pupils if parents could choose any secondary school and money was no object. A significant loss was estimated for nine of the regular state schools. The school that would experience the greatest loss was Linwood College. Its secondary school roll would decrease from 910 pupils to an estimated 304, with 95% certainty that the true underlying value for change lies between -902 and -310, according to the multiple re-sampling strategy. Avonside Girls' High School and Cashmere High School would also stand to lose several hundred pupils based on these estimates.

For four state schools, Aranui High School, Burnside High School, Christchurch Boys' High School and Hillmorton High School, the loss was not statistically significant, however, as the upper value for change indicated these schools could also gain pupils. Surprisingly, Christchurch Girls' High School would also experience a significant loss of pupils. According to the multiple re-sampling strategy, with 95% certainty the true underlying value for change lies between approximately -765 and -185, meaning Christchurch Girls' High School's roll would shrink from 1,089 pupils to 614. A state-integrated school, St Thomas of Canterbury College, was the only other school to experience a significant loss under both allocation strategies.

• Roll stability

A roll stability index was also calculated for each school (tables 4.3 and 4.4).²⁰ The index was calculated by dividing the estimated roll by the July 2006 roll. Schools with stable rolls have stability indices of approximately one; those with growing rolls have indices greater than one; while those with falling rolls

have indices below one. The private schools' indices are all greater than two, while significant losses at other schools are between 0.3 and 0.9 using both the multiple re-sampling strategy, and the proportional allocation strategy. Few schools have an index near one, and none of the values for the change to the size of their roll are statistically significant. The extreme range between the highest and lowest roll stability indices (2.323, multiple re-sampling strategy; 2.416, proportional allocation strategy) show that schools' rolls would not stay very stable under this kind of access scenario, even if the proportion of pupils moving between schools was not extremely large.

• Summary

In summary, the estimated change to school rolls shows that hypothetically speaking, private schools would be a popular choice of school. This finding should be tempered, however, by the reality that most children attend state schools and many families could not in actual fact afford to pay the fees of many private schools. Even if private education was affordable, the limited number of places at private schools would mean they could not access these schools. Some increased demand for state-integrated schools was also detected, but not to the same degree as private schools. A handful of state schools that currently operate a home zone, for which money is an object to access, might also experience a decline in the size of their rolls.

The estimated change to school rolls have also indicated which state schools in Christchurch are least preferred by parents. According to the findings of the multiple re-sampling strategy, Linwood College, followed by Avonside Girls' High School and Cashmere High School, would have the highest number of excess places. Nevertheless, even a school like Christchurch Girls' High School would have excess places.

Reasons why parents favoured schools

Parents who would send their child to a different school were also asked during the survey why they would favour their preferred school if money was no object. During the parental survey, nineteen characteristics of schools were put to these parents ($n = 77$) and they were asked to respond whether they agreed or disagreed that it was a reason why they favoured the school. The top ten reasons why parents

who would change their child's school favoured their preferred school were:

1. values (95%);
2. reputation (91%);
3. student discipline and behaviour (84%);
4. extra-curricular activities (78%);
5. class size (77%);
6. exam results (71%);
7. the teachers (70%);
8. range of subjects offered (68%);
9. school size (65%); and
10. sport (58%).

These proportions are presented at the 95% confidence level, with an associated margin of error of approximately +/- 5%.

Gains and losses between schools, if money was no object

The estimated change to school rolls has further illustrated the magnitude of change at the city level and which schools would be most popular. However, these findings do not show the amount of competition occurring between schools or which schools are gaining or losing pupils to each other. Analysing this data is the first step towards understanding the structure of the "education market place" that might exist between secondary schools.

• The amount of movement between schools

Taylor's research identified a number of different spaces of interaction between schools and parents because of the more diverse range of schools in England and a much larger sample of schools and institution spaces that could be analysed. Furthermore, because of the limited size of the survey sample for parents changing their child's school, only thirteen schools were identified as gaining pupils (see table 4.2). Consequently, this limits the possibility of discerning multiple spaces of interaction between parents and schools. Nevertheless, in this access scenario, one space of interaction between parents and the thirteen schools that would stand to gain pupils is apparent from the projections for the number of pupils moving between schools.

That there is only one space of interaction between parents and schools apparent from the data is further confirmed by the amount of movement that would occur between schools in Christchurch if parents could choose any school and money was no object. The average number of schools that gain from each other in this scenario is 3.5. This figure is the average of the total number of schools that each of the thirteen schools gained from. Expressed as a ratio against the total number of secondary schools in Christchurch (31 schools), the scale of the expected gains is not very great either, at 0.11. This is illustrated by the fact that if the ratio was 1.00 then it could be said that all schools within Christchurch could be expected to gain from each other.²¹

Estimates at the city level for the transfer of pupils between schools provides another way of looking at the scale of the gains made by schools which parents would prefer if money was no object. The estimates were determined using weightings applied in the previous analyses that were calculated from the Christchurch secondary school roll returns. A confidence interval and an associated margin of error have not been calculated for these projections. Applying the sampling weights to the raw figures for the number of pupils moving between schools helps to make them more closely reflect the estimates produced in the previous gains and losses analyses (which measured the absolute estimated change to school rolls).

Approximately 4,200 pupils in total could be expected to move between schools (table 4.5). The average size of all gains across each kind of secondary school in the space of interaction between parents and schools could be expected to be approximately 94 pupils. The minimum expected gain was 31, while the maximum was 365. Among both the state schools only and the state-integrated schools only, the average expected gain would be approximately 60 pupils, while for private schools the average expected gain would be approximately 119 pupils. Map 4.6 also uses the weighted values in table 4.5 to illustrate the estimated number of pupils that would transfer from school to school as well as the direction in which they move.

When individual schools are considered, the projected scale of the movement away is the greatest for Avonside Girls' High School, Cashmere High School and Linwood College, as they would each lose 350 or more pupils to other state, state-integrated

Table 4.5. Secondary schools which schools gain pupils from

Schools which gain pupils	Schools drawn from	Pupil gains (raw data)	Pupil gains (weighted data)	School type	Proportion roll achieving ≥ 80 NCEA credits (2004-05 mean)
State Schools					
Burnside High School					37.9
	Hagley Community College	1	110	State	17.2
	Papanui High School	1	54	State	17.4
	Shirley Boys' High School	1	39	State	24.5
	St Andrew's College	1	76	Private	44.8
	Total gains	4	279		
Christchurch Boys' High School					34.0
	Linwood College	1	101	State	15.8
	Mairehau High School	1	31	State	19.0
	Total gains	2	132		
Christchurch Girls' High School					44.6
	Burnside High School	1	32	State	37.9
Shirley Boys' High School					24.5
	Mairehau High School	1	31	State	19.0
Unlimited Paenga					5.4
	Burnside High School	2	64	State	37.9
Private Schools					
Christ's College					47.5
	Burnside High School	3	96	State	37.9
	Christchurch Boys' High School	3	174	State	34.0
	Linwood College	1	101	State	15.8
	Shirley Boys' High School	4	156	State	24.5
	St Thomas of Canterbury College	3	69	State-integrated	26.5
	Total gains	14	596		
Rangi Ruru Girls' School					46.9
	Avonside Girls' High School	4	216	State	26.8
	Burnside High School	1	32	State	37.9
	Cashmere High School	1	50	State	26.0
	Christchurch Girls' High School	1	73	State	44.6
	Hagley Community College	1	110	State	17.2
	Hillmorton High School	1	111	State	22.0
	Riccarton High School	2	104	State	32.0
	Total gains	11	696		
St Andrew's College					44.8
	Avonside Girls' High School	1	54	State	26.8
	Burnside High School	5	160	State	37.9
	Cashmere High School	4	200	State	26.0
	Christchurch Boys' High School	1	58	State	34.0
	Christchurch Girls' High School	1	73	State	44.6
	Linwood College	2	202	State	15.8
	Mairehau High School	1	31	State	19.0
	Papanui High School	1	54	State	17.4
	Riccarton High School	2	104	State	32.0
	Shirley Boys' High School	3	117	State	24.5
	St Thomas of Canterbury College	3	69	State-integrated	26.5
	Total gains	24	1122		
State-integrated schools					
St Margaret's College					41.5
	Avonside Girls' High School	5	270	State	26.8
	Burnside High School	1	32	State	37.9
	Christchurch Girls' High School	5	365	State	44.6
	Total gains	11	667		

Table 4.5. (cont.) Secondary schools which schools gain pupils from

Schools which gain pupils	Schools drawn from	Pupil gains (raw data)	Pupil gains (weighted data)	School type	Proportion roll achieving ≥ 80 NCEA credits (2004-05 mean)
Middleton Grange School					39.9
	Cashmere High School	1	50	State	26.0
	Christchurch Adventist School	1	63	State-integrated	20.5
	Christchurch Boys' High School	1	58	State	34.0
	Mairehau High School	1	31	State	19.0
	Shirley Boys' High School	1	39	State	24.5
	Total gains	5	241		
St Bede's College					35.2
	Cashmere High School	1	50	State	26.0
	Shirley Boys' High School	2	78	State	24.5
	Total gains	3	128		
Villa Maria College					41.6
	Burnside High School	1	32	State	17.2
	Hagley Community College	1	110	State	37.9
	Total gains	2	142		
TOTAL GAINS		81	4,210		

Proportion roll achieving ≥ 80 NCEA credits data sourced from: New Zealand Qualifications Authority, National Qualifications Framework Statistics. Canterbury regional schools. School profiles (2007), <http://www.nzqa.govt.nz/qualifications/ssq/statistics/region-schools.do?year=2006&tr=14>

or private schools. St Andrew's College would experience the greatest net gain of approximately 1,100 pupils, drawing on pupils from eleven state and state-integrated schools. Based on the projections, the popular state schools, Burnside High School, Christchurch Boys' High School and Christchurch Girls' High School could expect gains of between 30 and 300 pupils, but the gains are outweighed by estimated losses of between 290 and 511 pupils. The differences between the absolute and net gains and losses indicate that active choice could be expected to occur according to a structure (table 4.5). Ten schools, including state and state-integrated schools such as Avonside Girls' High, Cashmere High School and St Thomas of Canterbury College, show only movement away from the school. There are also six private and state-integrated schools that only experience a gain, including Christ's College, Middleton Grange School and St Bede's College. Six of the schools, however, including both state and private schools like Burnside High School, Christchurch Girls' High School and St Andrew's College experience both gains and losses. In one instance, a state school gained from a private school. Burnside High School would gain an estimated 76 pupils from St Andrew's College.

• **Patterns of movement between schools**

A remaining question then, is what patterns characterise the projected exchange of pupils between schools across this space of interaction. The different characteristics of between school processes that Taylor observed were according to nearest school gains, examination results and whether the school was a state or private school. The between school processes analysed in this research however, are in terms of nearest school gains and examination results. This is because there are fewer types of schools in the New Zealand school system, which means it is not possible to meaningfully examine between school processes according to school type.

Nearest school gains

Most parents are not choosing the next nearest school to the one they currently send their child to. The distances which parents are willing to have their children travel from home to their preferred school (if money was no object) are greater than the distances children travel to their current school (see maps 4.2 and 4.3). In map 4.3, only 6% of the parents displayed would have their children travel less than

2.5 km to school. Further, according to the distance calculations calculated in ArcGIS, using the straight line distance theorem described in section 2, the median home to school distance is 5.7 km (table 4.6), whereas the median distance from home to pupils' current school was 2.8 km.

In fact, the median for the excess distance travelled between the school children currently children attended and their parents' preferred school is 2.7 km (table 4.7). This means that in this scenario half of the distances that parents are willing to send their children to their preferred school are up to as much again as the distance they currently travel to school. The median distance between the schools parents are zoned for and their preferred school is also 3.1 km (table 4.8). Furthermore, a quarter of the distances parents who would change their child's school if money was no object are willing to send them to school are over over 6.9 km (table 4.6).

Table 4.6. Distance from home to preferred school if money was no object (n = 81)

Statistic	Distances (km)
mean	5.8
first quartile	4.3
median	5.7
third quartile	6.9
inter-quartile range	2.6
minimum	1.8
maximum	13.2
range	11.4

Table 4.7. Excess distance between the current school and the preferred school if money was no object (n = 81)

Statistic	Distances (km)
mean	2.6
first quartile	1.4
median	2.7
third quartile	3.5
inter-quartile range	2.1
minimum	0.03
maximum	6.7
range	6.7

Research published by the New Zealand Council for Educational Research (NZCER) in 2004 which looked at factors influencing parents' choice of school reported similar findings.²² The research

compared the actual distances pupils travelled to school with the distances parents were willing to let them travel. Over a quarter of the pupils were travelling less than 2 km to school. Pupils who attended the school of their first choice that was not the closest one to their home were more likely to be travelling between 5 km and 7 km. Pupils who attended state-integrated schools were more likely to travel distances greater than 5 km. The research concluded, "It seems that many parents would be prepared to have their children travel further to school than they currently do."²³

Table 4.8. Excess distance between the school zoned for and the preferred school if money was no object (n = 45)

Statistic	Distances (km)
mean	3.2
first quartile	2.3
median	3.1
third quartile	4.3
inter-quartile range	2.0
minimum	0.3
maximum	6.7
range	6.4

Examination results

Examination results are considered in terms of the average proportion of the school roll achieving 80 or more National Certificate of Educational Achievement (NCEA) credits for the years 2004 and 2005. The NCEA is the secondary school qualification offered in nearly all secondary schools in New Zealand. The 80 credit requirement is the minimum amount of credits that must be achieved in order to pass an NCEA Level at Years 11, 12 and 13. Using these proportions therefore provides an indication of the schools that achieve better or worse at the NCEA.²⁴

From table 4.5, it is clear that when parents change their child's school, and money is no object, parents choose schools which have a higher proportion of their roll achieving 80 NCEA credits. The only departure from this norm is the case of Christchurch Girls' High School. Parents would transfer their daughters out of this school to either St Andrew's College, Rangī Ruru Girls' School or St Margaret's College. The performance of these schools are only a few percentage points apart, suggesting that Christchurch Girls' High School is of

an equivalent status to the other schools that are gaining from it, according to this indicator.

The nature of the "education market place" if parents could change schools and money was no object

In summary, the patterns of movement across schools if parents could choose any school for their child, and money was no object, can be described as forming four distinct groups of schools (determined from the multiple re-sampling strategy – table 4.3).

- The first group of schools are the five schools that would make statistically significant pupil gains to the size of their school roll under this access scenario. These schools are all either private or state-integrated schools. They tend to have the highest exam scores. When the proportion of their pupils achieving 80 or more NCEA credits is averaged, the score is 44.1.
- The second group of schools is made up of the eight schools that registered either a non-statistically significant gain or loss. These schools are either state-integrated or state schools. These schools tend to do less well at the NCEA, on average, than those in the first group. When the proportion of their pupils achieving 80 or more NCEA credits is averaged, the score is 28.3.
- The third group of schools is made up of the ten schools that register a statistically significant loss. As in the second group, these schools are either state-integrated or state schools. They tend to do less well at the NCEA, on average, than either those schools in the first or second group. When the proportion of their pupils achieving 80 or more NCEA credits is averaged, the score is 25.0.
- The last group of schools is made up of the four schools whose rolls would be unlikely to change. There is limited data available for some of these schools. Therefore, it is not possible to accurately calculate the proportion of their pupils achieving 80 or more NCEA credits as an average. Of schools there is data for, however, the average proportion of their pupils achieving 80 or more NCEA credits is 16.0

The feasibility of accessing a school

• **Transport to school**

While knowing the magnitude of demand and the way movement might be structured between schools is helpful for understanding what might happen if parents were able to access the school of their first choice for their child, the accessibility of those schools is still a problem. If money was no object, parents would choose to send their children to school longer distances than they currently do. Parents who responded they would change their child's school and who knew which school they would send their child to were also asked to indicate how they would get their child to their preferred school (table 4.9).

Under this scenario, the majority of parents (51%) who responded to this question would bus their children to school. Approximately a fifth of parents would choose to transport them. About 12% of children would cycle, while 8% would drive themselves. No parents indicated that their children would walk to school. This is probably because the location of the schools parents preferred is in the inner city or across town from home, and longer distances would need to be travelled to get their children there. These proportions of the sample are presented at the 95% confidence level, with an associated margin of error of +/- 5%.

Table 4.9. How would you get your child get there? Preferred school if money was no object
(frequencies presented at the 95% confidence level, with an associated margin of error +/- 5%)

	Income						All	
	Not stated		Low-middle income (≤ \$70,000)		High income (≥ \$70,001)		n	%
	n	%	n	%	n	%		
Bus	3	42.8	15	46.8	21	55.3	39	50.7
Cycle	1	14.3	4	12.5	4	10.5	9	11.7
Walk	.	.	.	.	.	.	.	.
Car-pool	1	14.3	.	.	3	7.9	4	5.2
With parent	1	14.3	7	21.8	9	23.7	17	22.0
Own car	1	14.3	4	12.5	1	2.6	6	7.8
Other	.	.	1	3.2	.	.	1	1.3
Don't know	.	.	1	3.2	.	.	1	1.3
Total	7	100	32	100	38	100	77	100

Map 4.7, a variant of map 4.3, shows how parents would transport their children to school under this access scenario.

- **Distance from home to reach three secondary schools**

Similar to section 3, the feasibility of accessing a secondary school is examined in terms of how far parents would have to travel before they can access three schools (table 4.10). The distances, calculated in ArcGIS, show that the median distance parents have to travel to have a choice of three secondary schools is 2.2 km, while a quarter of the values for the distances parents would have to travel to reach three schools are greater than 3.4 km. The median distance is 2.2 km, which is 0.4 km less than the 2.6 km parents currently have to send their children to access three secondary schools. Expressed as cumulative percentages (table 4.11), 81% of parents would be able to choose between three schools at a distance of 4 km from their home; similar to the proportion of parents at the moment under the current situation (82%). The similar median distances and cumulative percentages reflect that the parents in this scenario have access to the same range of schools as considered in section 3.

Table 4.10. Feasibility of access to schools – distance to reach three schools from home (n = 81)

Statistic	Distance (km)
mean	2.8
first quartile	1.7
median	2.2
third quartile	3.4
inter-quartile range	1.7
mode	1.7
minimum	0.7
maximum	8.2
range	7.5

Table 4.11. Proportion of parents with three schools within a radius of distance from their home (n = 81)

Distance (km)	%	Cumulative %
2 km	40.7	40.7
4 km	40.7	81.4
6 km	14.8	96.3
> 6 km	3.8	100.0

- **Paying an amount towards the cost of education**

Although this scenario looked explicitly at which schools parents would choose hypothetically speaking, where money was no object, parents who would change their child's school, and knew which

school they would send them to, were also asked whether they would be willing to pay an amount to send their child to the school they preferred.

The results for the parents responding to this question showed that bearing their preferred school in mind, with 95% certainty, 78% of parents would be willing to pay some amount towards the cost of sending their child to their preferred secondary school, with an associated margin of error of +/- 5% (table 4.12). Approximately 20% were not willing and 3% did not know. These proportions are presented at the 95% confidence level, with an associated margin of error +/- 5%.

Table 4.12. Bearing (the preferred school) in mind, would you be willing to pay some amount towards the cost of sending your child to that school?
(frequencies presented at the 95% confidence level, with an associated margin of error +/- 5%)

	Income						All	
	Not stated		Low-middle income (≤ \$70,000)		High income (≥ \$70,001)		n	%
	n	%	n	%	n	%	n	%
Yes	5	71.4	22	68.8	33	86.8	60	77.9
No	2	28.6	10	31.2	3	7.9	15	19.5
Don't know	.	.	.	.	2	5.3	2	2.6
Total	7	100	32	100	38	100	77	100

Parents who were willing to pay an amount were then asked how much they would be willing, in principle, to contribute each year to be able to send their child to their preferred secondary school (table 4.13). The results showed that approximately 40% of parents who responded to this question were willing to contribute up to \$2,000 per year. A handful of parents who responded to this question were also willing to contribute amounts of \$4,000 or \$5,000 per year. 8% of parents were willing to contribute as much as over \$8,000 per year. A quarter of parents who answered this question, however, still responded that they did not know how much they were willing to contribute each year. These proportions are presented at the 95% confidence level, with an associated margin of error +/- 5%.

Map 4.8 illustrates the responses of parents described above, colour-coded according to the amount they were willing, in principle, to contribute towards the cost of sending their child to their preferred school. School zones are also displayed as a

point of contrast between how much money certain parents living within a school zone are prepared to pay to access their preferred school given a choice of any secondary school. No relationship is implied between location within a school zone and the cost parents are willing to pay. It is notable however, that parents willing to pay towards the cost of their child's schooling are distributed across the city, and not confined to wealthier suburbs of Christchurch.

The amount of money that the majority of parents are willing to pay is within range of the voluntary donations which most popular state schools ask from parents. Voluntary donations were in the order of \$300 per pupil in 2006. The amount parents were willing to pay is also enough money to cover most of, if not all, the costs of attending a state-integrated school at levels for attendance dues in 2006. Private schools, however, would remain inaccessible for most parents—without some other form of assistance—based on how much they were willing in principle to contribute to access their preferred school for their child, as private school fees in Christchurch were approximately \$12,000 to \$13,000 per year, per pupil, in 2006.

contributions or fees last year.²⁵ Only 5% of the country's 130 schools did not receive any parental contribution. Government funding for schools in 2006, by comparison was \$3.9 billion. Nevertheless, some principals have still commented that they could not afford to provide all of the educational opportunities they currently do without contributions from parents, such as providing enough teachers.²⁶ Figures also showed the discrepancy between the amounts raised from contributions from parents between high and low decile state schools.²⁷ In Christchurch, Aranui High School, a decile two school, earned revenue of \$6.6 million in 2006, amounting to \$8,727 per pupil. 11% of the revenue was from local funds. Burnside High School, a decile nine school, by contrast earned \$15.4 million, with spending being \$5,928 per pupil. Its proportion of revenue from local funds was 17.5%.

With some irony, it is clear many parents are already paying a premium for a 'free' state education. Every parent, irrespective of what kind of school they send their child to, pays for state education through general taxation. Those schools that collect voluntary donations, or that charge course fees or attendance dues, make those parents pay again for education. The cost is dramatically greater for parents who choose private education. In this way, schools whose pupils come from higher socio-economic status (SES) families can collect more money from parents than schools whose pupils come predominately from lower SES families. If this is the case then education should be funded so that school funding completely follows the child, rather than allowing financial discrepancies to persist between schools because of their differing SES intakes.

CONCLUSION

This section has examined what might happen if parents were allowed to choose any secondary school for their child out of all state, state-integrated or private schools in Christchurch, and if money was no object. It is a hypothetical scenario, intended to discover which schools parents would truly favour if restrictions which constrain access to secondary schools were lifted. Analysing the responses to this question has also allowed some observations to be made about the magnitude of change that would be expected to occur to school rolls under such an access scenario, and how movement between the schools parents would favour for their child is structured.

The magnitude of choice is substantial, as

Table 4.13. If you sent your child to (the preferred school), how much would you be willing, in principle, to contribute each year to be able to send your child to that school?
(frequencies presented at the 95% confidence level, with an associated margin of error +/- 5%)

	Income						All	
	Not stated		Low-middle income (≤ \$70,000)		High income (≥ \$70,001)		n	%
	n	%	n	%	n	%		
\$1000 or less	2	40.0	4	18.2	5	14.3	11	17.7
\$1001 - \$2000	.	.	7	31.8	7	20.0	14	22.5
\$2001 - \$3000	.	.	.	.	4	11.4	4	6.5
\$3001 - \$4000	.	.	3	13.6	3	8.6	6	9.7
\$4001 - \$5000	.	.	1	4.5	4	11.4	5	8.1
\$5001 - \$6000	.	.	.	.	.	.	.	.
\$6001 - \$7000	.	.	.	.	.	.	.	.
\$7001 - \$8000	1	20.0	.	.	.	.	1	1.6
Over \$8000	.	.	1	4.5	4	11.4	5	8.1
Don't know	2	40.0	6	27.3	8	22.9	16	25.8
Total	5	100	22	100	35	100	62	100

Information released by the Ministry of Education in August 2007, also showed that across the country twelve state and state-integrated schools received more than \$1 million each from parental

approximately one in four parents would choose a different school to the school their child currently attends, but not of a magnitude that the school system could not handle the number of children transferring between schools. Further, the number of schools gaining from each other and the scale of the gains is small. Reinforcing the lengths that parents will go to access the schools they prefer for their children are the longer distances parents are willing to send their children to school. In some cases this is the same distance again as to the nearest school, and often the distances are in excess of 5 km.

This section has also developed and applied a geographic framework for understanding the patterns of movement between schools by focusing on the interaction between parents and schools from their different vantage points in space.²⁸ In this section, the changes from the perspective of schools, in terms of gains and losses, have been used to understand the patterns of movement between schools, in order to help describe what kind of choices parents would make about schooling, if money was no object.

The small amount of movement between schools meant that only one distinct space of interaction between schools and parents (a "competition space") was discernable. Nevertheless, its structure indicated that schools would engage with the "education market place" at different scales. The characteristics of the space of interaction between schools and parents meant the schools formed four distinct groups of schools. This analysis of the nature of the "lived market" showed that private and state-integrated schools would experience the greatest demand, but also that the state schools with good NCEA performance would be likely to gain pupils, even from private schools. State-integrated schools would also prove popular for parents favouring this kind of education, and a degree of movement could be expected between schools of this type, under this scenario. The schools which would be in need of assistance have also been identified under this scenario, given the extent of the projected movement away from these schools and the fact that they would not gain pupils either.

In conclusion, this section has identified that there is some desire among Christchurch parents to access a different school for their child to their current school; that certain schools are favoured by more parents than others; and that choice would be manageable. Further, the geographic framework

has shown that parents are likely to choose different schools, moving away from some schools in favour of other schools. The between school processes, and the reasons why parents would favour a different school, suggests that this movement may be related to examination performance and the reputation and values of the schools parents would prefer. The framework has also illustrated the nature of the gains and losses between all schools. Importantly, conclusions have been drawn about the geography of improving access to schools through an approach other than the lens of class analysis. Nevertheless, the hypothetical access scenario tested in this section has limitations for understanding the actual implications of better access to schools for school network capacity, as in reality parents' choices would still be constrained by matters like enrolment regulations, money and distance; even if parents had better opportunity to choose their preferred school. The next section takes up examination of a more realistic school access scenario.

ENDNOTES

- ¹ H. Lauder et al., "Trading in Futures: The nature of choice in educational markets in New Zealand. Phase one, third report to the Ministry of Education," *The Smithfield Project* (Wellington: Ministry of Education, New Zealand, 1995); S.J. Ball, R. Bowe and S. Gewirtz, "Circuits of Schooling: A sociological exploration of parental choice of school in social-class contexts," in *Education Policy and Social Class*, ed. S.J. Ball (London & New York: Routledge, 2006).
- ² C. Taylor, "Hierarchies and 'Local' Markets: The geography of the 'lived' market place in secondary education provision," *Journal of Education Policy* 16, no. 3 (2001): 199.
- ³ C. Taylor, *Geography of the 'New' Education Market* (Aldershot: Ashgate Publishing, 2002), 90.
- ⁴ C. Taylor, "Hierarchies and 'Local' Markets: The geography of the 'lived' market place in secondary education provision," 202.
- ⁵ C. Taylor, *Geography of the 'New' Education Market*, 90.
- ⁶ Education Act 1989, Part 2, S 111 (c).
- ⁷ C. Taylor, *Geography of the 'New' Education Market*, 93-94.
- ⁸ C. Taylor, "Hierarchies and 'Local' Markets: The geography of the 'lived' market place in secondary education provision," 199-200.
- ⁹ V. Ainsworth et al., "Tomorrow's Schools and Freedom of Choice - A Recipe for Disaster. A study of the effects of roll changes on Christchurch state schools" (Christchurch: Education Policy Research Unit, University of Canterbury, 1993), 30.
- ¹⁰ C. Taylor, *Geography of the 'New' Education Market*, 94.
- ¹¹ C. Taylor, *Geography of the 'New' Education Market*, 95.
- ¹² Taylor established surrogate 'local' catchment intakes for each school using a GIS to determine which school was the local school for each pupil. C. Taylor, *Geography of the 'New' Education Market*, 91.
- ¹³ C. Taylor, *Geography of the 'New' Education Market*, 96-97.
- ¹⁴ C. Taylor, *Geography of the 'New' Education Market*, 99.
- ¹⁵ C. Taylor, *Geography of the 'New' Education Market*, 100-101.
- ¹⁶ C. Taylor, *Geography of the 'New' Education Market*, 101-103.
- ¹⁷ C. Taylor, *Geography of the 'New' Education Market*, 112-113.
- ¹⁸ R.J.A. Little and D.B. Rubin, *Statistical Analysis with Missing Data* (New York: Wiley, 2002).
- ¹⁹ Cf. S. Lohr, *Sampling: Design and Analysis* (Pacific Grove: Duxbury Press, 1999).
- ²⁰ Cf. D. Hughes et al., "Values or Social Class: Competing explanations for changing secondary school rolls in a market context. Phase two, seventh report to the Ministry of Education," *The Smithfield Project* (Wellington: Ministry of Education, New Zealand, 1998), 15.
- ²¹ C. Taylor, *Geography of the 'New' Education Market*, 97.
- ²² R. Hipkins and E. Hodgen, "National Survey of Secondary Schools" (Wellington: New Zealand Council for Educational Research (NZCER), 2004), 187.
- ²³ R. Hipkins and E. Hodgen, "National Survey of Secondary Schools," 187.
- ²⁴ Note that where some pupils sit alternative qualifications to the NCEA, like the Cambridge International Exams or the International Baccalaureate, it may reduce the proportion of pupils who sit NCEA achievement or unit standards.
- ²⁵ J. Harris, "High-earning schools revealed," *New Zealand Education Review* 12, no. 33 (2007): 1-5.
- ²⁶ J. Harris, "High-earning schools revealed."
- ²⁷ J. Harris, "High-earning schools revealed," 5.
- ²⁸ C. Taylor, *Geography of the 'New' Education Market*, 12.

SECTION 5

The Research Findings:

The implications of improving access to state schools

INTRODUCTION

The previous section examined which schools parents would choose for their child, if they could choose any secondary school in Christchurch, and if money was no object. This access scenario, however, does not really reflect reality, as parents will not always be able to access their first choice of school for a variety of reasons. For example, it is likely that there would not be enough spaces available at the most popular schools for every parent who wants to send their child to one of these schools. Schools can only expand their capacity as quickly as they can supply classrooms and teachers; or as much as they are allowed to by central government. A school might also reject a pupil's application, or parents who prefer a private school for their child might not be able to afford the fees.

In this section, the research measures how many parents would change schools in a more realistic situation where limitations were placed on the kind of school parents could access. This is important, because the number of parents who might change schools in a situation of open enrolment hinges on how feasible it is to access a different school, as well as which schools parents believe they can reasonably access.¹ In this research, a more realistic assessment of which schools parents might consider feasible to access is carried out by limiting parents' choices to state secondary schools, excluding from consideration both private and state-integrated schools. Hence, this section also estimates how many pupils state schools might have to accommodate in a situation where parents would have better access to the state school they prefer for their child.

RESEARCH FINDINGS

- If parents could choose any state secondary school in Christchurch, with 95% certainty, approximately 10% of parents would choose to change their child's school, with an associated margin of error of approximately +/- 3%;
- Two state secondary schools would be likely to experience a statistically significant gain to the size of their school roll; another fourteen schools would experience a gain or loss, but the change was not statistically significant; three schools showed a statistically significant loss in demand; and eleven schools showed no change to the size of their roll;
- The main reasons why parents who would change their child's school preferred their favoured state school were its reputation (88%) and values (85%), with an associated margin of error of approximately +/- 5%; and
- The median distance travelled by children of parents who would change their child's school in this access scenario between home and their parents' preferred state school, is 5.3 km (greater than the median distance between home and the school pupils currently attend (2.8 km)).

SUMMARY OF KEY FINDINGS

This section follows a similar structure to the previous section, applying the same framework and techniques to analyse what might happen if parents could change their child's school and choose any state secondary school. The first part discusses the research findings which show how many parents in Christchurch would choose a different state school, and describes which state schools parents prefer. Following this, the second part considers the gains and losses that would occur to school rolls, and which schools would gain or lose from each other, as well as the feasibility of accessing a different state school. In this way, the nature of the "lived market" for state schools is determined. This part also considers the reasons why parents favour the school they would choose. Finally, this section concludes with a discussion of how the expected demand for state schools might be effectively managed in a more realistic situation where parents had better access to their preferred state school.

The magnitude of change

Before asking parents which schools they would change where they send their child to, the survey asked parents if they would continue to send their child to the same school, or whether they would choose a different school, if they could choose any state secondary school (table 5.1). With 95% certainty, the estimated proportion of parents at the city level who would change their child's school was approximately 10%, with a margin of error of +/- 3%.

The proportion of parents who would change their child's school is much less than in the previous scenario where parents faced fewer constraints on their choice of school. Map 5.1 shows the point location of each parent surveyed and whether they would change their child's school or not, or if they did not know. Similar to map 4.1, map 5.1 shows the distribution of parents who would change their child's school is evenly spread across the city.

The results were also estimated at the city level, stratified by household income (table 5.1). The findings showed very similar proportions of parents would change their child's school if they could choose any state secondary school. With 95% certainty, for high income families (\$70,001 or more), the proportion was approximately 9%, with a margin of error of +/- 4%. On the other hand, approximately 11% of low-

middle income families (\$0-\$70,000) would change schools, with a margin of error of +/- 4%. This meant low-middle income parents might be slightly more likely to change schools than high income parents. No statistically significant relationship was found between choosing a different school and household income ($p = 0.411$).

Table 5.1. If you could choose any state secondary school in the state system out of all the ones in Christchurch, would you continue to send your child to (the current school) or would you choose a different school?

(overall estimates at the city level and overall estimates at the city level stratified by household income with margins of error at the 95% confidence interval)

Overall estimate	Preferred school	n	%	Margin of error	Lower limit	Upper limit
Overall estimate	Current school	360	84.2	3.7	80.4	87.9
	Different state school	40	10.0	3.2	6.8	13.2
	Undecided/ Don't know	21	5.8	2.2	3.6	8
	Total	421*	100			
Low-middle income (≤ \$70,000)	Current school	161	85.4	5.1	80.1	90.3
	Different state school	20	4.2	2.9	6.2	15
	Undecided/ Don't know	8	4.2	2.9	1.3	7.1
	Total	189	100			
High income (≥ \$70,001)	Current school	167	87	4.8	82.2	91.8
	Different state school	17	8.9	4	4.8	12.9
	Undecided/ Don't know	8	4.2	2.8	1.3	7
	Total	192	100			
Not stated	Current school	32	80	12.6	67	93
	Different state school	3	7.5	8.3	0	16
	Undecided/ Don't know	5	12.5	10.4	1.8	23.2
	Total	40	100			

* Three responses were reported missing to this question, reducing the sample size from 424 to 421.

Results for test of relationship between household income level and whether parents would change school: Chi-square = 9.28, df = 9, $p = 0.411$

The amount of change is similar to reported rates of pupil transience, which is the number of pupils transferring out of school in a school year. In 2004, the national median rate of transience was reported to be 10% of the total school roll.²

If 10% of parents changed the school their child attends from one to another, this would have consequences for managing the capacity of state schools in Christchurch. Based on the total number of pupils enrolled in Christchurch secondary schools in July 2006, 10% of the total state secondary school population is approximately 2,300 pupils. This means the approximate number of pupils who would transfer is almost equivalent to the size of the largest state school, Burnside High School, or the capacity of three to four of the smaller state schools.

State schools parents would choose

During the survey, parents who said they would change their child's school were then asked to indicate the state school they would most like to send their child to, if they could choose any state secondary school in the state system out of all the ones in Christchurch. Because of the small proportion of parents answering this question, the results were not directly estimated at the city level for this question. Nonetheless, descriptive frequencies are presented below in table 5.2. They are also broken down by household income level.

Table 5.2. Which state school would you most like to send your child to? (frequencies)

	Income						All	
	Not stated		Low-middle income (\$≤70,000)		High income (\$≥70,001)		n	%
	n	%	n	%	n	%		
Avonside Girls' High School	.	.	1	5.0	1	5.9	2	5.0
Burnside High School	1	33.3	1	5.0	6	35.3	8	20.0
Christchurch Boys' High School	2	66.7	7	35.0	4	23.5	13	32.5
Christchurch Girls' High School	.	.	7	35.0	3	17.6	10	25.0
Riccarton High School	.	.	2	10.0	1	5.9	3	7.5
Te Kura Kaupapa Maori O Te Whanau Tahī	.	.	1	5.0	.	.	1	2.5
Unlimited Paenga Tawhiti	.	.	1	5.0	1	5.9	2	5.0
Don't know	.	.	.	.	1	5.9	1	2.5
Total	3	100	20	100	17	100	40	100

The most popular state schools were the schools with the highest NCEA performance; Christchurch

Boys' High School, Christchurch Girls' High School and Burnside High School (see table 5.3). 33% of parents responding to this question preferred Christchurch Boys' High School, 25% preferred Christchurch Girls' High School and 20% preferred Burnside High School. The only other demand picked up, in minor proportions, was for specialist schools within the state sector; Unlimited Paenga Tawhiti and one of the *kura kaupapa* Maori schools, Te Kura Kaupapa Maori O Te Whanau Tahī.

There were ten state schools that no parents said they would prefer to send their child to over their current school. A finding from one of the questions asked in the choice of any school if money was no object access scenario perhaps sheds light on why these schools were not favoured. When asked why parents would not change their child's school, if money was no object, the reason 85% of parents agreed with, with 95% certainty and a margin of error of +/- 5%, was that they believed that their child was already at the best school for them. What is more, the majority of parents whose children attended those ten state schools did not want to change their child's state secondary schools. If parents did not change their child's school it suggests they are largely happy with the state school their child attends relative to the other state schools which are currently available.

Map 5.2 also uses the data in table 5.2, as well as data for the school children currently attended, to show which schools parents who would change their child's school currently send their children to, and which ones they would choose if they could choose any state secondary school. A straight line, which also indicates the distance between home and school, shows which schools parents in the sample would choose. Distances were calculated using the straight line distance theorem in ArcGIS, described in section 2. Similar to the comparison made between maps 4.2 and 4.3 in the previous section, map 5.2 shows the trend that parents prefer to send their children to state schools different to their local school. With the exception of the parents who would change from Burnside High School to Riccarton High School, some parents are willing to send their children in excess of 4 km so that they can attend the state school their parents prefer.

Gains and losses: Calculating the estimated change to school rolls

As for each of the schools in the previous section, the

Table 5.3. Estimated change to school rolls for Christchurch state secondary schools if parents could change schools and they could choose any state secondary school

School	Percent roll achieving ≥ 80 NCEA credits (2004-05 mean)	Year 9-15 school roll (July 2006)	Estimated school roll	Roll stability index (estimated roll/ July 2006 roll)	% change	Change	Lower confidence interval of change	Upper confidence interval of change
Statistically significant gain								
Christchurch Boys' High School	34.0	1339	2084	1.556	55.6	745	302	1188
Christchurch Girls' High School	44.6	1089	1537	1.411	41.1	448	101	796
Gain								
Burnside High School	37.9	2605	3006	1.154	15.4	401	-32	834
Riccarton High School	32.0	935	1038	1.110	11.0	103	-4	211
Te Kura Kaupapa Maori O Te Whanau Tahī	-	11	102	9.273	827.3	91	-11	290
Unlimited Paenga Tawhiti	5.4	282	349	1.238	23.8	67	-21	155
Loss								
Avonside Girls' High School	26.8	1187	1162	0.979	-2.1	-25	-351	300
Villa Maria College	41.6	709	666	0.939	-6.1	-43	-135	50
Middleton Grange School	39.9	681	633	0.930	-7.0	-48	-151	55
Mairehau High School	19.0	591	532	0.900	-10.0	-59	-142	25
Shirley Boys' High School	24.5	1314	1206	0.918	-8.2	-108	-235	19
Christ's College	47.5	647	521	0.805	-19.5	-126	-381	129
Papanui High School	17.4	1403	1249	0.890	-11.0	-154	-329	22
St Margaret's College	41.5	561	403	0.718	-28.2	-158	-361	46
Hagley Community College	17.2	1545	1333	0.863	-13.7	-212	-507	84
St Andrew's College	44.8	912	689	0.755	-24.5	-223	-458	11
Statistically significant loss								
St Thomas of Canterbury College	26.5	352	283	0.804	-19.6	-69	-130	-7
Cashmere High School	26.0	1606	1364	0.849	-15.1	-242	-447	-37
Linwood College	15.8	910	611	0.671	-32.9	-299	-598	-1
No change								
Aranui High School	14.6	761	-	-	-	-	no change	-
Hillmorton High School	22.0	778	-	-	-	-	no change	-
Hornby High School	14.2	418	-	-	-	-	no change	-
Te Kura Kaupapa Maori O Waitaha	-	28	-	-	-	-	no change	-
Rangi Ruru Girls' School	46.9	612	-	-	-	-	no change	-
Catholic Cathedral College	22.1	219	-	-	-	-	no change	-
Christchurch Adventist School	20.5	63	-	-	-	-	no change	-
Hillview Christian School	-	72	-	-	-	-	no change	-
Marian College	35.8	442	-	-	-	-	no change	-
Rudolf Steiner School	9.8	114	-	-	-	-	no change	-
St Bede's College	35.2	788	-	-	-	-	no change	-
No data								
Canterbury Christian College	30.7	37	-	-	-	-	no data	-

Proportion roll achieving ≥ 80 NCEA credits data sourced from: New Zealand Qualifications Authority, *National Qualifications Framework Statistics. Canterbury regional schools. School profiles* (2007), <http://www.nzqa.govt.nz/qualifications/sss/statistics/region-schools.do?year=2006&tr=14>.

No data: either there was no data or insufficient data to estimate variability around the point estimate.

gain or loss that each state school would be expected to experience to its school roll was also estimated at the city level. The redistribution of pupils across the city was estimated with sample weights based on the July 2006 Christchurch secondary school roll returns. Limits of certainty at the 95% confidence level were calculated directly from the procedure to provide a range of plausible estimates for inferring to the Christchurch population (these procedures were described in more detail in section 2). These confidence intervals were applied to the survey results for parents who would change their child's school, and to which schools they would choose (table 5.2). This procedure produced upper and lower values for the estimated change to school rolls, allowing an estimated school roll to be calculated, which was the mean of the estimates. This figure was compared directly to the 2006 school roll to determine the estimated change to each school's roll.

Again, for this access scenario, it was assumed that parents who were undecided about whether they would choose a different school would continue to send their child to the same school. In this scenario, there was only one parent who would change their child's school but did not know which state school they would choose. This parent's child was allocated to a school based on the choices made by the parents who did know, at the school this child attended. Using this method, there was only one possible school the child could be allocated to. This meant that the various statistical techniques applied in the previous section to allocate children to schools when their parents did not know which school they would change to were not necessary in this scenario.

Gains and losses: Main findings

The findings of this gains and losses analysis are presented in table 5.3. A significant gain or loss was determined by whether the range between the upper and lower confidence intervals crossed zero, meaning it was certain the estimate showed that a school would experience either an absolute gain or an absolute loss to its roll. As an aid, map 5.3 also uses the data in table 5.3 to illustrate the proportional change to the size of each school roll.

As the process for estimating the redistribution of pupils across schools was much simpler in this scenario, the results are clearer cut. This is also due to the smaller proportion of parents who would

change their child's school if they could only choose a state secondary school. The main finding is that two schools could expect to experience a significant gain to their school roll, while two state schools and one state-integrated school could expect to lose a significant number of pupils.

• State schools that gained pupils

Consistent with which state schools were favoured most by parents (table 5.2), Christchurch Boys' High School would experience the biggest gain in demand. Its roll would increase by an estimated 745 pupils from 1,339 to 2,084, with 95% certainty that the true underlying value for change to the school roll lies between 302 and 1188 pupils. The next biggest gain would be made by Christchurch Girls' High, which could expect 448 extra pupils added to its roll, meaning it could rise to 1,537 pupils. According to the estimates, with 95% certainty, the underlying value for the change to the school roll would be somewhere between 101 and 796 pupils. These two single-sex schools were also the only state schools that would experience a statistically significant gain.

Burnside High School was still quite popular, but its gain was not statistically significant. It could expect to gain 401 pupils according to these estimates, with the true underlying value for change to the school roll being between -32 and 834 pupils.

It was estimated that only three other schools would gain pupils, although the results were also not statistically significant. These were Riccarton High School, the *kura kaupapa* Maori school, Te Kura Kaupapa Maori O Te Whanau Tahurangi and Unlimited Paenga Tawhiti. The expected gain in the number of pupils at these schools was estimated to be between 67 and 103 pupils. As two of these schools are specialist schools, it would seem there is a measure of demand from some parents for specialist education. It cannot be argued from these estimates, however, that specialist schools would necessarily experience a positive gain in a situation where parents had better access to any state school.

• State schools that lost pupils

Compared to the previous access scenario, fewer schools would be expected to experience a significant loss to their school roll. Three state schools were in this situation: Linwood College and Cashmere High School, both regular state schools, and St Thomas

of Canterbury College, one of the larger state-integrated schools.

While each of these schools also experienced a significant loss to its roll in the previous scenario, the anticipated loss was much smaller than before. Linwood College would stand to lose the most pupils, as its roll would drop by an estimated 299 pupils, from 910 to 611, with 95% certainty that the true value for the expected change lies between -598 and -1 pupils. Cashmere High School could expect to lose 242 pupils, reducing its roll from 1606 to 1364 pupils, with 95% certainty that the true underlying value for change to the school roll lying between -447 and -37 pupils. St Thomas of Canterbury College would also lose pupils, but fewer than before, with the expected loss estimated to be 69 pupils, meaning its secondary school roll would be expected to drop from 352 to 283 pupils. With 95% certainty, the true underlying figure for change to its school roll lies between -130 and -7 pupils.

The estimates also showed that five other state schools would experience a loss, although this was not statistically significant. The five schools were Avonside Girls' High School, Hagley Community College, Mairehau College, Papnui High School and Shirley Boys' High School. Five private and state-integrated schools also recorded a loss, although again the findings are not statistically significant. The losses can be attributed to how parents whose children currently attend private and state-integrated schools were made to choose a state school if they wanted to change their child's school. In reality, it would be unlikely that these parents would leave their current private or state-integrated school for a state school.

It was also estimated that eleven schools would experience no change to their school roll. Like before, this was due either to the small number of parents sampled from those schools which estimates could be calculated for, or because parents did not favour these schools. The smaller religious state-integrated schools accounted for approximately half of the schools in this situation. Nonetheless, it is interesting that this gains and losses analysis did not detect any change at all for two regular state schools, Aranui High School and Hillmorton High School. In the previous scenario, both these schools were estimated to experience a loss, although in neither case was it a statistically significant one. The explanation for this is that the parents whose children attend these

schools each responded, in this access scenario, that they would prefer to keep their children at these state schools rather than change to a different one.

• Roll stability

Using the roll stability indices calculated for each school (table 5.3), it is clear that school rolls would remain much more stable when access was more limited by removing private and state-integrated schools for parents to choose from. The index was calculated by dividing the estimated roll by the July 2006 roll. Schools with stable rolls have stability indices of approximately one; those with growing rolls have indices greater than one; while those with falling rolls have indices below one. This is apparent from the majority of the roll indices being much closer to one than in the previous scenario, irrespective of whether schools experienced a gain or a loss. Leaving the outlying value for Te Kura Kaupapa Maori O Te Whanau Tahī aside (9.273), the maximum roll stability index is 1.556, for Christchurch Boys' High School, and the minimum is 0.671, for Linwood College. The range, being 0.885, is far smaller among state schools compared to the ones calculated in the previous access scenario. Leaving aside the value for Te Kura Kaupapa Maori O Te Whanau Tahī again, the average stability index is 0.972. Consequently, while some pressure would be created for a few schools that would gain pupils, by no means can it be claimed that if access to state schools were made better, the rolls of some state schools would plummet or that they would decline.

Reasons why parents favoured state schools

The parents who would change their child's school and knew which school they would change to ($n = 39$), were also asked to indicate whether they agreed or not with nineteen characteristics of schools that were put to parents as reasons for why they might favour their preferred state school. The reasons reflected both the process and product dimensions of schooling described previously. The top ten reasons parents gave for favouring the state school they would prefer for their children were:

1. reputation (87%);
2. values (85%);
3. range of subjects offered (77%);

4. exam results (74%);
5. student behaviour and discipline (72%);
6. extracurricular programmes (67%);
7. it is a single-sex school (59%);
8. buildings and general facilities (56%);
9. the teachers (51%); and
10. sport (46%).

These proportions are presented at the 95% confidence level, with an associated margin of error +/- 5%.

Similar to the previous scenario, for parents who would send their child to a different state school, reputation and values are the top two reasons why parents would favour their preferred school. A difference, however, is that the balance has shifted towards product criteria, like reputation, exam results and student behaviour and discipline, and away from process criteria, as reasons for favouring a school. This is different to the findings of other research, described in section 6, for why parents favour the schools they send their children to. It should be noted, however, that only 39 parents responded to these statements, making it quite small, so the findings should be treated with some care.

Notwithstanding this caveat, even if parents view schools holistically, which may simplify their perception of schools, the results might still be considered a good indication of the particular characteristics that parents who would change their child's school appreciate in the most popular state schools, Christchurch Boys' High School, Christchurch Girls' High School and Burnside High School. This point might also be supported by the result that 59% of parents favoured their preferred state school in this access scenario because it was a single-sex school, compared to 49% in the previous scenario. In other words, the survey may also be picking up parents' preferences for single-sex schooling.

Gains and losses between state schools

The estimates calculated for the change to school rolls have confirmed which state schools would be most popular among parents. The estimates have also illustrated that when only the state schools are considered the magnitude of the expected change at the city level is not very great. To complete the

analysis of the gains and losses to school rolls in this access scenario, the amount of competition occurring between schools, and which schools are gaining or losing pupils to each other, is examined. Analysing this data is helpful for understanding how the "education market place" might be structured, in particular between state secondary schools, but also if the range of schools parents could access was limited.

• The amount of movement between state schools

The problem of discerning multiple "competition spaces" within Christchurch from the survey data was noted in the previous section as a difficulty associated with applying Chris Taylor's geographic framework to analyse the amount of movement between schools. It is compounded in this access scenario by the even smaller number of schools which gain or lose pupils because of the smaller proportion of parents who would change their child's school. According to table 5.3, it is reasonably certain that only seven schools would experience a gain to their school roll. This part examines the competition space defined by the projected movement that would be expected to occur towards those seven schools, and away from the schools they would gain from.

The amount of competition that would be expected to occur if parents could only choose a state school was slightly greater than the amount found in the previous section. The average number of schools that each state school gained from was 3.7, including gains made from both private and state-integrated schools. This is because the smaller number of schools losing pupils intensifies the amount of competition between the schools which gain pupils for comparison's sake. If gains made from state schools are only considered, the amount of competition is less however, with the size being 2.7.

Expressed as a ratio against the total number of secondary schools in Christchurch (31 schools), the scale of the expected gains is still very small at 0.12. Hence, even if competition for places at the state schools which would be expected to gain pupils might be fierce, in perspective the scale of the competition is still not very great. As the previous part discussed, the rolls at a number of schools could reasonably be expected to remain stable. Demand is concentrated among a handful of schools.

As before, another way of looking at the scale

Table 5.4. Secondary schools which state secondary schools gain pupils from

Schools which gain pupils	Schools drawn from	Pupils gained (raw data)	Pupils gained (weighted data)	School type	Proportion roll achieving ≥ 80 NCEA credits (2005-06 mean)
Avonside Girls' High School	Christchurch Girls' High School	1	73	State	44.6
	Hagley Community College	1	110	State	17.2
	Total gains	2	183		
Burnside High School	Cashmere High School	1	50	State	26.0
	Hagley Community College	1	110	State	17.2
	Mairehau High School	1	31	State	19.0
	Middleton Grange School	1	52	State-Integrated	39.9
	Papanui High School	1	54	State	17.4
	St Andrew's College	3	228	Private	44.8
	St Margaret's College	1	80	Private	41.5
Total gains	9	605			
Christchurch Boys' High School	Burnside High School	1	32	State	37.9
	Cashmere High School	3	150	State	26.0
	Christ's College	1	129	Private	47.5
	Linwood College	2	202	State	15.8
	Papanui High School	1	54	State	17.4
	Shirley Boys' High School	3	117	State	24.5
	St Thomas of Canterbury College	2	46	State-Integrated	26.5
Total gains	13	730			
Christchurch Girls' High School	Avonside Girls' High School	4	216	State	26.8
	Burnside High School	1	32	State	37.9
	Cashmere High School	1	50	State	26.0
	Mairehau High School	1	31	State	19.0
	Papanui High School	1	54	State	17.4
	St Margaret's College	1	80	Private	41.5
	Villa Maria College	1	47	State-Integrated	41.6
Total gains	10	510			
Riccarton High School					32.0
	Burnside High School	3	96	State	37.9
Te Kura Kaupapa Maori O Te Whanau Tahi					N/A
	Linwood College	1	101	State	15.8
Unlimited Paenga Tawhiti					5.4
	Burnside High School	2	64	State	37.9
TOTAL GAINS		40	2,289		

Proportion roll achieving ≥ 80 NCEA credits data sourced from: New Zealand Qualifications Authority, National Qualifications Framework Statistics. *Canterbury regional schools. School profiles* (2007), <http://www.nzqa.govt.nz/qualifications/ssq/statistics/region-schools.do?year=2006&r=14>.

of the gains made by schools which parents would choose if they could choose any state secondary school for their child was by estimating the transfer of pupils between schools at the city level. The estimates were determined using weightings applied in the gains and losses analysis that were calculated from the Christchurch secondary school roll returns. A confidence interval and an associated margin of error have not been calculated for these projections. Applying the sampling weights to the raw figures for the number of pupils moving between schools helps to make them more closely reflect the estimates produced in the previous gains and losses analysis (which measured the absolute estimated change to state school rolls).

Approximately 2,300 pupils could be expected to be gained by schools (table 5.4). This is more than the total of the estimated gains in table 5.3 (1,855). Further, the average size of all gains across each state secondary school in the "competition space" could be expected to be approximately 89 pupils. The minimum expected gain was 31, while the maximum was 228. Map 5.4 also uses the weighted values in table 5.4 to illustrate the estimated number of pupils that would transfer from school to school as well as the direction in which they move.

When individual schools are considered, the projected scale of the movement away is the greatest for Linwood College and Cashmere High School. They would each stand to lose 303 and 250 pupils, respectively. Hagley Community College could also expect to lose 220 pupils. The private schools that would stand to lose the most pupils are St. Andrew's College and St Margaret's College. They would each stand to lose 160 or more pupils in this scenario. The average of the expected losses from all private or state-integrated schools combined where movement was detected from is approximately 84 pupils.

Christchurch Boys' High School and Christchurch Girls' High School would again make the greatest gains, according to these estimates, receiving over 500 pupils from a variety of schools. The story is different for Burnside High School, however. While it could expect to gain approximately 605 pupils, it would also lose approximately 220 pupils, making its net gain 385 pupils. This is close to the figure for change that was estimated in the gains and losses analysis.

• Patterns of movement between state schools

Following the approach taken in the previous section, the patterns which characterised the movement between schools are further analysed using the same indicators for between school processes, nearest school gains and examination results.

Nearest school gains

The first process which might explain the movement between schools is whether the preferred state school was also the nearest alternative state school. With reference to map 5.4, it seems difficult to argue that this was the case. Parents transferring out of private or state-integrated schools did not choose the nearest state school to the school their child currently attended. For example, parents transferring their children from Linwood College did not opt to send their children to either Shirley Boys' High School or Avonside Girls' High School; the two nearest alternative state schools.

Table 5.5: Distance from home to preferred state school (n = 40)

Statistic	Distances (km)
mean	5.8
first quartile	4.1
median	5.3
third quartile	7.5
inter-quartile range	3.4
mode	10.7
minimum	1.0
maximum	11.4
range	10.4

Table 5.6: Excess distance between the current school and the preferred state school (n = 40)

Statistic	Distances (km)
mean	2.8
first quartile	1.6
median	2.9
third quartile	3.8
inter-quartile range	2.2
minimum	0.1
maximum	7.4
range	7.3

As described in the previous access scenario, the reality is that some parents are willing to send their children longer distances in order to access their

preferred state school. Map 5.2 shows the majority of parents who would change their child's school would send their child a distance of 4 km or more to their preferred state school. Further distance calculations between home and school, completed with ArcGIS, also illustrate this point. The median home to school distance in this scenario was calculated to be 5.3 km (table 5.5), which was greater than the median distance between home and the school currently attended (2.8 km). A quarter of the distances parents would have their children travel were over 7.5 km in order to reach their preferred state school. The maximum distance that children might travel was calculated to be 11.4 km.

The median difference in distance between the school children currently attended and the state school parents preferred was also calculated to be 2.9 km (table 5.6); equivalent to the median distance between home and the current school. This means that in this access scenario, as well as the previous one, that half of the distances that parents are willing to send their children to school are up to as much again as the distance they currently travel to school. As for the other scenarios described, the message is clear that parents generally do not favour the nearest school or the nearest alternative school when they consider which schools to send their children to.

Examination results

The next between school process that might help explain the movement between schools are examination results. Examination results are considered in terms of the average proportion of the school roll achieving 80 or more National Certificate of Educational Achievement (NCEA) credits for the years 2004 and 2005.

Table 5.4 shows that generally parents moving from one state school to another transfer to a school that has a roll which achieves a higher proportion of 80 or more NCEA credits. Among the schools which state schools gain from, the average proportion of the roll achieving 80 credits or more is 31%. Among the state schools which state schools gain from, the figure is 23%. As the proportion of pupils gaining 80 or more NCEA credits is between 34% and 45% at the three most popular state schools, this means the schools that they are gaining from are generally below them in terms of NCEA performance. This result would seem to confirm that parents prefer

the state schools which are most popular because of their exam results.

There are some exceptions, however, as the parents transferring from Burnside High School to Riccarton High School are transferring to a school with a lower NCEA performance. The other exceptions occur where movement is between state schools and the specialist state schools mentioned above. Further, the parents whose children currently attend private schools, who indicated a preferred state school in this scenario, chose a school that had slightly lower NCEA performance. An exception is the case of parents transferring their daughters to Christchurch Girls' High School, which does better than all other schools girls can attend except for Rangī Ruru Girls' School and St Andrew's College.

• **The nature of the "education market place" if parents could change their child's school and they could choose any state school**

In summary, the patterns of movement across schools if parents could choose any state school for their child can be described as forming four distinct groups of schools (table 5.3).

- The first group of schools are the ones that would make statistically significant pupil gains under this scenario. These schools are two of the single-sex state schools, Christchurch Boys' High School and Christchurch Girls' High School. They tend to have the highest exam scores out of all the state schools in Christchurch. When the proportion of their pupils' achieving 80 or more NCEA credits is averaged, the score is 39.3.
- The second group of schools is made up of the fourteen schools that registered either a non-statistically significant gain or loss. These schools include private, state-integrated and state schools. When the proportion of their pupils' achieving 80 or more NCEA credits is averaged, the score is 28.3 (it should be noted that with five private and state-integrated schools included in this group, which have higher NCEA performance, the average is inflated).
- The third group of schools is made up of three schools that register a statistically significant

loss. These are two regular Year 9-15 state schools, Linwood College and Cashmere High School, and one state-integrated school, St Thomas of Canterbury College. They tend to do less well at the NCEA, on average, than either those schools in the first or second group. When the proportion of their pupils' achieving 80 or more NCEA credits is averaged, the score is 22.8.

- The last group of schools is made up of the eleven schools whose rolls would be unlikely to change. This was because the small number of parents sampled from these schools responded that they would not change the school they send their child to. Over half of these schools are private or state-integrated schools. They tend to do slightly less well at the NCEA, on average, compared to those schools in the third group. When the proportion of their pupils' achieving 80 or more NCEA credits is averaged, the score is 20.1.

The feasibility of accessing a state school

The gains and losses analyses have helped to quantify demand for state schools and how the patterns of exchange between state schools are structured. How feasible is it, however, to access one of those schools for the parents who would change their child's school? In this part, distance and transport to school are considered as measures of feasibility. In this scenario, the amount of money parents would have to pay is not considered because parents already pay for the cost of educating their children at state schools (and partially at private schools) through general taxation which is returned to schools through the subsidies and operating grants schools receive from central government.

• Distance from home to reach three state schools

Similar to sections 3 and 4, the feasibility of accessing a state school is examined in terms of how far parents would have to travel before their children can access three state schools (table 5.7). The distance calculations were completed using the straight line distance theorem in ArcGIS, described in section 2. The results show that the median parents have to travel to have a choice of three state schools is 2.6 km, while a quarter of the distances parents would have to send their children to be

able to access three state schools are over 3.7 km. The median distance is the same distance to travel as calculated for the current situation. Expressed as cumulative percentages (table 5.8), 83% of parents who would send their child to a different state school would be able to choose between three schools at a distance of 4 km from their home. In reality, it would be harder for parents to access a range of state schools if distance actually mattered.

Table 5.7. Feasibility of access to state schools: Distance to reach three state schools from home (n = 40)

Statistic	Distance (km)
mean	3.0
first quartile	2.0
median	2.6
third quartile	3.7
inter-quartile range	1.7
mode	1.7
minimum	0.7
maximum	7.3
range	6.6

Table 5.8. Proportion of parents with three state schools within a radius of distance from their home (n = 40)

Distance (km)	%	Cumulative %
2 km	25.0	25.0
4 km	57.5	82.5
6 km	12.5	95.0
> 6 km	5.0	100.0

Table 5.9. How would your child get to the preferred state school?

(frequencies presented at the 95% confidence level, with an associated margin of error +/- 5%)

	Income						All	
	Not stated		Low-middle income (≤ \$70,000)		High income (≥ \$70,001)		n	%
	n	%	n	%	n	%		
Bus	2	66.7	15	75.0	8	50.0	25	64.1
Cycle	1	33.3	2	10.0	2	12.5	5	12.8
Walk	.	.	.	.	1	6.3	1	2.6
Car-pool	.	.	.	.	1	6.3	1	2.6
With	.	.	1	5.0	4	25.0	5	12.8
Own car	.	.	1	5.0	.	.	1	2.6
Other	.	.	1	5.0	.	.	1	2.6
Total	3	100	20	100	16	100	39*	100

* The sample size is 39 because data for the one parent who would change schools, but did not know which state school they would choose, was ignored.

• Transport to state schools

Parents who would change their child's school and knew which state secondary school they would send their child to were also asked to indicate how they would transport their child to school (table 5.9). As an aid, the results of table 5.9 are presented in map 5.5. The results are also stratified by household income level.

The results show that 64% of parents who responded to the question would choose to bus their children to school. The next two most popular methods of transport were cycling and with the parent, with approximately 13% of parents choosing to have their children go to school either way. These proportions are presented at the 95% confidence level, with an associated margin of error +/- 5%.

As in the previous scenario, the high preference for bussing indicates the distances parents are willing to send their children to their preferred state school. However, bussing would also add to the cost of sending children to school, which would have an impact on the accessibility of state schools for some parents in the real world.

DISCUSSION

The main objective of this section was to illustrate what the likely demand for state schools would be if parents could change their child's schools and choose any state secondary school. The reason for this was because in reality the range of schools parents can choose from is constrained.

Managing network capacity

The findings in this section show that the magnitude of change would drop from one in four, on the choice of any school if money was no object access scenario, to one in ten parents in this scenario. This finding therefore has important implications for considering the impact of improving access to schools for parents. Firstly, at present, approximately 4% of parents send their children to private schools. Secondly, if it becomes more realistic for the majority of parents to access one of the popular state sector schools, the amount of expected change would probably not be great either. This is because the question put to parents in the survey asked which schools they would change to, not which ones they would consider choosing. For

this reason, the estimates presented in this section might be a reasonable indication of the amount of change that could be expected to occur to the size of school rolls and the amount of movement between schools that would take place in the first school year if restrictions were relaxed. Managing access to schools for the estimated 2,300 pupils that might move away from the schools they currently attend—out of the 23,000 secondary school pupils in Christchurch—is a realistic task.

Aspirations to change schools

In the Smithfield project, the authors are quick to argue that lower socio-economic status (SES) parents do not have aspirations to access the school of their first choice. They produce evidence which shows that across time the lower socio-economic status parents consider choosing high circuit schools in lower proportions (see discussion in appendix 1).³ Nevertheless, their data still shows that a proportion of these parents consider, or their children already attend, high circuit schools. In this research, even if the magnitude of change is less in this access scenario, the desire to change their child's school is also similar across household income for those parents who would change schools, even though a statistically significant relationship was detected between choosing a different school and household income level.

Possible limitations of school groupings

As found in the previous section, parents' choices and the exchange of pupils between schools sorted schools into distinct groups. The small number of parents that were sampled who would change their child's school hampers the precision with which the patterns of exchange can be estimated in this access scenario.

CONCLUSION

This section has reported several findings which estimate the amount of change that could be expected to occur to school rolls if parents could only choose their preferred state school. From a policy perspective, examining only the change to state school rolls is useful for estimating the demand for schools in the state sector, as private schools are responsible for managing their own capacity. It has also applied the

geographic framework developed in the previous section to interpret the movement that would be expected to occur between schools.

The amount of change that would be expected to occur is less than in the previous section, as only 10% of parents would choose to change their child's school. For reasons which cannot be determined from the data collected in the survey, parents generally preferred to continue sending their children to the school they currently attended. Nevertheless, this finding means in a situation where zoning was relaxed and access to schools was made better, the rolls of most state schools would probably be stable. This section has also shown which state schools are most or least popular. Only two schools were forecast to experience a significant loss, and only two would experience a significant gain. The demand for the two state schools that would experience a significant gain would be quite intense, however, compared to other state schools which might gain. One way to manage the extra demand would be to put spare school capacity to better use, by allowing the more popular schools to meet demand to use spare capacity. Another way would be to settle on a fairer policy than current zoning regulations for allocating pupils to schools when they become over-subscribed.

Finally, the nature of the "lived market" for state schools was examined. The findings show a similar trend, found in the previous access scenario, where schools formed four distinct groups in one "competition space" which emerged from the patterns of pupils moving between the schools considered in this scenario. The first group was made up of the two state schools which were predicted to experience a statistically significant gain. The second group was made up of fourteen schools that would experience either a non-statistically significant gain or loss. The third group was made up of the three schools that would experience a statistically significant loss. The fourth and final group was made up of eleven schools that would not experience any change to their school roll. Higher NCEA performance distinguished those schools which would experience statistically significant gains to those which would experience statistically significant losses.

In conclusion, this section has estimated the amount of change that would probably occur across the school network in Christchurch if constraints around parents' access to schools were relaxed or removed but the range of schools parents could

access was moderated. Having looked at the results, and estimates produced from them in a number of ways, the implications of the findings will now be discussed as well as what changes they might suggest for schooling policy and how to manage school capacity better in an urban New Zealand city so that parents could have better access to their preferred state schools.

ENDNOTES

- ¹ Cf. H. Lauder et al., *Trading in Futures: Why markets in education don't work* (Buckingham: Open University Press, 1999), 47.
- ² R. Hipkins and E. Hodgen, "National Survey of Secondary Schools" (Wellington: New Zealand Council for Educational Research (NZCER), 2004), 172.
- ³ H. Lauder et al., "Trading in Futures: The nature of choice in educational markets in New Zealand. Phase one, third report to the Ministry of Education," *The Smithfield Project* (Wellington: Ministry of Education, New Zealand, 1995), 26-27.

SECTION 6

Discussion

INTRODUCTION

The previous sections have offered some answers to two key questions which have framed this research: which secondary schools Christchurch parents would prefer to send their children to if they could change their child's school and they had better access to schools, and what the likely impact of change would be on school rolls. The purpose of this section is to discuss the implications of these findings.

The section begins with a discussion of the strengths and weaknesses of the approach this research has taken and the results it has produced. Secondly, how patterns of pupils moving between schools might be structured in a school system where families had better access to schools will be discussed. Where possible, the findings of this research are discussed in relation to New Zealand research on making access to schools better; in particular the circuits of schooling analysis presented in the Smithfield project (also see appendix 1). Thirdly, this section examines how capacity in the existing state school network could be put to better use in a situation of open enrolment, using the projections for the estimated change to school rolls produced as part of this research. Some related issues of accessibility to schools are then addressed, before concluding with a brief discussion of some possible directions for future research on making access to schools better for parents and children.

EVALUATION OF THE RESEARCH FINDINGS

The survey sample

As described, throughout this research, post-survey statistical adjustments were required to make inferences to the Christchurch population about

the proportions of parents choosing different schools. Various sensitivity analyses were carried out comparing the main results of the parental survey to a choice of sampling weights. These have included sensitivity analyses with weightings to the total Christchurch school roll and to household income. Further, two methods, a re-sampling strategy and a proportional allocation method, were used to assess the sensitivity of handling missing responses from parents who would change their child's school, but did not know which schools they would choose in the gains and losses analyses in section 4.

A strength of the sample revealed by these various analyses was that when the data were considered from various perspectives, the main results did not change substantially. The direction of the findings remained the same. For example, when the results of various survey questions were stratified by household income the proportion of parents responding were very similar to the overall estimate at the city level. This trend in the data gives some strength to the findings and also demonstrates that best efforts have been made to utilise all the available survey data to examine the issues of interest discussed in this research.¹

Although there were some differences between the sample and the population data (see section 2), another strength of the survey sample was that these differences did not affect the overall estimates. The responses of parents to each question did not appear to differ substantially across parents' annual household income level and/or their level of educational attainment.

The main limitation of the parental survey was the sample size of 424 parents. The sample size hampered

the range and precision of the inferences that could be made about the choices specific sub-groups of parents would make, for example, by household income level. The margin of error calculated around sub-groups for household income in the post-survey statistical estimates at the city level analyses was quite wide. Further responses—with quotas for particular sub-groups of parents, such as from low-income families or ethnic minorities—would be needed to determine conclusively whether or not there are differences in the degree of choice that would be exercised by parents of different household income levels. More precise data of this kind would also help to demonstrate whether there are any statistically significant relationships between population sub-groups of parents and whether they would access a different school for their child.

The problem of a small sample size was compounded when gains and losses to school rolls were estimated in the choice of any school if money was no object access scenario using the multiple re-sampling strategy. For instance, when the survey responses for parents who indicated they would change their child's school but did not know which school they would choose were extrapolated to the city level, an estimated 657 parents could not be allocated to a school. This figure is approximately equivalent to the roll of a medium-sized secondary school. Nevertheless, even with a high figure for the estimated number of parents who did not know which school they would choose using the multiple re-sampling strategy, the way missing data was handled may still be considered reliable. This is because the proportional allocation strategy showed that the same schools would experience either a significant gain or loss to their rolls.

The choice of Christchurch city as a site for this research also precluded examining the relationship between ethnicity and better access to schooling. Christchurch has a largely homogenous population. 2001 census data, obtained at the time of the survey, showed that the population of parents in Christchurch whose children were of secondary school age was 83% New Zealand European or of European extraction, while only 8% of census respondents were Maori or Pasifika. The figures nationally were 76% and 18%, respectively. The smaller proportions of non-European parents in Christchurch meant that even though the survey sampled an accurate proportion of parents from each ethnicity,² it was

difficult to adjust the survey findings to look at the relationship between ethnicity and choice. As with income, quotas for parents of each ethnicity would need to be set to ensure enough participants of each ethnicity were collected to enable valid inferences to be made to the Christchurch population.

An issue related to analysis of population sub-groups is the question of whether, and to what extent, school rolls might become segregated by socio-economic status (SES) as a result of lifting restrictions which prevent parents from accessing their preferred schools. This was noted in section 2 as a major controversy when the changes brought about by *Tomorrow's Schools* were evaluated (appendix 1 also shows that some New Zealand research has been misleading on this matter). The data in Smithfield project research shows that, in fact, parents of all backgrounds took advantage of the opportunity to choose a different school to their local school.

The main objective of this research has been to consider the impact of parents' preferences on school capacity rather than to test the polarisation thesis. Given the limitations of the sample size in this research, it would not have been possible to determine whether school rolls would become more or less segregated by SES. Further, school roll data was not publicly available broken down by SES, so the gains and losses analyses at the city level could not be calculated in relation to parents' annual household income levels. Moreover, segregation can really only be accurately measured over time, with good comparative data for the situation prior to restrictions like zoning being relaxed. This cannot be accomplished with a random sample survey which takes a snapshot of parents' preferences for schools at one point in time.

Another question which this research has not addressed is the choices parents of Year 8 pupils who are about to enter secondary school would make about which schools they would prefer to send their children to, if they had better access to schools. The estimates presented throughout this report are helpful insofar as they can predict what would happen in the first year of an open enrolment scheme. But it is likely that in subsequent years, with improved access to schools, parents' preferences would change from what they are now. The estimates produced by this research show which schools would have to respond to growing demand initially, but this research cannot provide estimates for beyond this first year.

Another limitation of using a random sample telephone survey is that only parents' stated preferences can be collected, rather than their revealed preferences. The schools parents say they most prefer for their children, or say they would consider or think are feasible choices, may be different to the schools they would actually choose, depending on how accessible schools are, how many schools they apply to and how many schools accept their applications.³

As a result, in this research the changes to school rolls are based on projections generalised to the city level, weighted to school rolls and presented with confidence intervals and margins of error.

The original contribution made by this research

Nevertheless, a major strength of this research is that it has produced some reasonable projections for how school rolls might change under two scenarios of open enrolment. It has also identified how much active choice is already happening under the current school enrolment system. Another of its most important contributions has been to apply research methods from geography using a Geographic Information System (GIS) to help organise, analyse and present the findings of the parental survey and the post-survey statistical adjustments for these two access scenarios.

The geographic framework and GIS techniques used in this research helped to indicate the relationship between parents and the schools they choose. In this research it has also helped to illustrate the way movement between schools might be structured across space and the relationship between distance and choice of school under various scenarios. Perhaps its most important strength has been that it has enabled the possible changes to school rolls to be interpreted through a framework whose first assumption is the preferences of parents. Different to some research from New Zealand and overseas, which applies the assumptions of social conflict theory, it does not assume some parents or school leaders are prejudiced from the outset when they think about education. Interpretations about the nature of parents' preferences for schools have been deduced through this framework, rather than first filtering the results through an ideological lens which views education as an arena in the struggle for positional advantage within society.⁴

PATTERNS OF MOVEMENT BETWEEN SCHOOLS

With these strengths and limitations in mind, the following points may be made in conclusion about the possible nature of the relationship between parents and schools, and the patterns of pupils moving between schools, as interpreted through the geographic framework. The purpose of using the framework was to reduce the complexity of the relationship between parents and schools in order to see what, if any, organising principles might be present that could also serve as aids to making best use of the existing capacity in the school system.

The structure of the patterns of movement between schools

Under the current enrolment system, approximately half of the parents surveyed were found to be accessing schools which were not the nearest school to where they lived or the school that they were zoned for. Proximity to schools does not matter for the majority of parents, as they are already choosing alternative schools. This constitutes a high degree of active choice.

The idea of a space of interaction between parents and schools (the "competition space") was introduced as the primary geographic unit in which the relationship between schools, and schools and parents could be examined in each access scenario. Chris Taylor broke down the "education market place" into these smaller spaces to enable the gains and losses of pupils occurring between schools to be seen and understood, when parents had the opportunity to change their child's school.⁵ In this research, because of the small number of schools among which pupils were expected to transfer between in both access scenarios, only one interaction space could be discerned in both cases.

The results of the survey indicate that the magnitude of choice in either scenario was not high. Estimates at the city level showed that either one in ten or one in four parents would change schools, depending on the access scenario. These trends were detected, but not statistically significant, across household income level. The estimated gains from the gains and losses analyses showed that with better access to schools, a number of schools would experience a significant gain to their school rolls.

In the choice of any secondary school, if money was no object access scenario, the private schools

and some state-integrated schools were the major beneficiaries, experiencing statistically significant gains. A handful of state schools and state-integrated schools would also experience a gain, but these gains were not statistically significant. The majority of state schools would suffer a significant loss under this scenario. With money being no object, this result was to be expected, as it shows that parents would choose schools for their children with the highest premium.

However, this scenario is not realistic because not every parent would be able to access each kind of school. For example, not every parent who would hypothetically prefer to send their child to a private school could expect their child to be admitted because of the limited number of places available at these schools, compared to at state schools. Only 13% of secondary schools in Christchurch are private schools. Further, based on the 2006 roll returns, there were approximately 2,700 places at the secondary level available at private schools. But the gains and losses analysis for this access scenario estimated that private schools could gain between 3,795 and 4,457 pupils. Val Ainsworth and colleagues also noted the reality that single-sex state schools in Christchurch were full because private single-sex schools were too expensive for families. This was compounded by rising costs for tertiary education which are no different today.⁶ It is difficult to foresee private schools expanding their capacity to more than double their size, according to the estimated gains, when in reality not every parent would be able to afford private education because of the higher cost.

Nevertheless, the scenario shows that the anticipated gains and losses to school rolls formed several patterns of pupil movement between schools.⁷ These patterns of movement sorted schools into four distinct groups. The number of groups was similar to the usual number of school groupings found by Taylor in the LEAs he studied in his research. The four distinct groups that schools formed were: those that registered a statistically significant gain; those that registered a non-statistically significant gain or loss; those that registered a statistically significant loss; and those that experienced no change. The gains and losses between schools also appeared to be structured according to the position of each school in terms of its NCEA performance.

The between school processes examined in the choice of any state secondary school scenario also

showed schools falling into four distinct groups according to the same pattern. The space of interaction between parents and schools was likely to be smaller than in the previous access scenario, but the pressure on the schools that would gain was more intense as only two state schools were predicted to experience a statistically significant gain. These schools lost few or no pupils to any other state schools, and they had higher NCEA performance compared to the other state schools.

When considering the implications of the estimated gains and losses to school rolls and the movement of pupils between schools for schooling policy, more emphasis should be placed on the findings from the choice of any state school access scenario. This is because most children already attend state schools, and moreover, most parents can access a state sector school more easily than a private school because the costs are less and there are more schools available to choose from.

This means the findings of the choice of any state school access scenario are more indicative of the amount of change that could be expected to happen to school rolls, since parents' choices were constrained in this scenario. The proportion of parents who would change schools is estimated to be only 10%, with 95% certainty at the city level and a margin of error of +/- 3%. There are also only seven schools which gain from other schools, compared to thirteen in the choice of any school if money was no object access scenario. Further, only two state schools were forecast to experience a significant gain to their rolls and only two state schools a significant loss. These findings have important implications for managing school network capacity in a situation where parents have better, not absolute, access to the schools they would prefer to send their children to.

The relationship between how parents choose schools and the structure of the "education market place"

Taylor also found that one of the most frequently occurring forms of movement between schools was according to their examination performance.⁸ Similar to the findings of this research, Taylor also found that it was school reputations, determined locally, and school examination performances that provided a basis for parents' decision-making. Taylor says:⁹

Even though parents generally tried to play

down the role of these two product criteria it was impossible to ignore the significant relationship between the structure of hierarchical competition and the schools relative examination performance.

The same pattern, according to the between school processes examined in this research, is generally evident from the reasons parents responded why they favoured their preferred schools. These were also among the top ten reasons parents who would change their child's school said they would favour their preferred school. Parents also appear to be choosing their preferred schools based on two important educational product criteria: reputation and exam results (see sections 4 and 5).

Susan Bridges also touched on the features some parents who were active choosers found attractive in Christchurch schools.¹⁰ In discussing whether parents in Christchurch who had moved home, and who had stated school zoning as a reason, hoped to send their children to either a co-educational or single-sex school, she found that half of the 150 parents she surveyed preferred a co-educational school, a quarter a single-sex school, while the rest had no preference. Bridges concluded that most parents simply wanted a school they perceived to be a good school. Mike Fowler's much earlier study also noted that parents do take the total reputation and appearance of a school into account when deciding whether they find a school attractive.¹¹ Further, in England, Carl Bagley and colleagues also suggested that examination performance was not necessarily the most important factor that parents used to determine their choice of school, but the perceived quality of the school was also important.¹²

New Zealand research by Helen Timperley and Vivienne Robinson, disputed by the Smithfield authors, reported an investigation between the match of parental and school values and whether congruence between these two factors produced stable or increasing school rolls.¹³ Where teachers' values matched those of parents, rolls increased, and decreased in cases where the values of parents and teachers did not match. Timperley and Robinson concluded that parents often choose schools which reinforce their educational values. Their findings lend weight to the proposition that the public face of schools, determined by their management, policy and practice, also has an impact on how some parents choose schools and whether parents will

choose to bypass some schools.¹⁴ The findings of this research appear to confirm that parents choose schools largely from their perception of the general quality of the school.

There is some debate, however, in the research literature about whether parents favour schools because of these kinds of product criteria or whether process criteria, like the school environment, are more important.¹⁵ Wendy Stockwell and Sally Duckworth's research of Christchurch parents found parents considered the following mixture of product and process criteria to be the most important attributes they preferred in a secondary school:¹⁶

- encouraging all students to be the best they can be (97%);
- good discipline practices (94%);
- a good academic reputation/achievements (94%); and
- a good reputation (91%).

That values and reputation are reasons why parents favour schools is also supported by research from the Australian Council for Educational Research which investigated the perceptions of schools that parents have which may shape their selection of private or public schools. It concluded that one reason stood out for selection of a private or a public school: "the extent to which the school embraced traditional values to do with discipline, religious or moral values, the traditions of the school itself, and the requirement that a uniform be worn."¹⁷ In this research, private schools were also the most popular schools. Since these schools often have a religious-affiliation or a strong school ethos,¹⁸ it is not surprising that values and reputation would be the strongest reasons why parents favoured the school they chose in this scenario; although this cannot be verified without further research.

The reasons why parents would favour their preferred schools in this research would also appear to show that Christchurch parents perceive schools holistically. For example, John Maddaus concluded that generalised statements, like whether a school has a good reputation, reflect the reality that what factors parents think makes a good school actually takes into account a number of dimensions of education.¹⁹ Maddaus also thought that these dimensions go beyond product and process factors of

schooling and include social dimensions too.

Fowler, in his study of Christchurch schools, also touched on this issue when he considered whether parents thought a school's reputation made it more or less attractive to parents. He commented that "reputation was viewed as a general statement which parents made in a holistic way, often linking it with their overall impression of a school rather than specific features."²⁰ On this basis, Fowler considered reputation to be an important aspect of parents' experiences or impressions of a school and whether parents would be attracted to it or not. Upon further questioning, Fowler found that parents often associated a school's reputation with factors they saw day-to-day, such as the intake of pupils, based on the behaviour of pupils and their uniform, and the area and community of the school.

These findings should not be taken to mean that parents make simplistic choices about education. In the absence of good comprehensive information about schools, parents make judgements based on the aspects of schooling that they do know about and what school they think will be best for their child.²¹ Different parents have better or worse knowledge about schools depending on the quality of their information networks. Parents who are more active choosers are the ones who are more often informed and have better networks of information. They tend to seek out information by visiting schools or meeting the principal.²² One of the most common sources of such "hot knowledge" about schools, though, for all parents, comes from talking with other parents and evaluating their opinions or their children's experience of various schools. However, parents differ in how engaged they are at obtaining information from each other. The lesson is that better information needs to be made available about schools so that quality information circulates through informal networks to help more parents to understand what kind of education each school offers. This is important, because as a basis for judgement, reputation can lag behind what is happening in schools by many years.²³

Interpreting the geography of the "education market place"

Overall, the findings suggest that change to a system of open enrolment is manageable. When the choice of any state secondary access school scenario is

considered alone, the estimates show that parents would not exit state schools in massive numbers given the current range of alternative schools available to them in the state sector. In summary, the choice of any state secondary school access scenario provides a much more appropriate set of estimates upon which to judge how stable school rolls might be and how many pupils might be expected to transfer between schools in the first year of operation of an open enrolment scheme.

Further, the geographic framework has helped to structure analysis of the gains and losses that would be experienced by schools to their school rolls under various scenarios where parents would have better access to schools. Moreover, it has helped to clarify more precisely the patterns of exchange that might occur between schools.

From the data, it is possible to see which schools parents would favour most, and which they would favour least. These projections are also useful for the purposes of planning how to manage capacity in the state sector if an open enrolment scheme was to be implemented again in New Zealand. Christchurch Boys' High School, Christchurch Girls' High School and perhaps Burnside High School in particular, would have to plan to expand their capacity. By contrast, it is likely Linwood College, Cashmere High School and St Thomas of Canterbury College would have to prepare for falling rolls.

Importantly, by looking at two forms of between school processes, nearest school gains and examination results, the framework showed the differences between schools and determined that not all schools would gain pupils from each other. In each access scenario, some movement between schools of an equivalent character or status, according to exam performance, was observed. It is reasonable to assume that parents who would change their child's school would do so in order that their children would be at the best school for them, as parents who would not change their child's current school in the survey responded that they believed their children were already at the best school for them.

PARENTS' KNOWLEDGE OF THE SCHOOLS THEY PREFERRED

This research has shown in sections 4 and 5 that many of the parents who would change their child's schools have a reasonable working knowledge of the

schools in Christchurch they would prefer, and that they know which schools they think are better or worse. This observation is contrary to the assumptions made about parents by Stephen Ball, Sharon Gewirtz and Richard Bowe as well as the Smithfield project authors (see appendix 1). They assume parents hold prejudices about certain schools, and that education is simply a competition for credentials. They do not think that parents might choose schools because they want the best education for their child.

The Smithfield project, however, produced a similar finding to this research concerning which schools parents would prefer if money was no object. In their telephone survey of 500 parents, they asked parents "where they would really like their child to go to secondary school assuming things like money and distance were no object."²⁴

Of the 284 parents who responded to their question, 68% overall indicated a school the Smithfield authors categorised a high circuit school (see discussion in appendix 1) as the school of their first choice. This proportion was approximately the same for parents in low, middle and high SES sub-groups. The parents who were sampled, therefore, ranked schools in the same way as the Smithfield authors had, and the ranking did not differ by social class. The authors had to conclude that:²⁵

The differences between the SES groups are very small and not significant, which suggests that, by and large, parents across the board are aware that there is a hierarchy of schools. ... there is considerable agreement as to what are considered the most and least desirable schools across SES groups.

By contrast, Ball, Bowe and Gewirtz, had found that lower SES parents had no knowledge of the high circuit schools available to them.²⁶ Hence, the Smithfield authors did not expect low and middle SES parents to have widespread knowledge of which schools would be desirable. To the contrary, they therefore dismissed the importance of their finding on the grounds that even if parents have knowledge about which schools are desirable they are unlikely to be able to act on the information in the same way, because of their social status. Yet, like this research shows, parents sampled in the Smithfield telephone survey had a reasonable knowledge of schools they would choose and think are best, hypothetically speaking.

In some respects then, the geographic framework used throughout this research is an improvement on the circuits of schooling framework used in the Smithfield project for understanding how patterns of choice are structured. The first assumption of the framework applied in this research is neither that the education system is a particular structure to begin with, nor that parents' choices are systematically conditioned according to their position in society. Rather, as Mark Harrison suggested, the approach taken in this research has been to consider the preferences of parents for schools first. Based on these preferences, and various kinds of between school processes including proximity, examination performance, and, to a lesser extent, school type, claims have been made about how parents' preferences are organised within a geographic area.

As demonstrated in each section, the framework shows the schools parents would choose and how the movement of pupils between schools is structured in space, by comparing what the situation looks like before, and might look like after, a policy change. What is more, the framework has allowed better judgements to be made about to what extent distance might affect parents' choice of school. With more extensive data for the total population, even more precise judgements could be made about the relationship between parents' levels of engagement, social advantage and space.

PUTTING STATE SCHOOL CAPACITY TO BEST USE

One of the main purposes of the enrolment scheme provisions in the Education Act 1989 is "to enable the Secretary to make best use of the existing networks of state schools."²⁷ Since the claim was made earlier that changing to a situation of open enrolment would be manageable in Christchurch, it is important to demonstrate this point. As estimates have been produced for the change that would be experienced by schools under a situation like open enrolment, this part considers how capacity in the state sector might be organised to "make best use of the existing network of state schools."

For the purposes of this exercise, estimates from the access scenario which considered only state secondary schools are considered. This is because the state schools scenario offers the most reasonable projection for the scale of demand that could be expected to occur for different schools. As a conservative measure, the amount of expected demand is based on the statistically significant estimates for change to school

rolls produced in the gains and losses analysis of this access scenario. The statistically significant figures are preferred because they are the most reliable figures for the expected change.

Section 3 described the state and state-integrated schools which were operating over, under or at capacity in 2006. The figures for utilisation for Year 9-15 state schools are re-stated in table 6.1. Out of these schools, seven schools, Burnside High School, Cashmere High School, Christchurch Boys' High School, Hagley High School, Papanui High School, Riccarton High School and Shirley Boys' High School, were each operating at or over 100% capacity. Five schools, Avonside Girls' High School, Christchurch Girls' High School, Hillmorton High School, Mairehau High School and Unlimited Paenga Tawhiti were operating at or between 75% and 99% capacity. Another five schools, however, were operating at less than 74% capacity. These schools were Aranui High School, Linwood High School, Hornby High School, and Te Kura Kaupapa Maori O Waitahi and Te Kura Kaupapa Maori O Tahi. It should be reiterated that Aranui High School, Linwood High

School and Hornby High School have current plans to rationalise the number of teaching spaces at their schools, either through rebuilding programmes or by reducing the number of classrooms.²⁸

At the moment, since there are some schools which are operating over capacity and some which are operating much below capacity, one could argue that the spare capacity in schools which are below capacity could be put to better use to ease demand at schools which are full. Smaller home enrolment zones and limited spaces available at schools like Christchurch Boys' High School and Christchurch Girls' High School mean that state schools like Shirley Boys' High School, Avonside Girls' High School and Cashmere High School are filled up partly by unsuccessful applicants who have to send their child to a school which is not their preferred school.

Finding ways of putting the existing capacity in the school network to better use, and increasing the opportunities for families to access schools, would become even more critical in a situation of open enrolment. As predicted by the state schools gains and losses analysis in this research, the number

Table 6.1. Current and projected demand at Christchurch state schools (Year 9-15 pupils)

School	Secondary school roll (July 2006)	Max. secondary school roll (March 2006)	Diff. max. school roll and school roll	Utilisation (%)	Estimated school roll (gains and losses analysis)	Difference between est. school roll and max. roll
Christchurch Boys' High School	1339	1274	65	105	2084	810
Burnside High School	2605	2359	246	104	3006	647
Christchurch Girls' High School	1089	1106	-17	98	1537	431
Riccarton High School	935	885	50	106	1038	153
Unlimited Paenga Tawhiti	282	285	-3	99	349	64
Avonside Girls' High School	1187	1200	-13	99	1162	-38
Cashmere High School	1606	1421	185	113	1364	-57
Papanui High School	1403	1313	90	107	1249	-64
Shirley Boys' High School	1314	1297	17	101	1206	-91
Hagley Community College	1545	1436	109	108	1333	-103
Mairehau High School	591	787	-196	75	532	-255
Linwood College	910	1369	-459	66	611	-758
Hillmorton High School	778	844	-66	92	no change	-
Te Kura Kaupapa Maori O Waitaha	28	40	-12	70	no change	-
Aranui High School	761	1233	-472	62	no change	-
Hornby High School	418	699	-281	60	no change	-
Te Kura Kaupapa Maori O Te Whanau Tahī	11	23	-12	48	102	79

School roll data sourced from the Data Management Unit, Ministry of Education

of parents wanting to access certain state schools would increase dramatically.

The question is how capacity in the state school system can best be used, given the most likely changes that would occur to school rolls. Considering the two state secondary schools that would experience a significant gain to their school rolls, Christchurch Boys' High School and Christchurch Girls' High School, the number of excess places can be calculated at these schools, compared to the available capacity in July 2006. Summing these figures shows that there would be approximately 1,200 extra places needing to be created at these state schools.

Two state schools were also predicted to experience a significant loss, Linwood College and Cashmere High School. With 95% certainty, the loss from Linwood College was projected to be 299 pupils, with the true value of change lying between -598 and -1. The difference of 758 pupils between Linwood College's actual capacity and what its expected roll would be is telling. The school would be a prime candidate for rationalisation, or other remedial action. The difference of 57 pupils between Cashmere High School's capacity and its estimated roll would be less severe. Even suffering a predicted loss of 242 pupils,²⁹ the school would still be near capacity. It would still be likely to retain pupils if parents could choose any state secondary school.

A number of other state schools experienced a loss that was not statistically significant or the estimates showed no change to their school rolls (section 5, table 5.3). Nonetheless, the utilisation figures for Aranui High School and Hornby High School show that they could easily take up some of the excess demand that would be experienced. The total number of excess places at these schools is approximately 750 pupils (table 6.1). The obvious solution is to use this spare school capacity to cover the majority of the excess demand, which could be approximately 1,200 pupils, if only the statistically significant gains registered for two state schools are considered. This would be a way of helping to increase the opportunities for parents to access a better school, if successful schools could be allowed to use the space in some way.

One possibility then would be for popular schools like Burnside High School or Christchurch Boys' High School to co-operate with the schools that have spare space. For example, Aranui High School could become a satellite school for Christchurch Boys' High School. Christchurch Boys' High School

could share its management and staff expertise and expand programmes, thereby perhaps improving the reputation and quality of schooling in the local community that Aranui High School serves. Moreover, if Aranui High School and Christchurch Boys' High School co-operated, it would make approximately 470 extra places available for parents wishing to access the kind of education offered by Christchurch Boys' High School.

Similarly, Christchurch Girls' High School could co-operate with Linwood College as a way of adding much extra capacity. A number of parents from Avonside Girls' High School and Cashmere High School wished to transfer to Christchurch Girls' High School. Co-operating with Linwood College would allow parents in the eastern suburbs better access to a Christchurch Girls' High School education. This way, the amount of new places that would be needed to be created at Christchurch Boys' High School, Christchurch Girls' High School and perhaps Burnside High School would be reduced. Moreover, encouraging co-operation among schools might be a way of increasing parents' access to the kind of schooling they most prefer for their children.

DIRECTIONS FOR FUTURE RESEARCH

While this research has shed light on the degree of choice currently being exercised by parents in Christchurch, and has looked at the possible degree of change that might occur in the first year of open enrolment if families had better access to schools, it has also raised several questions that could be researched in the future.

Firstly, it would be valuable to conduct more in-depth research with parents of children about to enter secondary school for the first time. This research only looked at the amount of change that might occur from parents who have already decided which secondary school their child attends. Even though the findings showed that a proportion of parents want to change to a different school, it is also clear that many parents are happy to leave their children in their current school. One reason for this is likely to be that once children are settled in a school, parents may be unwilling to move them to a different school. Consequently, it would be interesting to ask similar questions of parents of Year 8 pupils to determine their preferences for different schools. This would help to show the effect open enrolment would have

on the school system for the first pupil cohort year to enter secondary school.

Another avenue for future research is to examine more deeply whether there is a relationship between whether parents would change their child's school and their SES. As previously discussed, the sample size of 424 parents meant that a statistically significant relationship could not be proven between annual household income, as an indicator of SES, and whether parents of different incomes would change their child's school. Nevertheless, international research and the Smithfield project findings, discussed in appendix 1, suggest that parents of different SES have taken advantage of better access to schools when it has been available. The point would be to determine whether parents would be likely to respond in a similar way if they could choose their preferred school for their children in a situation of open enrolment.

Other exciting possibilities for future research include the further application of GIS methods and techniques. A GIS has only been used in a simple way in this research as a way of presenting the survey results and measuring the distances between where parents live and the schools they choose. With a larger more representative dataset, a GIS could be used in conjunction with census data to look at such questions as whether there is a relationship between proximity to school, and/or parents' SES, and choice of a particular type of school. It could also help to clarify the relationship between distance and access to schools; for example, examining whether there is a threshold distance that parents are willing to send their children to school.

While the case of Christchurch has offered some insights into how school rolls might change and the implications for managing school capacity with better access to state schools, it would be helpful to estimate what might happen in Auckland under the same circumstances. Auckland covers a larger area, as mentioned in the introduction, and has a more ethnically diverse population than Christchurch. To ensure that a sample representative of the various ethnic and SES sub-groups was collected, quotas for these groups would need to be established at the outset of sampling. Moreover, looking at the case of Auckland would be more revealing for how better access to schools could be managed in New Zealand's largest urban city.

Closely related to the call for future research using

GIS methods is the call for the collection and release of better pupil and school level data. The Ministry of Education already collects a lot of information about school characteristics in the SchoolSMART database, but it is not available to the research community, or the public.³⁰ If it were combined with socio-economic and geographic information for each pupil, then researchers would have access to a comprehensive database of information like the PLASC in England. They could use it to model the likely outcomes for different school access policies, or conversely, to monitor and evaluate the effects of any changes that might be implemented.

CONCLUSION

This section has evaluated the validity of the research presented in this report, and has summarised the major findings, determining that if parents had better access to schools for their children, the gains and losses to school rolls and the movement of pupils between schools would probably mean schools would form distinct groups, differentiating certain schools from each other. Nevertheless, the amount of change is likely to be manageable. It was demonstrated using the estimates generated from the choice of any state secondary school gains and losses analysis that it would be possible to use the existing capacity in the state school network to manage the greater demand that would be experienced by the two popular state schools. The possibility of changing to a system of open enrolment would probably encourage new innovations in schooling provision, such as schools co-operating together or allowing more flexibility on the supply side of schooling.

Lastly, several options for managing school capacity and improving access to schools were discussed in relation to the main research findings, with a view to determining how access can be improved for every child under an open enrolment scheme, and in particular, those from less socially advantaged families. As described, there are several Christchurch secondary schools which are already operating at levels below their maximum capacity, and two of these schools were forecast to lose even more pupils if parents could send their child to any state school. This situation actually makes it possible, however, to use the spare places at those schools to help provide better access to the kind of schooling parents have indicated they would prefer for their

children. This is because the more popular schools could establish partnerships with the schools that have excess teaching space. Allowing schools to form partnerships with each other would therefore be one way of helping to solve the mismatch which is occurring now, or would probably occur under a system of open enrolment, between the demand for popular schools and the number of places available at those schools. School partnerships would also help popular schools to add more places without having to spend more money by building new facilities.

Another important objective of allowing schools to form partnerships is to make access to schools fairer for pupils who are from families which cannot access these popular schools, because of the limited number of places currently available at these schools. This situation is also compounded at the moment by the requirement that over-subscribed schools must operate a home enrolment zone, which means that pupils end up being sorted into schools based on their parents' income, as higher income families can choose to live within the zone of their preferred school so that they can send their children to that school. Children from lower SES families can miss out. If spaces at schools which are currently operating under-capacity could be used more effectively, access to schools could be improved for children from all kinds of families. Further, as both New Zealand and overseas research indicates (see appendix 1), it is also possible the quality of schooling would improve across the board. Based on this discussion, the last section draws some final conclusions about this research and offers some further suggestions for managing state school capacity and improving access to schools for children from every family.

ENDNOTES

- ¹ Cf. S. Lohr, *Sampling: Design and analysis* (Pacific Grove: Duxbury Press, 1999).
- ² Demographic data for ethnicity collected from survey participants was as follows: European, 88.7%; Maori 2.6%; Pasifika, 1.8%; Asian, 2.8%; Other ethnicity, 3.7%. The weaknesses of self-identified ethnicity in survey research apply.
- ³ Note the discussion in H. Lauder et al., *Trading in Futures: Why markets in education don't work* (Buckingham: Open University Press, 1999), 46-50.
- ⁴ Cf. H. Lauder et al., *Trading in Futures: Why markets in education don't work*.
- ⁵ C. Taylor, *Geography of the 'New' Education Market* (Aldershot: Ashgate Publishing, 2002).
- ⁶ V. Ainsworth et al., "Tomorrow's Schools and Freedom of Choice - A Recipe for Disaster. A study of the effects of roll changes on Christchurch state schools" (Christchurch: Education Policy Research Unit, University of Canterbury, 1993).
- ⁷ Cf. C. Taylor, *Geography of the 'New' Education Market*.
- ⁸ C. Taylor, *Geography of the 'New' Education Market*.
- ⁹ C. Taylor, *Geography of the 'New' Education Market*.
- ¹⁰ S.J. Bridges, "Pupil Mobility and Zoning: Out-of-synchronisation enrolments in primary schools located near high school 'home zones' - An initial survey" (Christchurch: Christchurch College of Education, 2002).
- ¹¹ M. Fowler, *Factors Influencing Choice of Secondary School: A case study* (Christchurch: Education Department, University of Canterbury, 1993).
- ¹² C. Bagley, P.A. Woods and R. Glatter, "Rejecting Schools: Towards a fuller understanding of the process of parental choice," *School Leadership and Management* 21, no. 3 (2001): 309-325, cited in F. Fletcher-Campbell et al., "Review of International Literature on Admissions," *Literature Review*, (Slough; Reading, Berkshire: CfBT Education Trust; National Foundation for Educational Research (NFER), 2007).
- ¹³ The Smithfield authors dispute Helen Timperley and Vivienne Robinson's findings because they ruled out either demographic change in the communities schools were situated in or the social class and ethnic mix of the schools studied as reasons for why parents were choosing different schools. H.S. Timperley and V.M.J. Robinson, "Achieving Shared Values between Schools and their Communities," *Leading and Managing* 1 (1995): 137-149, discussed in D. Hughes et al., "Values or Social Class: Competing explanations for changing secondary school rolls in a market context. Phase two, seventh report to the Ministry of Education," *The Smithfield Project* (Wellington: Ministry of Education, New Zealand, 1998).
- ¹⁴ D. Hughes et al., "Values or Social Class: Competing explanations for changing secondary school rolls in a market context. Phase two, seventh report to the Ministry of Education."
- ¹⁵ For example, one study showed that from 7,689 different reasons why parents decided on their final choice of school, 68% were process criteria, 18% product criteria and 14%

- were related to geography. A. Stillman and K. Maychell, *Parents, LEAs and the 1980 Education Act* (London: Taylor & Francis Books, 1986). Taylor's research also found that four of the five most important reasons why parents chose schools were because of process criteria. In Taylor's study, reputation, a product criteria, was the ninth most important reason why a school was chosen. C. Taylor, *Geography of the 'New' Education Market*, 171-172.
- ¹⁶ W. Stockwell and S. Duckworth, "'Drivers of Choice' and Customer Satisfaction with Christchurch Secondary Schools. Report prepared for the Ministry of Education" (Wellington: 1998), 46.
- ¹⁷ A. Beavis, "Why Parents Choose Public or Private Schools," *Research Developments*, 12 (Camberwell, Victoria: Australian Council for Educational Research (ACER), 2004), 5.
- ¹⁸ Cf. P. Teske and M. Schneider, "What Research Can Tell Policymakers About School Choice," *Journal of Policy Analysis and Management* 20, no. 4 (2001): 614.
- ¹⁹ J. Maddaus, "Parental Choice of School: What parents think and do," *Review of Research in Education* 16 (1990): 267-295.
- ²⁰ M. Fowler, *Factors Influencing Choice of Secondary School: A case study*, 111.
- ²¹ Cf. M. Harrison, "Review of the Policy Recommendations from the Smithfield Project Reports" (Wellington: Ministry of Education, New Zealand, 1999), 20.
- ²² S.J. Ball and C. Vincent, "'I Heard it on the Grapevine': 'Hot' knowledge and school choice," *British Journal of Sociology of Education* 19, no. 3 (1998): 377-400; M.J. Marschall, "The Role of Information and Institutional Arrangements in Stemming the Stratifying Effects of School Choice," *Journal of Urban Affairs* 22, no. 3 (2000): 333-350; M. Schneider, P. Teske and M.J. Marschall, *Choosing Schools. Consumer choice and the quality of American schools* (Princeton & Oxford: Princeton University Press, 2000).
- ²³ D. Glover, "Community Perceptions of the Strengths of Individual Schools: The basis of 'judgement'," *Education Management and Administration* 20, no. 4 (1992): 223-230, cited in C. Taylor, *Geography of the 'New' Education Market*, 170.
- ²⁴ H. Lauder et al., "Trading in Futures: The nature of choice in educational markets in New Zealand. Phase one, third report to the Ministry of Education," *The Smithfield Project* (Wellington: Ministry of Education, New Zealand, 1995), 23-24.
- ²⁵ H. Lauder et al., "Trading in Futures: The nature of choice in educational markets in New Zealand. Phase one, third report to the Ministry of Education," 24.
- ²⁶ S.J. Ball, R. Bowe and S. Gewirtz, "Circuits of Schooling: A sociological exploration of parental choice of school in social-class contexts," in *Education Policy and Social Class*, ed. S.J. Ball (London & New York: Routledge, 2006).
- ²⁷ Education Act 1989, Part 2, Section 11A (c).
- ²⁸ Ministry of Education, "Christchurch State Secondary Schools' Capacity," Media Request (Wellington: Data Management Unit, Ministry of Education, New Zealand, 2007).
- ²⁹ At the 95% confidence level, the mean of the estimated change for Cashmere High School in the choice of any state school scenario was 242 pupils. Note, however, that the true value for its loss would be expected to lie anywhere between approximately 447 and 37 pupils. See section 5, table 5.3.
- ³⁰ See the discussion of this point in, S. Thomas, "Information for Parents," *The Parent Factor* (Auckland: Maxim Institute, 2005).

SECTION 7

Conclusion and Policy Implications

INTRODUCTION

This research has endeavoured to critically examine issues associated with creating better access for families to schools in New Zealand. Its focus has been examining what changes might be expected to happen to school rolls if parents could change their child's school and they could send their child to their preferred school. In investigating the answers to these questions, this research has applied a geographic framework to organise and interpret the findings of the survey research.¹ This approach, in particular, has allowed many of the findings to be illustrated on maps, which has aided analysis of the findings.

The advantage of the geographic framework was that it allowed parents' preferences for schools to be analysed in relation to space, measuring change in terms of the estimated gains and losses to school rolls between adjacent schools. The research has analysed and interpreted the results gathered about parents' preferences for schools in two different access scenarios where parents could choose a different school for their child using this framework. The results have enabled some conclusions to be drawn about how the "lived market" for schooling in Christchurch is structured in a way which has avoided the divisive categories of social conflict theory.

The findings of the research, therefore, allow some claims to be made about how much movement there would be between schools in the first year of an open enrolment scheme being introduced. However, the research only surveyed parents whose children already attend secondary school. This means the decisions parents of children in Year 8 would make about which secondary school they would prefer to send their child to have not been taken into account by the projections generated in this research. It is

possible that in a situation of open enrolment, their preferences for schools would be quite different to the choices currently being made about schools in Christchurch. If parents had better access to schools for their children, the schools which the research shows would experience significant growth in their rolls might come under even more pressure.

The estimates for the change to school rolls and the movement of pupils between schools are most helpful for indicating which schools would need to prepare for an increase in demand. They may also be useful to education policymakers as an aid for planning how to make best use of the capacity across the state school system in Christchurch. This would enable the transition to an open enrolment scheme to be managed in such a way that parents would have a reasonable chance of accessing the schools they prefer for their children. As such, as was indicated in section 6, the preferences of Year 8 parents should be the subject of a future research project, in order to fully ascertain the likely impact of an open enrolment scheme on demand for schools.

Under the current situation of access to schools, the findings at the city level show that approximately half of all parents do not send their children to the nearest school to where they live. Further, the majority of parents do send their child to the school they think they are zoned for. A lot of choice, therefore, is already being made by parents between schools in the state school system.

The access scenarios show that, in addition to the high degree of active choice already detected under the current situation of enrolment, the number of parents choosing a different school for their children would increase under the two access scenarios

examined in the research. At the city level, one in ten parents would change their child's school, if they could choose any state secondary school, while one in four parents would change if they could choose any secondary school and if money was no object. If these findings are taken as indicative of the likely movement away from schools in the first year of operation of an open enrolment scheme they should offer encouragement to both advocates and critics of creating better access to schools. This is because the amount of projected movement between schools would be quite small.

Furthermore, when the patterns of movement between schools were analysed by various between school processes the nature of the gains and losses to school rolls and the movement of pupils between schools showed that schools would form distinct groups, which differentiated schools from each other. Parents also appeared to know which schools were better or worse, contrary to the findings of some research which claims parents' ability to choose schools for their children is structured by class and ethnicity. The movement of pupils between schools under each access scenario showed that schools would gain or lose pupils from each other according to different patterns, meaning not all schools gained or lost to each other.

If money was no object, parents who would change their child's school more often than not indicated a private school as their preferred school. This access scenario represented a choice of preferred school with minimal or no constraints on the school parents could choose. Consequently, the results which considered the state schools parents would prefer to send their child to have been stressed as the most relevant estimates of the likely impact of open enrolment on the school system. The findings showed many parents, who would change the school their child attends, preferred two state schools the most. The relative popularity of these schools compared to the other state schools in Christchurch would create even more demand for them at a time when they are already operating at or near capacity.

The reality is, however, that if parents had better access to schools, other changes would be required to free up the supply of schools so that parents would have a better chance of accessing the schools they would prefer for their child. Under the current system, for instance, schools cannot manage the size of their rolls themselves, which reduces their flexibility to

increase or decrease the number of places available in accordance with demand. The system is a bit like:²

... a modified game of musical chairs—there are enough chairs for everyone, but some are more desirable than others. ... The issue for policies around ... access is how things look when the game finishes—which pupils are going to which schools.

There needs to be a focus on improving the accessibility of schools parents want their child to attend, not just by providing better transportation and more classrooms at those schools, but by being more creative with how schooling is delivered. The wishes of parents need to be carefully balanced with what contributes to making a good school. For instance, principals may be hesitant to expand schools by adding physical capacity if the attributes of the school that parents favour, like class size or pupil discipline and behaviour, could be diluted. One of the fundamental issues to work through is how factors that make a difference to children's education like good teachers, good school leadership and a strong school ethos can be shared and extended to other schools which may be lacking in these areas.³

MAKING ACCESS TO SCHOOLS BETTER

Before presenting the specific policy implications that are related to the findings of this research, there are several other issues relevant to making access to schools better for parents, that need to be discussed.

Providing fair and equitable access to schools

The findings of this research detected, but could not confirm, a trend suggesting that a proportion of parents would change their child's school irrespective of their income level. The Smithfield project also showed that low income and ethnic minority parents took advantage of better access to schools in the 1990s. An important question which remains then is which system of providing education, and determining how pupils are allocated to schools, would bring about the most fair and equitable access to schools. A particular concern is how to give parents who may have the most difficulty in accessing a school can have a better chance of getting their children into their preferred school.

Caroline Hoxby has described three essential elements that should be present in the school system

if general improvements in terms of access and opportunity are to be achieved. These are:⁴

1. making it easier for schools to start up or diversify (supply flexibility);
2. allowing parents to control the funding of their child's education (non-discriminatory funding that follows the child to the school they attend); and
3. giving schools more freedom over their operations (independent management of schools).

If these elements informed the principles which govern the school system, parents' preferences would be revealed, and schools would have an incentive to expand and improve the education they offer. These elements would bring about the kinds of improvements described by Hoxby and others in the research noted in appendix 1. They would also circumvent the problems noted previously with the provision of fair and equitable access to schools in New Zealand. For instance, that:

- state-management of school capacity and zoning regulations cause school rolls to become static at popular schools, in spite of high demand;
- the Government subsidises the cost of state education more than private education, with private schools being resourced to approximately 25% to 30% of the level of funding received by state schools;⁵ and
- that the Government restricts schools from responding to new opportunities, or developing a specialist focus, by having to meet the requirements of detailed legislation.⁶

Besides application of the principles described by Hoxby, several specific policy areas are worthy of attention in the future to ensure that parents who have difficulty accessing a school may have a better chance of getting their children into the school they prefer.

Revisions to school enrolment schemes

The first is revisiting how school enrolment schemes might operate. Open enrolment should be the goal

of the education system so that parents' preferences determine the supply of schooling in the education system.

Schools should, therefore, have the flexibility to set their own maximum roll. A mechanism would be needed to allocate pupils to schools when they become over-subscribed. In this situation, a ballot is a fair and impartial way of allocating places so that neither pupils' prior achievement nor their parents' income unduly influences whether they can access an over-subscribed school.⁷

Targeted access schemes and education credits

Another mechanism which could improve access is a targeted intervention like the Targeted Individual Entitlement (TIE) scheme, described in appendix 1.⁸ Parents would receive an education credit which they could spend at their preferred school. As international research has shown (discussed in appendix 1), targeted programmes could help a number of disadvantaged families to access a different school to their local school, which could improve their children's educational achievement.⁹ An intervention like this would also reduce the relationship between residence and access to schools which the Smithfield authors treat as a structural reality of life for lower socio-economic status (SES) parents.

Transport to school

Transport to school is another practical way that disadvantaged families in particular can be assisted with accessing a school. Taylor's research showed that the distances travelled to school by children tended to reach a threshold for a significant majority of parents. 90% of urban parents did not send their children further than 5 km away from home, and 80% travelled no further than 4 km to school.¹⁰ Further, Taylor's research also showed differences in the way more socially advantaged and less socially advantaged parents transported their children to school.¹¹ More socially advantaged parents preferred school buses and car journeys. This meant they could travel further. The less socially advantaged parents chose either a private bus or to have their children walk to school. While the travelling arrangements limited the distance these parents could transport their children to school, nevertheless these parents still sent their children further than the distance to

their nearest school. The bus either sufficed, or their children walked a little further. The extra distance did not necessarily deter those from low SES backgrounds from making an active choice.

This research has shown that the majority of parents are willing to send their children long distances or across town, to access their preferred schools. Bussing was a consistently popular method of transport favoured by parents. While the survey responses for transportation were not estimated at the city level by household income, often low-middle income parents indicated they would bus their children to school. The proportions were equivalent to, if not more than, those of high income parents. Consequently, it would be necessary to invest in accessible public transportation options so that access to schools would not be unduly confined to local areas under an open enrolment scheme. One option could be for central government to provide means-tested transport for some families.¹² Alternatively, schools or even groups of parents within a community could consider providing transportation to help children

access a distant school.

Providing better information to parents

Alongside any of these measures there is also an imperative to provide comprehensive information about schools to parents; for instance, their exam results, their courses and extra-curricular programmes, the background of the teachers and more. Moreover, when information is provided, it needs to be readily accessible, such as through an internet site and in language that parents can understand. The edCentre website (www.edcentre.govt.nz) run by the Ministry of Education would provide a good platform for this service.¹³ Further, it should be possible to compare different schools. Without good information, parents cannot make informed choices. For this reason, any strategy to inform parents about schools should take care to make the information accessible to the disadvantaged families who stand to benefit most from it.¹⁴

POLICY IMPLICATIONS

Given the estimated demand for different schools, and the projected change to school rolls under both of the access scenarios examined in this research, in the final analysis, it is important to make sure that increased demand for certain schools can be managed and that parents can access a range of good state schools.

With this objective in mind, the research findings and discussion documented in this report suggest the following general policy implications for the New Zealand school system. The policy implications are intended to help provide better information about schooling to parents and the general community, and to help manage school network capacity in a situation of open enrolment, as may occur if parents had better access to schools:

1. Collect and make available information about schooling at the pupil and school level

- (i) The Ministry of Education should expand the range of information it already collects about pupils and schools, and make this information available to the general community.**

This research has pointed out that New Zealand lacks a centralised database of information about the background of each pupil and how they are achieving at school, like the Pupil Level Annual Schools Census (PLASC) in England.

As a prerequisite for better understanding and research into the impact of various education policies, the Ministry of Education should expand the range of information it already collects about pupils and schools, and make this information available to the general community, to help parents choose the best school for their children and to help evaluate the effects of education policy on pupils and schools.

2. Abolish school home enrolment zones

(i) The requirement in the Education Act 1989 that a school's enrolment scheme must define a home zone for the school should be removed.

School enrolment zones artificially restrict access to schools. While intended to promote social mixing, the policy in fact promotes social segregation as wealthy families exercise residential choice by buying houses within the school zone to get their children into the schools they prefer. Pupils end up being sorted into schools that operate an enrolment scheme based on their parents' income. Children from lower SES families get turned away, unless they satisfy the five criteria for enrolling out of zone applicants laid down in the Education Act 1989.¹⁵

School zones, therefore, fail at increasing the educational opportunities for more children. Lastly, school enrolment zones should not become a prop for under-performing schools. Schools exist for the benefit of pupils.

Consequently, the requirement in the Education Act 1989 that a school's enrolment scheme must define a home zone for the school should be removed so that all parents may access the school they most prefer for their children, regardless of where they live. Furthermore, schools already using home enrolment zones should be required to disestablish them.

(ii) The requirement in the Education Act 1989 that schools must be "reasonably convenient" for pupils to attend should be removed.

The requirement that schools be reasonably convenient for parents to attend also creates the opportunity for ambiguity to occur about what is fair and equitable access to schools.¹⁶ It also further entrenches right of access for parents who live nearby a school, irrespective of their social status or needs.

Consequently, all references that schools should be "reasonably convenient" for parents to attend should be removed from the Education Act 1989.

3. Grant schools more freedom to manage their capacity

(i) School boards should be able to set their school's maximum roll.

School boards should have the freedom to adjust their rolls to be able to respond to falling or rising demand. In this way, the supply of schools can more quickly respond to the wishes of parents if they have excess space or the capacity to provide extra teaching space.

This means that the power of the Secretary of Education to set maximum school rolls must be devolved to school boards.

(ii) The requirement that school capacity should be managed subject to the "best use of the network of state schools in the area" in the Education Act 1989 should be amended.

The requirement that school capacity must be managed with respect to the "best use of the network of state schools in the area" creates unnecessary restrictions on the ability of schools to adjust their capacity to meet rising or falling demand.¹⁷ It also restricts the growth of alternatives to regular Year 9 to 15 state schools, such as state-integrated and special character schools.

This requirement should be removed from the Education Act 1989 to give schools more flexibility to manage their own capacity.

(iii) The roll caps on state-integrated schools should be abolished.

Currently, state-integrated schools cannot offer enough places to meet demand from parents for the special character education they offer. State-integrated schools have two types of caps on their rolls: a maximum roll-cap, and the requirement that no more than 5% of their roll must not be of the special character of the school. They must receive approval from the Minister of Education before they can increase their roll.

Lifting the roll-cap on state-integrated schools would be an easy way to allow these schools to expand to meet current and future demand from parents who prefer special character education for their children.

(iv) The Ministry of Education should provide capital funding grants to schools that need to expand.

Another strategy to help schools cater for growing rolls and to expand their capacity could be to implement a scheme for schools to apply for extra capital funding so that more pupils can be admitted. In England and Wales, school intakes have become more socially mixed because schools can offer more places.¹⁸

4. Allocate places at over-subscribed schools fairly

(i) Where schools experience greater demand than there are places for pupils, applications should be decided by a random ballot.

Allocation of places at schools which are over-subscribed by a random ballot is the fairest way to determine which pupils may access a school. This is because a random ballot does not discriminate on the basis of parents' income, a pupil's prior achievement or a pupil's background.

5. Schools should have more freedom to co-operate

(i) Over-subscribed schools should be encouraged to form partnerships with schools that have excess capacity.

The monochrome approach to the provision of schooling in New Zealand has led to a mismatch between the demand for schools and the number of places available at certain schools. Under a system of open enrolment, this situation would need to be addressed so that popular schools would be able to meet demand better, and so alternative providers of schooling could start new schools, perhaps within the state sector.

In this research, several schools in Christchurch were noted as having excess teaching space. As suggested, one way to make best use of the existing capacity within the state school system could be to encourage popular schools to establish partnerships with schools that have excess teaching space.

Schools which are full could use the opportunity to create partnerships with schools that have excess capacity. The new teaching spaces made available could help the more successful schools to offer specialist education in areas of excellence; for example, music, sport, *kapa haka* or drama. If schools could specialise more they might also become popular with particular

subsets of families, helping to create a better match between school capacity and parental demand. School specialisation would also help to eliminate the problem of over-subscribed schools and under-utilised teaching spaces.¹⁹

(ii) Successful schools should be encouraged to assist schools which are under-performing.

Conversely, under-performing schools that otherwise would be closed could be assisted by a successful school. This way, good schools which have a strong reputation for quality could share governance, management techniques, programmes and perhaps even teachers with schools that do not have access to these resources.

This kind of partnership between schools would also allow schools that need to expand more flexibility to add teaching spaces rather than having to build new facilities. Furthermore, school partnerships would make it easier for parents who have difficulty accessing the most popular schools to obtain the education they would most prefer for their children. School partnerships would also help to improve the quality of local schools for those parents who would prefer to send their children to their local school.

6. Make it easier to establish alternative schools to regular state schools

(i) The power of the Minister of Education to decide whether designated character schools can be established should be reduced.

Along with giving existing schools the freedom to manage their own capacity, it should be easier for providers of specialist schooling or special character schools to establish alternatives to regular state schools within the state system. Access to a range of schools—some of which might have a specialist focus—would also increase the variety of schools parents could access.²⁰ This would expand the opportunities for parents to choose the kind of school that is most suitable for their child's education. This freedom might even involve groups of like-minded parents coming together to establish schools that cater for the particular kind of education they prefer for their children.

The Minister of Education currently has the discretion to decide whether designated character schools may be established. Parents or educators wanting to start a school must satisfy the Minister that there are 21 children who would enrol at the school, and that the education that would be offered at the school would differ from the education at an ordinary state school or special character education available at other schools.

The Minister's powers should be reduced so that parents or educators wanting to start a designated character school only have to prove to the Minister that there is enough demand from a group of parents to support a new school, and that the school will be adequately resourced before it starts operating.

(ii) School boards should be given the freedom to grant leases or licenses so that alternative education providers can establish schools using their premises.

Currently schools must apply to the Secretary of Education to grant a lease or a licence to occupy premises to any person in respect of any land, buildings, or facilities occupied by the school board.²¹ By giving school boards the discretion to grant leases or licenses, unused capacity could be put to better use by allowing alternative education providers to establish

new schools using the premises of existing schools.

Besides this, another advantage of giving school boards this power would be that new schools could be able to minimise their start up costs. It would also allow an efficient use of existing school property. As with school partnerships, this proposal has the potential to increase the number of schools within close proximity of where parents live while also creating a wider range of schools for parents to choose from.

The arrangements for these 'schools within schools' might be similar to the way Maori bilingual units operate in some mainstream secondary schools, but they would be slightly different since their operations would be run separately from the host school. Many charter schools in the United States run this way by renting property from state schools.

7. Make transportation to schools more accessible

(i) School boards should be responsive to the needs of parents whose children attend their school, or who are seeking to attend their school, by providing transport if necessary for parents who live further away.

This research has shown that, if they could choose any secondary school, many parents would be willing to send their children longer distances to their preferred school than the distance to their nearest school. Reducing the barrier that distance may present to parents when they are choosing between schools is vital for helping more parents gain entry into the schools they prefer for their children. This research also showed that bussing would be the most popular method of transport among parents who would change their child's school. It is important to make sure that bussing is convenient and affordable for the majority of families who want to choose a different school.

Currently, the Secretary for Education may assist in the provision of school transport by either paying schools to provide school transport to their students, arranging transport providers to provide school transport, or contributing to the cost of parents providing school transport.²² School boards should be responsive to the needs of parents attending, or seeking to attend, their school and help provide transport if necessary. This might take the form of a bus service or community involvement through car-pooling.

CONCLUSION

This report has presented findings from original research into how parents might respond to two hypothetical scenarios where they had better access to schools, and they could choose the secondary school they would most like to send their child to. The objective of the research has been to uncover what the implications of better access to schools would be for managing capacity in the school system, using Christchurch as a case study. *Roll Play* has presented and discussed these findings using a framework and methodological techniques that link the study of accessing schools to geography,²³ making it different to previous New Zealand research.

The research has presented a reasonable picture of the degree of change that might be expected under a system of open enrolment in an urban environment. It has found the proportion of parents changing their child's school would be relatively small, and so change in the first year of an open enrolment scheme would most likely be manageable. While school rolls would fluctuate, the effects of allowing better access to schools is unlikely to send the majority of state schools into spirals of decline as some critics fear.²⁴

More importantly, it has used these findings to make some tangible suggestions for how the projected change to secondary school rolls might

be handled. This has included an analysis of how existing school capacity can be used better. The analysis suggests that there is a case for schools which become over-subscribed to manage their capacity by forming partnerships with schools that have excess capacity. Alternatively, those schools could allow alternative education providers to use their spare capacity, as a way of improving the range of educational opportunities available to parents so they have more opportunities to access the right kind of education for their children.

A caveat is placed on the implications of this research, however, which is that lifting restrictions on access to schools is only one part of wider changes which are necessary to improve the quality of schooling in New Zealand. In particular, changes in teacher recruitment, remuneration and retention are also necessary. If some schools are to expand with better access to schools, then it is vital that more quality teachers are trained to cater for the needs of the children attending them. Making sure every pupil can benefit from being taught by a quality teacher, coupled with better access to schools, is important to reduce the disparity between the highest and lowest achievers in New Zealand schools.²⁵

Nevertheless, as has been demonstrated by the experience of numerous countries and territories overseas, and from New Zealand's own fleeting experience with improving access to schools, removing the restrictions that limit parents' choices can lead to improvements in the quality of schooling. Policies which give parents better access to schools also mean that parents' preferences determine the supply of schooling.

Consequently, improving parents' access to schools for their children has the potential to make every state school a better state school, as schools become more responsive to the wishes of parents. It is also fairer than the current rigid one-size-fits-all education system that reinforces elitism and privilege. Better access is also fairer to lower SES parents as it breaks down the power of income and residential choice as the primary determinants of access to schools. In conclusion, this research shows that if access to schools was improved changing school rolls could be managed, and capacity in the state school sector could be put to better use.

ENDNOTES

- ¹ C. Taylor, "The Geography of Choice and Diversity in the 'New' Secondary Education Market of England," *Area* 33, no. 4 (2001): 368-381; C. Taylor, "Hierarchies and 'Local' Markets: The geography of the 'lived' market place in secondary education provision," *Journal of Education Policy* 16, no. 3 (2001): 197-214; C. Taylor, *Geography of the 'New' Education Market* (Aldershot: Ashgate Publishing, 2002).
- ² S. Burgess et al., "School Choice in England: Background facts," *Working Paper*, 06/159 (Bristol: Centre for Market and Public Organisation (CMPO); University of Bristol, 2006), 14.
- ³ S. Burgess et al., "School Choice in England: Background facts," 15.
- ⁴ C.M. Hoxby, "School Choice: Three essential elements and several policy choices" (Wellington: Education Forum, 2006), 11.
- ⁵ C.M. Hoxby, "School Choice: Three essential elements and several policy choices," 20. Also see M. Harrison, *Education Matters. Government, markets and New Zealand schools* (Wellington: Education Forum, 2004), 170-171.
- ⁶ Special character schools are allowed for in the Education Act, Section 156. The Minister of Education has wide discretionary powers to decide whether such a school may be started, including that the kind of education offered is not available at a state school children can conveniently attend. N. LaRocque, "School Zoning: Locking kids out or letting them in?" (Wellington: Education Forum, 2005), 12; Education Act 1989, S 156.
- ⁷ F. Fletcher-Campbell et al., "Review of International Literature on Admissions," *Literature Review* (Slough; Reading, Berkshire: CfBT Education Trust; National Foundation for Educational Research (NFER), 2007), 36.
- ⁸ See M. Gaffney and A.B. Smith, "An Evaluation of New Zealand's Targeted Individual Entitlement Scheme," in *Can the Market Save our Schools?* ed. C.R. Hepburn (Vancouver: The Fraser Institute, 2001), 151-166.
- ⁹ But see in particular, W.G. Howell et al., "Test-Score Effects of School Vouchers in Dayton, Ohio, New York City and Washington D.C.: Evidence from randomised field trials," Paper prepared for the annual meeting of the American Political Science Association, Washington D.C., September 2000 (Cambridge, Massachusetts: Program on Education Policy and Governance, Harvard University, 2000); and W.G. Howell and P.E. Peterson, *The Education Gap. Vouchers and urban schools* (Washington D.C.: Brookings Institution Press, 2002); P.E. Peterson et al., "School Vouchers. Results from randomised experiments," in *The Economics of School Choice*, ed. C.M. Hoxby (Chicago: University of Chicago Press, 2003), 107-144. Also see J.P. Greene, "The Effect of School Choice: An Evaluation of the Charlotte Children's Scholarship Fund Program" (2000); J.P. Greene, "A Survey of Results from Voucher Experiments: Where we are and what we know" (New York: Manhattan Institute, 2000); J.P. Greene, "Rising to the Challenge: The effect of school choice on public schools in Milwaukee and San Antonio," *Civic Bulletin*, 27 (New York: Manhattan Institute, 2002); J.P. Greene, "Vouchers in Charlotte," *Education Matters*, Summer (2001); and J.P. Greene, "An Evaluation of the Florida A-Plus Accountability

and School Choice Program" (New York: Manhattan Institute, 2001).

- ¹⁰ C. Taylor, *Geography of the 'New' Education Market*, 217-218.
- ¹¹ C. Taylor, *Geography of the 'New' Education Market*, 178.
- ¹² C. Taylor, "The Quality of Education in Britain: More choice for citizens? Paper presented at "The Quality of Welfare Services in Europe: The impact of policy change on citizens and providers," Social Science Research Center, Berlin October 2001" (2001), 6.
- ¹³ edCentre was profiled in the following publication: New Zealand Qualifications Authority, "www.edCentre.govt.nz - A New Gateway to Education Information," *QA News*, no. 50 (2005).
- ¹⁴ M.J. Marschall, "The Role of Information and Institutional Arrangements in Stemming the Stratifying Effects of School Choice," *Journal of Urban Affairs* 22, no. 3 (2000): 347-49.
- ¹⁵ Education Act 1989, Part 2, S 11F, part 1 (a) - (e).
- ¹⁶ Education Act 1989, Part 2, S 11B, S 11E, part 2 (a).
- ¹⁷ For example, Education Act 1989, Part 2, S 11I, part 1 (d)
- ¹⁸ C. Taylor, "The Quality of Education in Britain: More choice for citizens? Paper presented at "The Quality of Welfare Services in Europe: The impact of policy change on citizens and providers," Social Science Research Center, Berlin October 2001," 6.
- ¹⁹ J. Merrifield, "Parental Choice as an Education Reform Catalyst: Global lessons" (Wellington: Education Forum, 2005), 27.
- ²⁰ J. Merrifield, "Parental Choice as an Education Reform Catalyst: Global lessons," 27-28. Cf. C. Taylor, *Geography of the 'New' Education Market*, 255.
- ²¹ Education Act 1989, S 70B, part 1.
- ²² Education Act 1989, S 139.
- ²³ C. Taylor, "The Geography of Choice and Diversity in the 'New' Secondary Education Market of England"; C. Taylor, "Hierarchies and 'Local' Markets: The geography of the 'lived' market place in secondary education provision"; C. Taylor, *Geography of the 'New' Education Market*.
- ²⁴ H. Lauder et al., "Trading in Futures: The nature of choice in educational markets in New Zealand. Phase one, third report to the Ministry of Education," *The Smithfield Project* (Wellington: Ministry of Education, New Zealand, 1995).
- ²⁵ Ministry of Education, "Focus on Achievement in Reading Literacy - PISA 2000" (Wellington: Comparative Education Research Unit, Ministry of Education, New Zealand, 2004), 11-12.

APPENDIX 1

Improving Access to Schools:

An overview of some of the relevant literature

INTRODUCTION

As an aid to the discussion of major ideas, themes and developments in the education research discussed in this report, this appendix briefly examines the developments in research looking at policies which provide parents with better access to their preferred school. The purpose of the appendix is not so much to present an exhaustive review of the literature on improving access to schools, as numerous other studies have surveyed this body of research.¹ Rather, the objective of this section is to show how research has spread to a number of different disciplines to study the impact of improving access to schools, by moving beyond outlining the ideas and principles for how such a system might work. In particular, it discusses research that has originated from disciplines as varied as sociology, economics, political science and geography which has added to the empirical literature and improved understanding of the effects of improving access to schools, expanding on the typology of research presented in section 2.

The second part of this appendix critically evaluates New Zealand research on improving access to schools. It focuses on the findings of research produced by the Smithfield project that examined the impact of education policy introduced under *Tomorrow's Schools* by the Education Act 1989. Principal among the changes introduced by *Tomorrow's Schools* was the relaxing of school zones and the implementation of a system of open enrolment that allowed parents to choose their preferred school. It shows that the Smithfield research has several limitations and a number of findings which are misleading or incorrect. Even with such shortcomings, the findings of the Smithfield project have still been used by other overseas researchers and

analysts as evidence that improving access to schools leads to negative outcomes for schooling. In reality, the evidence could suggest alternative conclusions and its interpretation ignores the positive effects of open enrolment. The record needs to be set straight: the conclusions drawn by the Smithfield project authors which were misleading about improving access to schools need to be corrected.

INTERNATIONAL RESEARCH ON THE IMPACT OF IMPROVING ACCESS TO SCHOOLS

First generation studies on access to schools

The body of literature that has examined improving access to schools has mushroomed since the earliest research and writing on the subject, which emerged in the 1950s. It concentrated on the principles of what such a system might look like, and questioned whether parents and schools or the state should be the primary driver of education.

In the first instance, the late American economist Milton Friedman might be regarded as the intellectual grandfather of policy ideas that have given parents better access to schools. In his 1955 essay called "The Role of Government in Education," he was one of the original advocates for improving access to schooling.² When Friedman wrote, he was not dissatisfied with the quality of America's public schools. He was more interested in advocating that the administration of the educational institutions by the Government was difficult to justify on the grounds that it created an education industry. Friedman hoped that by reducing state control of education, more diverse forms of schooling might eventuate, giving parents more schools to choose from.

Contending that finance and administration could be separate, Friedman also proposed that parents should receive an education credit from the Government, which they could spend at whichever school they preferred. This proposal meant that all parents would have the means to choose a school that best fitted the needs of their child. With this contribution, Friedman arguably set the scene for years of fruitful debate about the concept of an education system where the state played a reduced role in structuring access and provision of schooling.

In Friedman's wake, others followed. Research and policy analysis really began to mature when improving access to schools arose as an attractive policy solution for raising education standards, primarily, but not exclusively, in the United States and England.

In addressing these concerns, two American political scientists, John Chubb and Terry Moe gained considerable attention. Drawing on theories of institutional behaviour, they criticised state control of education, publishing research in 1988 and 1990 that found the most effective schools were subject to less external administrative control.³ Their research findings also suggested that giving schools more autonomy would help them become more effective. An important implication of their research was that state schools lack incentives to reform themselves. Chubb and Moe concluded with a case for education credits to bring about external pressure on schools to improve.⁴ Their argument for an education credit was weakened, however, as their empirical data did not directly support this proposal.⁵

Nevertheless, their work still offers a reasonable explanation for why education driven by the state, not parents, is not as likely to produce effective schools as a system with greater freedom for schools and school leaders.⁶ Chubb and Moe's work was influential in the policy debate surrounding increased access to education, especially in the United States, as despite the Government investing more money and resources into schooling, pupils still ranked low in international comparisons and standardised tests scores had plateaued.

Second generation studies of access to schools

The various kinds of second generation studies that originated in the context of alarm over the slow rate of growth in pupil achievement in the United States were discussed in section 2. The quality of the studies

produced from the late 1990s onward, which fall into the categories identified in section 2, improved dramatically; largely due to the application of a range of more sophisticated research techniques from different disciplines.

This is because many of the latest generation of studies have increasingly met criteria described by Caroline Hoxby, a labour economist and a leading expert on the effects of making access to schools better, as the 'gold standard' for research in this area. They have used statistical techniques for analysing policy interventions in non-experimental settings. These include having a randomly drawn control group, detailed baseline data on parents' demographics and their behaviour before receiving the opportunity to choose, pupils' test scores before and after a policy change, and data on attrition and longitudinal assessment.⁷

In the same vein, Hoxby also argues that empirical economists are scholars with the most appropriate techniques to model the results of limited programmes or policy experiments, whether planned or those that occur through the natural course of events. She makes the case that economists' methods work well because they mimic the settings of a laboratory, taking carefully into account problems like selection (the families who take the opportunity to access a different school might be different from those who do not), the difference between programmes which allow a small number of pupils to participate (against those where more or all can), and whether pupils may continue to suffer problems, such as social disadvantage, after policies have been enacted.⁸ Appropriate use of methodology and the validity of conclusions drawn from those methods is also a factor that should be kept in mind when evaluating research on access to schooling in New Zealand, which will be discussed shortly.

Moreover, these developments in the research methodology of studies which examine making access to schools better, also explain why a more diverse range of empirical research has been produced. Better research techniques allow for a more enhanced analysis of a range of issues and outcomes. Examples of various studies which fall into each category are now listed below:

- **Targeted education credit programmes**

One of the most comprehensive studies of the

effect of privately-funded education credit schemes, targeted at low-income families, was led by two political scientists, William Howell and Paul Peterson.⁹ It examined the gain in test scores for pupils who received an education credit by lottery in three cities in the United States, New York, Washington D.C. and Dayton, Ohio. Each of the schemes was established between 1996 and 1998.

Howell and Peterson were able to analyse the three schemes because the design of the programmes in each city was similar. This was due to the recipients in each city being of similar socio-economic status (SES), and because the credits were partial, with families being required to supplement the credit from other resources. Most importantly, each scheme met the criteria for the allocation of the credits being random, as they were awarded by lot. This feature meant those families who did not receive credits could act as a control group. The research team was also able to collect baseline data on families and pupils' test scores before the lotteries were conducted.

Another noteworthy example of a study of a targeted scheme includes one of Milwaukee conducted by Jay Greene and colleagues.¹⁰ Using similar methods to Howell and Peterson, Greene's team found relatively large independent school effects for pupils who attended independent schools for three years; 6 percentile points in reading and 7 in mathematics.

Greene has also examined the Florida A-plus scholarship scheme, which gives parents of children in schools deemed by the state to be failing, the opportunity to transfer to an independent school. By comparing schools that were either failing with ones that were not, positive effects were found for failing schools that were forced to improve by the state, as these schools made statistically significant gains in test scores.¹¹ Lastly, Hoxby, in a study with a sample comprising 99% of elementary pupils attending charter schools, also found that pupils in charter schools are 5% more likely to be proficient in reading and 3% more likely to be proficient in mathematics on their state's tests.¹² These findings were in relation to the scores at the nearest regular state school the pupil could have attended with a similar pupil population.

- **Studies looking at the whole school system**

While the studies of targeted programmes are helpful

for understanding the short-term impact of specific interventions, how disadvantaged parents respond to better access, and how those programmes can better benefit the parents who use them, and the broader effects of improved access to schools for children on the school sector and school performance are also of great interest.

In this area, Hoxby has made some of the most sophisticated and compelling contributions, working with the tools of economics. In a series of studies in the 1990s, Hoxby found that after statistically controlling for income, ethnic background and other confounding variables characteristic of cities, metropolitan areas with more state school districts achieved slightly higher test scores, educational attainment, and future wages—at less cost.¹³

In subsequent research, Hoxby also examined whether the effect of the Milwaukee education credit, and charter schools in Michigan and Arizona improved the performance of pupils in state schools that faced competition.¹⁴ The findings showed state schools consistently responded favourably to competition, improving at rates faster than schools which did not face any pressure.¹⁵ The competition effect swamped any effect associated with skimming. In a later paper published in 2003, Hoxby was also able to demonstrate that the same state schools also raised their productivity in the face of competition. Productivity was defined as higher achievement for every dollar spent by a school.¹⁶ The clear message coming from Hoxby's research was that state schools improved their performance when they faced an alternative provider, and pupils have benefited.

At a country-level, the Swedish education system is a good case study of a system which has made it easier for parents to access an alternative school for their children to regular state schools. In 1992, legislation was passed which devolved power over funding to the local level, allowing municipalities to fund approved independent schools.¹⁷ The new law made it very easy for education providers to set up independent schools. Today, independent schools are funded to the same level per child as state schools run by the municipality.¹⁸ Further, because the legislation affects the entire country it is possible to see what the impact of a wide scale access scheme has been across the state municipal school system.¹⁹

Research published by Frederik Bergström and Mikael Sandström has looked at these reforms. They found that the number of independent schools

increased by 438% between 1992 and 2004, while the number of state schools decreased by only 5%. Consequently, one feature of the Swedish experience has been increased specialisation of schools, as the great majority of independent schools have a special focus on a particular subject or pedagogy. Similar to Hoxby's research in the United States, Bergström and Sandström have also shown that Swedish pupils achieved higher grades and test scores in schools that faced competition from independent schools, while other research has shown public schools also become more efficient in a competitive environment.²⁰

• General equilibrium studies

As the rise of access programmes suggests, money is not the only factor that makes a good school. Other factors play an important role, like differences between where parents live, pupils' prior achievement, peer effects, teacher quality, and the level of bureaucracy. A systematic approach to analysis from economics, called general equilibrium modelling, can clarify the channels through which proposals to improve families' access to schools may impact parents, children and schools, and link these channels to empirically relevant data.²¹ In economics an equilibrium describes a situation "where everyone is doing the best they can" in the economy, "given the features of the economy that can be observed, and when those features are consistent with the underlying political and production processes."²²

Thomas Nechyba is an American economist who has used general equilibrium modelling to make predictions about the impact of policies that give parents in the United States more choice of school between independent and state schools with education credits.²³ In one piece of research, Nechyba looks at the link between housing and school consumption, as one of the effects of education credits is to reduce the link between residential choice and access to schools.

To examine the relationship, Nechyba built a theoretical model that incorporates all the observed forces that are important for analysing school competition under residential choice, and calibrated it to replicate the most important outcomes, by assuming that the underlying factors and forces that affect people's choices would remain the same, in order to analyse the potential impact of new education credit policies. By taking into account

as many variables as possible, including residence, per-pupil spending, and peer quality, Nechyba demonstrated that education credits change parents' incentives, leading to social integration.

Patrick Bayer and Robert McMillan also used general equilibrium modelling in a study measuring the elasticity of demand faced by 700 elementary schools in the San Francisco Bay Area.²⁴ They developed a school-specific measure that showed how a reduction in school quality may lead to reduced demand. In other words, their method is to simplify the effect of making access to schools better, into demand and supply components, an issue relevant for policy. Bayer and McMillan found strong evidence that higher demand elasticities are associated with increases in public school achievement scores, with little effect on resource use, indicating that productivity improves. Their findings are the same irrespective of which pupil, school, and neighbourhood characteristics were controlled for.

In summary, general equilibrium modelling has perhaps been most useful to construct models of choice processes, helping to take into account as many forces that impinge on parents' choices as possible. Further, they have helped to examine how the impact of various incentives introduced by access schemes may affect school performance.

• Parental attitudes and information levels about accessing schools

The studies and models mentioned so far might suggest school and pupil performance are the only factors relevant to the discussion of the merits of giving children better access to schools.²⁵ Yet there are other factors that should be taken into account, such as parents' attitudes and decision-making processes with respect to choosing schools.

Terry Moe published the findings of a vast telephone survey of 4,700 Americans in 1995, including parents and non-parents, where participants were asked to respond to a range of questions about education, education credits and the quality of state schools.²⁶ Moe described the research as "an effort to clarify and extend our knowledge of where the American people stand on the voucher issue, and how their thinking reflects the deeper values, beliefs and interests that matter to them."²⁷ Despite finding high satisfaction levels, Moe nevertheless found that Americans were relatively dissatisfied with public

sector schools, as they generally thought independent schools were superior and that state schools provide children from low-income families and from ethnic minorities with lesser qualifications. Moe found demand for independent schools from low-income parents and parents from ethnic minorities, as 67% of these parents said that if they could afford it they would be interested in sending their child to an independent or parochial school.²⁸ Moe concludes that parents are more interested in opting out of the state system when they think the state system is performing poorly, or they think it is inequitable.

Despite these strong feelings, Moe found that information levels about education credits are quite low. Only two-thirds of Americans had heard about education credits.²⁹ So a major problem is that lower educated or lower SES parents, who may benefit most from the opportunity for their child to attend an alternative school, are not informed and therefore not mobilising to access one. Nevertheless, Moe found that 77% of inner-city parents support an education credit.³⁰ On balance, Americans think that education credits will have positive benefits for society, in the form of better schools, and, if they are parents, in terms of greater control over their children's education.³¹ Further, around three-quarters of participants thought that education credits would help low-income children, parents would have enough information, and education credits would help get children out of bad schools.

Moe's study shows just how complicated it is to study and interpret public opinion, especially on a tricky issue such as education credits and preferences for schooling. Nonetheless, his findings are consistent with other studies reviewed by Paul Teske and Mark Schneider, as the message which emerges from the research is that parents who choose a different school do so based on academic programmes, educational quality and higher standards, with the preference for these products of education being marked among lower SES parents. Hoxby's study of access to schools in metropolitan areas also showed that parents with more choice ended up with their children at more rigorous and academic schools.³²

With respect to parents' information levels about schools and options available to them identified by Moe, different research by Teske and Schneider also suggests that parents do gather basic information about schools. Further, while urban parents did not have high levels of information, those parents

who could choose had slightly higher information levels, and better-educated parents might be able to pass on their information.³³ These findings are also similar to research in England by sociologist Sharon Gewirtz that showed parents have different degrees of engagement with sources of information, whether that was by researching schools in person (a high level of engagement) or talking to other parents (a low level of engagement).³⁴ Further, Stephen Ball, an educational sociologist, and colleagues considered that parents had different networks through which to learn information; different from official information, like school prospectuses.³⁵ Together, these studies provide insight for education policymakers that much work needs to be done to structure programmes and information arrangements so that the majority of parents can access them and derive the sorts of benefits for pupils and schools described previously.

• Segregation effects of increased access to schools

Perhaps the most charged area of research that has been debated in the literature so far has been whether the mechanisms for improving access to schools, like education credits and open enrolment schemes, has led to the sorting of pupils into schools based on SES. It has become such an important issue because the way pupils are allocated to schools determines the social composition of school rolls, which is critical if one of society's goals is fair and equitable access to education. Scholars such as Ball, working from a cultural capital perspective, contend that access schemes work "as a class strategy by creating a mechanism which can be exploited by the middle classes as a strategy of reproduction in their search for relative advantage, social advancement and mobility."³⁶

The issue of whether increasing access to schools leads to social segregation will be discussed more thoroughly with reference to New Zealand, as this has been the assumption of leading New Zealand scholars.³⁷ The reality is that segregation of school intakes has always been present.³⁸ What is more, wherever school zones are used "segregation by mortgage" will be guaranteed. This point was noted in relation to Nechyba's research: children's access to schools is often constrained by whether their families can afford to live near a school. School zones reinforce this kind of social inequity. Nevertheless, researchers

like Ball remain sceptical of lifting restrictions which currently limit the schools which parents can attempt to enrol their children in, claiming that poor parents are unable to make the same choices as other parents and that their disadvantaged status means they will make poor choices.³⁹ Further, other research claims this leads to an education gap between the privileged and the under-privileged.⁴⁰

The Cardiff study, produced by Stephen Gorard, John Fitz and Chris Taylor, was a study of all secondary schools in England and Wales from 1989 to 2002, using data from their annual school census returns.⁴¹ It is a good example of a research programme that has used a large dataset to critically examine the question of whether socio-economic segregation will increase between schools when children have better access to schools. The datasets were analysed using spatial models and indices of segregation based on family poverty, ethnicity, first language and special education needs.⁴² Studies of districts and schools were included. On the question of segregation by poverty, the Cardiff study showed that prior to the introduction of measures that allowed parents to indicate their preferred school within a Local Authority, segregation was higher before than after the change in policy. Furthermore, segregation broadly declined from 35% to 30% between 1990 and 1994, stayed at around 30% between 1995 and 1997, and between 1998 and 2002 crept back to 33%—still less than before 1989.⁴³

Other researchers have ignored or dismissed the Cardiff study's findings without explanation, or have quibbled over their methods.⁴⁴ Moreover, a major problem is that these studies were much smaller in scale, many looking at inner London, and did not seek to test the composition of school rolls as the Cardiff study did.⁴⁵ Instead, they examined the class disparities in the way parents went about choosing schools, the *process* side of choice, not the *outcome* of making access to schools better.⁴⁶ Where segregation was a consequence, it was merely hypothesised rather than confirmed, sometimes with the use of only one year's data. Yet, in a practice of academic vote counting, the prevailing consensus in England seems to be that making access to schools better causes social segregation.⁴⁷

Measuring social segregation, or sorting of pupils, is not straight-forward, and requires precise statistical techniques to take account of the myriad of background factors to prove that it has occurred.

As Gorard and Fitz comment, "One should not naively attribute any and all changes in segregation to the introduction of choice and competition in the state-funded education system, as other researchers have done."⁴⁸ The debate around, and the short-comings of, studies arguing the opposite of the Cardiff study should signal that the segregation debate is politically charged, and that education research can be driven by underlying agendas. The Cardiff study is, however, an example of an objective, robust study, and its comprehensive longitudinal dataset means it has vastly increased understanding of the effects of Government policy on access to schools in England. Its findings should be taken seriously. The authors of the Cardiff study have also challenged the methods and findings of New Zealand's Smithfield study on the period after 1990 when school zoning was relaxed and the claim that it also led to the polarisation of school rolls and social segregation.⁴⁹

THE STUDY OF IMPROVING ACCESS TO SCHOOLS IN NEW ZEALAND: A CRITIQUE OF THE FINDINGS OF THE SMITHFIELD PROJECT AND RELATED RESEARCH

This part briefly discusses the research which has been conducted on improving access to schools in New Zealand and shows where the interpretations of the research findings have been misleading. It includes a discussion of the Smithfield project, introduced in section 2, and work by Edward Fiske and Helen Ladd.

The Smithfield project

Access to schools became better in New Zealand as a result of the fourth Labour Government picking up on a recommendation made by the Picot Taskforce which reviewed education administration in 1987. The Taskforce found that schools were not responsive to the wishes of parents. It recommended that parents should have a greater choice of school, which could be achieved by eliminating zoning.⁵⁰ This recommendation, along with numerous others, formed the White Paper, *Tomorrow's Schools*, which the Education Act 1989 implemented. Initially, pupils still had the right to attend their local school, but this right was abolished in 1991. Schools determined their own enrolment schemes when demand for places outstripped capacity.⁵¹

In the context of these fundamental changes to the school system, the Smithfield project was initiated

in January 1992, under contract to the Ministry of Education, to look at the impact on educational equality of opportunity and school effectiveness.⁵² Hugh Lauder, David Hughes, Sietske Waslander and Martin Thrupp were leading researchers on the project. Before these reforms, very little was written on the subject of the effects of zoning in New Zealand, although one contribution from Gary McCulloch did look at the history of zoning policies. It focused on Auckland, concluding that zoning maintained entrenched social interests and perpetuated social inequality.⁵³

The Smithfield project collected a wide range of data using multiple methods. As summarised by Mark Harrison:

"The authors selected 23 target secondary schools, eleven each of which were neighbouring schools in two urban areas, plus one rural school. The urban schools include three integrated and one independent school."⁵⁴

The Smithfield cohort was 3,297 pupils in size. The location of the schools and their identity were not disclosed in the published research. The authors constructed a longitudinal dataset using their sample. "In 1992, they collected data on the family background of students in 77 feeder schools who were to due to start in the target high school in schools in 1994 ...".⁵⁵ Questionnaires asking parents about their choice of school, occupation and ethnicity were distributed in 1992, 1994 and 1996. A sub-sample of 500 parents was also surveyed by telephone in 1993 on the same topics. Furthermore, pupils were examined with an aptitude test in 1993 and 1995, interviews with principals were conducted, and data on the third form (Year 9) intake was collected each year from 1990 for one of the groups of eleven urban neighbouring secondary schools in one area.

The findings from the research were published progressively in eight reports, a number of journal articles, and lastly as a book in 1999, *Trading in Futures. Why Markets in Education Don't Work*.⁵⁶ The main findings claimed by the Smithfield authors, as presented in *Trading in Futures* were:⁵⁷

- children from families with middle class backgrounds were able to exercise a greater degree of choice, and were more likely to travel greater distances to enter schools which had a higher SES mix of pupils;

- the decision to choose an adjacent school to the local school was "more likely to be made by those from the upper end of each social class group";
- this movement exacerbated the polarisation of school intakes by SES (this polarisation had also been a feature of the system with zoning);
- so-called working class schools were hurt by "white flight" and "brown flight," while 'elite' schools did not experience a decline in pupils; and
- schools with a mix of poorer pupils, less popular schools or schools with high numbers of Maori and Pacific Island pupils, consequently suffered.

These findings led the researchers to conclude that there were four major characteristics of the school system under dezoning:⁵⁸

1. that choice in education is "determined by social class, ethnicity and gender";
2. that individual parents "do not have equal ability to choose a school";
3. that when schools become "oversubscribed they, by and large choose pupils who will enhance" their reputation through high achievement on examinations; and
4. that schools offload at-risk pupils to maintain high exam results, insulating them from the pressures that other schools face.

Hence, one of the implications which the Smithfield authors draw from their analysis is that education is a site in the struggle for "credential advantage" among different families.⁵⁹ Further, they hold that lower SES parents were slow to adapt to a situation of better access to schools, by comparison to their middle class counterparts, who the Smithfield authors see as active choosers using their cultural capital (their position in society) to get ahead in society.

In light of these findings, the position of the Smithfield authors may be summarised in the following three propositions:⁶⁰

1. "parents choose schools primarily on the basis

- of SES or the ethnic mix" of a school;
2. the value each school adds to its pupils is determined by the socio-economic mix of the pupils at that school; and
 3. eliminating school zones encourages socio-economic polarisation between schools and in local communities.

However, the evidence generated by the Smithfield project is not nearly as negative as the authors claim. There were actually a number of positive outcomes from eliminating zones and making access to schools better which the Smithfield authors obfuscate or ignore. The shortcomings and errors of the Smithfield project have been extensively recorded in several publications; a review written for the Ministry of Education by Australian economist, Mark Harrison,⁶¹ and others written by the Cardiff study authors,⁶² who challenge the Smithfield project's results. The Cardiff study authors have responded to the Smithfield project because their critics have sometimes used the Smithfield project's claim that making access to schools better led to increased social segregation as corroborating evidence against the Cardiff study's finding that socio-economic segregation dropped. For reasons of space, the most important corrections and clarifications are described here, under the three propositions identified above.

- **Parents choose schools primarily on the basis of SES or ethnic mix**

The Smithfield authors claim that schools which have a high proportion of Pakeha pupils or high socio-economic pupils are more attractive to parents.⁶³ However, they make this claim without explaining why. For example, in the seventh report, they claim that parents' decisions to take their children from lower SES schools was driven by prejudice and elitism.⁶⁴ Despite going to extensive lengths "to understand the processes by which parents 'choose' schools for their children," in both the questionnaire and the telephone survey, no evidence is produced of racial prejudice on the part of parents. Ironically, in the third report they state that "our data do not allow us to examine the reasons why parents choose particular schools."⁶⁵ In a later article, the Smithfield authors state that the reason for the movement of pupils away from their local "working class" schools is:⁶⁶

"a matter of some conjecture, since it is very difficult to collect qualitative data about the reasons for school choice. In our experience, parents ... give a range of contradictory answers which are (apparently) not easily prioritised."

It appears to be simpler for the Smithfield authors to attribute movement between schools to "white flight" or "brown flight," rather than to accept that parents took the opportunity to choose a better school for their child once zones were removed.

In fact, the only example of ethnically motivated choice by parents that the research can conclusively show is among Maori parents. The telephone survey highlighted that 22% of Maori parents in the survey considered sending their children to a church related boarding school. The majority of them were from low socio-economic backgrounds. Further, the longitudinal data shows that the percentage of Maori third form pupils enrolled in a local school dropped from 79% in 1990 to 61% in 1995, while the percentage choosing an adjacent school climbed from 15% to 29%.⁶⁷ The Smithfield authors do not argue that Maori are being elitist or prejudiced, however. The Smithfield authors explain the contradiction in their reasoning by appealing to an argument for self-determination. They believe it is right for Maori to be able to access schools that teach their worldview and culture, including *kura kaupapa* Maori immersion schools, because it will help Maori to revive their identity and so achieve greater social equity.⁶⁸ While de-zoning allowed significant numbers of Maori to transfer to another school, the Smithfield authors do not recommend extending the same opportunity to other parents because of their assumption that parents choose schools based on ethnic and social prejudice.

- **The value each school adds to its pupils is determined by the socio-economic mix of the pupils at that school**

"Educational achievement depends on both school and non-school factors."⁶⁹ The latter are influenced by the family and community background of a pupil. Thus, family background measures are assumed as a proxy for non-school factors that influence outcomes for pupils. A school mix effect can occur when the composition of a school's roll has an impact greater than the effect of an individual pupil's background. The Smithfield authors claimed that parents favour

schools with a higher socio-economic mix, or a greater proportion of Pakeha pupils. Those left in less popular schools suffer from the school mix effect of being part of a lower performing peer group.

The problem with this explanation is that the Smithfield authors do not specify what the mix effects are, or what the precise effect they have is: it could be anything from peer group, to SES, to sex. Further, they find in report six that "ethnicity and SES are correlated with academic ability of peers ... but are generally insignificant at both the individual and school level, once prior attainment is controlled for."⁷⁰ Two educational researchers, Roger Harker and Roy Nash also find it doubtful that in New Zealand "the class composition of a school has an independent effect on a school's performance."⁷¹ Similarly, John Hattie concludes that the proportion of the total variance in pupil achievement in New Zealand attributable to school composition lies within the range of 8 to 10%.⁷² Consequently, there is little support for the Smithfield authors' contention that ethnicity and SES determine academic success. This conclusion undermines the Smithfield authors' assumptions for why parents should favour some schools over others.

• **Eliminating school zones encourages socio-economic polarisation between schools and in local communities**

This element of the Smithfield project is perhaps the one most fraught with contention. The empirical analysis of the effects of dezoning was conducted by examining the intakes of eleven of the target schools in one of the urban areas. The authors have not accepted the results of their data, either ignoring the findings, or performing additional analyses that are not consistent with the original research questions posed. Their extra analyses also changed the results. Contrary to the Smithfield authors' conclusions, Harrison as well as Gorard and Fitz argue that the data shows that socio-economic polarisation did not occur.

The index which is used throughout the analysis for measuring social segregation is a dissimilarity index, which measures the proportion of pupils who would have to switch schools in order for there to be no segregation. In 1990, the index was 58.3, the last available year for data before zones were removed. In 1991, when parents could choose and places were allotted by ballot, it dropped to 48.1, and then

crept to 53.4 by 1993 (table A1.1).⁷³ The trend is that socio-economic segregation dropped and crept after dezoning, but was still less than before dezoning.

The Smithfield authors do not accept this finding, arguing that the level of aggregation is misleading, begging the question why the finding was included if it was misleading.⁷⁴ The aggregate data should have been most helpful for determining who took advantage of dezoning, which was the question the Smithfield authors originally wanted to answer.⁷⁵ Furthermore, because the figure crept up in 1993, the authors assume that segregation will continue to rise. This is a leap of faith because the indices tend to jump around a lot in each year. What is more, to make this assumption the authors, ironically, trust the index at this level of aggregation, contrary to their earlier position. Interestingly, the authors did not choose to update the dissimilarity indices for 1994 and 1995 in the fourth report, even though the data was collected.

	1990	1991	1992	1993
Socio-economic status	58.3	48.1	49.3	53.4
Adjacent	58.2	51.6	52.6	55.2

Source: H. Lauder et al., "The Creation of Market Competition for Education in New Zealand. Phase one, first report to the Ministry of Education in New Zealand," 27, table 3.

When ethnicity is considered, the Maori/Pakeha and the Pacific Island/Pakeha dissimilarity indices fluctuated considerably more in the three years after dezoning (table A1.2). It is not really clear what is happening, as depending on the year, segregation could have been increasing or decreasing. Furthermore, increased segregation on the Maori index in 1993 was explained by Maori parents choosing a school that was marketing itself as bicultural—a positive choice for those families wanting to choose a particular kind of education.

	1990	1991	1992	1993
Maori/Pakeha	46.2	47.0	39.1	53.0
Pacific Island/Pakeha	52.0	52.5	56.8	53.5

Source: H. Lauder et al., "The Creation of Market Competition for Education in New Zealand. Phase one, first report to the Ministry of Education in New Zealand," 25, table 2.

In reviewing an article by Waslander and Thrupp, Gorard and Fitz refute the Smithfield authors claim that dezoning led to the reinforcement of privilege. Firstly, Gorard and Fitz point out that the data shows families, irrespective of ethnicity, were accessing adjacent schools that they could not have before (table A1.3). They were not trapped by zoning. Waslander and Thrupp's figures (table A1.4) show the proportion of Maori and Pacific Island families gained the most from dezoning, as the proportion of Maori pupils using an adjacent school to their local school rose from 15% to 25% from 1990 to 1991. The figures for the same period for Pacific Island families increased from 13% to 22%. At this point, Gorard and Fitz point out that the Smithfield authors do not accept the findings at face value. They proceed to take into account measures of social composition, even after declaring earlier that the social composition did not matter because it was stable from year to year, and so changes experienced by schools would be the result of parents' choice between schools (table A1.5).⁷⁶

Table A1.3. Percentage of pupils by locality of school

Locality	1990	1991	1992	1993	1994	1995
Local	76	69	71	71	66	65
Adjacent	14	20	20	18	22	25
Distant	10	11	9	11	12	10

Source: H. Lauder et al., *Trading in Futures: Why markets in education don't work*, 91, table 6.8.

Table A1.4. Percentage of all third form pupils by ethnicity and school locality

Ethnicity/ locality	1990	1991	1992	1993	1994	1995
Maori						
Local	79	70	73	69	66	61
Adjacent	15	25	22	25	28	29
Distant	6	5	5	6	7	10
Pacific Island						
Local	83	72	65	67	62	62
Adjacent	13	22	31	28	33	32
Distant	5	6	4	5	5	6
Pakeha						
Local	74	68	71	72	67	67
Adjacent	13	18	18	16	18	22
Distant	13	14	11	12	15	11
Other						
Local	76	68	75	69	62	65
Adjacent	16	27	19	17	30	29
Distant	8	5	7	14	9	6

Source: H. Lauder, et al., *Trading in Futures: Why markets in education don't work*, 92, table 6.9.

Waslander and Thrupp conclude that even if ethnic minorities gained from improved access to schools, it was the higher SES parents among them that did so. But this conclusion is doubtful according to Gorard and Fitz given that Waslander and Thrupp do not look at the interaction between ethnicity and SES. This means it cannot be assumed the ethnic families and higher SES families who chose adjacent schools are the same ones. Further, the growth in the number of parents who chose was proportionately greater among Maori and Pacific Island families than Pakeha, and the mean SES of parents who chose a different school was lower than for the population as whole. Gorard and Fitz's analysis suggests that dezoning did not lead to the reinforcement of privilege as minorities gained.

Similarly, Gorard and Fitz argue that when Waslander and Thrupp convert the SES of school users (table A1.5) to a score relative to their neighbourhood SES (table A1.6) they find evidence of integration not segregation. The relative SES of each pupil was calculated by subtracting the figure for each pupil's own SES from the figure for the SES of each pupil's neighbourhood. Waslander and Thrupp state that:⁷⁷

By taking neighbourhood characteristics into account an ecological fallacy is avoided, and a very different process of socio-economic exit is shown. The mechanism behind school choice within each area becomes more transparent: it is the relatively well off who are more likely to send their children to adjacent or distant schools, while those relatively worse off are most likely to send their children to their local school.

The method of using a student's own SES compared with the neighbourhood SES can also be applied to examine the SES dimension of ethnic attendance patterns. Although a process of SES exit is apparent for all students, it is further accentuated for Maori and Pacific Island Polynesian students The conclusion is plain: *choice of non-local schools is primarily dependent on the socio-economic background of students with the relatively better off families, regardless of ethnicity, sending their children out of local schools* (emphasis added).

Gorard and Fitz rebut this assessment, saying that the figures for relative SES by locality actually show that poorer families are more likely than before to use a local school in areas with a high mean SES (tables A1.6 and A1.7 (also broken down by ethnicity)). This

makes sense because segregation would involve poor families being excluded from schools in wealthier neighbourhoods.

	1990	1991	1992	1993	1994	1995
Local	3.09	2.96	3.14	2.99	3.00	2.90
Adjacent	3.01	3.11	3.21	3.20	3.12	3.10
Distant	2.52	2.42	2.39	2.51	2.35	2.59

Source: H. Lauder et al., *Trading in Futures: Why markets in education don't work*, 93, table 6.10.

	1990	1991	1992	1993	1994	1995
Local	-0.08	-0.10	-0.14	-0.12	-0.15	-0.12
Adjacent	0.16	0.13	0.35	0.25	0.30	0.24
Distant	0.35	0.40	0.33	0.35	0.33	0.17

Source: H. Lauder et al., *Trading in Futures: Why markets in education don't work*, 93, table 6.11.

Mark Harrison makes a similar observation. The figures show that those who have gained from improved access to schools are from ethnic minority groups and poorer than average backgrounds (tables A1.3 and A1.4). He continues:⁷⁸

While the families who exercised choice are relatively well off for the neighbourhood they are in, they are from poor neighbourhoods and are poorer than the national average. They are relatively better off than their neighbours, but relatively worse off compared with the average New Zealand family. The Smithfield finding that those who choose are the higher than average SES in their neighbourhood does imply the very poorest do not choose. That does not mean those who do choose are rich.

What this debate shows is that the Smithfield authors interpret their numbers to make them fit their presuppositions about who benefited from making access to schools better. They do not accept what their aggregate data tells them, which is a much more pertinent source for determining which people in society as a whole did or did not benefit from dezoning.⁷⁹

Lastly, the Smithfield authors fail to properly control for other factors that affect school intakes, segregation and parental choice, like school characteristics, the economy and demographic changes. They also rely heavily on 1990 as a

comparison point for all of the judgements they make about segregation. They do not look at other years to establish trends, which may have been useful, since they admit in the first report that one of the schools was hit hard by zoning and was in difficulty in 1990.⁸⁰

Ethnicity/locality	1990	1991	1992	1993	1994	1995
Maori						
Local	-0.64	-0.95	-0.87	-0.99	-0.69	-0.77
Adjacent	-0.40	-0.31	-0.08	-0.09	0.28	0.30
Distant	0.45	-0.13	-0.12	-0.20	1.00	0.43
Pacific Island						
Local	-0.60	-0.60	-0.72	-0.70	-1.02	-1.00
Adjacent	-0.42	-0.10	0.30	-0.09	0.12	0.24
Distant	0.41	0.07	0.58	0.08	-0.39	-0.71
Pakeha						
Local	0.20	0.14	0.13	0.10	0.13	0.06
Adjacent	0.24	0.30	0.45	0.33	0.47	0.29
Distant	0.43	0.43	0.37	0.36	0.32	0.18

Source: H. Lauder et al., *Trading in Futures: Why markets in education don't work*, 94, table 6.12.

The conclusion from the data is different to what the Smithfield authors claim, as greater segregation did not occur. Many ethnic minority and low-income families in the sample took the opportunity to access a school different to their local school. More social mixing occurred with parents of various backgrounds exercising choice, reducing the social stratification created by zoning. The average pupil attending an adjacent school under dezoning was poorer than those who did not choose, while parents who were better off still chose, as they did before. Despite these errors or shortcomings being made plain to the authors, they have never been corrected.⁸¹ More grievous, is that the Smithfield authors maintained throughout their various reports that socio-economic segregation increased as a consequence of dezoning.⁸²

• Critiquing circuits of schooling

The Smithfield analysis of access to schools according to circuit of schools

The Smithfield authors also analysed parents' choice of schools by SES according to a framework adapted from Ball and colleagues, called circuits of

schooling.⁸³ Circuits of schooling were used by the Smithfield authors to look at patterns formed by the way parents access schools, and those which school enrolments formed.⁸⁴ The school circuits reflect the expected social composition of schools according to SES, since the researchers pre-suppose that access to schools is conditioned by social class:⁸⁵

... the way in which circuits are identified is by the social class mix of their students. Circuits, therefore, define the structural and ideational limits and possibilities in terms of parental choice. It is within this context that preferences are juggled.

High circuit schools will be composed of pupils from higher SES families, while low circuit schools will only attract lower SES pupils.

The authors also believe that parents of higher SES choose schools with largely middle class intakes, while lower SES parents only consider schools which have a lower SES intake. In this way, they assume a school's reputation is a proxy for the social class composition of a school.⁸⁶ In summary, school circuits assume parents are prejudiced about their choice of school, and that education is about competition for credentials. They do not assume that parents might choose a school because they want the best education for their child.

The Smithfield authors constructed three school circuits for classifying schools in the two cities they examined.⁸⁷ The highest circuit schools were the schools likely to have the highest SES intakes. Apart from one state co-educational school they were all state, private or state-integrated single-sex schools. Middle circuit schools were schools which "retain a blend of students from high and low social class families but recruit predominantly from the middle class."⁸⁸ Middle circuit schools in the sample were mainly state co-educational schools. The low circuit schools were schools expected to recruit from lower SES backgrounds. The low circuit schools were also all state or state-integrated co-educational schools. The authors do not say why they decided on three circuits, except that it was "as a result of intra-group discussion by the Smithfield team," using the data and their own knowledge.⁸⁹

Harrison notes that "All high circuit schools had enrolment schemes, but not all the schools with enrolment schemes were considered high circuit."⁹⁰ As the Smithfield authors admit, their classification of schools contained "an element of arbitrariness

since there are no clear divisions between schools according to SES. The significant point is that all schools recruit from all SES classes, although they do so in varying proportions."⁹¹ This admission would seem to contradict the authors' point that giving parents better access to schools leads to social exclusion.

In order to test their hypothesis about whether parents of different SES would only choose schools according to their social class, the Smithfield authors asked in their telephone survey of 500 parents "where they would really like their child to go to secondary school assuming things like money and distance were no object."⁹² The Smithfield project's findings for the parents' answers to this question were discussed in section 6.

After asking parents which schools they would really like to send their children to, the Smithfield project authors also investigated during the telephone survey which schools parents thought were feasible choices: "The telephone interview asked parents which schools they had actually considered or would consider for their children."⁹³ The responses were classified into high, middle and low circuit schools, and analysed by SES. The results showed that there were significant SES differences in the highest circuit of school parents reported that they had or would consider. 55% of middle SES parents and 38% of low SES parents considered choosing a high circuit school. 60% of high SES parents considered choosing a high circuit school.

Further, the Smithfield authors looked at which schools enrolled children, drawing on a sub-sample of six schools from the two cities. Harrison states that "They find that after controlling for achievement (as measured by PAT test scores), there is a highly significant relationship between SES and probability of acceptance by high circuit schools."⁹⁴ 54% of high SES parents, 34% of middle SES parents and 18% of low SES parents attended a high circuit school.

What is more, the Smithfield authors also conceded in a footnote in their third report that "middle circuit schools appear to remain well mixed in terms of their socio-economic intake. This raises an interesting question about why high SES parents might choose middle circuit schools for their children." The finding that 18% of low SES parents gained entry to a high circuit school (as well as 16% of Maori) was dismissed "because of the way the school zones have been drawn, rather than because

of the workings of the educational market."⁹⁵ The authors mean they were selected because the parents already had right of access. However, the authors only investigate whether the low SES parents came from out of the zone or not. They do not check whether high SES parents were also admitted because they were in the zone to verify their claim that schools were systematically discriminating against low SES parents.

The reality is that 18% of low SES parents did access a high circuit school. The reasons why some parents of different social or ethnic backgrounds might access a school in varying proportions are not as simple as can be predicted by social conflict theory. For example, schools might give priority to every parent within a zone. As the Smithfield authors themselves admit, this is not discrimination.⁹⁶ It is another case of the Smithfield project authors having to explain away findings that do not fit their preconceptions. These findings from the Smithfield project therefore show that there are differences between the extent that parents of different backgrounds consider, and can actually access a school with some zoning restrictions in place.

Circuits of schooling as a measure of equality of opportunity

The analyses of acceptance into high circuit schools discussed by the Smithfield authors focuses on the probability that pupils were accepted into high circuit schools, or schools that the Smithfield authors "decreed to be desirable."⁹⁷ In other words, acceptance into a high circuit school was their primary measure of equality of opportunity. For example, the Smithfield authors also examined the issue of feasible access to schools, to account for restrictions on access like travel and school fees. The authors sought to find systematic differences in the circuits of schools parents actually considered compared to the consistent preference for high circuit schools they found, as they believed parents' knowledge differs according to social class.⁹⁸

Their findings showed higher SES parents were more likely to consider choosing a high circuit school, and the authors asked why parents of different status activated their knowledge in different ways. The Smithfield authors assumed that both parents' first choice of school and the schools they actually consider should be randomly distributed throughout

the population. It is slightly absurd to suggest, however, that the absence of this trend should mean that there is a disjunction between parental aspirations and their choice of school.⁹⁹ As Harrison argues, "The answer could be that they have different incomes, live in different suburbs and have different access to transport."¹⁰⁰

The Smithfield authors also looked at which schools parents preferred, after their children were enrolled in school for ten months, to determine how engaged they were with school choice. Harrison says that:¹⁰¹

The proportion of middle and low SES parents in the questionnaire (1,884 parents were questioned) who preferred a high circuit school from those available was less than the proportion who considered a high circuit school in the phone interview (284 parents gave usable responses).

This finding is taken to mean that even if middle or low SES parents have similar motivations about which schools they prefer, their aspirations have been systematically "cooled out," as demonstrated by the schools they prefer compared to the ones they considered accessing.¹⁰²

The Smithfield authors also argue that an:¹⁰³

... explanation for the choice patterns identified ... turns on the differential access parents from different social class and ethnic backgrounds have to the material and cultural resources needed to fulfil their aspirations in terms of enabling their children to go to the schools they consider most desirable.

As described above, though, one of the few results reported from the Smithfield project telephone survey of parents' decision-making processes is that low SES parents prefer different schools in the same proportions as other parents, and according to the Smithfield authors' circuits. They dismissed the importance of this finding on the grounds that even if parents have knowledge about which schools are desirable they are unlikely to be able to act on the information in the same way, because of their social status. They also dispute that those lower socio-economic parents who do successfully get their children into high circuit schools would be able to influence the school to meet the needs of their children.

The drop between considered and preferred schools was consistent, however, with no change

in parents' preferences. The highest circuit school considered may honestly not have been the school most preferred by some parents. Harrison states that:¹⁰⁴

The observations are consistent with no change in preferences (the highest circuit school considered is not necessarily the most preferred school). It is also consistent with considering a school, but rejecting it as too expensive.

Nevertheless, the Smithfield authors reject allowing better access to schools for parents and children because parents of a lower status do not seem to realise their aspirations. The argument is that if some do not get into schools the Smithfield authors think are best, then everyone's choices should be moderated through school enrolment zones.

Shortcomings in the circuits of schooling framework in the Smithfield project

The irony is that zoning cannot improve the opportunities for lower SES parents, either. Home zones do not help children of these parents attend high circuit schools, unless they already live in the zones of those schools. Zoning produces unequal outcomes. The high circuit was made up of seven private schools, and five state-integrated schools and five state schools, four of which were single-sex schools.¹⁰⁵ The obvious point is that zoning would not have helped parents access a high circuit school, since most of the schools were not required to operate a zone. Furthermore, the composition of the school circuits seems to have been forgotten by the authors. As all but one of the high circuit schools were single-sex schools, it is not clear whether the findings picked up differences in the demand for single-sex education among parents of different SES.¹⁰⁶

The Smithfield authors also lament that lower SES parents are disempowered as they do not have a diverse choice of schools since they do not access high circuit schools in similar proportions to higher SES parents. But this situation was the case with zoning, prior to *Tomorrow's Schools*. Since the authors do not explain how the circuit of school attended varied by SES, ethnicity or unemployment before and after zones were relaxed, they did not establish that the amount of access was worse for lower SES parents.

This is a serious weakness in the analysis of access to schools by school circuit in the Smithfield project

and is typical of the authors' presupposition that making access to schools better has only negative outcomes for schools and parents. To improve the analysis of circuits of schooling, a "better approach would have been to test whether parents were having their own preferences respected."¹⁰⁷ The Smithfield authors collected information on first preferences, but did not use it.¹⁰⁸ Harrison states that it would have been useful to determine the proportion of parents who accessed the school they most preferred, after controlling for achievement.

• Fair and equitable access to education

The Smithfield authors also misconstrued what constitutes fair and equitable access to schools. The Smithfield authors criticised policies which relaxed school zones because they believed that they led to inequality of opportunity. They argued that the changes that *Tomorrow's Schools* introduced made schools act like businesses. They also contended that unless every parent has equal knowledge and ability to act on their preferences for schools policies which give parents better access to schools for their children will fail.¹⁰⁹ As discussed elsewhere in this report, however, the changes did not bring about a situation where schools had the same freedom to control their operations as a business would. A high degree of control over provision and funding by central government remained. For example:¹¹⁰

- the government continued to fund school property, teacher salaries and operating costs, and controlled the national curriculum;
- parents could essentially only choose between state schools because of the lower subsidies for education at independent schools; and
- the government restricted schools from co-operating together; it did not reallocate capacity to expanding schools when neighbouring schools were operating under capacity, and it did not close failing schools.

It is unfair to criticise policies which relaxed zoning and gave schools a measure of control over their own operations against a different standard. It is also unrealistic to expect that every parent could ever choose a school with equal ability or knowledge, whatever the situation. The Smithfield authors assume that because class, ethnicity and

SES may have an influence on parents' relative access to schools then policies which offer more freedom to parents are invalid and social conflict theory is correct.¹¹¹

Secondly, as discussed, the Smithfield authors do not establish that a return to zoning—however the boundaries are set—would markedly improve the situation for the socially disadvantaged families they argued experienced reduced access to schools with de-zoning; in spite of their own evidence to the contrary.

This is not a reasonable argument. Policies that give parents better access to the school they prefer for their child are not intended to make winners or losers out of parents or schools.¹¹² Such policies are meant to create better, but not perfect, opportunities for access to education. This means that the Smithfield authors should have more thoroughly investigated whether inequality of access was reduced after 1991, compared with the situation before zones were relaxed. What is more, in the current education system, which the Smithfield authors prefer, Government policy gives the state a monopoly over the provision of schooling. The Government determines the number and type of schools that most parents can access.

A central approach to education planning and provision puts a small number of experts in central government in charge of education. As this research has sought to illustrate, which schools pupils attend, is determined by the interaction of parents and schools. Parents know their children's educational needs best,¹¹³ and they generally have a much better idea about how good a school is at the ground level. The central government can never have perfect information about every school all the time. It is therefore bizarre to assume that a system where central government makes all the major decisions about education can be better than one where parents have a stronger voice, and schools have more independence from government control. Further, the result of zoning is that parents are pressured to send their children to the nearest school, not the most suitable for them, unless they can afford to access an adjacent school.¹¹⁴

Together, these features of the education system mean that state schools provide more or less the same kind of education for every pupil, as they do not need to be as responsive to the wishes of parents. The implication is that the state system does not provide well for a diversity of preferences from

parents. Consequently, when parents were asked in this research which school they would really prefer to send their child to, the result was extremely high demand for a few schools which can distinguish themselves from the majority of state schools, principally because of the quality of the education they provide.

When the provision of schooling is freed up, and parents have better access to schools for their children, parents' preferences would be more likely to be respected and they would drive innovation and improvement in education. The Smithfield project notes that in one low circuit school (Kauri College) a loss of pupils to other schools in the city which were offering better educational opportunities forced the school to improve itself.¹¹⁵ The school management took action; setting up a publicity committee to market the school and increase the roll, and introducing a new discipline system to reduce parents' fear of violence and unruliness at the school. The school also responded to the low levels of prior achievement of some pupils by retaining low achieving pupils an extra year in junior school. Waslander and Thrupp thought that the latter innovation was "an instance where, arguably, good educational practice is consistent with the school's attempts at survival."¹¹⁶

Like the question of whether parents choose schools because of congruence between their values and the school's, there is some debate about whether schools can solve all of the problems of falling rolls by changing their image, as schools cannot control every factor which influences the decisions parents make. The fact remains, however, that education got better for the pupils who remained at Kauri College as a result of relaxing zones. This conclusion is glossed over by the Smithfield authors. By contrast, strict application of zoning regulations is guaranteed to produce inequitable access to education and limit the possibility of schools responding to the wishes of parents.

A Cautionary Tale? Edward Fiske and Helen Ladd

Another piece of research by a journalist, Edward Fiske and an education researcher, Helen Ladd looked at the impact of the total package of *Tomorrow's Schools* reforms on the school system in a book called *When Schools Compete: A Cautionary Tale*. They focused on

schools in the urban areas of Auckland, Wellington and Christchurch, and examined data from the Ministry of Education, including annual school enrolments, school funding, the socio-economic characteristics of pupils by schools, and results from national examinations. In addition, they visited 46 primary and secondary schools. Fiske and Ladd also supplemented their work with the Smithfield project.¹¹⁷ Their research levelled heavy criticism against the reforms, arguing they caused a rupture among the various stakeholders in the education system, led to the emergence of failing schools, and found evidence of polarisation, similar to the Smithfield project:¹¹⁸

Our data show that in the five years following the introduction of parental choice in 1991 New Zealand students sorted themselves out by ethnic group and to a lesser extent by socio-economic status to a degree that cannot be explained by changes in ethnic and demographic patterns. Data also show that much choice is motivated by considerations related to a school's mix of students and that the system has produced both white and brown flight from unpopular schools.

In particular Fiske and Ladd found that:¹¹⁹

- in secondary schools in all three centres, and in primary and intermediate schools in Wellington, low decile school rolls declined, while high decile rolls increased;
- the percentage of (ethnic) minority students in lower decile primary and intermediate schools in Wellington increased;
- with the exception of decile 3 schools in Auckland, decile 1 to 3 secondary schools in all three centres increased their percentage of ethnic minority pupils (with the effect being strongest in decile 2); and
- in all three centres, overall ethnic polarisation, (measured by dissimilarity indexes) increased slightly in primary and intermediate schools and more markedly in secondary schools.

Just like the Smithfield project, though, their claim that school rolls polarised is not held up by their own data. Gorard and Fitz argue that although Fiske and Ladd's key tables (7-2 to 7-4), presenting data for the years 1991, 1996 and 1997 show a slight increase in segregation from 1991 to 1996-97, they do not compare these figures with 1990.¹²⁰ As explained,

1991 was the first year after dezoning and the only year in which places were allocated by a lottery. When compared to 1990, the figures for segregation are lower in 1991 and are still lower in 1997. By not disclosing comparative figures for segregation, Fiske and Ladd make it appear that segregation increased as a result of better access, when in fact segregation dropped and then crept to a figure less than the 1990 figure; just as the Smithfield data shows. Fiske and Ladd were aware of the figure for 1990, as they mention in a footnote on page 194 of their book that segregation fell between 1990 and 1991.¹²¹

This point did not escape the attention of Ron Crawford, a senior Treasury social policy analyst writing in 2002, who, when commenting on Fiske and Ladd's research, said they presented:¹²²

... very little data relevant to assessing trends prior to 1991. This omission implicitly assumes that there are no underlying forces towards polarisation which may account for changes observed in 1991. This assumption needs further testing.

Alan Woodfield and Philip Gunby, writing in 2003, also note that Fiske and Ladd's analysis had shortcomings because it tried to evaluate what happened after the reforms had played themselves out and had been pulled back.¹²³ They were ten years too late, and so could not establish a study with the same tight design, collection of baseline data and establishment of control groups as has been possible in the United States for evaluating education policy. Fiske and Ladd admit this point, but it cannot be argued the reforms failed at increasing educational quality or social equity without counterfactual evidence to demonstrate the situation was better before the changes made to the education system.

As Hoxby notes, Fiske and Ladd's criticisms of the schooling system under *Tomorrow's Schools* are not really criticisms of increasing families' access to schools, but relate to the degree of regulation that still existed over schools.¹²⁴ For example, there were financial disincentives for schools to expand, it was difficult for new schools to open and problems in failing schools were not addressed by the authorities.¹²⁵ In other words, they were judging it by the wrong standard, the standard of a system of access perhaps more readily found in the United States, when the New Zealand reforms were really only a partial step to decentralisation of the education system.¹²⁶

The Targeted Individual Entitlement (TIE) programme

Brief mention should also be made of a review by Michael Gaffney and Anne Smith of the Children's Issues Centre at Otago University of a short-lived targeted education credit scheme that existed in New Zealand between 1996 and 2000, the TIE programme.¹²⁷ Similar to the education credit programmes overseas, it assisted low-income families to attend an independent school, intentionally giving families with limited schooling options the opportunity to access a different school to their local school, and helped to raise achievement among children from disadvantaged backgrounds.

Gaffney and Smith found that the programme was "successful in facilitating access to private schooling for a small group of pupils from low income New Zealand families."¹²⁸ Their evaluation found that over 90% of parents and high proportions of pupils were satisfied with the programme, and parents felt their children were receiving a better education in an alternative independent school to their previous school.¹²⁹ This included improved confidence, self-esteem and achievement. Participating schools were also satisfied with the programme.¹³⁰ In 1998, Gaffney and Smith noted a Maori version of the TIE programme, *Whakapiki Tauira*, was also introduced to help address the achievement gap between Maori and non-Maori. The incoming Government in 2000 abolished the TIE programme, however, and no new pupils were admitted after that year.

SUMMARY AND CONCLUSION

In summary, firstly this appendix has reviewed a range of research literature on how various researchers from a number of different disciplines have investigated the impact of policies which allow parents better access to schools for their children. In doing so, it has noted the particular contributions made by researchers from economics and sociology, as well as political science. It has argued the latest studies with their greater rigour have advanced our empirical understanding of the way various access programmes and initiatives have worked overseas. Research which uses the tools and concepts from the geography of education sit alongside these studies as another discipline which can enhance understanding of the processes and impact of improving access to schools on a school system.

Secondly, this appendix has offered a sustained critique of the findings of the Smithfield project and other research which has examined improving access to schools for children in New Zealand. The Smithfield authors assumed that policies which improved access to schools for parents and children had negative consequences for pupils, parents and schools. The Smithfield authors in particular were sceptical of any evidence that better access to schools improved the opportunities of the under-privileged and families from ethnic minorities, who they believe are better off under zoning. The social conflict theory which framed their research led them to draw these conclusions. They threw up a straw man version of the school system when zones were relaxed, and they claimed that all the problems with relaxing zones are the result of those policies. All the changes that occurred after zones were relaxed are attributed to parental choice by the Smithfield authors. They did not attempt to control for other factors that affect the composition of school rolls and school quality. Regulation over the supply of schools also affects the range of schools that parents have to choose from.¹³¹ However, mention of the benefits of improving access to schools is sparse if not altogether absent in the Smithfield project reports.

The Smithfield project's narrow focus on relaxing zones and social exclusion is therefore numbing. If the Smithfield authors were to be believed, to put it bluntly, many parents would not be considered capable of choosing the best school for their child, or if they did choose, their choices would be prejudiced. This is why they recommend school zones are needed to shoulder schools that would otherwise decline, and to force social mixing, even when the evidence is unclear about whether this policy will have positive outcomes for pupils. The *Tomorrow's Schools* reforms reached far wider than zoning, into school management, financing and curriculum. It is impossible, therefore, to attribute all the changes that were occurring in schools to relaxing zones and the movement of pupils between schools.

The research findings presented in this report should be taken as an indication of what kind of schooling parents want for their children. The task for policymakers is not to artificially constrain access to schools, as previous New Zealand research advocated, because the research actually suggests this strategy does not lead to equitable or fair access to schools. Restricting access to schools does not help

parents to send their child to their preferred school, and it does not help to improve the educational opportunities of children from lower SES families. Instead, the task for policymakers should be to better manage demand from parents for the schools they prefer for their children, in a way that makes best use of school capacity. The policy implications presented in this report do not claim to provide a total solution towards this end, but offer a possible guide as to how access to schools might be improved for all parents and children.

ENDNOTES

- ¹ An excellent overview is given in P. Teske and M. Schneider, "What Research Can Tell Policymakers About School Choice," *Journal of Policy Analysis and Management* 20, no. 4 (2001): 609-631, and more lately with a focus on the New Zealand school system, M. Harrison, *Education Matters. Government, markets and New Zealand schools* (Wellington: Education Forum, 2004). Further, a number of important studies on access to schooling were reviewed in a previous report that was part of the *Parent Factor* series produced by Maxim Institute. See S. Thomas and R. Oates, "Access to Education," *The Parent Factor* (Auckland: Maxim Institute, 2005).
- ² M. Friedman, "The Role of Government in Education," in *Economics and the Public Interest*, ed. R.A. Solo (New Brunswick, New Jersey: Rutgers University Press, 1955), 124-130. Also see, R.C. Enlow and L.T. Ealy (eds.), *Liberty and Learning. Milton Friedman's voucher idea at fifty* (Washington D.C.: Cato Institute, 2006).
- ³ J.E. Chubb and T.M. Moe, "Politics, Markets and America's Schools," *American Political Science Review* 82 (1988): 1065-1089; J.E. Chubb and T.M. Moe, *Politics, Markets and America's Schools* (Washington D.C.: Brookings Institution, 1990). Also see, J. Chubb and T.M. Moe, "Should Market Forces Control Educational Decision-Making?" *Political Science Review* 84 (1990): 558-567.
- ⁴ J. Chubb and T.M. Moe, "Should Market Forces Control Educational Decision-Making?" 217-218.
- ⁵ Two critics of Chubb and Moe's voucher proposal and its support from their empirical work include, E. Rasell and R. Rothstein (eds.), *School Choice: Examining the evidence* (Washington D.C.: Economic Policy Institute, 1993); K.B. Smith and K.J. Meier, *The Case Against School Choice: Politics, markets and fools* (Armonk, New York: M.E. Sharpe, 1995). Other criticisms of Chubb and Moe's dataset and regression analysis include Chubb and Moe's faith in the direction of causality between institutional autonomy and degree of achievement, when in fact this relationship may be difficult to prove and of limited value for basing public policy. These criticisms are described in, G.V. Glass and D.A. Matthews, "Are Data Enough? Review of Chubb and Moe's Politics, Markets and America's Schools" (Arizona State University: College of Education, 1990).
- ⁶ H.J. Walberg and J.L. Bast, *Education and Capitalism*, (Stanford: Hoover Institution Press, 2003), xx-xxi. Also see Chris Taylor's commentary, who notes the correlation between Chubb and Moe's proposals and education policy reform in England and Wales, the Netherlands, New Zealand, Scotland, France and Israel, as these reforms followed a similar pattern of devolving power from the state and giving parents and schools more freedom over their choice of school and school operations, respectively; measures associated with neo-liberal public policy design. C. Taylor, "The Geography of Choice and Diversity in the 'New' Secondary Education Market of England," *Area* 33, no. 4 (2001): 369-70.
- ⁷ C.M. Hoxby, "Comments on Papers. Harvard Conference on Charters, Vouchers and School Choice, March 8-9, JFK School of Government" (Cambridge, Massachusetts: 2000), cited in P. Teske and M. Schneider, "What Research Can Tell Policymakers About School Choice," 611.

- ⁸ C.M. Hoxby, "Introduction," in *The Economics of School Choice*, ed. C.M. Hoxby (Chicago: Chicago University Press, 2003), 1-2, 28-29.
- ⁹ W.G. Howell et al., "Test-Score Effects of School Vouchers in Dayton, Ohio, New York City and Washington D.C.: Evidence from randomised field trials," Paper prepared for the annual meeting of the American Political Science Association, Washington D.C., September 2000 (Cambridge, Massachusetts: Program on Education Policy and Governance, Harvard University, 2000); W.G. Howell and P.E. Peterson, *The Education Gap. Vouchers and urban schools*, (Washington D.C.: Brookings Institution Press, 2002); P.E. Peterson et al., "School Vouchers. Results from randomised experiments," in *The Economics of School Choice*, ed. C.M. Hoxby (Chicago: University of Chicago Press, 2003), 107-144.
- ¹⁰ J.P. Greene, "A Survey of Results from Voucher Experiments: Where we are and what we know" (New York: Manhattan Institute, 2000); J.P. Greene, "Rising to the Challenge: The effect of school choice on public schools in Milwaukee and San Antonio," *Civic Bulletin*, 27 (New York: Manhattan Institute, 2002). Cf. C. Rouse, "Private School Vouchers and Student Achievement: An evaluation of the Milwaukee Parental Choice Programme," *Quarterly Journal of Economics* 63 (1998): 553-602. Also see D. Goldhaber, "What Can We Infer From Recent Experiments with Educational Vouchers?" *Education Next*, no. 2 (2001).
- ¹¹ J.P. Greene, "An Evaluation of the Florida A-Plus Accountability and School Choice Program" (New York: Manhattan Institute, 2001); J.P. Greene, "When Schools Compete: The effects of vouchers on Florida public school achievement," *Education Working Paper*, 2 (New York: Manhattan Institute, 2003).
- ¹² C.M. Hoxby, "Achievement in Charter Schools and Regular Public Schools in the United States: Understanding the differences" (Harvard University and National Bureau of Economic Research (NBER), 2004).
- ¹³ C.M. Hoxby, "Do Private Schools Provide Competition for Public Schools?" *NBER Working Paper*, 4978 (Washington D.C.: National Bureau of Economic Research (NBER), 1994); C.M. Hoxby, "Does Competition Among Public Schools Benefit Students and Taxpayers?" *Working Paper*, 4979 (Washington D.C.: National Bureau of Economic Research (NBER), 1994); C.M. Hoxby, "The Effects of Private School Vouchers on Schools and Students," in *Holding Schools Accountable*, ed. H.F. Ladd (Washington D.C.: Brookings Institution, 1996), 281-315. Also see the following chapter, C.M. Hoxby, "Analysing School Choice Reforms that Use America's Traditional Forms of Parental Choice," in *Learning from School Choice*, eds. P.E. Peterson and B.C. Hassel (Washington D.C.: Brookings Institute, 1998), 144-148.
- ¹⁴ C.M. Hoxby, "How School Choice Affects the Achievement of Public School Students," Prepared for Koret Task Force on K-12 Education Meeting, September 2001 (Stanford: Hoover Institute, 2001), 2; C.M. Hoxby, "School Choice and School Competition: Evidence from the United States," *Swedish Economic Policy Review* 10 (2003): 23-24.
- ¹⁵ C.M. Hoxby, "Rising Tide," *Education Next*, no. 4 (2001).
- ¹⁶ C.M. Hoxby, "School Choice and School Productivity (or Could School Choice be a Tide that Lifts All Boats?)," Prepared for NBER Conference on The Economics of School Choice, Cheeca Lodge (Massachusetts, Cambridge: National Bureau of Economic Research (NBER), 2001); C.M. Hoxby, "School Choice and School Competition: Evidence from the United States," 17, 43-44.
- ¹⁷ F. Bergström and F.M. Sandström, "School Choice Works! The case of Sweden," *School Choice Issues in Thought*, Vol. 1, No. 1 (Indianapolis: Milton & Rose D. Friedman Foundation, 2002). Also see G. Miron, "Choice and the Quasi-Market in Swedish Education," in *School Choice and the Quasi-Market*, ed. G. Walford (Wallingford, Oxfordshire, United Kingdom: Triangle Books, 1996), 33-47; and F. Bergström and M. Blank, "A Survey on the Development of Independent Schools in Sweden" (London: Reform and The Swedish Research Institute of Trade (HUI), 2005).
- ¹⁸ F. Bergström and M. Blank, "A Survey on the Development of Independent Schools in Sweden," 4; J. Merrifield, "Parental Choice as an Education Reform Catalyst: Global lessons" (Wellington: Education Forum, 2005), 51-52.
- ¹⁹ F. Bergström and F.M. Sandström, "School Choice Works! The case of Sweden," 9.
- ²⁰ F. Bergström and M.F. Sandström, "School Vouchers in Practice: Competition will not hurt you," *Journal of Public Economics* 89 (2005). Also see S. Waldo, "Efficiency in Public Education" (Department of Economics, Lund University, 2002).
- ²¹ T.J. Nechyba, "The Economics of Education: Vouchers and peer group effects," *Treasury Working Paper*, 98/5 (Wellington: The Treasury, New Zealand, 1998), 6-9.
- ²² T.J. Nechyba, "Introducing School Choice into Multidistrict Public School Systems," in *The Economics of School Choice*, ed. C.M. Hoxby (Chicago: National Bureau of Economic Research (NBER), University of Chicago Press, 2003), 154.
- ²³ T.J. Nechyba, "Introducing School Choice into Multidistrict Public School Systems."
- ²⁴ P. Bayer and R. McMillan, "Choice and Competition in Local Education Markets," *Working Paper*, 11802 (Cambridge, Massachusetts: National Bureau for Economic Research (NBER), 2007).
- ²⁵ Cf. H.J. Walberg and J.L. Bast, *Education and Capitalism*, 17.
- ²⁶ T.M. Moe, *Schools, Vouchers, and the American Public* (Washington D.C.: The Brookings Institute, 2001).
- ²⁷ T.M. Moe, *Schools, Vouchers, and the American Public*, 344.
- ²⁸ T.M. Moe, *Schools, Vouchers, and the American Public*, 154ff.
- ²⁹ T.M. Moe, *Schools, Vouchers, and the American Public*, 171ff.
- ³⁰ T.M. Moe, *Schools, Vouchers, and the American Public*, 210-213.
- ³¹ T.M. Moe, *Schools, Vouchers, and the American Public*, 353.
- ³² P. Teske and M. Schneider, "What Research Can Tell Policymakers About School Choice," 613-614.
- ³³ P. Teske and M. Schneider, "What Research Can Tell Policymakers About School Choice," 615; M. Schneider et al., "Shopping for Schools: In the land of the blind, the one-eyed parent may be enough," *American Journal of Political Science* 42, no. 3 (1998): 769-793. Also see M. Schneider, P. Teske and M.J. Marschall, *Choosing Schools. Consumer choice and the quality of American schools* (Princeton & Oxford: Princeton University Press, 2000). Also see M.J. Marschall, "The Role of Information and Institutional Arrangements in Stemming the Stratifying Effects of School Choice," *Journal of Urban Affairs* 22, no. 3 (2000): 333-350.

- ³⁴ S. Gewirtz, S.J. Ball and R. Bowe, "Parents, Privilege and the Education Marketplace," *Research Papers in Education* 9, no. 1 (1994): 3-29.
- ³⁵ S.J. Ball and C. Vincent, "'I Heard it on the Grapevine': 'Hot' knowledge and school choice," *British Journal of Sociology of Education* 19, no. 3 (1998): 377-400.
- ³⁶ S.J. Ball, "Education Markets, Choice and Social Class: The market as a class strategy in the UK and the USA," *British Journal of Sociology of Education* 14, no. 1 (1993): 17.
- ³⁷ For example, V. Ainsworth et al., "Tomorrow's Schools and Freedom of Choice - A Recipe for Disaster. A study of the effects of roll changes on Christchurch state schools" (Christchurch: Education Policy Research Unit, University of Canterbury, 1993); L. Gordon, "School Choice and the Quasi-Market in New Zealand: 'Tomorrow's Schools' today," in *School Choice and the Quasi-Market*, ed. G. Walford (Wallingford, Oxfordshire, United Kingdom: Triangle Books, 1996), 129-144; L. Gordon and G. Whitty, "Giving the 'Hidden Hand' a Helping Hand? The rhetoric and reality of neoliberal education reform in England and New Zealand," *Comparative Education* 33, no. 3 (1997): 453-467; L. Gordon, "School Choice and the Social Market in New Zealand: Education reform in an era of increasing inequality," *International Studies in Sociology of Education* 13, no. 1 (2003): 17-34; D. Pearce and L. Gordon, "In the Zone: New Zealand's legislation for a system of school choice and its effects," *London Review of Education* 3, no. 2 (2005): 145-157. Further, see D. Hughes et al., "Ethnicity and School Choice," *New Zealand Annual Review of Education* 7 (1997): 95-109; H. Lauder, D. Hughes and S. Watson, "The Introduction of Educational Markets in New Zealand: Questions and consequences" (1999); H. Lauder et al., *Trading in Futures: Why markets in education don't work* (Buckingham: Open University Press, 1999); and S. Robertson and R. Dale, "Local States of Emergency: The contradictions of neo-liberal governance in education in New Zealand," *British Journal of Sociology of Education* 23, no. 3 (2002): 468-69. On funding arrangements introduced by *Tomorrow's Schools* and alleged increasing selectivity among New Zealand schools, see C. Wylie, "Is the Land of the Flightless Bird the Home of the Voucherless Voucher?" *New Zealand Journal of Educational Studies* 34, no. 1 (1999): 99-109.
- ³⁸ Stephen Ball himself admits segregation has always been around. S.J. Ball, R. Bowe and S. Gewirtz, "School Choice, Social Class and Distinction: The realisation of social advantage in education," *Journal of Education Policy* 11, no. 1 (1996): 89-112.
- ³⁹ S.J. Ball, "Education Markets, Choice and Social Class: The market as a class strategy in the UK and the USA."
- ⁴⁰ J.S. Ambler, *Who Benefits from Educational Choice? Some evidence from Europe* (Edinburgh: Edinburgh University Press, 1994).
- ⁴¹ The authors of the Cardiff study have produced a range of articles in various specialist peer-reviewed education and education policy related journals with international readership. A sample of the most important works are: S. Gorard, "Market Forces, Choice and Diversity in Education: The early impact," *Sociological Research Online* 2, no. 3 (1997): U116-U125; S. Gorard, "Social Movement in Undeveloped Markets: An apparent contradiction," *Educational Review* 50, no. 3 (1998): 249-258; S. Gorard and J. Fitz, "The More Things Change ... The Missing Impact of Marketisation?" *British Journal of Sociology of Education* 19, no. 3 (1998): 365-376; S. Gorard and J. Fitz, "Under Starters Orders: The established market, the Cardiff Study and the Smithfield Project," *International Studies in Sociology of Education* 8, no. 3 (1998): 299-316; S. Gorard and J. Fitz, "Markets and Stratification: A view from England and Wales," *Educational Policy* 14, no. 3 (2000): 405-428; S. Gorard and C. Taylor, "Market Forces and Standards in Education: A preliminary consideration," *British Journal of Sociology of Education* 23, no. 1 (2002): 5-18; and S. Gorard, C. Taylor and J. Fitz, "Does School Choice Lead to 'Spirals of Decline'?" *Journal of Education Policy* 17, no. 3 (2002): 367-384. A book length work presents the major findings of the study. See S. Gorard, C. Taylor and J. Fitz, *Schools, Markets and Choice Policies* (London: Routledge Falmer, 2003).
- ⁴² S. Gorard and J. Fitz, "What Counts as Evidence in the School Choice Debate?" *British Educational Research Journal* 32, no. 6 (2006): 797-816: 800.
- ⁴³ S. Gorard and J. Fitz, "What Counts as Evidence in the School Choice Debate?" 801.
- ⁴⁴ Studies which ignore the Cardiff study include: D. Reay and H. Lucey, "Children, School Choice and Social Differences," *Educational Studies* 26, no. 1 (2000): 83-100; S.J. Ball, M. Maguire and S. Macrae, *Choice, Pathways and Transitions post-16* (London: Routledge, 2000); and S. Gewirtz, "Cloning the Blairs: New Labour's programme for the re-socialisation of working class parents," *Journal of Education Policy* 16, no. 4 (2001): 365-378. Studies which acknowledge but do not explain why the Cardiff study's findings might be wrong include: N. Adnett and P. Davies, "Schooling Reforms in England: From quasi-markets to co-opetition? Presentation to Centre for Education Policy, London School of Economics, February," (2002); N. Adnett and P. Davies, "Education as a Positional Good: Implications for market-based reforms of state schooling," *British Journal of Educational Studies* 50, no. 2 (2002): 189-205; and A. West and H. Pennell, "How New is New Labour? The quasi-market and English schools 1997-2001," *British Journal of Educational Studies* 50, no. 2 (2002): 206-224; and C. Lubienski, "Innovation in Education Markets: Theory and evidence on the impact of competition and choice in charter schools," *American Educational Research Journal* 40, no. 2 (2003): 395-443. Findings which make mistakes about the Cardiff study's methods include: P. Noden, "Rediscovering the Impact of Marketisation: Dimensions of social segregation in England's secondary schools, 1994-1999," *British Journal of Sociology of Education* 21, no. 3 (2000): 371-390; G. Whitty, *Making Sense of Education Policy* (London: Paul Chapman, 2002); and S. Burgess, D. Wilson and R. Lupton, "Ethnic Segregation across Schools and Neighbourhoods. Presentation at the "Education and the Neighbourhood Conference," Bristol, January" (2004).
- ⁴⁵ Again, for example, see J. Willms and F. Echols, "Alert and Inert Clients: the Scottish experience of parental choice of schools," *Economics of Education Review* 11, no. 4 (1992): 339-350, and S. Gewirtz, S.J. Ball and R. Bowe, *Markets, Choice and Equity in Education* (Buckingham & Philadelphia: Open University Press, 1995), cited in S. Gorard and J. Fitz, "What Counts as Evidence in the School Choice Debate?" 804.
- ⁴⁶ Process orientated studies of the Education Reform Act 1988 include: J. Willms and F. Echols, "Alert and Inert Clients: the Scottish experience of parental choice of schools"; S.J. Ball, R. Bowe and S. Gewirtz, "Circuits of Schooling - a Sociological

- Exploration of Parental Choice of School in Social-Class Contexts," *Sociological Review* 43, no. 1 (1995): 52-78; and D. Reay, "Engendering Social Reproduction: Mothers in the educational marketplace," *British Journal of Sociology of Education* 19, no. 2 (1998): 195-209.
- ⁴⁷ For example, see J. Willms and F. Echols, "Alert and Inert Clients: the Scottish experience of parental choice of schools"; S. Gewirtz, S.J. Ball and R. Bowe, *Markets, Choice and Equity in Education*; R. Glatter, P.A. Woods and C. Bagley, *Choice and Diversity in Schooling: Perspectives and prospects* (London: Routledge, 1997); S. Tomlinson, "Diversity, Choice and Ethnicity," *Oxford Review of Education* 23, no. 1 (1997): 63-76; P. Woods, C. Bagley and R. Glatter, *School Choice and Competition: Markets in the public interest?* (London: Routledge, 1998); S. Bradley and J. Taylor, "The Effect of Quasi-Market on the Efficiency-equity Trade-off in the Secondary School Sector," *Lancaster University Management School Discussion Paper, EC9/00* (Lancaster: Lancaster University, 2000); A. Gibson and S. Asthana, "What's in a Number? Commentary on Gorard and Fitz's 'Investigating the Determinants of Segregation between Schools'," *Research Papers in Education* 15, no. 2 (2000): 133-154; P. Noden, "Rediscovering the Impact of Marketisation: Dimensions of social segregation in England's secondary schools, 1994-1999"; S. Tomlinson, *Education in a Post Welfare Society* (Buckingham: Open University Press, 2001); and G. Whitty, *Making Sense of Education Policy*, cited in S. Gorard and J. Fitz, "What Counts as Evidence in the School Choice Debate?" 802-804.
- ⁴⁸ Gorard and Fitz isolate Sharon Gewirtz in relation to this point. S. Gewirtz, S.J. Ball and R. Bowe, *Markets, Choice and Equity in Education*, cited in S. Gorard and J. Fitz, "What Counts as Evidence in the School Choice Debate?" 801.
- ⁴⁹ S. Gorard and J. Fitz, "Under Starters Orders: The established market, the Cardiff Study and the Smithfield Project"; S. Gorard, C. Taylor and J. Fitz, *Schools, Markets and Choice Policies*, 193-202; S. Gorard and J. Fitz, "What Counts as Evidence in the School Choice Debate?" 805-806.
- ⁵⁰ Department of Education, "Administering for Excellence. Effective administration in education. Report of the Taskforce to Review Education Administration (Picot Report)" (Wellington: Department of Education, New Zealand, 1988).
- ⁵¹ N. LaRocque, "School Choice: Lessons from New Zealand," in *What America Can Learn from School Choice in Other Countries*, eds. D. Salisbury and J. Tooley (Washington D.C.: Cato Institute, 2005), 115.
- ⁵² H. Lauder et al., "The Creation of Market Competition for Education in New Zealand. Phase one, first report to the Ministry of Education in New Zealand," *The Smithfield Project* (Wellington: Ministry of Education, New Zealand, 1994).
- ⁵³ G. McCulloch, "Secondary School Zoning: The case of Auckland," in *Political Issues in New Zealand Education*, eds. J. Codd, R. Harker and R. Nash (Palmerston North: Dunmore Press, 1990), 283-302.
- ⁵⁴ M. Harrison, "Review of the Policy Recommendations from the Smithfield Project Reports" (Wellington: Ministry of Education, New Zealand, 1999), 6. Also see, H. Lauder et al., "The Creation of Market Competition for Education in New Zealand. Phase one, first report to the Ministry of Education in New Zealand"; S. Waslander et al., "An Overview of Research Activities. Phase one, second report to the Ministry of Education," *The Smithfield Project* (Wellington: Ministry of Education, New Zealand, 1994); D. Hughes et al., "Markets in Education: Testing the polarisation thesis. Phase two, fourth report to the Ministry of Education," *The Smithfield Project* (Wellington: Ministry of Education, New Zealand, 1996).
- ⁵⁵ M. Harrison, "Review of the Policy Recommendations from the Smithfield Project Reports" (Wellington: Ministry of Education, New Zealand, 1999), 6.
- ⁵⁶ The eight major reports of the Smithfield study were: H. Lauder et al., "The Creation of Market Competition for Education in New Zealand. Phase one, first report to the Ministry of Education in New Zealand"; S. Waslander et al., "An Overview of Research Activities. Phase one, second report to the Ministry of Education"; H. Lauder et al., "Trading in Futures: The nature of choice in educational markets in New Zealand. Phase one, third report to the Ministry of Education," *The Smithfield Project* (Wellington: Ministry of Education, New Zealand, 1995); D. Hughes et al., "Markets in Education: Testing the polarisation thesis. Phase two, fourth report to the Ministry of Education"; D. Hughes et al., "A Question of Ethnicity: The meanings of 'New Zealander'. Phase two, fifth report to the Ministry of Education," *The Smithfield Project* (Wellington: Ministry of Education, New Zealand, 1996); D. Hughes et al., "School Effectiveness: An analysis of differences between nineteen schools on four outcome measures using hierarchical linear modelling. Phase two, sixth report to the Ministry of Education," *The Smithfield Project* (Wellington: Ministry of Education, New Zealand, 1997); and D. Hughes et al., "Values or Social Class: Competing explanations for changing secondary school rolls in a market context. Phase two, seventh report to the Ministry of Education," *The Smithfield Project* (Wellington: Ministry of Education, New Zealand, 1998); S. Watson, A. Hughes and H. Lauder, "'Success' and 'Failure' in the Educational Marketplace. Phase two, eighth report to the Ministry of Education." *The Smithfield Project* (Wellington: Ministry of Education, New Zealand, 1998); Examples of key journal articles based on the various reports are: S. Waslander and M. Thrupp, "Choice, Competition and Segregation: An empirical analysis of a New Zealand secondary school market, 1990-1993," *Journal of Education Policy* 10, no. 1 (1995): 1-26; D. Hughes et al., "Ethnicity and School Choice"; and H. Lauder, D. Hughes and S. Watson, "The Introduction of Educational Markets in New Zealand: Questions and consequences". The reference for the summary book is: H. Lauder, et al., *Trading in Futures: Why markets in education don't work*.
- ⁵⁷ H. Lauder et al., *Trading in Futures: Why markets in education don't work*, 131-132.
- ⁵⁸ H. Lauder et al., *Trading in Futures: Why markets in education don't work*, 134.
- ⁵⁹ H. Lauder et al., *Trading in Futures: Why markets in education don't work*, 135.
- ⁶⁰ M. Harrison, "Review of the Policy Recommendations from the Smithfield Project Reports," 60.
- ⁶¹ M. Harrison, "Review of the Policy Recommendations from the Smithfield Project Reports."
- ⁶² S. Gorard and J. Fitz, "Under Starters Orders: The established market, the Cardiff Study and the Smithfield Project"; S. Gorard, C. Taylor and J. Fitz, "The Debate over Measuring Segregation," in *Schools, Markets and Choice Policies* (London: Routledge Falmer, 2003), 193-202; S. Gorard and J.

- Fitz, "What Counts as Evidence in the School Choice Debate?"
- ⁶³ D. Hughes et al., "Ethnicity and School Choice," 99, 103.
- ⁶⁴ D. Hughes et al., "Values or Social Class: Competing explanations for changing secondary school rolls in a market context. Phase two, seventh report to the Ministry of Education," 2.
- ⁶⁵ H. Lauder et al., "Trading in Futures: The nature of choice in educational markets in New Zealand. Phase one, third report to the Ministry of Education," 36.
- ⁶⁶ D. Hughes et al., "Ethnicity and School Choice," 102, cited in M. Harrison, "Review of the Policy Recommendations from the Smithfield Project Reports," 9.
- ⁶⁷ H. Lauder et al., *Trading in Futures: Why markets in education don't work*, 92, table 6.9.
- ⁶⁸ H. Lauder et al., *Trading in Futures: Why markets in education don't work*, 137.
- ⁶⁹ M. Harrison, "Review of the Policy Recommendations from the Smithfield Project Reports," 23.
- ⁷⁰ M. Harrison, "Review of the Policy Recommendations from the Smithfield Project Reports," 25.
- ⁷¹ R. Harker and R. Nash, "Academic Outcomes and School Effectiveness: Type 'A' and type 'B' effects," *New Zealand Journal of Educational Studies* 31, no. 1 (1996): 13-28.
- ⁷² J. Hattie, "Schools Like Mine: Cluster analysis of New Zealand schools," *Project asTtle Technical Report*, 14 (University of Auckland, 2002), 11-12.
- ⁷³ H. Lauder et al., "The Creation of Market Competition for Education in New Zealand. Phase one, first report to the Ministry of Education in New Zealand," 27.
- ⁷⁴ M. Harrison, "Review of the Policy Recommendations from the Smithfield Project Reports," 39.
- ⁷⁵ M. Harrison, "Review of the Policy Recommendations from the Smithfield Project Reports," 41.
- ⁷⁶ S. Gorard and J. Fitz, "Under Starters Orders: The established market, the Cardiff Study and the Smithfield Project," 308-309. Cf. S. Waslander and M. Thrupp, "Choice, Competition and Segregation: An empirical analysis of a New Zealand secondary school market, 1990-1993," 5.
- ⁷⁷ S. Waslander and M. Thrupp, "Choice, Competition and Segregation: An empirical analysis of a New Zealand secondary school market, 1990-1993," 8-9.
- ⁷⁸ M. Harrison, "Review of the Policy Recommendations from the Smithfield Project Reports," 41.
- ⁷⁹ M. Harrison, "Review of the Policy Recommendations from the Smithfield Project Reports," 41.
- ⁸⁰ H. Lauder et al., "The Creation of Market Competition for Education in New Zealand. Phase one, first report to the Ministry of Education in New Zealand," 43.
- ⁸¹ S. Gorard and J. Fitz, "What Counts as Evidence in the School Choice Debate?" 805.
- ⁸² H. Lauder et al., "The Creation of Market Competition for Education in New Zealand. Phase one, first report to the Ministry of Education in New Zealand," 57; H. Lauder et al., "Trading in Futures: The nature of choice in educational markets in New Zealand. Phase one, third report to the Ministry of Education," 2, 45; D. Hughes et al., "Markets in Education: Testing the polarisation thesis. Phase two, fourth report to the Ministry of Education," 1, 28; D. Hughes et al., "Ethnicity and School Choice," 108.
- ⁸³ S.J. Ball, R. Bowe and S. Gewirtz, "Circuits of Schooling: A sociological exploration of parental choice of school in social-class contexts," in *Education Policy and Social Class*, ed. S.J. Ball (London & New York: Routledge, 2006); H. Lauder et al., "Trading in Futures: The nature of choice in educational markets in New Zealand. Phase one, third report to the Ministry of Education"; H. Lauder et al., *Trading in Futures: Why markets in education don't work*.
- ⁸⁴ H. Lauder et al., "Trading in Futures: The nature of choice in educational markets in New Zealand. Phase one, third report to the Ministry of Education."
- ⁸⁵ H. Lauder et al., "Trading in Futures: The nature of choice in educational markets in New Zealand. Phase one, third report to the Ministry of Education," 11.
- ⁸⁶ H. Lauder et al., "Trading in Futures: The nature of choice in educational markets in New Zealand. Phase one, third report to the Ministry of Education," 11.
- ⁸⁷ H. Lauder et al., "Trading in Futures: The nature of choice in educational markets in New Zealand. Phase one, third report to the Ministry of Education," 21.
- ⁸⁸ H. Lauder et al., "Trading in Futures: The nature of choice in educational markets in New Zealand. Phase one, third report to the Ministry of Education," 11.
- ⁸⁹ H. Lauder et al., "Trading in Futures: The nature of choice in educational markets in New Zealand. Phase one, third report to the Ministry of Education," 20.
- ⁹⁰ M. Harrison, "Review of the Policy Recommendations from the Smithfield Project Reports," 43.
- ⁹¹ H. Lauder et al., "Trading in Futures: The nature of choice in educational markets in New Zealand. Phase one, third report to the Ministry of Education," 20.
- ⁹² H. Lauder et al., "Trading in Futures: The nature of choice in educational markets in New Zealand. Phase one, third report to the Ministry of Education," 23-24.
- ⁹³ H. Lauder et al., "Trading in Futures: The nature of choice in educational markets in New Zealand. Phase one, third report to the Ministry of Education," 25; H. Lauder, et al., *Trading in Futures: Why markets in education don't work*, 48.
- ⁹⁴ M. Harrison, "Review of the Policy Recommendations from the Smithfield Project Reports," 45.
- ⁹⁵ H. Lauder et al., "Trading in Futures: The nature of choice in educational markets in New Zealand. Phase one, third report to the Ministry of Education," 31-32, 53.
- ⁹⁶ "... a school might appear to be discriminating against low SES parents even when it was not if a large proportion of its within zone applications were from high SES families." H. Lauder et al., "Trading in Futures: The nature of choice in educational markets in New Zealand. Phase one, third report to the Ministry of Education," 25.
- ⁹⁷ M. Harrison, "Review of the Policy Recommendations from the Smithfield Project Reports," 45.
- ⁹⁸ H. Lauder et al., "Trading in Futures: The nature of choice in educational markets in New Zealand. Phase one, third report to the Ministry of Education," 23-43.
- ⁹⁹ H. Lauder et al., "Trading in Futures: The nature of choice in educational markets in New Zealand. Phase one, third report to the Ministry of Education," 48-49.
- ¹⁰⁰ M. Harrison, "Review of the Policy Recommendations from

- the Smithfield Project Reports," 44.
- ¹⁰¹ M. Harrison, "Review of the Policy Recommendations from the Smithfield Project Reports," 44.
- ¹⁰² H. Lauder et al., "Trading in Futures: The nature of choice in educational markets in New Zealand. Phase one, third report to the Ministry of Education," 27.
- ¹⁰³ H. Lauder et al., "Trading in Futures: The nature of choice in educational markets in New Zealand. Phase one, third report to the Ministry of Education," 48.
- ¹⁰⁴ M. Harrison, "Review of the Policy Recommendations from the Smithfield Project Reports," 44.
- ¹⁰⁵ H. Lauder et al., "Trading in Futures: The nature of choice in educational markets in New Zealand. Phase one, third report to the Ministry of Education," 20-21.
- ¹⁰⁶ M. Harrison, "Review of the Policy Recommendations from the Smithfield Project Reports," 44.
- ¹⁰⁷ M. Harrison, "Review of the Policy Recommendations from the Smithfield Project Reports," 45.
- ¹⁰⁸ M. Harrison, "Review of the Policy Recommendations from the Smithfield Project Reports," 45.
- ¹⁰⁹ H. Lauder et al., "Trading in Futures: The nature of choice in educational markets in New Zealand. Phase one, third report to the Ministry of Education," 3, 7, 9.
- ¹¹⁰ N. LaRocque, "School Choice: Lessons from New Zealand," 123; M. Harrison, "Review of the Policy Recommendations from the Smithfield Project Reports," 18.
- ¹¹¹ The Smithfield authors write: "... what constitutes education is quite different for different groups. For example, there is evidence to suggest the aims and significance of education are quite different for working class students compared to those from professional backgrounds"; "The patterns of opportunity created by a market system of education are in part determined by social class and ethnic factors"; and "Overall social exclusion theory rather than neo-classical economic or public choice theory best explains the pattern of data." H. Lauder et al., "Trading in Futures: The nature of choice in educational markets in New Zealand. Phase one, third report to the Ministry of Education," 8, 53.
- ¹¹² M. Harrison, "Review of the Policy Recommendations from the Smithfield Project Reports," 17.
- ¹¹³ J.R. Morse, "Competing Visions of the Child, the Family, and the School," in *Education in the Twenty-First Century*, ed. E. Lazear (Stanford, California: Hoover Institution Press, 2002), 147-177.
- ¹¹⁴ M. Harrison, "Review of the Policy Recommendations from the Smithfield Project Reports," 19.
- ¹¹⁵ S. Waslander and M. Thrupp, "Choice, Competition and Segregation: An empirical analysis of a New Zealand secondary school market, 1990-1993," 13-16.
- ¹¹⁶ S. Waslander and M. Thrupp, "Choice, Competition and Segregation: An empirical analysis of a New Zealand secondary school market, 1990-1993," 15.
- ¹¹⁷ E.B. Fiske and H.F. Ladd, *When Schools Compete: A cautionary tale* (Washington, D.C.: Brookings Institution Press, 2000), xiv-xv. Also see E.B. Fiske and H.F. Ladd, "The Tomorrow's Schools Reforms: An American perspective," *IPS Policy Paper*, 6 (Wellington: Institute of Policy Studies; Victoria University of Wellington, 2000) and H.F. Ladd and E.B. Fiske, "The Uneven Playing Field of School Choice: Evidence from New Zealand," *Journal of Policy Analysis and Management* 20, no. 1 (2001): 43-63.
- ¹¹⁸ E.B. Fiske and H.F. Ladd, *When Schools Compete: A cautionary tale*, 9.
- ¹¹⁹ As summarised in: R. Crawford, "Commentary," in *The Tomorrow's Schools Reforms: An American perspective*, ed. G. Sullivan, *IPS Policy Paper*, 6 (Wellington: Institute of Policy Studies; Victoria University of Wellington, 2000), 9.
- ¹²⁰ E.B. Fiske and H.F. Ladd, *When Schools Compete: A cautionary tale*, 192-194.
- ¹²¹ S. Gorard and J. Fitz, "What Counts as Evidence in the School Choice Debate?" 806.
- ¹²² R. Crawford, "Commentary," 10.
- ¹²³ A. Woodfield and P. Gunby, "The Marketisation of New Zealand Schools: Assessing Fiske and Ladd," *Journal of Economic Literature* 41 (2003): 881.
- ¹²⁴ C.M. Hoxby, "School Choice and School Competition: Evidence from the United States," 18, note 1.
- ¹²⁵ Cf. A. Woodfield and P. Gunby, "The Marketisation of New Zealand Schools: Assessing Fiske and Ladd," 881.
- ¹²⁶ Cf. N. LaRocque, "School Choice: Lessons from New Zealand," 125; A. Woodfield and P. Gunby, "The Marketisation of New Zealand Schools: Assessing Fiske and Ladd," 881-882.
- ¹²⁷ M. Gaffney and A.B. Smith, "An Evaluation of New Zealand's Targeted Individual Entitlement Scheme," in *Can the Market Save our Schools?* ed. C.R. Hepburn (Vancouver: The Fraser Institute, 2001), 151-166.
- ¹²⁸ M. Gaffney and A.B. Smith, "An Evaluation of New Zealand's Targeted Individual Entitlement Scheme," 163.
- ¹²⁹ M. Gaffney and A.B. Smith, "An Evaluation of New Zealand's Targeted Individual Entitlement Scheme," 160.
- ¹³⁰ M. Gaffney and A.B. Smith, "An Evaluation of New Zealand's Targeted Individual Entitlement Scheme," 156-157.
- ¹³¹ M. Harrison, "Review of the Policy Recommendations from the Smithfield Project Reports," 19.

APPENDIX 2

Maps Illustrating the Research Findings

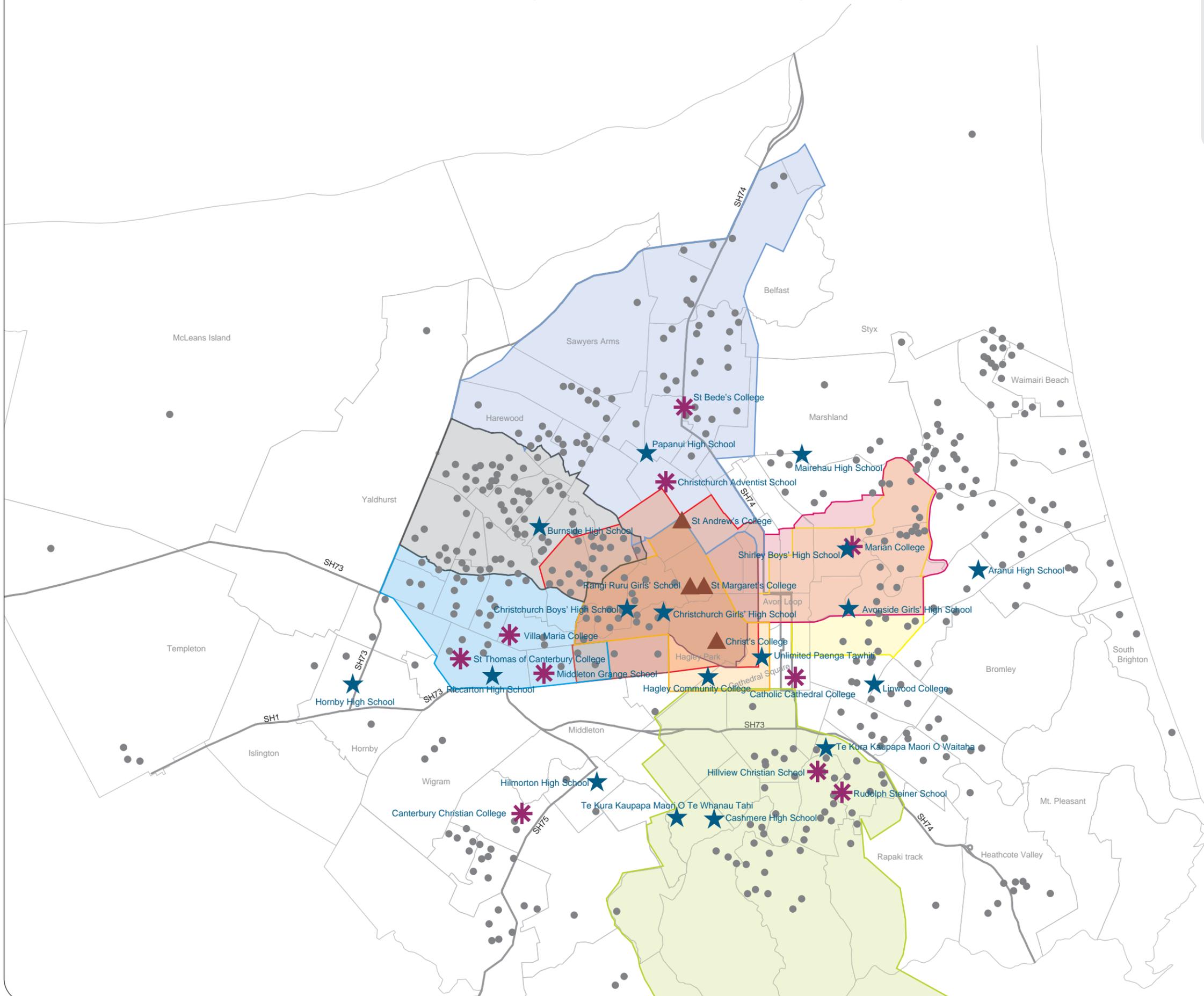
The Study Area	The Christchurch City Territorial Local Authority boundary
Map 3.1.	Children who attend a school different to the one their parents are zoned for
Map 4.1.	Parents who would change their child's school or not if money was no object
Map 4.2.	Schools currently attended by children whose parents would change their child's school if money was no object
Map 4.3.	Schools preferred by parents who would change their child's school if money was no object
Map 4.4.	Gains and losses to school rolls if money was no object (multiple re-sampling strategy)
Map 4.5.	Gains and losses to school rolls if money was no object (proportional allocation strategy)
Map 4.6.	Movement of pupils between schools if money was no object
Map 4.7.	Transportation to parents' preferred school if money was no object
Map 4.8.	Amount parents would contribute to send their child to their preferred school
Map 5.1.	Parents who would change their child's school or not, given a choice of any state school
Map 5.2.	Schools currently attended and state schools preferred by parents who would change their child's school
Map 5.3.	Gains and losses to state school rolls given a choice of any state school
Map 5.4.	Movement of pupils between schools given a choice of any state school
Map 5.5.	Transportation to parents' preferred state school given a choice of any state school

The Study Area

The Christchurch City Territorial Local Authority boundary

ABOUT THIS MAP

1. This map uses raw data from the survey.
2. It illustrates the boundary of the study area, as defined by the Christchurch City Territorial Local Authority boundary, the location of each parent, the location of each school and school enrolment zone boundaries.
3. The scale is 1:85,000.
4. A total of 424 parents are displayed on this map.



LEGEND

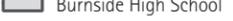
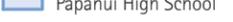
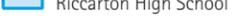
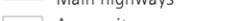
Schools

-  State school
-  State-integrated school
-  Private school

Parents

-  Location of each parent's residence

School zones

-  Cashmere High School
-  Avonside Girls' High School
-  Hagley Community College
-  Christchurch Boys' High School
-  Shirley Boys' High School
-  Christchurch Girls' High School
-  Burnside High School
-  Papanui High School
-  Riccarton High School
-  Main highways
-  Area units

0 0.5 1 2 Kilometres

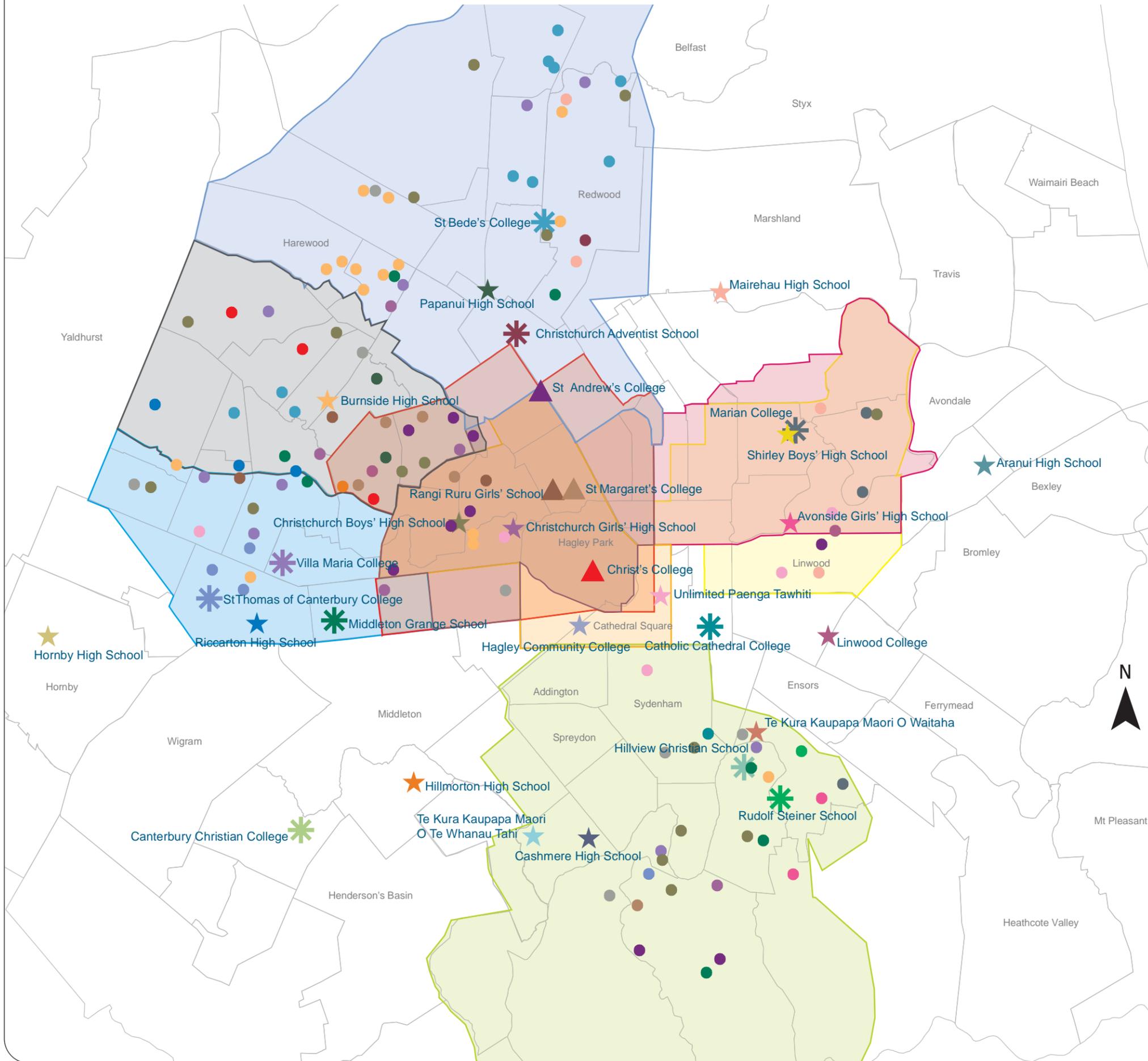
1:85,000

Map 3.1

Children who attend a school different to the one their parents are zoned for

ABOUT THIS MAP

1. This map uses raw data from the survey.
2. It illustrates parents whose children currently attend a school that is different to the one their parents are zoned for. The school parents were zoned for was determined by the nearest school to where they lived, according to GIS calculations, and which also had a home enrolment zone.
3. The scale is 1:60,000.
4. 167 parents were not considered for this map, as they did not live in any school enrolment zone, according to GIS mapping.
5. The choices of 254 parents were compared to the school currently attended by each child.
6. 118 parents were identified who did not send their child to the school they were zoned for.
7. These parents are colour-coded according to the school their child currently attends.
8. Four parents (ID numbers 18, 39, 43 and 240) have been excluded from display on this map.



LEGEND

- | School zones | | Schools | |
|--------------|---------------------------------|---------|-------------------------|
| | Cashmere High School | | State school |
| | Avonside Girls' High School | | State-integrated school |
| | Hagley Community College | | Private school |
| | Christchurch Boys' High School | | |
| | Shirley Boys' High School | | |
| | Christchurch Girls' High School | | |
| | Burnside High School | | |
| | Papanui High School | | |
| | Riccarton High School | | |
| | Area units | | |

- Location of parents (colour indicates child's current school)**
- | | | | |
|--|--------------------------------|--|---------------------------------|
| | St Margaret's College | | Avonside Girls' High School |
| | Rangi Ruru Girls' School | | Mairehau High School |
| | Christchurch Boys' High School | | Unlimited Paenga Tawhiti |
| | Papanui High School | | Linwood College |
| | Middleton Grange School | | Christchurch Girls' High School |
| | Catholic Cathedral College | | St Andrew's College |
| | Rudolph Steiner School | | Villa Maria College |
| | Shirley Boys' High School | | St Thomas of Canterbury College |
| | Burnside High School | | St Bede's College |
| | Hillmorton High School | | Riccarton High School |
| | Christ's College | | Hagley Community College |
| | Christchurch Adventist School | | Marian College |

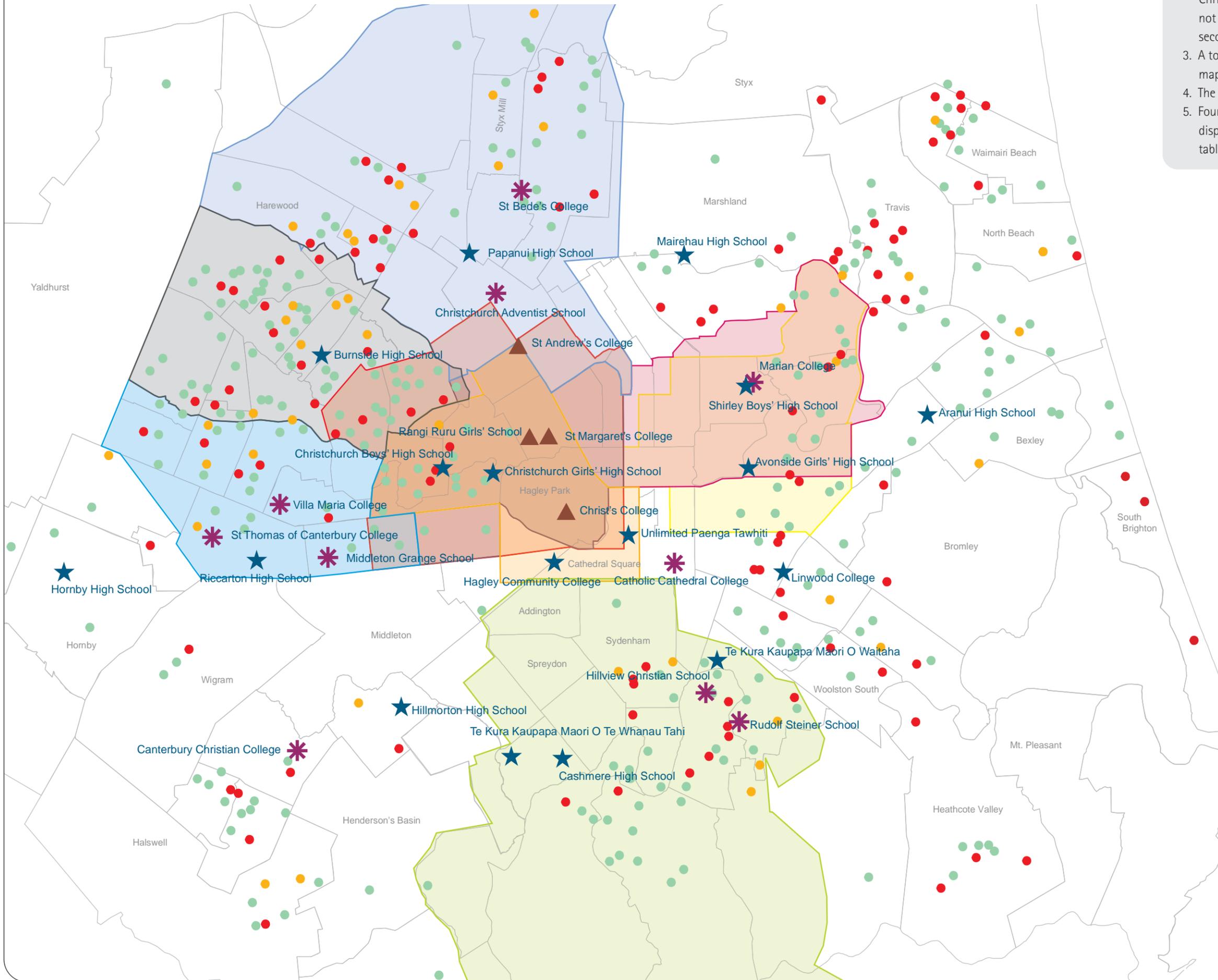
0 0.45 0.9 1.8 Kilometres 1:60,000

Map 4.1

Parents who would change their child's school or not if money was no object

ABOUT THIS MAP

1. This map uses raw data from the survey.
2. It shows the distribution of parents across Christchurch who responded whether or not they would change their child's secondary school if money was no object.
3. A total of 410 parents are displayed on this map.
4. The scale is 1:60,000.
5. Fourteen parents have been excluded from display on the map, as listed in section 2, table 2.10.



LEGEND

- Schools**
- ★ State school
 - ✳ State-integrated school
 - ▲ Private school
- Parents**
- Parents continuing to send their child to their current school
 - Parents choosing a different school for their child (from all schools)
 - Undecided/don't know
- School zones**
- Cashmere High School
 - Avonside Girls' High School
 - Hagley Community College
 - Christchurch Boys' High School
 - Shirley Boys' High School
 - Christchurch Girls' High School
 - Burnside High School
 - Papanui High School
 - Riccarton High School
 - Area units

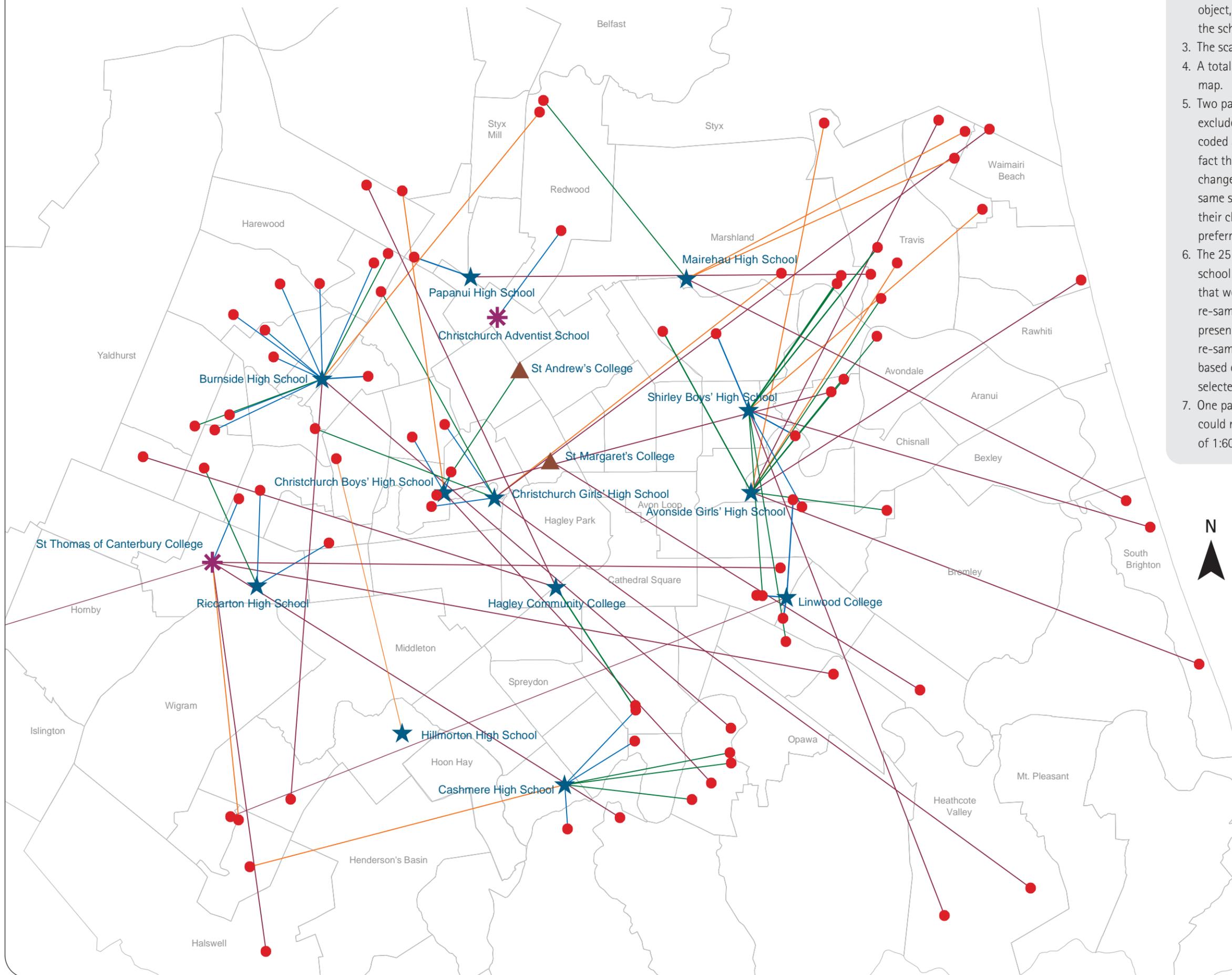


1:60,000

Map 4.2

Schools currently attended by children whose parents would change their child's school if money was no object

- ABOUT THIS MAP**
1. This map uses raw data from the survey.
 2. It shows the parents who would change their child's secondary school if money was no object, and the distance between home and the school they currently send their child to.
 3. The scale is 1:60,000.
 4. A total of 80 parents are displayed on this map.
 5. Two parents (ID numbers 360 and 380) were excluded from this map, because they were coded as changing their child's school but in fact they either did not indicate they would change their child's school or they chose the same school as the one they currently send their child to. However, they still indicated a preferred school.
 6. The 25 parents who did not know which school they would choose for their child—that were allocated to schools by the multiple re-sampling procedure—could not be presented on this map. This was because re-sampled data could not be mapped as it is based on a probability of a school being selected.
 7. One parent (ID number 147, in Templeton) could not be displayed on this map at a scale of 1:60,000 and is excluded.



LEGEND

Schools

- ★ State school
- ✳ State-integrated school
- ▲ Private school

Parents

- Parents choosing a different school for their child (from all schools)

Distance to current school

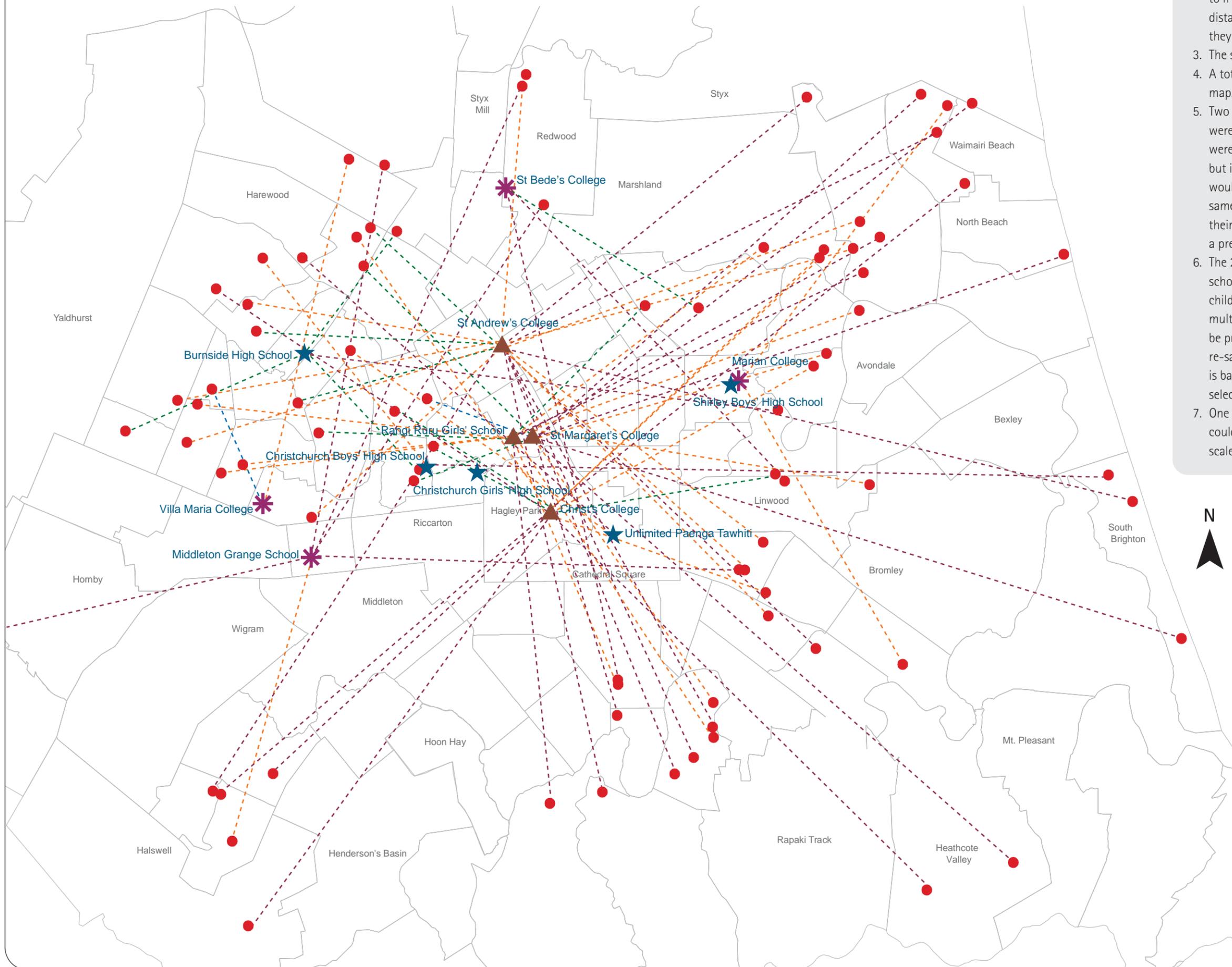
- 0-2km
- 2-4km
- 4-6km
- >6km
- Area units

0 0.45 0.9 1.8 Kilometres

1:60,000

Map 4.3

Schools preferred by parents who would change their child's school if money was no object



ABOUT THIS MAP

1. This map uses raw data from the survey.
2. It shows the parents who would change the secondary school they send their child to if money was no object, and the distance between home and the school they would send their child to.
3. The scale is 1:60,000.
4. A total of 80 parents are displayed on this map.
5. Two parents (ID numbers 360 and 380) were excluded from this map, because they were coded as changing their child's school but in fact they either did not indicate they would change school or they chose the same school as the one they currently send their child to. However, they still indicated a preferred school.
6. The 25 parents who did not know which school they would choose for their child—that were allocated to schools by the multiple re-sampling procedure—could not be presented on this map. This was because re-sampled data could not be mapped as it is based on a probability of a school being selected.
7. One parent (ID number 147, in Templeton) could not be displayed on this map at a scale of 1:60,000 and is excluded.

LEGEND

Schools

- ★ State school
- ✱ State-integrated school
- ▲ Private school

Parents

- Parents choosing a different school for their child (from all schools)

Distance to preferred school

- 0-2km
- 2-4km
- 4-6km
- >6km
- Area units

0 0.45 0.9 1.8 Kilometres

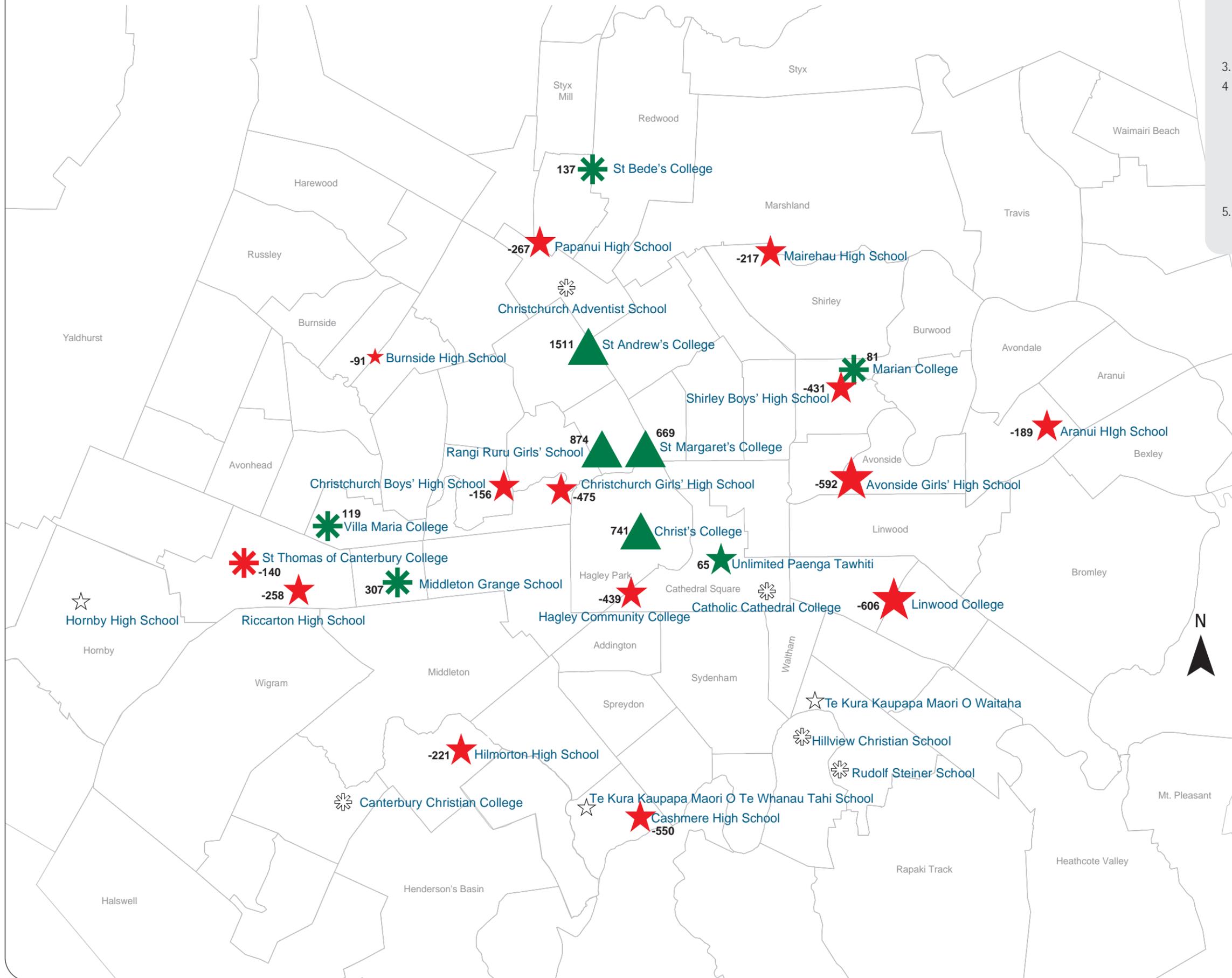
1:60,000

Map 4.4

Gains and losses to school rolls if money was no object (multiple re-sampling strategy)

ABOUT THIS MAP

1. This map shows data generated by the multiple re-sampling procedure to calculate the change to school rolls.
2. It illustrates the expected gains and losses to school rolls in the choice of any secondary school if money was no object scenario.
3. The scale is 1:55,000.
4. The data in the Change column from table 4.3 was used to calculate the percentage change to the school roll according to the following formula:
$$\text{Percent change in school roll} = (\text{Change} / \text{2006 school roll return}) \times 100$$
5. Nine schools show a gain in the number of pupils, while fourteen schools show a loss.



LEGEND

- Schools**
- △ Private school
 - ☆ State school
 - ✱ State-integrated school
- Gains or losses to school rolls (%)**
- 50% or more gain
 - 10% - 49.9% gain
 - 0.0% - 9.9% gain
 - No change/no data
 - 0% - 9.9% loss
 - 10% - 49.9% loss
 - 50% or more loss
- Area units
- 000 Numbers represent estimated roll increase/decrease

0 0.45 0.9 1.8 Kilometres

1:55,000

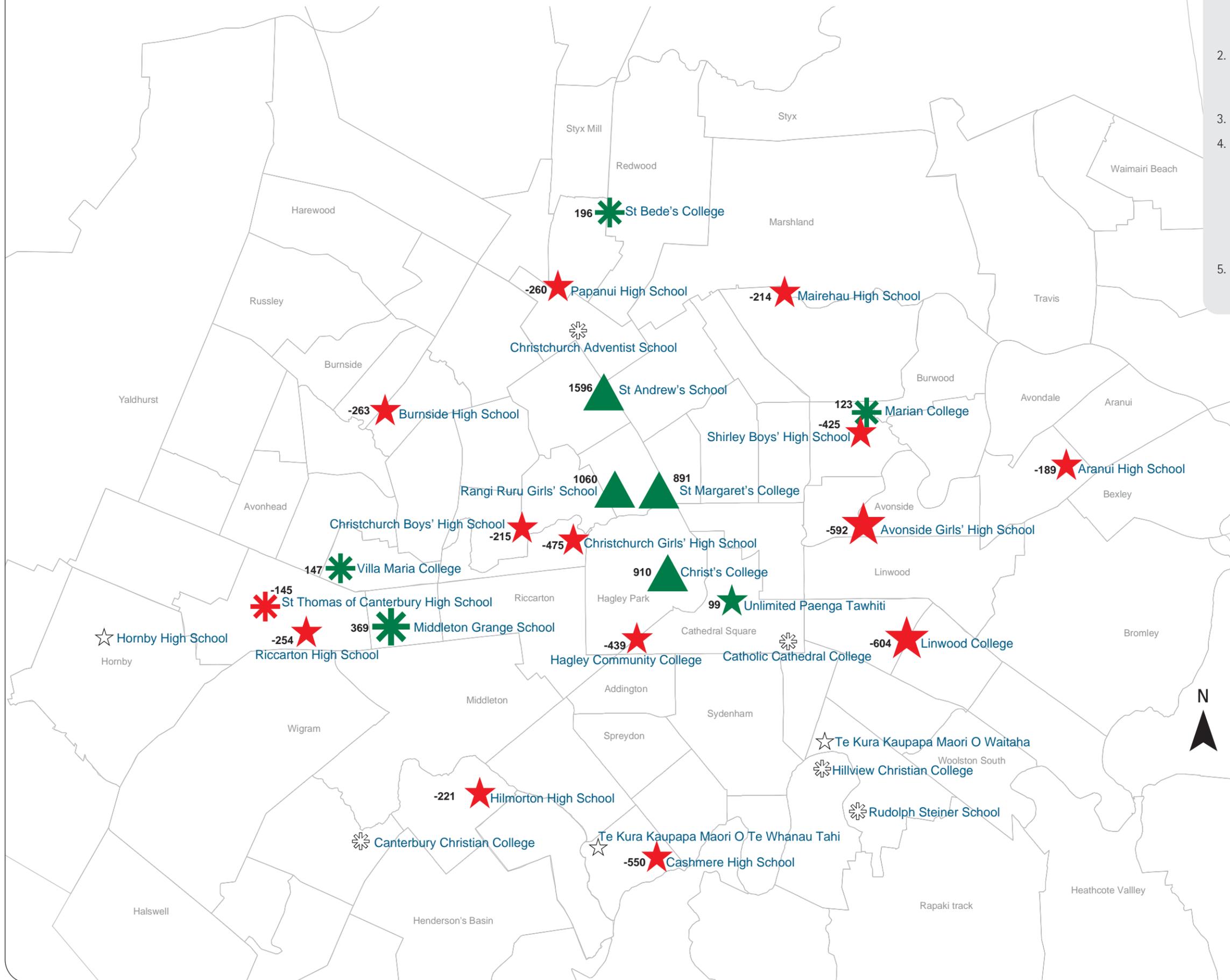
Map 4.5

Gains and losses to school rolls if money was no object (proportional allocation strategy)

ABOUT THIS MAP

1. This map shows data generated by the method that allocated parents to schools proportionate to the observed change in the size of school rolls, used in the statistical analysis to verify the results of the multiple re-sampling method.
2. It illustrates the expected gains and losses to school rolls in the choice of any secondary school if money was no object scenario.
3. The scale is 1:55,000.
4. The data in the Change column from table 4.4 was used to calculate the percentage change to the school roll for each method, according to the following formula:

$$\text{Percent change in school roll} = (\text{Change} / \text{2006 school roll return}) \times 100$$
5. Nine schools show a gain in the number of pupils, while fourteen schools show a loss.



LEGEND

Schools

- △ Private school
- ☆ State school
- ✳ State-integrated school

Gains or losses to school rolls (%)

- 50% or more gain
- 10% - 49.9% gain
- 0.0% - 9.9% gain
- No change/no data
- 0% - 9.9% loss
- 10% - 49.9% loss
- 50% or more loss

□ Area units

000 Numbers represent estimated roll increase/decrease

0 0.45 0.9 1.8 Kilometres

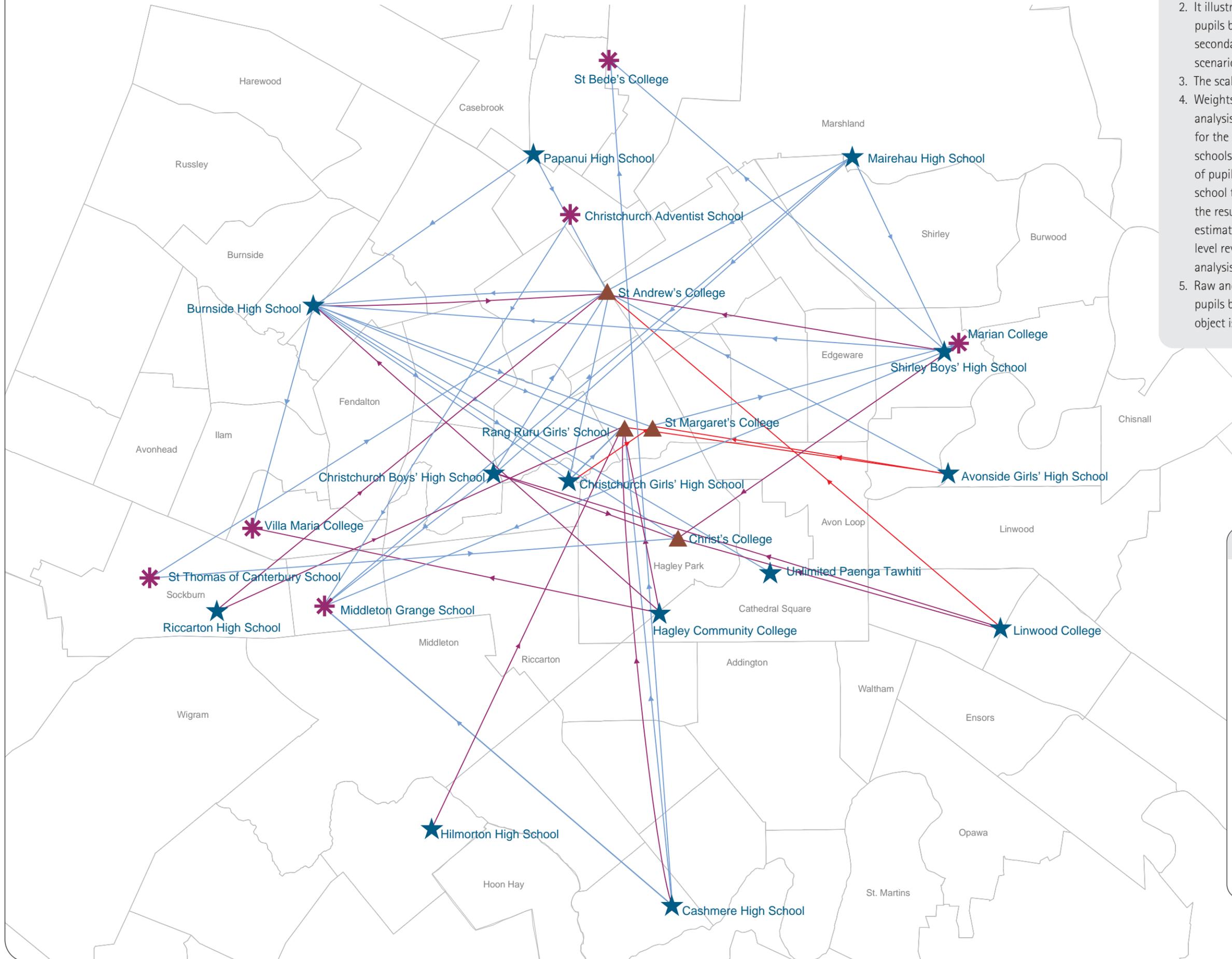
1:55,000

Map 4.6

Movement of pupils between schools if money was no object

ABOUT THIS MAP

1. This map uses a mixture of raw data and sampling weights from the statistical analysis.
2. It illustrates the projected movement of pupils between schools in the choice of any secondary school if money was no object scenario.
3. The scale is 1:40,000.
4. Weights developed for the statistical analysis were multiplied with the raw data for the movement of pupils between schools to calculate the estimated number of pupils who would transfer from one school to another. This was done so that the results were more consistent with the estimated change to school rolls at the city level revealed by the gains and losses analysis, presented in tables 4.3 and 4.4.
5. Raw and weighted data for the flow of pupils between schools if money was no object is presented in table 4.5.



LEGEND

Schools

- ★ State school
- ✱ State-integrated school
- ▲ Private school

Number of pupils transferring between schools

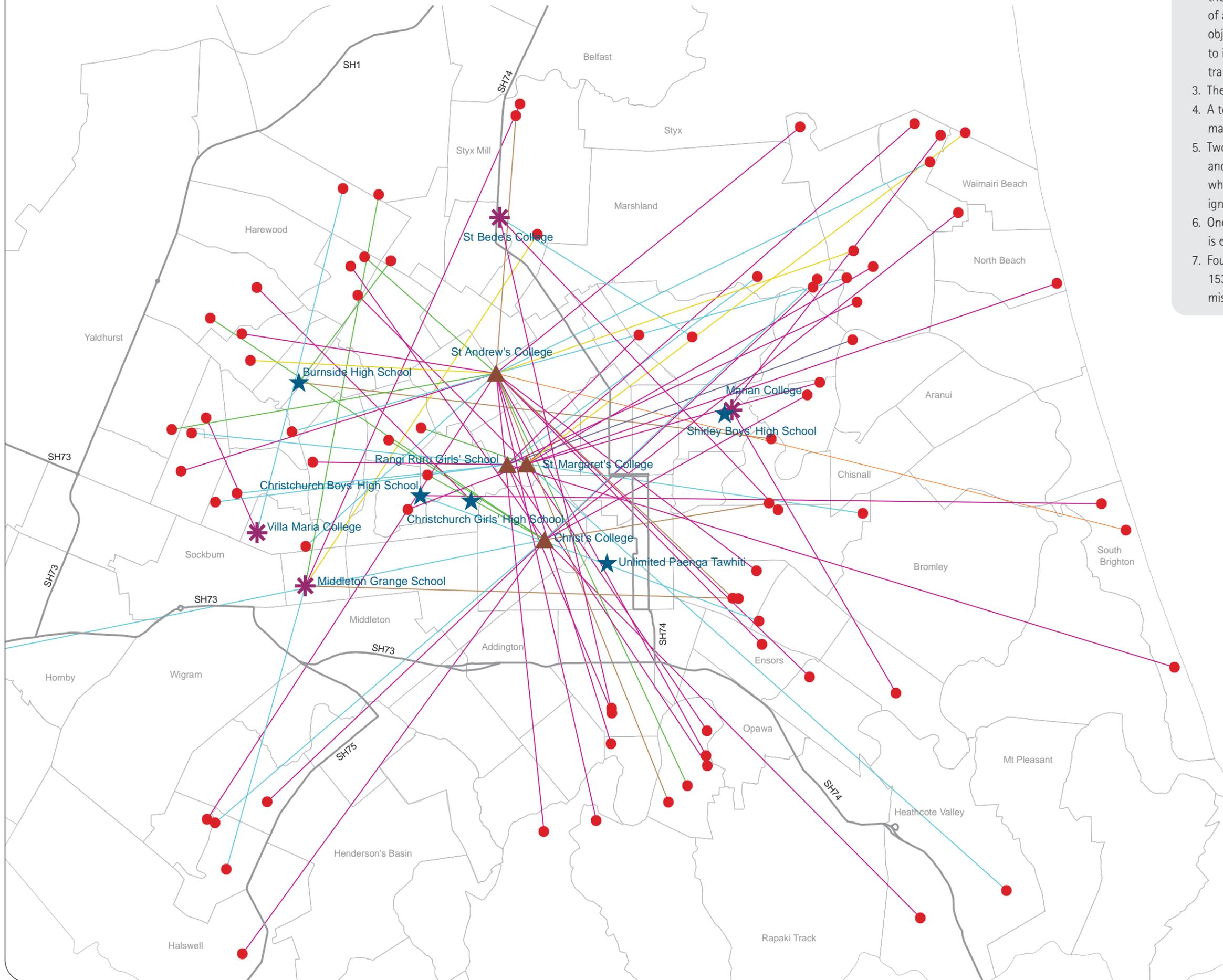
- 31 - 100 pupils
- 101 - 200 pupils
- 201 - 365 pupils
- Area units

0 0.25 0.5 1 Kilometres

1:40,000

Map 4.7

Transportation to parents' preferred school for their child if money was no object



ABOUT THIS MAP

1. This map uses raw data from the survey.
2. It illustrates how parents would transport their children to school under the choice of any secondary school if money was no object scenario, using colour-coded lines to identify their preferred mode of transport.
3. The scale is 1:60,000.
4. A total of 76 parents are displayed on this map.
5. Two parents (ID numbers 360 and 380) and the 25 parents who did not know which school they would choose were ignored, as for map 4.3.
6. One parent (ID number 147, in Templeton) is excluded from display on this map.
7. Four parents (ID numbers 58, 130, 142 and 153) were also excluded because of missing data for this question.



LEGEND

Schools

-  State school
-  State-integrated school
-  Private school

Parents

-  Parents choosing a different school for their child (from all schools)

-  Area units
-  Main highways

Transport to preferred school

-  Bus
-  Car-pool
-  Cycle
-  Own car
-  With parent
-  Other
-  Don't know

0 0.5 1 2 Kilometres

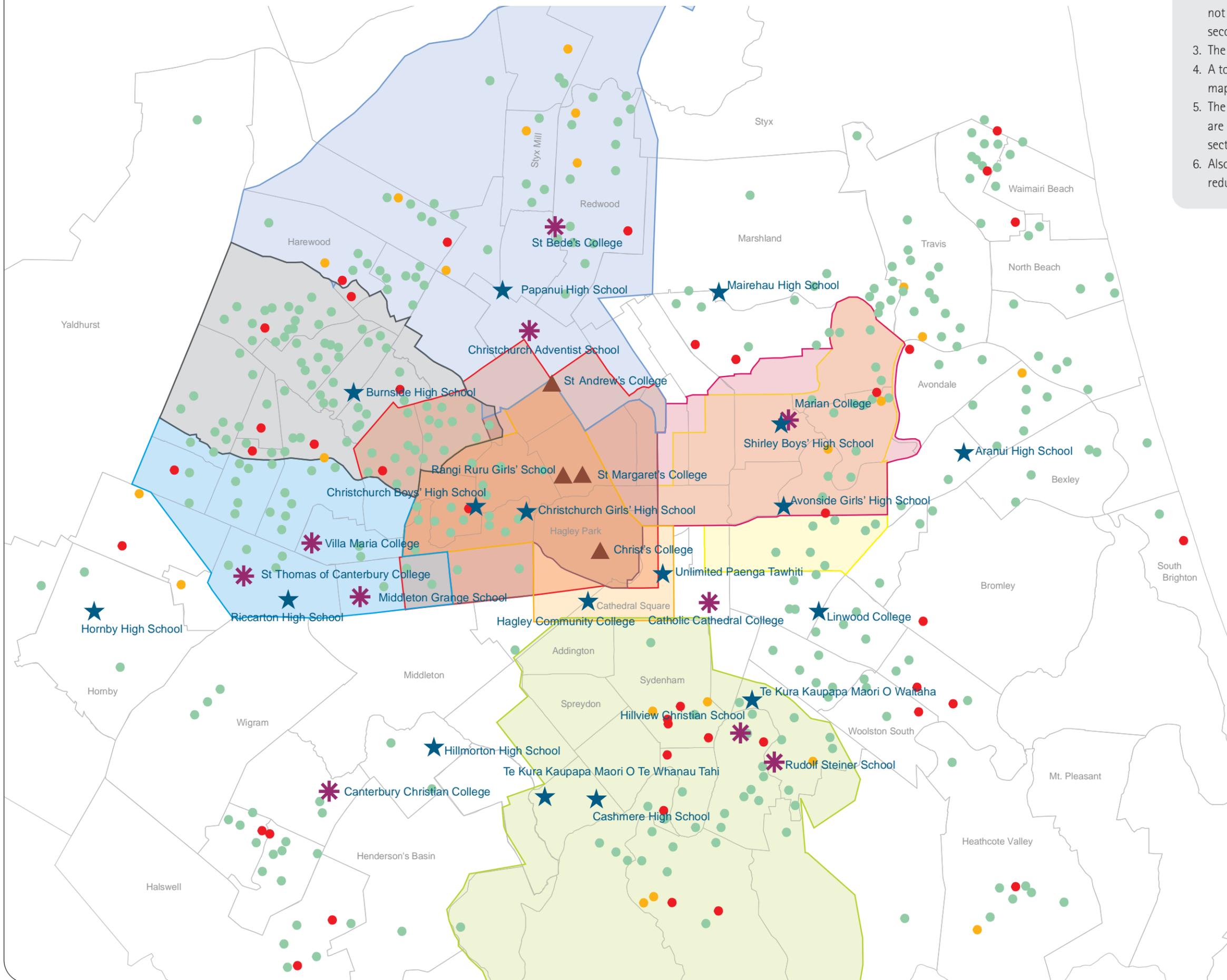
1:60,000

Map 5.1

Parents who would change their child's school or not, given a choice of any state school

ABOUT THIS MAP

1. This map uses raw data from the survey.
2. It shows the distribution of parents across Christchurch who responded whether or not they would change their child's state secondary school.
3. The scale is 1:60,000.
4. A total of 407 parents are displayed on this map.
5. The details of fourteen excluded parents are the same as for map 4.1, as noted in section 2, table 2.10.
6. Also note that three missing responses reduced the sample size from 424 to 421.



LEGEND

Schools

- ★ State school
- * State-integrated school
- ▲ Private school

Parents

- Parents continuing to send their child to their current school
- Parents choosing a different school for their child (state schools only)
- Undecided/don't know

School zones

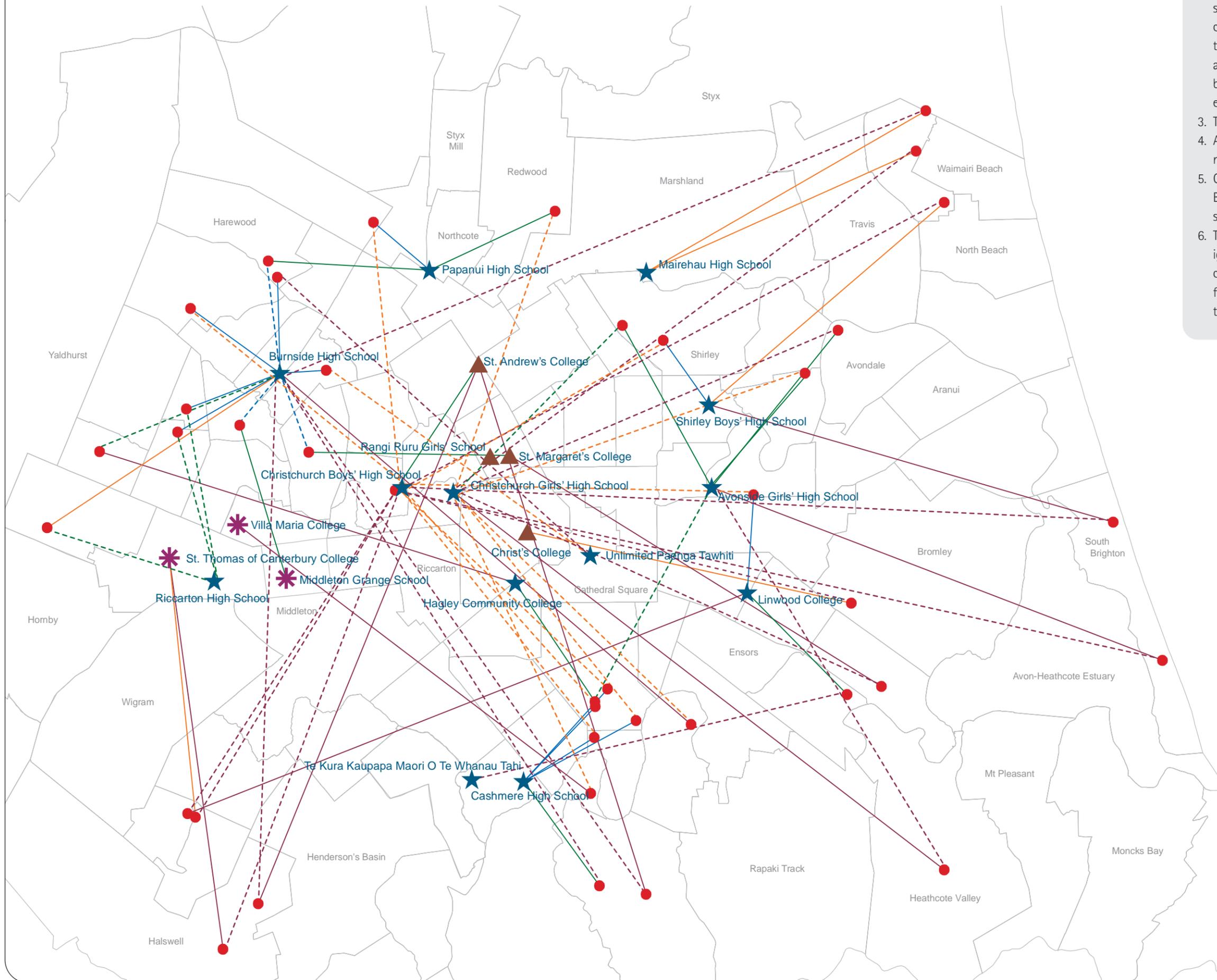
- Cashmere High School
- Avonside Girls' High School
- Hagley Community College
- Christchurch Boys' High School
- Shirley Boys' High School
- Christchurch Girls' High School
- Burnside High School
- Papanui High School
- Riccarton High School
- Area units

0 0.45 0.9 1.8 Kilometres

1:60,000

Map 5.2

Schools currently attended and state schools preferred by parents who would change their child's school



ABOUT THIS MAP

1. This map uses raw data from the survey.
2. It shows the parents who would change their child's school, if they could choose any state secondary school, which school they currently send their child to, and the school they would prefer to send their child to. It also shows the distance between home and both the current school and the state school each parent would send their child to.
3. The scale is 1:60,000.
4. A total of 40 parents are displayed on this map.
5. One parent (ID number 12) was assigned to Burnside High School through the re-sampling procedure.
6. Two parents (ID numbers 60 and 76) were ignored for this map, because they were coded as wanting to change schools but in fact they chose the same school as the one they currently send their child to.

N

LEGEND

Schools

- ★ State school
- ✳ State-integrated school
- ▲ Private school

Parents

- Parents choosing a different school for their child (state schools only)
- Area units

Distance to current school

- 0-2km
- 2-4km
- 4-6km
- >6km

Distance to preferred state school

- - - 0-2km
- - - 2-4km
- - - 4-6km
- - - >6km

0 0.5 1 2 Kilometres

1:60,000

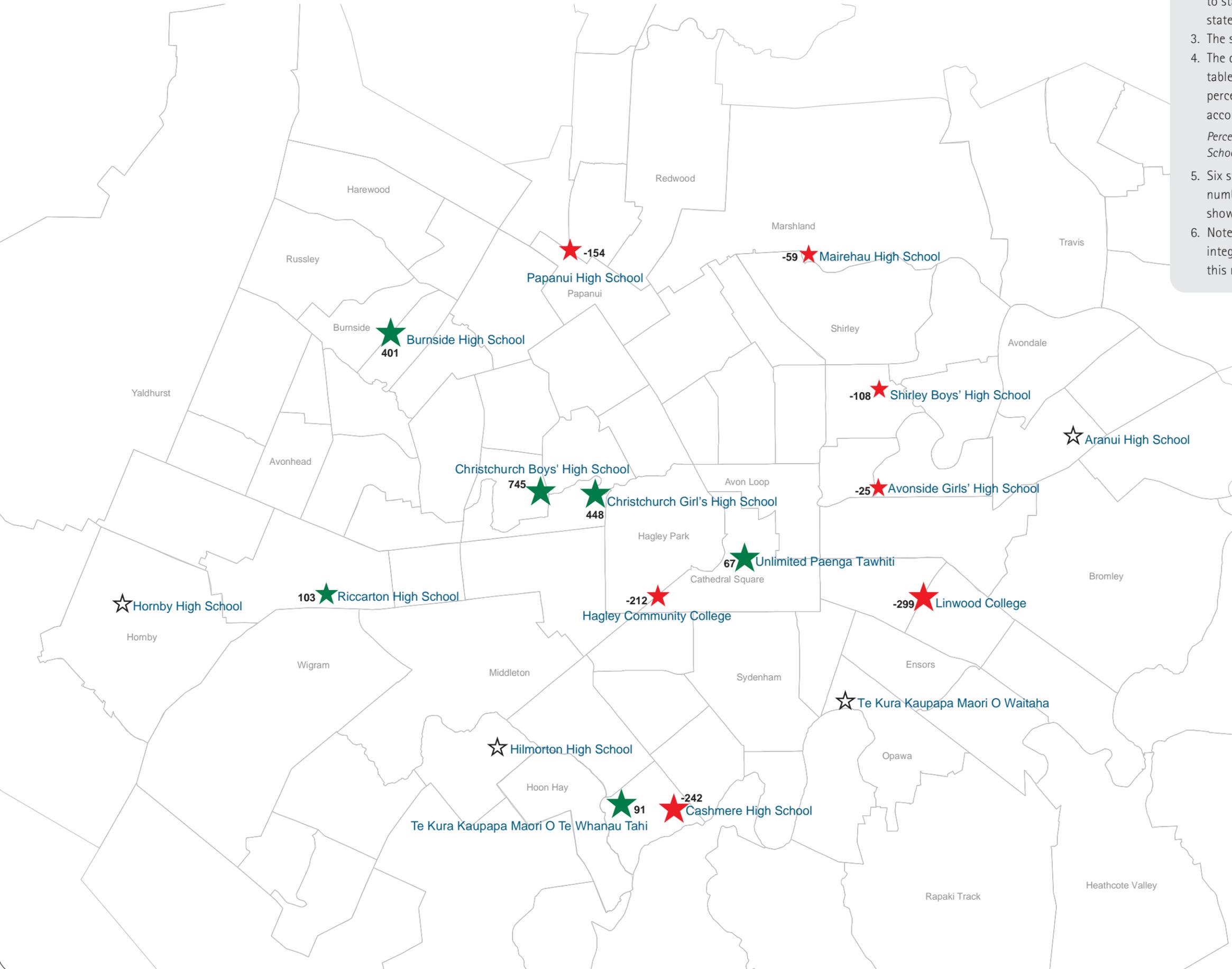
Map 5.3

Gains and losses to state school rolls given a choice of any state school

ABOUT THIS MAP

1. This map uses data from the statistical analysis.
2. It illustrates the expected gains or losses to state school rolls in the choice of any state secondary school scenario.
3. The scale is 1:55,000.
4. The data in the Change column from table 5.3 was used to calculate the percentage change to the school roll, according to the following formula:

$$\text{Percent change in school roll} = (\text{Change} / 2006 \text{ School Roll}) \times 100$$
5. Six state schools show a gain in the number of pupils, while seven schools showed a loss.
6. Note the results for private and state-integrated schools are not displayed on this map but are presented in table 5.3.



LEGEND

Gains or losses to state school rolls (%)

- ★ 15.0% or more gain
- ★ 10.0% - 14.9% gain
- ★ 0.0% - 9.9% gain
- ☆ No change/no data
- ★ 0.0% - 9.9% loss
- ★ 10.0% - 14.9% loss
- ★ 15.0% or more loss
- Area units
- 000 Numbers represent estimated roll increase/decrease

0 0.5 1 Kilometres

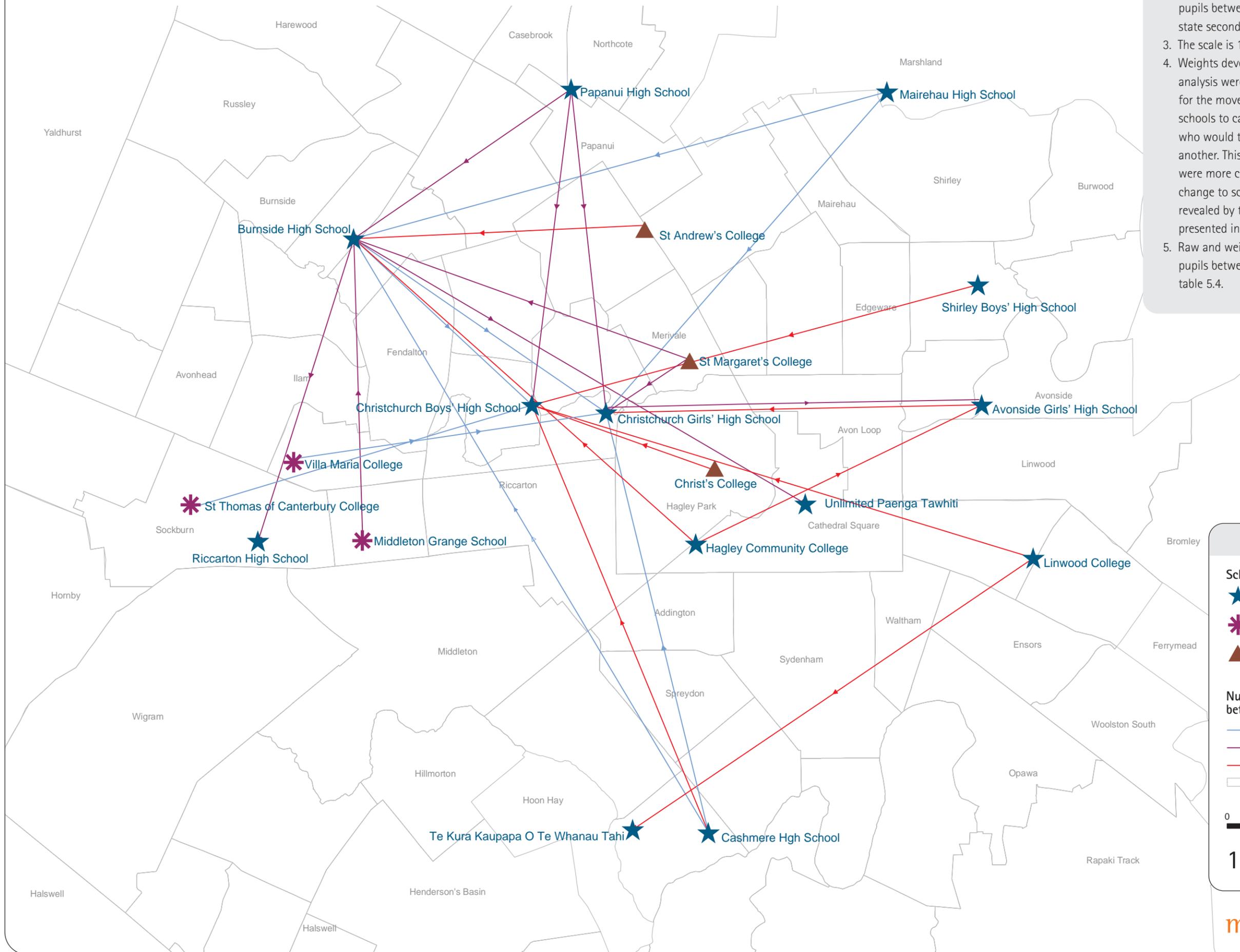
1:55,000

Map 5.4

Movement of pupils between schools given a choice of any state school

ABOUT THIS MAP

1. This map uses data from the statistical analysis.
2. It illustrates the projected movement of pupils between schools in the choice of any state secondary school scenario.
3. The scale is 1:40,000.
4. Weights developed for the statistical analysis were multiplied with the raw data for the movement of pupils between schools to calculate the number of pupils who would transfer from one school to another. This was done so that the results were more consistent with the estimated change to school rolls at the city level revealed by the gains and losses analysis, presented in table 5.3.
5. Raw and weighted data for the flow of pupils between schools are presented in table 5.4.



LEGEND

- Schools**
- ★ State school
 - * State-integrated school
 - ▲ Private school
- Number of pupils transferring between schools**
- 31 - 50 pupils
 - 51 - 100 pupils
 - 101 - 228 pupils
 - Area units



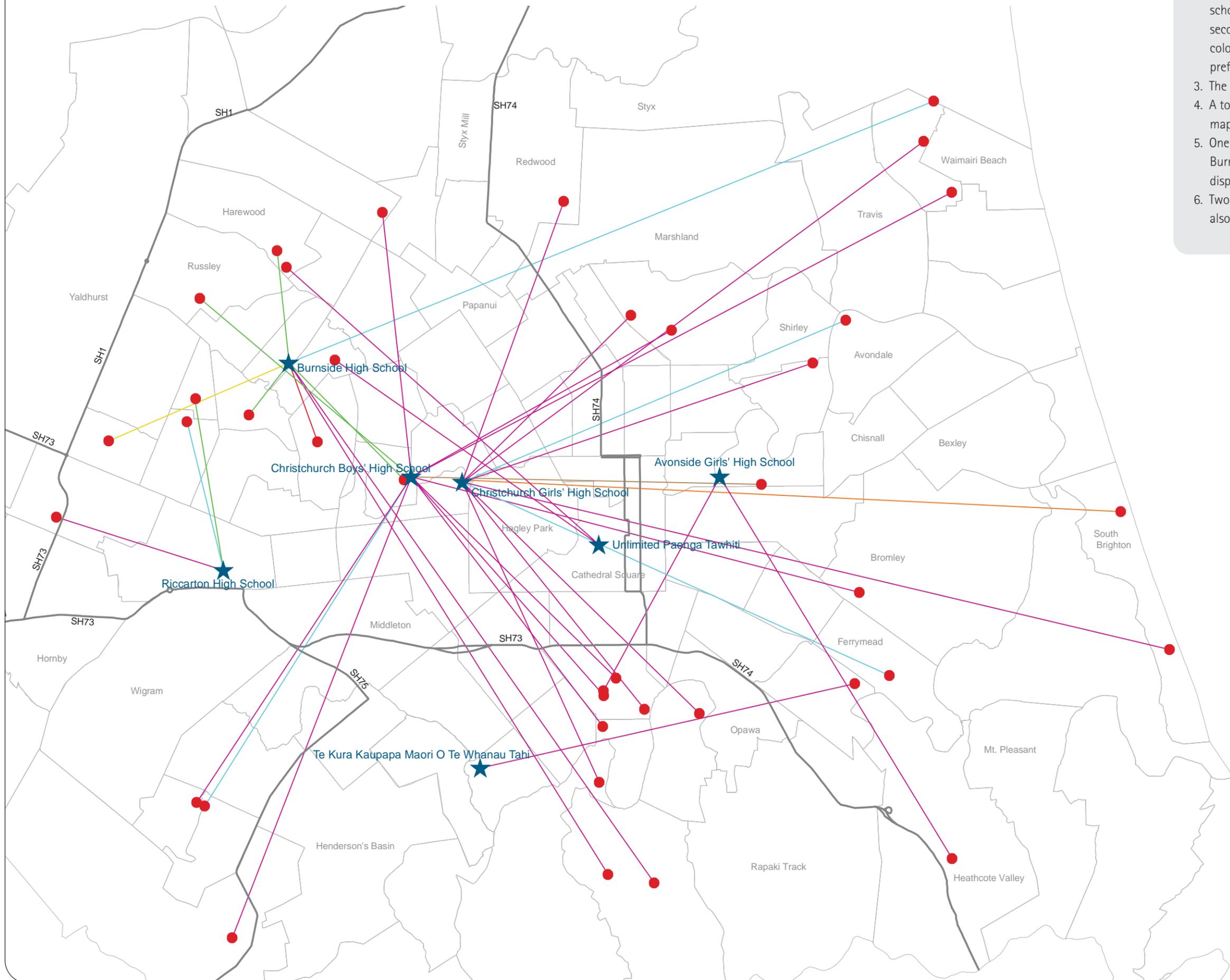
1:40,000

Map 5.5

Transportation to parents' preferred state school for their child given a choice of any state school

ABOUT THIS MAP

1. This map uses raw data from the survey.
2. It illustrates how parents would transport their children to their preferred state school under the choice of any state secondary state school scenario, using colour-coded lines to identify their preferred mode of transportation.
3. The scale is 1:60,000.
4. A total of 39 parents are displayed on this map.
5. One parent (ID number 12), assigned to Burnside High School by resampling, is not displayed on a map.
6. Two parents (ID numbers 60 and 76) were also ignored, as noted for map 5.2.



LEGEND

Schools

- ★ State school
- ✳ State-integrated school
- ▲ Private school

Parents

- Parents choosing a different school for their child (state schools only)

- Area units
- Main highways

Transport to preferred state school

- Bus
- Car-pool
- Cycle
- Own car
- With parent
- Other
- Don't know

0 0.5 1 2 Kilometres

1:60,000

APPENDIX 3

Register of Christchurch Secondary and Composite Schools

See table overleaf.

APPENDIX 3

Register of Christchurch Secondary and Composite Schools

Name	Street	Suburb	School type	Definition	Authority	Student type	Decile	Secondary school Roll (July 2006)
Aranui High School	106 Shortland Street	Aranui	Year 9-15	N/A	State	Co-Ed.	2	761
Avonside Girls' High School	180 Avonside Drive		Year 9-15	N/A	State	Girls	6	1187
Burnside High School	151 Greers Road		Year 9-15	N/A	State	Co-Ed.	9	2605
Canterbury Christian College	2 Nash Road	Halswell	Composite	N/A	State-integrated	Co-Ed.	7	37
Cashmere High School	Rose Street		Year 9-15	N/A	State	Co-Ed.	8	1606
Catholic Cathedral College	62 Ferry Road		Year 7-15	N/A	State-integrated	Co-Ed.	4	219
Christchurch Adventist School	15 Grants Road	Papanui	Composite	N/A	State-integrated	Co-Ed.	7	63
Christchurch Boys' High School	Straven Road	Riccarton	Year 9-15	School with boarding facilities	State	Boys	10	1339
Christchurch Girls' High School	10 Matai Street	Riccarton	Year 9-15	School with boarding facilities	State	Girls	10	1089
Christ's College	Rolleston Avenue		Year 9-15	School with boarding facilities	Private	Boys	99	647
Hagley Community College	510 Hagley Avenue		Year 9-15	N/A	State	Co-Ed.	6	1545
Hillmorton High School	Tankerville Road	Barrington	Year 9-15	N/A	State	Co-Ed.	5	778

Hillview Christian School	150 Wilsons Road	St Martins	Composite	N/A	State-integrated	Co-Ed.	6	72
Hornby High School	180 Waterloo Road	Hornby	Year 9-15	N/A	State	Co-Ed.	3	418
Linwood College	85 Aldwins Road	Linwood City	Year 9-15	N/A	State	Co-Ed.	2	910
Mairehau High School	440 Hills Road		Year 9-15	N/A	State	Co-Ed.	5	591
Marian College	126 North Parade	Shirley	Year 9-15	N/A	State-integrated	Girls	7	442
Middleton Grange School	50 Acacia Avenue	Riccarton	Composite	N/A	State-integrated	Co-Ed.	9	681
Papanui High School	30 Langdons Road	Papanui	Year 9-15	N/A	State	Co-Ed.	6	1403
Rangi Ruru Girls' School	59 Hewitts Road	Merivale	Year 7-15	School with boarding facilities	Private	Girls	99	612
Riccarton High School	Curlletts Road		Year 9-15	N/A	State	Co-Ed.	7	935
Rudolf Steiner School	19 Ombersley Terrace	Opawa	Composite	N/A	State-integrated	Co-Ed.	7	114
Shirley Boys' High School	North Parade	Shirley	Year 9-15	N/A	State	Boys	6	1314
St Andrew's College	347 Papanui Road		Composite	School with boarding facilities	Private	Co-Ed	99	912
St Bede's College	210-220 Main North Road	Papanui	Year 9-15	School with boarding facilities	State-integrated	Boys	9	788
St Margaret's College	12 Winchester Street	Merivale	Composite	School with boarding facilities	Private	Girls	99	561
St Thomas of Canterbury College	69 Middlepark Road	Sockburn	Year 7-15	N/A	State-integrated	Boys	8	352
Te Kura Kaupapa Maori O Te Whanau Tahu	83 Lyttelton Street	Spreydon	Composite	Kura kaupapa Maori	State	Co-Ed.	3	11
Te Kura Kaupapa Maori O Waitaha	45 Hassals Lane	Opawa	Composite	Kura kaupapa Maori	State	Co-Ed.	3	28
Unlimited Paenga Tawhiti	158 Cashel Street		Year 9-15	Character school	State	Co-Ed.	6	282
Villa Maria College	21 Peer Street	Upper Riccarton	Year 7-15	N/A	State-integrated	Girls'	9	709

APPENDIX 4

School Enrolment Zone Boundary Descriptions

Each school enrolment zone boundary was sourced from the website of each school or its school prospectus, prior to carrying out the survey in July–August 2006. All current school zone descriptions are also available from the website www.schoolzones.org.nz.

Avonside Girls' High School

From the intersection of Edgware Road and Barbadoes Street north, along a line to the west of Barbadoes Street as far as Warrington Street, eastward to the north of Warrington Street/Shirley Road/New Brighton Road to Horseshoe Lake Road. Then to the east (inside) of Horseshoe Lake Road following the curve around to the south of Lake Terrace Road as far as the Avon River. Then south along the middle of the Avon River to Kerrs Reach. Then across the river and Avonside Drive in a line east of Kerrs Road to the junction with Buckleys Road. South along to the east of Buckleys Road to the intersection with Linwood Avenue. North up Linwood Avenue to Cashel Street. West along the south of Cashel Street to Barbados Street. North up a line west of Barbadoes Street to the intersection of Kilmore and Barbadoes Street. West along a line south of Kilmore Street to the intersection of Kilmore Street and Colombo Street. North up a line in the middle of Colombo Street to the intersection of Colombo Street and Bealey Avenue. East along the middle of Bealey Avenue to the intersection of Bealey Avenue and Manchester Street. North along a line west of Manchester Street to the intersection of Manchester Street and Edgware Road. East along a line north of Edgware Road to the intersection of Edgware Road and Barbadoes Street.

Burnside High School

From Russley Road east along Wairakei Road to Breens Road, north along Breens Road to Twyford

Street, along Twyford Street to Vauxhall Street, east along Vauxhall Street to Farrington Avenue, north along Farrington Avenue to Hornsby Street, east along Hornsby Street and crossing Mooray Avenue to Staines Street, east along Staines Street to Grahams Road, north along Grahams Road to Greers Road, south along Greers Road to Saffron Street, along Saffron Street to Manor Place, east along Manor Place to Wairakei Road, east along Wairakei Road to Idris Road, east along Idris Road to Glandovey Road, south along Glandovey Road to Fendalton Road, west along Fendalton Road to Clyde Road, south along Clyde Road to Creyke Road, west along Creyke Road to Maidstone Road continuing west along Maidstone Road to Withells Road, along a line across Withells Road to Wardour Mews, west along Wardour Mews to Berkshire Drive, west along Berkshire Drive to Greystoke Lane, west along Greystoke Lane and continuing on this line to Russley Road, north along Russley Road to Wairakei Road.

This includes residences on both sides of the boundary roads included in the zone.

Cashmere High School

The Cashmere High School geographic or home zone is defined by the streets on the boundary of the zone. Houses on both sides of these streets are included in the zone.

From the junction of Frankleigh Street and Sparks Road along Sparks Road to the intersection of Sparks Road and Rydal Street, along Rydal Street, into Northaw into Rollesby Street, south along Rydal Street into Leistrella Road to the intersection with Hoon Hay Road. South along Hoon Hay Road to Blakiston Street (including Barossa Lane and Penmarc Lane), along Kaiwara Street to Cashmere Road. West along Cashmere Road to Hoon Hay Valley Road, then across to the Summit Road and along the Summit Road to the junction with Gebbies Pass Road,

including all residences with access from the Summit Road. From the junction of Gebbies Pass and the Summit Road to Port Levy, including all residences on the Port Levy Road and the Camp Bay Road and all other roads feeding to the south side of Lyttelton Harbour.

The remaining boundary shall run from the intersection of Frankleigh Street and Lyttelton Street, northwards along the west of Lyttelton Street to Neville Street. East along Neville Street to Barrington Street. Northwest along Barrington Street to Lincoln Road, then along Lincoln Road to Moorhouse Avenue. East along Moorhouse Avenue to the junction of Waltham Road. South along Waltham Road to the intersection with Brougham Street and then along Brougham Street to the intersection with Opawa Road. In a south easterly direction along Opawa Road to its junction with Port Hills Road.

West covering streets along the south side of the Port Hills Road to Rapaki Road. South along Rapaki Road to its junction with Summit Road. From the junction of Rapaki Road and the Summit Road in a straight line to the eastern end of Corsair Bay, to include the house at number 20 Park Terrace.

Christchurch Boys' High School

From the intersection of Tuam Street and Colombo Street along Tuam Street, through Hagley Park and along Blenheim Road to Wharenui Road. Then northwards along Wharenui Road to cross Riccarton Road. North along Clyde Road to Creyke Road then along Creyke Road to Ilam Road. North along Ilam Road to Wairakei Road. North along Wairakei Road as far as Blighs Road, along Blighs Road to Papanui Road and south along Papanui Road as far as Mays Road. Eastwards along Mays Road to Rutland Street. South along Rutland Street to Westminster Street, then east to Cranford Street. Then south along Cranford Street and Colombo Street as far as Tuam Street.

All residential properties on or within the boundary of streets described above shall be in-zone addresses for the purpose of an in-zone enrolment to Christchurch Boys' High School.

Christchurch Girls' High School

From Papanui Road, west along both sides of Normans Road to Strowan Road. Both sides of Jeffreys Road from Wairakei Road to Idris Road. Along the east side of Idris Road to Glandovey Road, then along the south

side of Glandovey Road to Fendalton Road. Along the south side of Fendalton Road to Clyde Road. Along the east side of Clyde Road to Riccarton Road. Along the north side of Riccarton Road to Matipo Street. Along the east side of Matipo Street to Blenheim Road. On both sides of Blenheim Road to Hagley Park. From Blenheim Road, on both sides of Deans Avenue to Riccarton Avenue. Through Hagley Park via Riccarton Avenue and on both sides of Riccarton Avenue to Christchurch Hospital. Along Tuam Street to Durham Street, left into Durham Street round Cambridge Terrace, to Gloucester Street, across Gloucester Street and into Durham Street. On both sides of Durham Street to Kilmore Street. Along the north side of Kilmore Street to Colombo Street. Along the west side of Colombo Street to Edgeware Road. Both sides of Edgeware Road to Trafalgar Street. Along both sides of Trafalgar Street to St Albans Street. West on both sides of St Albans Street to Papanui Road. Both sides of Papanui Road to Normans Road.

Hagley Community College

From the corners of Hagley Avenue and Moorhouse Avenue, west along Moorhouse Avenue to Deans Avenue, north along Deans Avenue to Riccarton Road, west along Riccarton Road to Clyde Road, north along Clyde Road to Fendalton Road, east along Fendalton Road to Glandovey Road, Glandovey Road to Strowan Road, north along Strowan Road to Normans Road, northeast along Normans Road to Papanui Road, southeast along Papanui Road to Victoria Street, Victoria Street to Kilmore Street, east along Kilmore Street to Manchester Street, south along Manchester Street to Moorhouse Avenue, west along Moorhouse Avenue to the corner of Hagley Avenue.

Houses on the outer sides of the streets described will be counted as in zone.

Papanui High School

From the south end of the Waimakariri Bridge south to Main North Road. East along the Main North Road to Marshlands Road. South along Marshlands Road to Guthries Road. South along Guthries Road to Belfast Road. Along Belfast Road to Blakes Road, south along Blakes Road to Radcliffe Road. Along a line drawn from the intersection of Radcliffe Road and Blakes Road, along Mills Road to the intersection of Philpotts Road and Queen Elizabeth II Drive, along Philpotts

Road to a point just before Roslyn Avenue from where a line is drawn south-west to intersect with Cranford Street. Down Cranford Street to Edgeware Road, west along Edgeware Road to Trafalgar Street, along Trafalgar Street to St Albans Street, south-west along St Albans Street to Papanui Road. North along Papanui Road to Normans Road, along Normans Road to Strowan Road, along Strowan Road to Jeffries Road, west along Jeffries Road to Idris road, along Idris Road to Wairakei Road, along Wairakei Road to Manor Place, along Manor Place to Saffron Street, along Saffron Street to Greers Road, north along Greers Road to the intersection with Grahams Road, along Grahams Road to Staines Street. Along Staines Street, across Mooray Avenue to Hornsby Street. East along Hornsby Street to Farrington Avenue, along Farrington Avenue to Vauxhall Street, west along Vauxhall Street to Twyford Street, along Twyford Street to Breens Road, south along Breens Road to Wairakei Road, west along Wairakei Road to the Christchurch Airport perimeter, north around the airport perimeter to McCleans Island Road, along McCleans Island Road to the perpendicular left hand turn after the Orana Wildlife Reserve, along a line from that corner to the Waimakariri River, along the Waimakariri River to the southern end of the Waimakariri Bridge.

(Note: Where the school shares a boundary with Burnside High School, the Papanui High School zone includes all roads leading into the boundary roads but not the boundary roads themselves. In all other cases the zone includes houses on both sides of the boundary roads.)

Riccarton High School

From a point on Russley Road opposite Greystone Lane the line continues along the north side of Greystoke Lane, Berkshire Drive, Wardour Mews and Maidstone Road to its intersection with Creyke Road. Along the north side of Creyke Road to its intersection with Clyde Road, then along the east side of Clyde Road to its intersection with Riccarton Road. It then proceeds along the north side of Riccarton Road to its intersection with Matipo Street, then along the east side of Matipo Street to its intersection with Blenheim Road. The line then continues west along the south side of Blenheim Road to its intersection with the Main South Road, then along the south side of Epsom Road to its intersection with Racecourse

Road. The line then continues directly across Riccarton Racecourse to the intersection of Yaldhurst and Steadmans Roads, then along the south side of Yaldhurst Road to its intersection with Russley Road. The line then proceeds along the west side of Russley Road to its starting point.

Shirley Boys' High School

From the intersection of Kilmore and Colombo Street north along a line to the west of Colombo Street. At the end of Colombo Street, east along the north side of Edgeware Road to Cranford Street. North along Cranford Street as far as Oxley Avenue. East along the north side of Oxley Avenue. North along the west side of Forfar Street to Warrington Street. North to the east side of Flockton Street and Thornton Street, (crosses Aylesford Street at house number 79) then to the north of Spurway Place, Ailsa Place and Praem Place across Emmett Street. Then north to the west of Emmett Street. From the intersection of Hammersley Avenue and Marshland Road (crossing at house numbers 91 and 92) to Player Place, then north along the west side of Golf Links Road to Joy Street. Then in a line due east to the junction of Horseshoe Lake Road and Broomfield Terrace. Then north to the east of Horseshoe Lake Road following the curve around on the south of Lake Terrace Road as far as the Avon River. The zone then follows a line directly across the Avon River to Avonside Drive (crossing at house number 1152). It then follows south along Avonside Drive to the east to the bend in the road where it cuts directly across the road in a straight line past the Rowing Club directly through Avonside Drive to Kerrs Road, south down Kerrs Road (including the west side) until it intersects with Woodham Road. Then in a line westward along to the south of Woodham Road, Avonside Drive, across Fitzgerald Avenue to Kilmore Street until Kilmore Street intersects with Colombo Street.

REFERENCES

Legislation

Education Act 1989.

Newspaper articles

"White Flight Skews Lopsided School Rolls."

Christchurch Press. 16 July 2007.

"Editorial: Only tolls can ration road use."

New Zealand Herald. 27 December 2006.

"Grammar Could Go to Court."

New Zealand Herald. 31 August 2006.

"Zoning's Perverse Effects."

New Zealand Herald. 31 August 2006.

Academic literature

Adler, M., A. Petch and J. Tweedie. *Parental Choice and Educational Policy*. Edinburgh: Edinburgh University Press, 1989.

Adnett, N. and P. Davies. "Education As a Positional Good: Implications for Market-Based Reforms of State Schooling." *British Journal of Educational Studies* 50, no. 2 (2002): 189-205.

------. "Schooling Reforms in England: From Quasi-markets to Co-opetition? Presentation to Centre for Education Policy, London School of Economics, February." 2002.

Ainsworth, V., T. Anderson, C. Clements, S. Heggie, R. Rogers and D. Martin. "Tomorrow's Schools and Freedom of Choice - A Recipe for Disaster. A Study of the Effects of Roll Changes on

Christchurch State Schools." Christchurch: Education Policy Research Unit, University of Canterbury, 1993.

Ambler, J.S. *Who Benefits from Educational Choice? Some Evidence from Europe*. Edinburgh: Edinburgh University Press, 1994.

Anthony, A.N. and W. Donna. "New SAS Procedures for Analysis of Sample Survey Data. SUGI proceedings." 1998.

Bagley, C., P.A. Woods and R. Glatter. "Rejecting Schools: Towards a Fuller Understanding of the Process of Parental Choice." *School Leadership and Management* 21, no. 3 (2001): 309-325.

Ball, S.J. "Education Markets, Choice and Social Class: The Market As a Class Strategy in the UK and the USA." *British Journal of Sociology of Education* 14, no. 1 (1993): 3-19.

------. "Circuits of Schooling - a Sociological Exploration of Parental Choice of School in Social-Class Contexts." *Sociological Review* 43, no. 1 (1995): 52-78.

Ball, S.J. and C. Vincent. "'I Heard It on the Grapevine': 'Hot' Knowledge and School Choice." *British Journal of Sociology of Education* 19, no. 3 (1998): 377-400.

Ball, S.J., R. Bowe and S. Gewirtz. "Circuits of Schooling: A Sociological Exploration of Parental Choice of School in Social-class Contexts." In *Education Policy and Social Class*, ed. S.J. Ball. London & New York: Routledge, 2006.

------. "School Choice, Social Class and Distinction: The Realisation of Social Advantage in Education." *Journal of Education Policy* 11, no. 1 (1996): 89-112.

- Ball, S.J., M. Maguire and S. Macrae. *Choice, Pathways and Transitions post-16*. London: Routledge, 2000.
- Bayer, P. and R. McMillan. "Choice and Competition in Local Education Markets." *Working Paper*. 11802. Cambridge, Massachusetts: National Bureau for Economic Research (NBER), 2007.
- Beavis, A. "Why Parents Choose Public or Private Schools." *Research Developments*. 12. Camberwell, Victoria: Australian Council for Educational Research (ACER), 2004.
- Beeby, C.E. "New Zealand - An Example of Secondary Education Without Selection." *International Review of Education* 2, no. 4 (1956).
- Berger, E.H. *Parents as Partners in Education: Families and Schools Working Together*. Englewood Cliffs, New Jersey: Prentice Hall, 1995.
- Bergström, F. and M. Blank. "A Survey on the Development of Independent Schools in Sweden." London: Reform; The Swedish Research Institute of Trade (HUI), 2005.
- Bergström, F. and F.M. Sandström. "School Choice Works! The Case of Sweden." *School Choice Issues in Thought*. Vol. 1, No. 1. Indianapolis: Milton & Rose D. Friedman Foundation, 2002.
- Bergström, F. and M.F. Sandström. "School Vouchers in Practice: Competition Will Not Hurt You." *Journal of Public Economics* 89 (2005).
- Biddulph, F., J. Biddulph and C. Biddulph. "The Complexity of Community and Family Influences on Children's Achievement in New Zealand." Wellington: Ministry of Education, New Zealand, 2003.
- Bowe, R., S.J. Ball and A. Gold. *Reforming Education and Changing Schools. Case Studies in Policy Sociology*. New York and London: Routledge, 1992.
- Bradley, S. and J. Taylor. "The Effect of the Quasi-Market on the Efficiency-equity Trade-off in the Secondary School Sector." *Lancaster University Management School Discussion Paper*. EC9/00. Lancaster: Lancaster University, 2000.
- Bridges, S.J. "Pupil Mobility and Zoning: Out-of-synchronisation Enrolments in Primary Schools Located Near High School 'Home Zones' - An Initial Survey." Christchurch: Christchurch College of Education, 2002.
- Burgess, S. and A. Briggs. "School Assignment, School Choice and Social Mobility." *Working Paper*. 06/157. Bristol: Centre for Market and Public Organisation (CMPO); University of Bristol, 2006.
- Burgess, S., A. Briggs, B. McConnell and H. Slater. "School Choice in England: Background Facts." *Working Paper*. 06/159. Bristol: Centre for Market and Public Organisation (CMPO); University of Bristol, 2006.
- Burgess, S. and H. Slater. "Using Boundary Changes to Estimate the Impact of School Competition on Test Scores." 06/158. Bristol: Centre for Market and Public Organisation (CMPO), 2006.
- Burgess, S., B. McConnell, C. Propper and D. Wilson. "Sorting and Choice in English Secondary Schools." *Working Paper*. 04/111. Bristol: Centre for Management and Public Organisation (CMPO); University of Bristol, 2004.
- Burgess, S., D. Wilson and R. Lupton. "Ethnic Segregation Across Schools and Neighbourhoods. Presentation at the 'Education and the Neighbourhood Conference,' Bristol, January." 2004.
- Christchurch City Council. *Resource Catalogue for Schools. Transportation Student Resource Kit*. 2007. <http://www.ccc.govt.nz/publications/ResourceCatalogueForSchools/Transport/> (accessed 16 July 2007).
- Chubb, J.E. and T.M. Moe. *Politics, Markets and America's Schools*. Washington D.C.: Brookings Institution Press, 1990.
- "Should Market Forces Control Educational Decision-Making?" *Political Science Review* 84 (1990): 558-567.
- "Politics, Markets and America's Schools." *American Political Science Review* 82 (1988): 1065-1089.
- Coleman, J. "Choice, Community and Future Schools." in *Choice and Control in American Education*, eds. W. Clune and J. Witte. Vol. 1. New York: Falmer Press, 1990.
- *Equality and Achievement in Education*. Boulder, Colorado: Westview Press, 1990.
- Crawford, R. "Commentary." In *The Tomorrow's*

- Schools Reforms: An American Perspective*, ed. G. Sullivan. *IPS Policy Paper 6*. Wellington: Institute of Policy Studies; Victoria University of Wellington, 2000.
- Croft, J. "Positive Choice, No Choice or Total Rejection: The Perennial Problem of School Catchments, Housing and Neighbourhoods." *Housing Studies* 19, no. 6 (2004): 927-945.
- Demers, M.N. *Fundamentals of Geographic Information Systems*. Third ed. New Mexico: John Wiley Sons Inc., 2005.
- Department of Education. "Administering for Excellence. Effective Administration in Education. Report of the Taskforce to Review Education Administration (Picot Report)." Wellington: Department of Education, New Zealand, 1988.
- Dronkers, J. "The Existence of Parental Choice in The Netherlands." *Educational Policy* 9, no. 3 (1995): 227-243.
- Education Counts. *Student Numbers as at 1 July 2006*. Ministry of Education, New Zealand. 2007. <http://educationcounts.edcentre.govt.nz/statistics/schooling/student-numbers-at-july-2006.html>.
- Education Forum. "Submission on the Education Amendment Bill, 2000." Wellington: 2000.
- Education Review Office. "The Collection and Use of Assessment Information in Schools." Wellington: Education Review Office (ERO), 2007.
- . "Schools' Use of Operational Funding." Wellington: Education Review Office (ERO), 2006.
- . "Improving Schooling in Mangere and Otara." Wellington: Education Review Office (ERO), 1996.
- Enlow, R.C. and L.T. Ealy (eds.), *Liberty and Learning. Milton Friedman's Voucher Idea at Fifty*. Washington D.C.: Cato Institute, 2006.
- Epstein, J.L. "Perspectives and Previews on Research and Policy for School, Family and Community Partnerships." In *Family School Links: How Do They Affect Educational Outcomes?*, eds. A. Booth and J.F. Dunn. New Jersey: Erlbaum, 1996, 209-246.
- . "Theory to Practice: School and Family Partnerships Lead to School Improvement and Student Success." In *School, Family and Community Interaction: A View From the Firing Lines*, eds. C.L. Fagano and B.Z. Werber. Boulder, Colorado: Westview, 1994, 39-52.
- Fiske, E.B. and H.F. Ladd. *When Schools Compete: A Cautionary Tale*. Washington, D.C.: Brookings Institution Press, 2000.
- . "The Tomorrow's Schools Reforms: An American Perspective." *IPS Policy Paper 6*. Wellington: Institute of Policy Studies; Victoria University of Wellington, 2000.
- Fletcher-Campbell, F., K. Whitby, K. White and T. Chamberlin. "Review of International Literature on Admissions." *Literature Review*. Slough; Reading, Berkshire: CfBT Education Trust; National Foundation for Educational Research (NFER), 2007.
- Fowler, M. *Factors Influencing Choice of Secondary School: A Case Study*. Christchurch: Education Department, University of Canterbury, 1993.
- Friedman, M. "The Role of Government in Education." In *Economics and the Public Interest*, ed. R.A. Solo. New Brunswick, New Jersey: Rutgers University Press, 1955.
- Gaffney, M. and A.B. Smith. "An Evaluation of New Zealand's Targeted Individual Entitlement Scheme." In *Can the Market Save Our Schools?* ed. C.R. Hepburn. Vancouver: The Fraser Institute, 2001, 151-166.
- Gewirtz, S. "Cloning the Blairs: New Labour's Programme for the Re-socialisation of Working Class Parents." *Journal of Education Policy* 16, no. 4 (2001): 365-378.
- Gewirtz, S., S.J. Ball and R. Bowe. *Markets, Choice and Equity in Education*. Buckingham & Philadelphia: Open University Press, 1995.
- . "Parents, Privilege and the Education Marketplace." *Research Papers in Education* 9, no. 1 (1994): 3-29.
- Gibson, A. and S. Asthana. "What's in a Number? Commentary on Gorard and Fitz's 'Investigating the Determinants of Segregation Between Schools.'" *Research Papers in Education* 15, no. 2 (2000): 133-154.

- Glass, G.V. and D.A. Matthews. "Are Data Enough? Review of Chubb and Moe's Politics, Markets and America's Schools." Arizona State University: College of Education, 1990.
- Glatter, R., P.A. Woods and C. Bagley. *Choice and Diversity in Schooling: Perspectives and Prospects*. London: Routledge, 1997.
- ."Diversity, Differentiation and Hierarchy: School Choice and Parental Preferences." In *Choice and Diversity in Schooling: Perspectives and Prospects*. London: Routledge, 1997.
- Glover, D. "Community Perceptions of the Strengths of Individual Schools: The Basis of 'Judgement.'" *Education Management and Administration* 20, no. 4 (1992): 223-230.
- Goldhaber, D. "What Can We Infer From Recent Experiments With Educational Vouchers?" *Education Next*, no. 2 (2001).
- Gorard, S. "Well. That About Wraps It Up for School Choice Research: A State of the Art Review." *School Leadership and Management* 19, no. 1 (1999): 25-47.
- ."Social Movement in Undeveloped Markets: An Apparent Contradiction." *Educational Review* 50, no. 3 (1998): 249-258.
- Gorard, S. and J. Fitz. "What Counts As Evidence in the School Choice Debate?" *British Educational Research Journal* 32, no. 6 (2006): 797-816.
- ."Markets and Stratification: A View From England and Wales." *Educational Policy* 14, no. 3 (2000): 405-428.
- ."Under Starters Orders: The Established Market, the Cardiff Study and the Smithfield Project." *International Studies in Sociology of Education* 8, no. 3 (1998): 299-316.
- ."The More Things Change ... The Missing Impact of Marketisation?" *British Journal of Sociology of Education* 19, no. 3 (1998): 365-376.
- Gorard, S. and E. Smith. "An International Comparison of Equity in Education Systems." *Comparative Education* 40, no. 1 (2004): 15-28.
- ."Market Forces, Choice and Diversity in Education: The Early Impact." *Sociological Research Online* 2, no. 3 (1997): U116-U125.
- Gorard, S. and C. Taylor. "The Debate Over Measuring Segregation." In *Schools, Markets and Choice Policies*. London: Routledge Falmer, 2003, 193-202.
- ."Market Forces and Standards in Education: A Preliminary Consideration." *British Journal of Sociology of Education* 23, no. 1 (2002): 5-18.
- Gorard, S., C. Taylor and J. Fitz. *Schools, Markets and Choice Policies*. London: Routledge Falmer, 2003.
- ."Does School Choice Lead to 'Spirals of Decline'?" *Journal of Education Policy* 17, no. 3 (2002): 367-384.
- Gordon, L. "School Choice and the Social Market in New Zealand: Education Reform in an Era of Increasing Inequality." *International Studies in Sociology of Education* 13, no. 1 (2003): 17-34.
- ."School Choice and the Quasi-Market in New Zealand: 'Tomorrow's Schools' Today." In *School Choice and the Quasi-Market*, ed. G. Walford. Wallingford, Oxfordshire, United Kingdom: Triangle Books, 1996, 129-144.
- Gordon, L. and G. Whitty. "Giving the 'Hidden Hand' a Helping Hand? The Rhetoric and Reality of Neoliberal Education Reform in England and New Zealand." *Comparative Education* 33, no. 3 (1997): 453-467.
- Greene, J.P. "When Schools Compete: The Effects of Vouchers on Florida Public School Achievement." *Education Working Paper*. 2. New York: Manhattan Institute, 2003.
- ."Rising to the Challenge: The Effect of School Choice on Public Schools in Milwaukee and San Antonio." *Civic Bulletin*. 27. New York: Manhattan Institute, 2002.
- ."An Evaluation of the Florida A-Plus Accountability and School Choice Program." New York: Manhattan Institute, 2001.
- ."Vouchers in Charlotte." *Education Matters*, Summer (2001).
- ."A Survey of Results from Voucher Experiments: Where We are and What We Know." New York: Manhattan Institute, 2000.
- ."The Effect of School Choice: An Evaluation of the Charlotte Children's Scholarship Fund Program." *Civic Report*. 12. New York: Manhattan Institute, 2000.

- Harker, R. and R. Nash. "Academic Outcomes and School Effectiveness: Type 'A' and Type 'B' Effects." *New Zealand Journal of Educational Studies* 31, no. 1 (1996): 13-28.
- Harris, J. "High-Earning Schools Revealed." *New Zealand Education Review* 12, no. 33 (2007): 1-5.
- Harrison, M. *Education Matters. Government, Markets and New Zealand Schools*. Wellington: Education Forum, 2004.
- "Review of the Policy Recommendations from the Smithfield Project Reports." Wellington: Ministry of Education, New Zealand, 1999.
- Hattie, J. "What is the Nature of Evidence that Makes a Difference to Learning? Presentation to the ACER *Using Data to Support Learning Research Conference*." Camberwell, Victoria: Australian Council for Educational Research (ACER), 2005.
- "New Zealand Education Snapshot. With specific reference to Yrs 1-13 years. Presentation to "Knowledge Wave 2003 - the Leadership Forum"." 2003.
- "Schools Like Mine: Cluster Analysis of New Zealand Schools." Project asTtle Technical Report. 14. University of Auckland, 2002.
- Henderson, A.T. "Parents Are a School's Best Friends." *Phi Delta Kappan* 70, no. 2 (1988): 148-153.
- "The Evidence Continues to Grow: Parent Involvement Improves Student Achievement." Columbia: National Committee for Citizens in Education, 1987.
- "Parent Participation—Student Achievement: The Evidence Grows." Columbia: National Committee for Citizens in Education, 1981.
- Henderson, A.T. and N. Berla (eds.). "A New Generation of Evidence: The Family is Crucial to Student Achievement (A report from the National Committee for Citizens in Education)." *National Committee for Citizens in Education*. Washington D.C.: Center for Law and Education, 1994.
- Hepburn, C.R. "The Case for School Choice: Sweden." In *The Case for School Choice: Models From the United States, NZ, Denmark and Sweden*. Canada: The Fraser Institute, 1999.
- Heywood, I., S. Cornelius and S. Carver. *An Introduction to Geographic Information Systems*. Edinburgh: Pearson Education, 2002.
- Hipkins, R. and E. Hodgen. "National Survey of Secondary Schools." Wellington: New Zealand Council for Educational Research (NZCER), 2004.
- Howell, W.G. and P.E. Peterson. *The Education Gap. Vouchers and Urban Schools*. Washington D.C.: Brookings Institution Press, 2002.
- Howell, W.G., P.J. Wolf, P.E. Peterson and D.E. Campbell. "Test-Score Effects of School Vouchers in Dayton, Ohio, New York City and Washington D.C.: Evidence From Randomised Field Trials." Paper Prepared for the Annual Meeting of the American Political Science Association, Washington D.C., September 2000. Cambridge, Massachusetts: Program on Education Policy and Governance, Harvard University, 2000.
- Hoxby, C.M. "School Choice: Three Essential Elements and Several Policy Choices." Wellington: Education Forum, 2006.
- "Achievement in Charter Schools and Regular Public Schools in the United States: Understanding the Differences." Harvard University and National Bureau of Economic Research (NBER), 2004.
- "Introduction." In *The Economics of School Choice*, ed. C.M. Hoxby. Chicago: Chicago University Press, 2003, 1-22.
- "School Choice and School Competition: Evidence From the United States." *Swedish Economic Policy Review* 10 (2003).
- "School Choice and School Productivity (or Could School Choice be a Tide that Lifts All Boats?)." Prepared for NBER Conference on The Economics of School Choice, Cheeca Lodge. Massachusetts, Cambridge: National Bureau of Economic Research (NBER), 2001.
- "Rising Tide." *Education Next*, no. 4 (2001).
- "How School Choice Affects the Achievement of Public School Students." Prepared for Koret Task Force on K-12 Education Meeting, September 2001. Stanford: Hoover Institute, 2001.

- "Comments on Papers. Harvard Conference on Charters, Vouchers and School Choice, March 8-9, JFK School of Government." Cambridge, Massachusetts: 2000.
- "Analysing School Choice Reforms that Use America's Traditional Forms of Parental Choice." In *Learning From School Choice*, eds. P.E. Peterson and B.C. Hassel. Washington D.C.: Brookings Institution Press, 1998, 133-155.
- "The Effects of Private School Vouchers on Schools and Students." in *Holding Schools Accountable*, ed. H.F. Ladd. Washington D.C.: Brookings Institution Press, 1996, 281-315.
- "Do Private Schools Provide Competition for Public Schools?" *NBER Working Paper*. 4978. Washington D.C.: National Bureau of Economic Research (NBER), 1994.
- "Does Competition among Public Schools Benefit Students and Taxpayers?" *NBER Working Paper*. 4979. Washington D.C.: National Bureau of Economic Research (NBER), 1994.
- Hughes, A. "Constructing Competitive Spaces: On the Corporate Practice of British Retailer-Supplier Relationships." *Environment and Planning A* 31, no. 5 (1999): 819-839.
- Hughes, D., H. Lauder, A. Dupuis, S. Watson and R. Strathdee. "A Question of Ethnicity: The Meanings of 'New Zealander'. Phase Two, Fifth Report to the Ministry of Education." *The Smithfield Project*. Wellington: Ministry of Education, New Zealand, 1996.
- Hughes, D. H. Lauder, I. Simiyu, S. Watson and R. Strathdee. "Values or Social Class: Competing Explanations for Changing Secondary School Rolls in a Market Context. Phase Two, Seventh Report to the Ministry of Education." *The Smithfield Project*. Wellington: Ministry of Education, New Zealand, 1998.
- "Ethnicity and School Choice." *New Zealand Annual Review of Education* 7 (1997): 95-109.
- Hughes, D., H. Lauder, S. Watson, J. Hamlin and I. Simiyu. "Markets in Education: Testing the Polarisation Thesis. Phase Two, Fourth Report to the Ministry of Education." *The Smithfield Project*. Wellington: Ministry of Education, New Zealand, 1996.
- Hughes, D., H. Lauder, S. Watson, R. Strathdee, I. Simiyu and J. Hamlin. "School Effectiveness: An Analysis of Differences Between Nineteen Schools on Four Outcome Measures Using Hierarchical Linear Modelling. Phase Two, Sixth Report to the Ministry of Education." *The Smithfield Project*. Wellington: Ministry of Education, New Zealand, 1997.
- Jacobsen, V., A. Duncan and A. Hunt. "The Structure and Dynamics of Schools and Businesses: Do They Face Similar Issues?" 99/11. Wellington: The Treasury, New Zealand, 1999.
- Karsten, S. and C. Teelken. "School Choice in The Netherlands." *Oxford Studies in Comparative Education* 6, no. 1 (1996).
- Ladd, H.F. and E.B. Fiske. "The Uneven Playing Field of School Choice: Evidence from New Zealand." *Journal of Policy Analysis and Management* 20, no. 1 (2001): 43-63.
- LaRocque, N. "School Choice: Lessons From New Zealand." In *What America Can Learn From School Choice in Other Countries*, eds. D. Salisbury and J. Tooley. Washington D.C.: Cato Institute, 2005.
- "School Zoning: Locking Kids Out or Letting Them In?" Wellington: Education Forum, 2005.
- LaRocque, N. and J. Kaye. "Enrolment Scheme Provisions in New Zealand." *Briefing Papers*. 3. Wellington: Education Forum, 2002.
- Lauder, H. and D. Hughes. "Social Inequalities and Differences in School Outcomes." *New Zealand Journal of Educational Studies* 25, no. 1 (1990): 37-60.
- Lauder, H., D. Hughes and S. Watson. "The Introduction of Educational Markets in New Zealand: Questions and Consequences." *New Zealand Journal of Educational Studies* 34, no. 1 (1999): 86-98.
- Lauder, H., D. Hughes, S. Watson, I. Simiyu, R. Strathdee and S. Waslander. "Trading in Futures: The Nature of Choice in Educational Markets in New Zealand. Phase One, Third Report to the Ministry of Education." *The Smithfield Project*. Wellington: Ministry of Education, New Zealand, 1995.

- Lauder, H., D. Hughes, S. Waslander, M. Thrupp, J. McGlenn, S. Newton and A. Dupuis. "The Creation of Market Competition for Education in New Zealand. Phase One, First Report to the Ministry of Education in New Zealand." *The Smithfield Project*. Wellington: Ministry of Education, New Zealand, 1994.
- Lauder, H. D. Hughes, S. Watson, M. Thrupp, R. Strathdee, I. Simiyu, A. Dupuis, J. McGlenn and J. Hamlin. *Trading in Futures: Why Markets in Education Don't Work*. Buckingham: Open University Press, 1999.
- Lidström, A. "Local School Choice Policies in Sweden." *Scandinavian Political Studies* 22, no. 2 (1999): 137-156.
- Lieberman, M. "Free-market Strategy and Tactics in K-12 Education." In *Liberty and Learning. Milton Friedman's Voucher Idea at Fifty*, eds. R.C. Enlow and L.T. Ealy. Washington D.C.: Cato Institute, 2006.
- Little, R.J.A. and D.B. Rubin. *Statistical Analysis with Missing Data*. New York: Wiley, 2002.
- Lohr, S. *Sampling: Design and Analysis*. Pacific Grove: Duxbury Press, 1999.
- Lubienski, C. "Innovation in Education Markets: Theory and Evidence on the Impact of Competition and Choice in Charter Schools." *American Educational Research Journal* 40, no. 2 (2003): 395-443.
- Maddaus, J. "Parental Choice of School: What Parents Think and Do." *Review of Research in Education* 16 (1990): 267-295.
- Manzer, R. *Public Schools and Political Ideas*. Toronto: University of Toronto Press, 1994.
- Marschall, M.J. "The Role of Information and Institutional Arrangements in Stemming the Stratifying Effects of School Choice." *Journal of Urban Affairs* 22, no. 3 (2000): 333-350.
- Marsden, T., M. Harrison and A. Flynn. "Creating Competitive Space: Exploring the Social and Political Maintenance of Retail Power." *Environment and Planning A* 30 (1998): 481-798.
- McClay, S. and R. Harrison. "The Impact of School Zoning on Residential House Prices in Christchurch, Paper Presented at the 2003 Meetings of the New Zealand Association of Economists." 2003.
- McCulloch, G. "Secondary School Zoning: The Case of Auckland." In *Political Issues in New Zealand Education*, eds. J. Codd, R. Harker and R. Nash. Palmerston North: Dunmore Press, 1990, 283-302.
- Merrifield, J. "Parental Choice as an Education Reform Catalyst: Global Lessons." Wellington: Education Forum, 2005.
- Minister of Transport and Associate Minister of Transport. "Auckland Road Pricing: Next Steps." *Memorandum*. WGTA6685. Wellington: Ministry of Transport, 2006.
- Ministry of Education. "Christchurch State Secondary Schools' Capacity." Media Request. Wellington: Data Management Unit, Ministry of Education, New Zealand, 2007.
- . "Maximum Roll Guidelines. Increase in Maximum Roll. Appendix 22A." Wellington: Ministry of Education, New Zealand, 2007.
- . "Student Outcome Overview 2001-2005." Wellington: Research Division, Ministry of Education, New Zealand, 2006.
- . "Focus on Achievement in Reading Literacy - PISA 2000." Wellington: Comparative Education Research Unit, Ministry of Education, New Zealand, 2004.
- Miron, G. "Choice and the Quasi-Market in Swedish Education." In *School Choice and the Quasi-Market*, ed. G. Walford. Wallingford, Oxfordshire, United Kingdom: Triangle Books, 1996, 33-47.
- Moe, T.M. *Schools, Vouchers, and the American Public*. Washington D.C.: The Brookings Institution Press, 2001.
- Morse, J.R. "Competing Visions of the Child, the Family, and the School." In *Education in the Twenty-First Century*, ed. E.Lazear. Stanford, California: Hoover Institution Press, 2002, 147-177.
- Nechyba, T.J. "Introducing School Choice into Multidistrict Public School Systems." In *The Economics of School Choice*, ed. C.M. Hoxby. Chicago: National Bureau of Economic Research (NBER), University of Chicago Press, 2003, 145-194.

- "The Economics of Education: Vouchers and Peer Group Effects." *Treasury Working Paper* 98/5. Wellington: The Treasury, New Zealand, 1998.
- New Zealand Qualifications Authority. *National Qualifications Framework Statistics. Canterbury Regional Schools. School Profiles*. 2007. <http://www.nzqa.govt.nz/qualifications/ssq/statistics/region-schools.do?year=2006&tr=14>.
- "www.edcentre.govt.nz - A New Gateway to Education Information." *QA News*, no. 50 (2005).
- Noden, P. "Rediscovering the Impact of Marketisation: Dimensions of Social Segregation in England's Secondary Schools, 1994-1999." *British Journal of Sociology of Education* 21, no. 3 (2000): 371-390.
- Pearce, D. and L. Gordon. "In the Zone: New Zealand's Legislation for a System of School Choice and Its Effects." *London Review of Education* 3, no. 2 (2005): 145-157.
- Peterson, P.E., W.G. Howell, P.J. Wolf and D.E. Campbell. "School Vouchers. Results from Randomised Experiments." In *The Economics of School Choice*, ed. C.M. Hoxby. Chicago: University of Chicago Press, 2003, 107-144.
- Rasell, E. and R. Rothstein (eds.). *School Choice: Examining the Evidence*. Washington D.C.: Economic Policy Institute, 1993.
- Ravitch, D. "Somebody's Children: Educational Opportunity for All American Children." In *New Schools for a New Century*, eds. D. Ravitch and J. Viteritti. New Haven: Yale University Press, 1997, 251-274.
- Reay, D. "Engendering Social Reproduction: Mothers in the Educational Marketplace." *British Journal of Sociology of Education* 19, no. 2 (1998): 195-209.
- Reay, D. and H. Lucey. "Children, School Choice and Social Differences." *Educational Studies* 26, no. 1 (2000): 83-100.
- Robertson, S. and R. Dale. "Local States of Emergency: The Contradictions of Neo-Liberal Governance in Education in New Zealand." *British Journal of Sociology of Education* 23, no. 3 (2002): 463-481.
- Rouse, C. "Private School Vouchers and Student Achievement: An Evaluation of the Milwaukee Parental Choice Programme." *Quarterly Journal of Economics* 63 (1998): 553-602.
- Schneider, B. and J. Coleman. *Parents, their Children and Schools*. Boulder, Colorado: Westview Press, 1993.
- Schneider, M., P. Teske and M.J. Marschall. *Choosing Schools. Consumer Choice and the Quality of American Schools*. Princeton & Oxford: Princeton University Press, 2000.
- Schneider, M., P. Teske, M. Marschall and C. Roch. "Shopping for Schools: In the Land of the Blind, the One-Eyed Parent May Be Enough." *American Journal of Political Science* 42, no. 3 (1998): 769-793.
- Smith, K.B. and K.J. Meier. *The Case Against School Choice: Politics, Markets and Fools*. Armonk, New York: M.E. Sharpe, 1995.
- Statistics New Zealand. *Geographic Hierarchy*. 2006. <http://www.stats.govt.nz/statistics-by-area/regional-statistics/geography-mapping/default.htm>.
- Stillman, A. and K. Maychell. *Parents, LEAs and the 1980 Education Act*. London: Taylor & Francis Books, 1986.
- Stockwell, W. and S. Duckworth. "'Drivers of Choice' and Customer Satisfaction with Christchurch Secondary Schools. Report Prepared for the Ministry of Education." Wellington: 1998.
- Taylor, C. *Geography of the 'New' Education Market*. Aldershot: Ashgate Publishing, 2002.
- "The Geography of Choice and Diversity in the 'New' Secondary Education Market of England." *Area* 33, no. 4 (2001): 368-381.
- "Hierarchies and 'Local' Markets: The Geography of the 'Lived' Market Place in Secondary Education Provision." *Journal of Education Policy* 16, no. 3 (2001): 197-214.
- "The Quality of Education in Britain: More Choice for Citizens?" Paper Presented at "The Quality of Welfare Services in Europe: The Impact of Policy Change on Citizens and Providers," Social Science Research Center, Berlin October 2001. 2001.

- Taylor, C. and S. Gorard. "The Role of Residence in School Segregation: Placing the Impact of Parental Choice in Perspective." *Environment and Planning A* 33, no. 10 (2001): 1829-1852.
- Taylor, C., J. Fitz and S. Gorard. "Diversity, Specialisation and Equity in Education." *Oxford Review of Education* 31, no. 1 (2005): 47-69.
- Teske, P. and M. Schneider. "What Research Can Tell Policymakers About School Choice." *Journal of Policy Analysis and Management* 20, no. 4 (2001): 609-631.
- Thomas, S. "Information for Parents." *The Parent Factor*. Auckland: Maxim Institute, 2005.
- Thomas, S. and R. Oates. "Access to Education." *The Parent Factor*. Auckland: Maxim Institute, 2005.
- Timperley, H.S. and V.M.J. Robinson. "Achieving Shared Values Between Schools and Their Communities." *Leading and Managing* 1 (1995): 137-149.
- Tomlinson, S. *Education in a Post Welfare Society*. Buckingham: Open University Press, 2001.
- "Diversity, Choice and Ethnicity." *Oxford Review of Education* 23, no. 1 (1997): 63-76.
- Tooley, J. *The Global Education Industry: Lessons from Developing Countries - IEA, 2001*. London: Institute for Economic Affairs (IEA), 2001.
- Tooley, J. and P. Dixon. "Private Education is Good for the Poor: A Study of Private Schools Serving the Poor in Low-income Countries." *White Paper*. Washington D.C.: Cato Institute, 2005.
- Tooley, J., P. Dixon and J. Stanfield. *Delivering Better Education: Market Solutions for Educational Improvement*. London: Adam Smith Institute, 2003.
- Vandenberghe, V. "Combining Market and Bureaucratic Control in Education: An Answer to Market and Bureaucratic Failure?" *Comparative Education* 35, no. 3 (1999): 271-282.
- Walberg, H.J. "Families As Partners in Educational Productivity." *Phi Delta Kappan* 65, no. 6 (1984): 397-400.
- Walberg, H.J. and J.L. Bast. *Education and Capitalism*. Stanford: Hoover Institution Press, 2003.
- Waldo, S. "Efficiency in Public Education." Department of Economics, Lund University, 2002.
- Waslander, S. and M. Thrupp. "Choice, Competition and Segregation: An Empirical Analysis of a New Zealand Secondary School Market, 1990-1993." *Journal of Education Policy* 10, no. 1 (1995): 1-26.
- Waslander, S., D. Hughes, H. Lauder, J. McGlinn, S. Newton, M. Thrupp and A. Dupuis. "An Overview of Research Activities. Phase One, Second Report to the Ministry of Education." *The Smithfield Project*. Wellington: Ministry of Education, New Zealand, 1994.
- Watson, S., A. Hughes and H. Lauder. "'Success' and 'Failure' in the Educational Marketplace. Phase Two, Eighth Report to the Ministry of Education." *The Smithfield Project*. Wellington: Ministry of Education, New Zealand, 1998.
- West, A. and H. Pennell. "How New Is New Labour? The Quasi-Market and English Schools 1997-2001." *British Journal of Educational Studies* 50, no. 2 (2002): 206-224.
- Whitty, G. *Making Sense of Education Policy*. London: Paul Chapman, 2002.
- Wild, C. and G. Seber. *Introduction to Probability and Statistics*. Auckland: Auckland University Press, 1993.
- Willms, J. and F. Echols. "Alert and Inert Clients: the Scottish Experience of Parental Choice of Schools." *Economics of Education Review* 11, no. 4 (1992): 339-350.
- Wise, S. *GIS Basics*. London and New York: Taylor and Francis, 2002.
- Woodfield, A. and P. Gunby. "The Marketisation of New Zealand Schools: Assessing Fiske and Ladd." *Journal of Economic Literature* 41 (2003): 863-884.
- Woods, P., C. Bagley and R. Glatter. *School Choice and Competition: Markets in the Public Interest?* London: Routledge, 1998.
- Wylie, C. "Is the Land of the Flightless Bird the Home of the Voucherless Voucher?" *New Zealand Journal of Educational Studies* 34, no. 1 (1999): 99-109.

ACKNOWLEDGEMENTS

Many people worthy of special thanks for their assistance, advice and service have contributed towards the research presented in this report. Nicki Taylor, whose passion for New Zealand education was the inspiration behind the project, also helped to plan much of the research and many of the questions and ideas explored in the report.

We also owe a debt to Chris Taylor of Cardiff University, whose approach to analysing the geography of education, using a Geographic Information System, helped bring this project to life. Chris also offered sound advice at several stages of the project.

Newell Grenfell offered valuable comments on the draft questionnaire of the parental survey. David Thomas of the Survey Research Unit at the University of Auckland, which Maxim Institute commissioned to conduct the survey, oversaw data collection, and worked hard to ensure that participants from an anonymous telephone survey could be located precisely for the spatial analysis which represents a major part of the research.

Steve Vander Hoorn, Biostatistics Manager at the Clinical Trials Research Unit, also at the University of Auckland, was of tremendous help with analysing the survey results at the city level and with finding ways the data could be used to its fullest extent in the GIS spatial analysis.

Su Bee Seng worked studiously over a very short space of time to produce the majority of the maps and distance calculations. Daniel Exeter of the University of Auckland assisted with reviewing the maps and preparing them for publication.

We would also like to thank Norman LaRocque for his attentive review of the draft manuscript.

Finally, to others not named here, grateful thanks are also given for their support and encouragement throughout the research project, although responsibility for the final report, and the views expressed in it, rests with us.

ABOUT THE AUTHOR

Steve Thomas is a Researcher at the Maxim Institute. He was educated at the University of Canterbury, graduating with a Master of Arts with Distinction. Steve's background is in political science; however,



he also researches and writes in a number of areas, including New Zealand education, regionalism, New Zealand politics and local government. He is the author of two of Maxim Institute's award-winning Fisher Memorial Prize series of *Parent Factor* reports, *Information for parents* and *Access to education*, and has also been published in the journals, *Asia Pacific Journal of EU Studies* and *Urban Policy and Research*.