

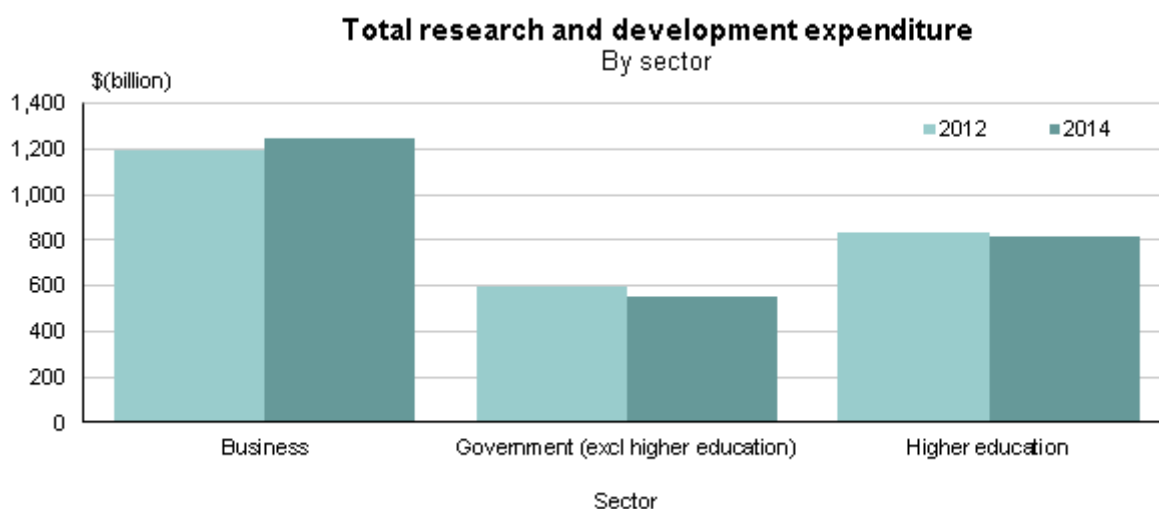
Research and Development Survey: 2014

Embargoed until 10:45am – 27 March 2015

Key facts

In 2014:

- Business expenditure on research and development (BERD) increased by \$53 million since 2012, to reach \$1,246 million.
- Computer services increased \$90 million since 2012, now contributing a quarter of BERD.
- Total expenditure on R&D remained at \$2,619 million.
- Half of all businesses expect to increase their R&D activity in 2015.



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Commentary

- Total R&D expenditure stable despite BERD increase
- Three-quarters of BERD funding comes from businesses
- Experimental R&D on the up
- R&D grows but at a slower rate than GDP
- More businesses performing R&D
- Primary and manufacturing industries are biggest target of research
- New markets motivator for R&D
- More people involved in R&D people
- Bioscience steady at almost one-fifth of R&D expenditure

The Research and Development Survey includes questions on expenditure on R&D, employees engaged in R&D, and expectations of future trends. It also collects information on sources of funding for those involved in R&D, but is not designed to capture all funding sources.

Total R&D expenditure stable despite BERD increase

Total R&D expenditure across all sectors remained steady, at \$2,619 million in 2014 compared with \$2,625 million in 2012. This expenditure can be broken down into three different sectors – government, higher education (eg universities), and business.

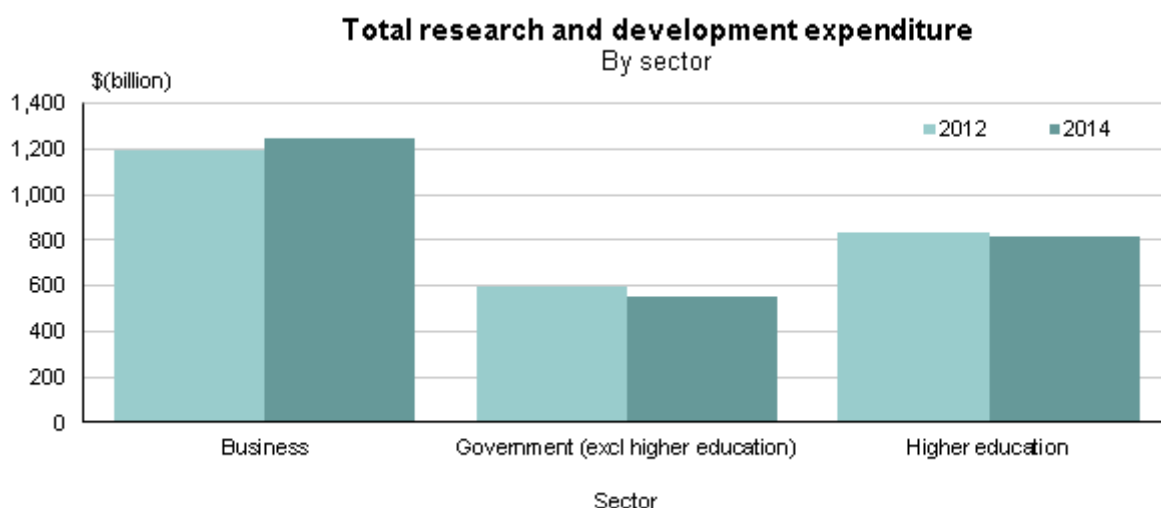
The government sector, which contributes one-quarter of all R&D expenditure, fell by 7 percent – to \$556 million. Universities, which contribute one-third of all R&D expenditure, fell by 2 percent – to \$817 million.

Business sector expenditure on R&D sat at \$1,246 million in 2014, which was just under half of all R&D expenditure in New Zealand. This expenditure equates to a 4 percent increase from 2012. Expenditure has increased every year the survey has run.

The majority of the increase in business expenditure came from the services industry, which saw a 19 percent increase – up from \$532 million in 2012 to \$632 million in 2014. Due to this increase, services has overtaken the manufacturing industry as the biggest spender on R&D.

The services sub-industry with the highest increase was computer services, which had a 41 percent increase in R&D expenditure – up from \$221 million in 2012 to \$311 million in 2014. The computer services sub-industry includes activities such as hardware and software development, programming, or consulting.

In contrast, the primary and manufacturing industries had decreased expenditure on R&D (26 percent and 3 percent, respectively), although the petroleum, coal, chemical, and associated product manufacturing sub-industry had an increase.



Source: Statistics New Zealand

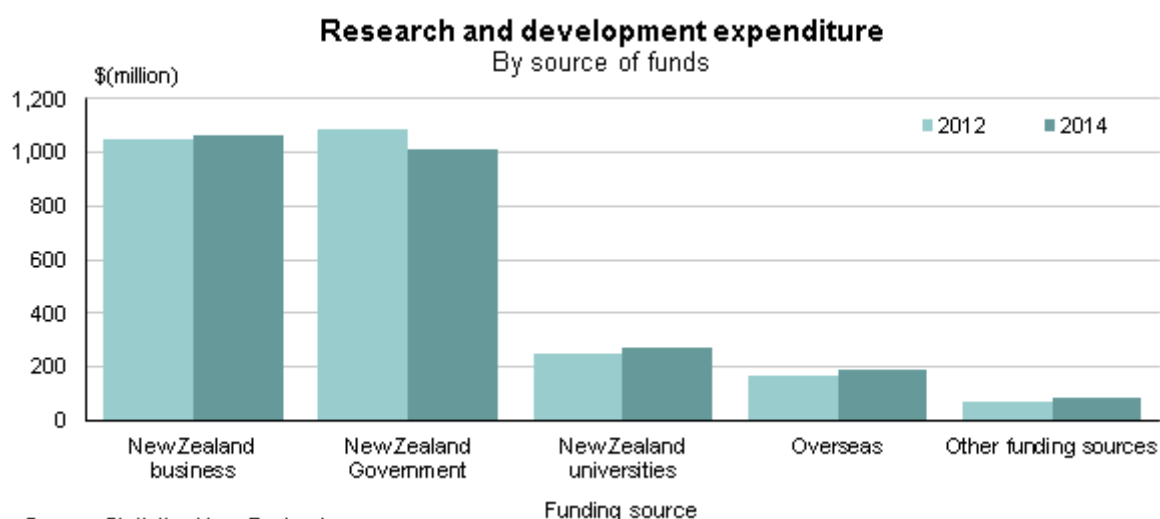
Three-quarters of BERD funding comes from businesses

Businesses engaged in R&D were asked about the source of funding for their R&D activity. On the whole, R&D expenditure is funded from within the sector carrying it out.

In 2014, businesses received almost three-quarters of their R&D funding from within the business sector. The next biggest sources were from overseas (12 percent).

Similarly, three-quarters of government R&D was funded from within the government sector. However, the government sector is also the largest source of funding (57 percent) for higher education R&D expenditure.

Overall, overseas funding for R&D increased by 13 percent, to reach \$187 million in 2014. Three-quarters of this went to businesses.



Source: Statistics New Zealand

Experimental R&D on the up

R&D includes a range of activities, which can be grouped under three broad headings:

- **basic research** searches for new knowledge or technologies to underpin a range of applications
- **applied research** determines possible uses of basic research towards a specific practical aim or objective
- **experimental development** uses knowledge gained from research and practical experience to produce new or improved materials, processes, or products.

Applied research continues to be the dominant type of R&D performed in New Zealand, with \$1,019 million (39 percent of the total in 2014) worth of expenditure.

Basic and applied research both had decreased expenditure in 2014 – down 3 percent and 6 percent, respectively.

Experimental development was the only type of R&D to increase – up from \$871 million in 2012 to \$942 million in 2014.

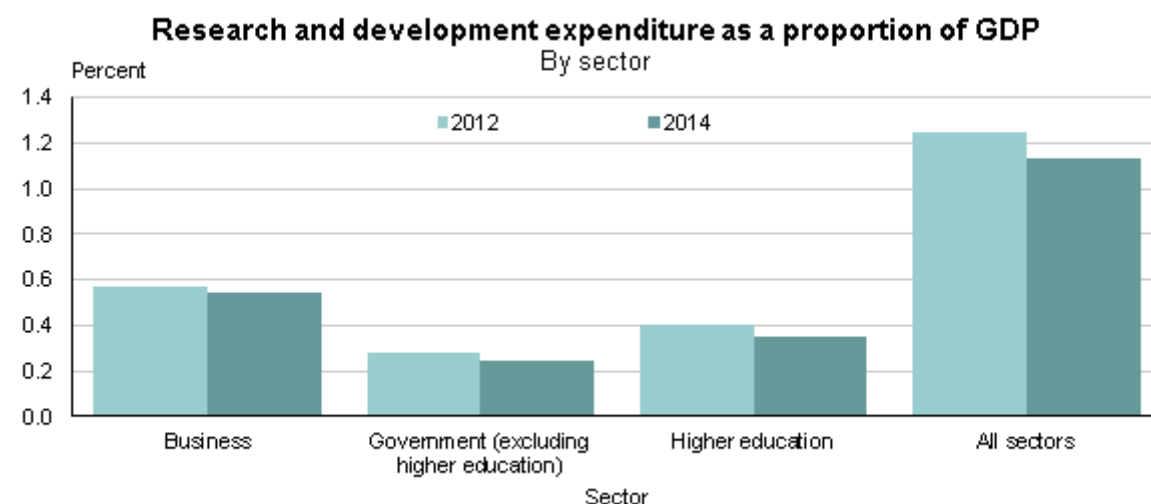
Type of R&D	2014		2012	
	\$(million)	% of total	\$(million)	% of total
Basic research	658	25	675	26
Applied research	1,019	39	1,080	41
Experimental development	942	36	871	33

The predominant type of R&D varies across the sectors – businesses conduct more experimental development, while government and higher education R&D is directed more towards research.

R&D grows at a slower rate than GDP

While R&D expenditure has increased, GDP has increased by more. As a result, R&D expenditure as a percentage of GDP has fallen from 0.57 percent in 2012 to 0.55 percent in 2014. However, since the survey was first collected, R&D expenditure as a percentage of GDP has risen from 0.48 percent in 2012 to 0.55 in 2014. The increase in GDP came from these industries: construction; agriculture, forestry and fishing; and health care and social assistance.

New Zealand's proportion of R&D undertaken by the government sector has traditionally been higher than in other countries, with the proportion undertaken by businesses correspondingly lower. Government R&D is driven by Crown research institutes, which are some of the larger R&D performers in New Zealand. These organisations, and others, conduct industry-good research, which would often be covered by the business sector in other countries. However, the increase in business R&D over the last two years does start to bring New Zealand closer to the mix seen in other countries.



Relative to other OECD countries of similar size, or those with which New Zealand is often compared, our R&D expenditure is relatively low.

More businesses performing R&D

The number of businesses carrying out R&D increased from 1,491 in 2012 to 1,549 in 2014. So not only are business spending more on R&D, but more of them are performing R&D.

However, the number of governmental organisations carrying out R&D decreased from 63 in 2012 to 45 in 2014. This could explain some of the drop in R&D expenditure by the government sector.

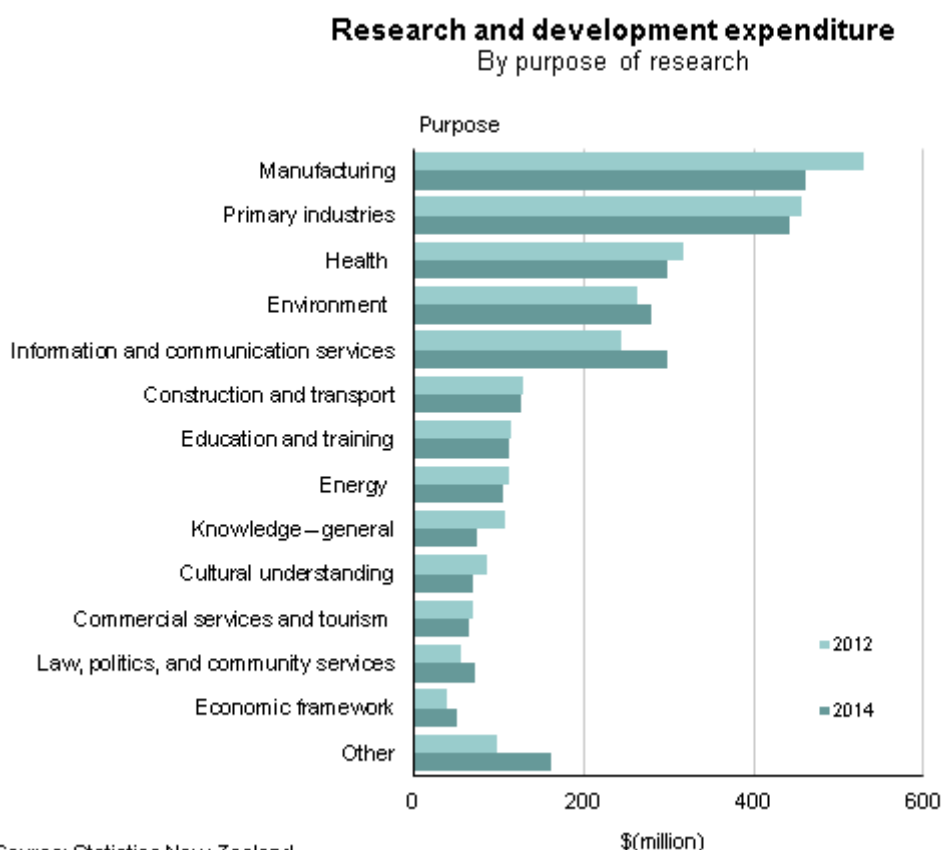
The number of businesses performing R&D does not necessarily affect total business expenditure on R&D – there are many small players in R&D, but only a few very large players.

Primary and manufacturing industries are biggest target of research

Top industries benefiting from R&D are the primary and manufacturing industries. Thirty-five percent of R&D is designed to support these industries.

The largest increases in 2014 came from the information and communication services (up \$55 million), and 'other' such as defence and other research purposes (up \$63 million).

Priorities for sectors reveals that businesses have an interest in the manufacturing, information and communication services, and primary industries. The government is interested in environmental and primary industries.



New markets motivator for R&D

In 2014, we collected information from businesses undertaking R&D on their motivations for undertaking it and the expected benefits.

Gaining entry into new markets was the main reason for businesses undertaking R&D, as reported by over one-third of businesses.

Over one-quarter undertook R&D to maintain their position in the market.

Businesses can take some time to reap the rewards of their R&D investment. But the vast majority expected to break even within five years.

Businesses were also asked about their R&D activity over the next year. Thirty-five percent indicated levels would stay the same, and almost half said they would expect their R&D activity to increase.

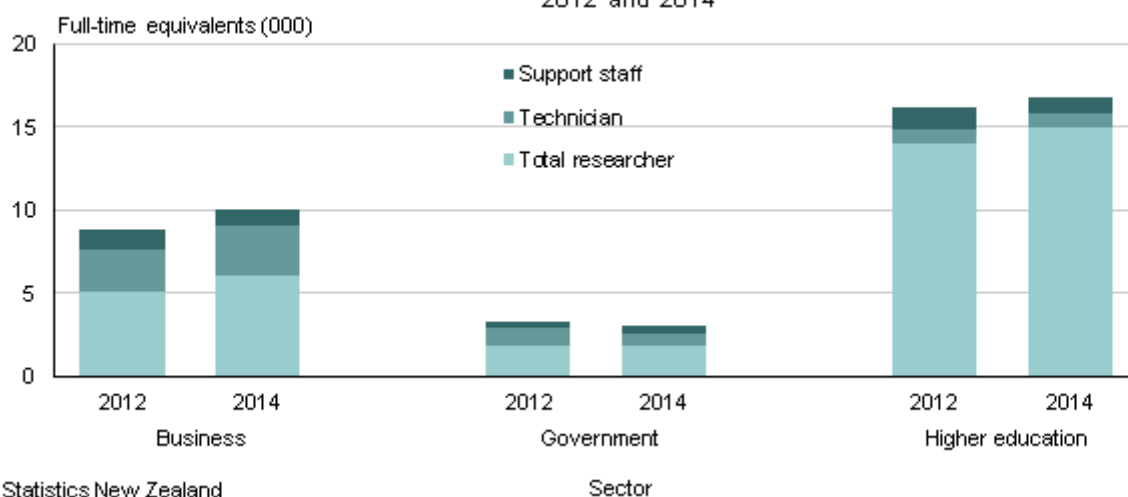
The sub-industries with the highest proportion of businesses expecting an increase were the machinery and equipment industries; and the scientific research and technical services – both with 50 percent. They were closely followed by the computer services and 'other services' sub-industries.

More people involved in R&D

The R&D survey also collects information on the number of researchers, technicians, and support staff involved in R&D – to understand the broader picture of R&D.

R&D personnel rose 5 percent to 29,900 full-time equivalents in 2014. This increase was driven by the business sector, up 14 percent from 2012, and is across all occupation groups. The occupation group driving this increase was researchers, at 11,900 in 2014, a 9 percent increase.

Personnel involved in research and development
2012 and 2014



Source: Statistics New Zealand

Bioscience steady at almost one-fifth of R&D expenditure

Bioscience expenditure fell almost 2 percent in 2014, down to \$486 million. Bioscience is a type of R&D that focuses on the way plants, animals, and humans function for the development of products or services. Bioscience can also be split into the sectors of business, government, and higher education.

The government sector contributed the most towards bioscience R&D, at \$192 million in 2014, a \$10 million drop from 2012. Similarly, higher education expenditure dropped \$11 million, down to \$171 million in 2014.

The only sector with increased expenditure was business, which had an 11 percent increase to \$123 million in 2014.

Bioscience makes up 19 percent of the total R&D expenditure but is carried out by just 11 percent of businesses performing R&D.

Bioscience has applications in diverse fields such as health, animal and plant breeding, food manufacturing, and aquaculture.

For more detailed data, see the Excel tables in the 'Downloads' box.

Definitions

About the Research and Development Survey 2014

The Research and Development Survey, conducted every two years, is a joint survey with the Ministry of Business, Innovation and Employment (MBIE). The survey measures the level of research and development (R&D) activity, employment, and expenditure by business sector enterprises, government departments, government-owned trading entities, and universities.

Types of research and development

The government and Crown research institute (CRI) sector questionnaires ask for R&D expenditure to be categorised into the following R&D types: basic research, targeted basic research, applied research, and experimental development. The business sector questionnaire does not make a distinction between basic research and targeted basic research. The type of R&D breakdown relates to the following definitions.

Basic research: carried out to advance knowledge, without seeking long-term economic or social benefits or making any effort to apply the results to sectors responsible for their application.

Targeted basic research: produces a broad base of new knowledge likely to underpin solutions to current or future applications.

Applied research: investigation undertaken to acquire new knowledge. It is directed primarily towards a specific practical aim or objective.

Experimental development: systematic work, drawing on knowledge gained from research and practical experience, that is directed at producing new materials, products, and devices; installing new processes, systems, and services; or improving substantially those already produced or installed.

The wording of these definitions is the result of cognitive testing of the definitions provided in chapter 4 of the OECD's *Frascati Manual 2002* and the 1991 *Glossary of Terms for Scientific and Technological Activities in New Zealand*.

Higher education (university) sector: types of R&D expenditure were provided for four types of research: pure-basic research, targeted-basic research, applied research, and experimental development. These types of research are based on the Frascati Manual 2002 definitions.

All sectors: includes basic research, applied research, and experimental development. We compile statistics for all three types research types for the business, government, and higher education sectors.

More definitions

ANZSIC06: Australian and New Zealand Standard Industrial Classification (2006 version).

Bioscience: the development and application of knowledge of the way plants, animals, and humans function for the development of products and services.

Bioscience activities may occur in the following areas:

- agriculture feedstock and chemicals
- aquaculture, horticulture, and forestry
- human and animal therapeutics and diagnostics (including clinical trial providers)
- medical devices and equipment
- research testing and medical laboratories
- microbes
- biotechnology.

Biotechnology: the application of science and technology to living organisms as well as parts, products, and models thereof, to alter living or non-living materials for the production of knowledge, goods, and services. The following list of techniques was published by the OECD in 2004 as an interpretative guide as to what biotechnology includes:

- DNA – the coding: genomics, pharmaco-genetics, gene probes, DNA sequencing/synthesis/amplification, genetic engineering
- proteins and molecules – the functional blocks: protein/peptide sequencing/synthesis, lipid/protein glyco-engineering, proteomics, hormones, and growth factors, cell receptors/signalling/pheromones
- cell and tissue culture, and engineering: cell/tissue culture, tissue engineering, hybridisation, cellular fusion, vaccine/immune stimulants, embryo manipulation
- process biotechnologies: bioreactors, fermentation, bioprocessing, bioleaching, bio-pulping, bio-bleaching, biodesulphurisation, bioremediation, and biofiltration
- DNA and RNA vectors: gene therapy, viral vectors
- other: bioinformatics, nanobiotechnologies, other.

Statistics NZ business frame: a register of all businesses operating in New Zealand.

Enterprise: a legal business entity operating in New Zealand.

Research and development (R&D): the definition of R&D used in this survey is consistent with the recommendations contained in the OECD's *Frascati Manual 2002*. R&D performed by enterprises are generally investigative work that is of actual or potential use in the development of new or enhanced materials, products, devices, processes, or services. R&D directed towards duplicating work already developed by others is only included if the knowledge or technology required for the development is not available to the enterprise.

Rolling mean employment (RME): defines the number of employees of an enterprise. This is a 12-month rolling average of the monthly employment count figure. The employment count is obtained from taxation data.

Gross domestic product (GDP): the market value of all final goods and services produced within a country in a given period of time. It is also the sum of value added at every stage of production of all final goods and services produced within a country in a given period of time. Given that GDP data is provisional for a two-year period from the first release, the figures included in this report are provisional. Once we obtain updated figure, we revise the GDP data and derived data based on GDP. The revisions of this nature (as a result of changes external to the R&D dataset) are therefore not expressed in the report with a revision code R alongside. The same logic is also used in expressing GDP and other data from the OECD's *Main Science and Technology Indicators (2012/2)* report.

Research and development indicator: response from respondents stating whether or not they carry out R&D activity.

Related links

Next release

Research and Development Survey: 2016 will be released in March 2017.

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[The release calendar](#) lists all information releases by date of release.

Past releases

[Research and Development](#) has links to our previous releases.

Related information

The [Business Operations Survey](#) collects information on business characteristics, including additional R&D and innovation results.

[Research and development statistics](#) has international comparisons from the OECD.

[Ministry of Business, Innovation and Employment](#) has information on the survey's stakeholder.

Data quality

Period-specific information

This section contains information that has changed since the last release.

- [Reference period](#)
- [Supplementary tables](#)
- [Summary of changes to the R&D population](#)
- [Response rates by industry](#)
- [Sampling error by industry](#)
- [Bioscience expenditure on R&D](#)
- [Business operations survey used for non-survey years](#)

General information

This section contains information that does not change between releases.

- [Survey background](#)
- [Data collection](#)
- [Target population](#)
- [Sample design](#)
- [Measurement errors](#)
- [Analysis of results](#)
- [Imputation methodology](#)
- [Published sector and industry breakdowns](#)
- [Published industries](#)
- [Confidentiality and rounding](#)

Period-specific information

Reference period

The reference period for the latest survey was the 2013/14 financial year. Businesses with balance dates falling between 1 January and 30 September supplied data for the year ending 2014. Businesses with balance dates falling between 1 October and 31 December supplied financial data for the year ending 2013.

Supplementary tables

Supplementary tables are available in an Excel file (see the 'Downloads' box). We introduced these tables as part of the R&D report in 2012. The main tables are those included in previous releases.

Summary of changes to the R&D population

The sample for the R&D Survey: 2014 consisted of 3,700 enterprises, plus the eight universities and their commercial arms.

The target overall response rate for the R&D Survey: 2014 was 85 percent for business, government, and Crown research institutes (CRI). The target overall response rate for the higher

education (universities) survey was 100 percent, which was achieved. The survey achieved an actual response rate of **87 percent**.

We identified some businesses as key units – if their response to a survey question was considerable in the previous survey period. The target response rate was 100 percent for businesses identified as key units.

The sampling error on the total R&D expenditure figure is **1.7 percent** at the 95 percent confidence level.

There is **no sampling error** for the university sector due to the full coverage of this sector. The sampling error on the R&D expenditure figures at the 95 percent confidence level for the total business sector is **2.4 percent**; for the total government sector it is **0.8 percent**.

The table below provides a numerical summary of the changes in the R&D population, as well as associated changes in the sample, number of responders, and sampling errors.

Summary of changes in the R&D population for 2014		
	2012	2014
Population	Number	
Business	4,176	4,068
Government	111	96
Higher education	8	8
Total	4,296	4,176
Sample	Number	
Business	3,333	3,606
Government	111	96
Higher education	8	8
Total	3,447	3,708
Number of responders	Number	
Business	2,922	3,114
Government	99	89
Higher education	8	8
Total	3,030	3,213
Response rate⁽¹⁾	Percent	
Business	88	86
Government	89	91
Higher education	100	100
Total	88	87
Yes to R&D⁽²⁾	Number	
Business	1,491	1,587
Government	63	51
Higher education	8	8
Total	1,560	1,638
R&D performers as percentage of responders⁽³⁾	Percent	
Business	51	51
Government	64	58

Higher education	100	100
Total	51	51
Sample errors	Percent	
Business	3.3	2.4
Government	0.4	0.8
Higher education	0.0	0.0
Total	1.5	1.7
1. Response rate = number of responders divided by sample. 2. 'Yes to R&D' means that a business is carrying out and/or funding R&D. 3. R&D performers as percentage of responders = 'yes to R&D' divided by number of responders. Note: Due to rounding some figures may not add to stated totals.		

Only businesses we pre-identified as carrying out R&D are included. The sample size and response rate were relatively stable from 2012 to 2014.

Response rates by industry

The table below shows response rates by industry within the business sector. The response rates were very consistent at this level, ranging from 80 percent for beverage and tobacco manufacturing, to 90 percent for textiles, clothing, footwear, and leather manufacturing; metal product manufacturing; machinery and equipment manufacturing; and other manufacturing.

Response rates by industry – business sector 2012 and 2014 reference years		
Published industry	Response rate (percent)	
	2012	2014
Primary	84	85
Food product manufacturing	92	89
Beverage and tobacco manufacturing	83	80
Textiles, clothing, footwear, and leather manufacturing	90	90
Petroleum, coal, chemical, and associated product manufacturing	88	88
Non-metallic mineral product manufacturing	87	87
Metal product manufacturing	92	90
Machinery and equipment manufacturing	91	90
Other manufacturing	87	90
Manufacturing	90	89
Wholesale trade	87	87
Scientific research and technical services	90	88
Computer services	86	83
Other services	87	85
Services	87	85
Total business sector	88	87

Sampling error by industry

The table below shows the business sector sampling error on R&D expenditure by published industry. Customers need to take into account these sample errors when using data at published industry level.

Sample error by industry – business sector 2012 and 2014 reference years		
Published industry	Sample error (percent)	
	2012	2014
Primary	5.5	9.5
Food product manufacturing	8.0	6.9
Beverage and tobacco manufacturing	17.6	10.6
Textiles, clothing, footwear, and leather manufacturing	13.0	16.4
Petroleum, coal, chemical, and associated product manufacturing	6.3	5.2
Non-metallic mineral product manufacturing	11.9	20.7
Metal product manufacturing	5.5	14.1
Machinery and equipment manufacturing	8.9	3.1
Other manufacturing	15.6	8.1
Manufacturing	5.3	2.4
Wholesale trade	6.4	6.4
Scientific research and technical services	6.4	22.1
Computer services	9.3	6.0
Other services	9.0	5.8
Services	5.0	4.0

The survey sample was designed to minimise sample error at sector level. At published industry level, sample errors are higher, due to the smaller numbers in each of these groups.

Bioscience expenditure on R&D

Bioscience is the development and application of knowledge of the way plants, animals, and humans function for the development of products and services. Bioscience has applications in diverse fields such as health, animal and plant breeding, food manufacturing, and aquaculture.

We ask respondents to the survey whether any of their expenditure on internal R&D is attributable to bioscience. Within table 11 (see 'Downloads' box), the total amount of bioscience attributable to R&D is reported.

This total (\$487 million) in 2014, differs from the expenditure in Statistics NZ's Bioscience Survey, for the following reasons:

- The R&D Survey only includes bioscience that forms part of a business's R&D. The Bioscience Survey includes non-R&D expenditure.
- The R&D Survey collects information from pre-identified R&D performers. The Bioscience Survey collects expenditure information from businesses whose main activity is bioscience. While some businesses will respond to both surveys, many are in one but not the other.

Business Operations Survey used for non-survey years

The Business Operations Survey (BOS) provides an approximate level of business expenditure on R&D (BERD) for years when R&D is not run. We ran a regression to see how well BOS could be used to model R&D expenditure movement, and gained a R squared correlation coefficient of 0.8437 from the regression. We used a model based on this regression to create a BERD estimate for the years when the R&D survey is not run.

BERD figures are provisional on first release. We remodel and fix them based on the following year's R&D survey figure.

General information

Survey background

The Research and Development Survey: 2014 (R&D Survey: 2014) was jointly developed by Statistics NZ and the Ministry of Science and Innovation (MSI). From 1 July 2012, MSI became part of the Ministry of Business, Innovation, and Employment (MBIE).

The R&D Survey measures the level of R&D activity, employment, and expenditure by businesses, government departments, government-owned trading entities, and higher education (universities). The R&D Survey is conducted every two years by Statistics NZ. Results from surveys before 2002 were released by the Ministry of Research, Science, and Technology (MoRST), which was amalgamated with the Foundation of Research, Science, and Technology in February 2011 to create MSI.

This is the first release of data from the R&D Survey: 2014. We will release a full report later in 2015. The report will go into further detail on business, government, and higher education R&D activity, and focus on the scientific research industry.

Data collection

The R&D Survey is a postal survey consisting of four questionnaires: a business questionnaire, a government questionnaire, a CRI questionnaire, and a higher education (universities) questionnaire. These questionnaires are specifically designed to capture data on R&D from these different organisation types.

We posted out the business, government, and CRI questionnaires in mid-August 2014. Information collected included:

- the number of personnel within an enterprise working on R&D
- current and capital expenditure on R&D
- expenditure by type of R&D
- source of funds for R&D carried out
- the area of application of the R&D.

We requested information for the last financial year within the 12 months ending 30 September 2014.

We also sent the the higher education (universities) questionnaire in August 2014. Data was collected for the year ended 31 December 2013. The higher education (universities) questionnaire was designed to allow universities to use financial information that is generally produced for annual reporting purposes. This means that a number of data items for universities' R&D were produced using modelled information. Universities New Zealand – Te Pūkai Tara assisted us to determine these modelling specifications. Information collected included university discretionary income, internal and external research funding, academic staff salaries, university operating expenditure by faculty, and R&D personnel data.

Target population

The target population is all economically significant enterprises we have pre-identified as performing or funding R&D activities in New Zealand.

A range of information sources are available that allow us to identify R&D performers. These, combined with the last few iterations of this survey, have allowed us to build a consistent picture of the types of firms carrying out R&D in New Zealand. These changes were first made to the survey in 2012 and have allowed us to more intensively survey these businesses and create a better picture of individual R&D performers and their characteristics.

Enterprises (business, government, and CRI) are included in the R&D Survey population if they:

- are economically significant and active on the Statistics NZ Business Frame
- are not classified to ANZSIC06 codes 'G', 'H', 'I', or 'P'
- are a university
- fulfil one or more of the following indicators of R&D activity:
 - enterprises indicating they undertook R&D in the Annual Frame Update Survey
 - enterprises applying for funding from the Ministry of Business, Innovation and Employment (and its predecessor agencies) in 2012, 2013, or 2014.
 - enterprises applying for patents in the last two years
 - enterprises recording R&D activity in the 2012 or 2013 BOS or the previous two R&D surveys (only from full coverage strata)
 - enterprises recording R&D activity in the 2011 Bioscience Survey.

Excluding ANZSIC division codes 'H' (accommodation and food services), 'G' (retail trade), and 'I' (transport, postal and warehousing) is due to the previous equivalents of these industries showing little or no contribution to the total reported expenditure on R&D in the 2002 survey. We considered such contributions too small to justify their inclusion in the survey population so the equivalent industries have been excluded since the R&D Survey: 2004. ANZSIC division 'P' (education and training) is excluded, with the exception of universities, who perform the vast majority of R&D in this industry.

Sample design

The R&D Survey uses a stratified sample in its sample design. We developed strata based on industries defined by their sector (ie business, government, or higher education (universities)) and ANZSIC06.

Substrata were then developed using RME and annual GST from the Statistics NZ Business Frame. These are both captured from tax data.

We made some of these substrata full coverage, meaning we selected all enterprises in the substratum for the survey. Within the full coverage substrata, we identified 'keys' for intensive attention in the data collection phase. Keys are enterprises that made significant R&D expenditure in 2012.

Measurement errors

The R&D Survey results are subject to measurement errors. Customers need to consider these when analysing the results from the survey.

Measurement errors include mistakes by respondents when completing the questionnaire, variation in respondents' interpretation of the questions asked, and errors made during data processing. In addition, the survey applies imputation methodologies to cope with non-respondents and item non-response (see [Imputation methodology](#) for more detail). These methods are not without error.

We adopt procedures to minimise these types of errors, but they may still occur and are not quantifiable.

Given the nature of the data collected, there are limitations on the level of accuracy that can be expected from the R&D Survey. Many respondents do not keep a separate account of their R&D expenditure, or they may include R&D with other scientific and technological services, such as consulting.

Analysis of results

We compare the R&D Survey results with annual reports and other indicators we publish. Where the survey results differ substantially, more detailed study of the data is made.

Imputation methodology

This section outlines the imputation methodology we use in the R&D Survey: 2014 (business, government, and CRIs). No unit non-response was required for the R&D higher education (universities) survey, as a 100 percent response rate was achieved.

Unit non-response

Unit (or complete) non-response occurs where units in the population do not return the questionnaire, or an invalid questionnaire is received. We use a weight adjustment method to rate up the responding firms to compensate for the non-responding firms within the same estimation cell. The data from responding firms are multiplied by the inverse of the response rate for the estimation cell.

We remove any enterprises that cease operation during the survey period from the weight calculations.

Item non-response

Item (or partial) non-response is where units return the questionnaire but fail to provide data for selected aggregates.

We apply item non-response imputation to breakdowns where a total can be sourced from another question and personnel questions where data is not provided. The item non-response imputation method then uses the mean proportion of all responding linked units (excluding outliers) within the item non-response estimation cell, and we apply these proportions to the sourced total. For personnel questions the totals are imputed using a similar method.

Published sector and industry breakdowns

The published sector and industry breakdowns provided in this release are created using recommendations from the OECD's *Frascati Manual 2002* to allow for greater international comparability.

This manual recommends that state-owned enterprises (Business Type 1996 classification) be classified to the business sector. In addition, the *Frascati Manual 2002* recommends that the industrial classification code for significant research organisations be changed to the industry they predominantly serve. We apply the industry breakdowns using the Australian and New Zealand Standard Industrial Classification 2006 (ANZSIC06).

Business sector

Includes central and local government-owned trading enterprises and all other enterprises with the following New Zealand Institutional Sector (NZISC)1996 codes.

Business sector institutional codes	
NZISC96 code	Description
1331 ⁽¹⁾	Central government enterprises
1321 ⁽¹⁾	Local government enterprises
1111	Private corporate producer enterprises
1121	Private non-corporate producer enterprises
1211	Producer boards
2211	Private registered banks
2221	Private other broad money (M3) depository organisations
2291	Private other depository organisations
2311	Private other financial organisations except insurance and pension funds
2411	Private insurance and pension funds
4	Private non-profit organisations serving households
1. Central and local government trading enterprises are included in business sector.	

Government sector (excluding universities)

The government sector excludes the eight universities, and central and local government trading enterprises, and includes all enterprises with the NZISC96 codes included in the table below.

Government sector institutional codes	
NZISC96 code	Description
1331 ⁽¹⁾	Central government enterprises
1321 ⁽¹⁾	Local government enterprises
2111	Central bank
2212	Central government registered banks
2213	Local government register banks
2222	Central government other broad money (M3) depository organisations
2223	Local government other broad money (M3) depository organisations
2292	Central government other depository organisations nec
2293	Local government other depository organisations nec
2312	Central government other financial organisations except insurance and pension funds
2313	Local government other financial organisations except insurance and pension funds
2412	Central government insurance and pension funds
2413	Local government insurance and pension funds

3	General government (excluding universities)
1. Central and local government trading enterprises are included in business sector.	

Higher education (universities)

The higher education (universities) sector includes the eight New Zealand universities that are members of Universities New Zealand – Te Pūkai Tara. These are classified to NZISC96 code 3111 (central government excluding funded social security), with an ANZSIC06 code of P810200 (higher education).

Included within the higher education sector are universities' commercial arms. Before 2010, they were represented in the business sector.

Feasibility studies conducted by Statistics NZ and MBIE have found there is an insignificant amount of R&D being carried out in other higher education institutions (eg polytechnic institutes). Therefore, they are excluded from the survey.

Published industries

The published industries within the business sector are based on ANZSIC06 classification, apart from the reclassification of significant scientific research organisations (M691) to the industry they predominately serve and the inclusion of local and state-owned trading enterprises. Published industries are listed below, followed by their ANZSIC06 codes.

Business sector

Primary industries – A and B
Food product manufacturing – C11
Beverage and tobacco manufacturing – C12
Textile, clothing, footwear, and leather manufacturing – C13
Petroleum, coal, chemical, and associated product manufacturing – C17, C18, and C19
Non-metallic mineral product manufacturing – C20
Metal product manufacturing – C21 and C22
Machinery and equipment manufacturing – C23 and C24
Other manufacturing – C14, C15, C16, and C25
Wholesale trade – F
Scientific research and technical services – M691 and M692 (excluding M6924)
Computer services – M70
Other services – D to S excluding (F, M691, M6921, M6922, M6923, M6925, M70)

Government sector

Scientific research – M691
Other government research – All ANZSIC codes except M691

Higher education (universities) sector

Total universities, including their commercial arms.

Confidentiality and rounding

Data published from the R&D Survey: 2014 is governed by the provisions of the Statistics Act 1975, which requires that all statistical information published by Statistics NZ must be arranged

so that no individual respondent can be identified. Cell suppression has been used to prevent the disclosure of sensitive information.

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On occasion, we round figures to the nearest thousand or some other convenient unit. This may result in a total disagreeing slightly with the total of the individual items shown in tables. Where figures are rounded, the unit is generally expressed in words below the table headings, but where space does not allow this the unit may be shown as, for example, (000) for thousands.

All counts of businesses in this release are randomly rounded to base 3 to protect the confidentiality of respondents. Totals are rounded independently of the components, so not all components will add to the stated totals. All counts of personnel are rounded using a graduated random rounding approach. Again, not all components will add to the stated totals.

More information

Statistics in this release have been produced in accordance with the Official Statistics System principles and protocols for producers of Tier 1 statistics for quality. They conform to the Statistics NZ Methodological Standard for Reporting of Data Quality.

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Tables

The following tables are available in Excel format from the 'Downloads' box. If you have problems viewing the files, see [opening files and PDFs](#).

1. Research and development expenditure by sector and published industry
2. Research and development expenditure as a proportion of GDP by sector
3. Research and development expenditure by source of funds and recipient sector
4. Research and development expenditure by purpose of research and sector
5. Type of research and development expenditure by sector
6. What businesses in the Research and Development Survey want to spend more time and money on, business sector by published industry
7. What businesses in the Research and Development Survey most want to spend more time and money on, business sector by published industry
8. Main reason businesses carry out and fund research and development, business sector by published industry
9. Expected time for businesses to break even on research and development, business sector by published industry
10. Expectation of own firms' research and development for the next year, business sector by published industry
11. Bioscience research and development carried out by sector and published industry
12. Personnel involved in research and development by occupation
13. Business expenditure on research and development timeseries

Supplementary tables

- 1.01 Research and development expenditure by purpose of research and sector
- 1.02 Source of funds for business R&D
- 1.03 Source of funds for government R&D
- 1.04 Source of fund for higher education R&D
- 1.05 Business expenditure on R&D by industry and firm size
- 1.06 Business expenditure on R&D by firm size
- 1.07 Business expenditure on R&D by industry
- 1.08 Personnel involved in business R&D activity full time equivalents (FTE) by industry and occupation 2014
- 1.09 Personnel involved in business R&D activity full time equivalents (FTE) by industry and occupation 2012
- 1.10 Personnel involved in business R&D activity headcount by industry and occupation 2014
- 1.11 Personnel involved in business R&D activity headcount by industry and occupation 2014
- 1.12 Current and capital expenditure by sector and industry 2014
- 1.13 Current and capital expenditure by sector and industry 2012
- 1.14 Purpose of research and development expenditure by sector and industry 2014
- 1.15 Purpose of research and development expenditure by sector and industry 2012
- 1.16 Full-time equivalents involved in research and development by occupation and sector 2014 and 2012
- 1.17 Full-time equivalents involved in research and development by highest qualification and sector 2014 and 2012
- 1.18 Research and development expenditure – New Zealand and Australia by sector and industry 2014
- 1.19 Annual wages per full-time equivalent involved in research and development by industry 2014

Next release

Research and Development Survey: 2016 will be released in March 2017.