

→ **FEATURED SECTOR**

Knowledge Intensive Services





**MINISTRY OF BUSINESS,
INNOVATION & EMPLOYMENT**
HĪKINA WHAKATUTUKI

MBIE develops and delivers policy, services, advice and regulation to support economic growth and the prosperity and wellbeing of New Zealanders.

MBIE combines the former Ministries of Economic Development, Science + Innovation, and the Departments of Labour and Building and Housing.

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New Zealand Sectors Report 2014

The New Zealand Sectors Report Series comprises the Main Report covering all sectors in the economy and six additional, separate, reports providing an in-depth analysis of six individual sectors. The seven reports are:

1 The New Zealand Sectors Report 2014: Main Report

Featured Sector Reports

2 Information and communications technology (ICT)

3 High technology manufacturing

4 Construction

5 Petroleum and minerals

6 Tourism

7 Knowledge intensive services (this report)



Minister's foreword

I am pleased to present this report on New Zealand's knowledge intensive services sectors and the role they play in facilitating growth, innovation and exports in both our traditional and emerging export sectors.

The knowledge intensive services sectors, as defined in this report, cover a very wide range of activities, including scientific research, architecture and engineering, information technology services, financial services, advertising, marketing, legal and accounting services.

Knowledge intensive services sectors' share of an economy can be seen as a proxy for an economy's capacity to absorb new knowledge from international sources, and to generate new knowledge locally, driving innovation and growth.

This report shows New Zealand is well placed, with its knowledge intensive services sectors employing 432,000 people and generating one-fifth of New Zealand's GDP, around the average for an OECD country. These sectors are also generating 62% of New Zealand's commercial services exports, worth \$2.5 billion.

Given the size and scope of this collection of sectors, this report focuses in particular on the professional, scientific and technical services sector (excluding computer services, which is covered in the companion report on information and communications technology). This one sector is still significant, employing 168,600 people and contributing 6.2% of GDP.

The sectors report series provides a useful analysis of the contribution of individual sectors to the economy. In many cases it is knowledge intensive services that provide and facilitate connections between the different sectors in the New Zealand economy.

The quality of infrastructure and the built environment is dependent on our architects and engineers. The health of the natural environment and its monitoring, the productivity of our farms and the guarantee of the safety of our food are dependent on our scientists and technicians. The proper functioning of our capital markets is dependent on our lawyers and accountants. The ability of our businesses to develop new, attractive, high-value products for export is dependent on our marketers and brand designers.

A key theme emerging from the sectors report series is change, both the changing global economy and the change driven by the rapid digitisation of many economic and social activities.

This report shows that knowledge intensive services firms are having to change the way they do business in order to remain internationally competitive and to meet the demands of their clients.

I hope this report demonstrates the important role the knowledge intensive services sectors play in the New Zealand economy and will generate informed debate on New Zealand's economic future.

Hon Steven Joyce

MINISTER FOR ECONOMIC DEVELOPMENT
MINISTER OF SCIENCE AND INNOVATION
MINISTER FOR TERTIARY EDUCATION, SKILLS AND EMPLOYMENT
MINISTER FOR SMALL BUSINESS
ASSOCIATE MINISTER OF FINANCE

Key terms and data limitations

Defining sectors

A sector is an area of economic activity in which businesses or other organisations (e.g. government or voluntary organisations) share a similar market or produce a similar product or service. Examples are retailing (businesses that sell products directly to consumers) and telecommunications (provision of communications services using wired or wireless infrastructure).

This report uses data grouped into sectors using the Australian and New Zealand Standard Industrial Classification codes (ANZSIC codes). A business or other type of organisation is classified to an ANZSIC code based on its predominant activity. The term 'sector' is often used interchangeably with the term 'industry'.

Sources

The numbers in this report come from multiple sources. Data sourced from Statistics New Zealand is the latest that was available as at mid-December 2013. Some of this data is provisional and may change.

The data used covers different time periods for different metrics. For example, goods exports is for the year ended June 2013, while labour productivity is for the year ended March 2011.

Customised data for knowledge intensive services

Knowledge intensive services is a cross-cutting sector combining several ANZSIC codes. Customised data has been provided by Statistics New Zealand for this report.

Export data

Some export data for cross-cutting sectors uses international sources in order to provide a longer time series. These sources may not

agree with Statistics New Zealand data due to differences in the group of exported products being allocated to the relevant sector.

Use of the term 'firm'

The term 'firm' is used generically. It includes all relevant entities, some of which are not firms at all, such as those in the charities, government, education and health sectors.

Example firms

This report provides examples of firms which are believed to belong to the sector. The example firms provide a partial answer to a key question on the composition of a sector: which firms are in it?

Firms are classified by Statistics New Zealand as being part of an industry sector according to their predominant activity. This is explained fully on the Statistics New Zealand website. The classification of each firm to a sector using the Australian and New Zealand Standard Industrial Classification (ANZSIC) system is **confidential** to Statistics New Zealand.

Because of the confidentiality rules, MBIE has used other publicly available sources to determine which firms are likely to belong to a sector. These sources may be inaccurate or incomplete.

Quotes and interviews

A limited number of interviews with sector leaders were carried out in the preparation of this report. Anonymous quotes from these interviews that illustrate key themes have been included. The opinions expressed are those of the industry participants. Additional quotes from public sources have also been used.

A full explanation of the data sources and limitations is provided in the Appendix.

Report objective

The New Zealand Sectors Report Series is a set of seven publications that provides a factual source of information in an accessible format on the key sectors that make up the New Zealand economy.

New Zealand needs to encourage all industry sectors to operate at their peak potential to meet the goals of our Business Growth Agenda. This report provides information on New Zealand's knowledge intensive services sector, with a particular focus on professional, scientific and technical services (excluding computer systems design).

The report does not draw policy conclusions. The aim is to provide a comprehensive report card on the state of New Zealand's knowledge intensive services sectors for business people, exporters, policy makers, media commentators, economists, academics, students and anyone with an interest in New Zealand's economic development.

The Ministry of Business, Innovation & Employment (MBIE) welcomes comment and feedback on this report, and on the measures the Government is taking to facilitate the development of competitive and successful knowledge intensive services sectors. Email sectors.reports@mbie.govt.nz



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Executive summary: knowledge intensive services

General

- The knowledge intensive services sector, as defined by the OECD, covers a broad and diverse range of services with varying degrees of knowledge intensity. It includes firms providing post, telecommunications, finance, insurance, computer system design, professional, scientific and technical services.
- This large cross-cutting sector accounts for one fifth of New Zealand's GDP. It includes over 100,000 firms with more than 400,000 employed and self-employed workers.
- These firms make an important contribution to New Zealand's exports, both directly and through their contribution to other firms' exports. Other firms are increasingly looking to the sector to provide specialised and complex services.
- Employees with post-school qualifications (an indicator of knowledge intensity) are concentrated in the computer system design sub-sector (a focus in the companion ICT sector report) and the professional, scientific and technical services sub-sector (the main focus of this report).

Business and employment

- The number of firms in the knowledge intensive services sector grew 6% per year between 2002 and 2009, but has plateaued since then. The large increase between 2002 and 2009 was dominated by 14% per annum growth in the number of finance and insurance firms and 5% per annum growth in professional, scientific and technical services firms.
- The sector shed 23,000 employees during the Global Financial Crisis (GFC) but employment levels are almost back to their 2008 peak.

Innovation

- Overall, 54% of knowledge intensive services firms reported innovating in 2011. This is above the New Zealand average of 46%.
- Innovation rates for sub-sectors range from 80% of insurance and superannuation firms to 45% of professional, scientific and technical services firms.
- 13% of knowledge intensive services firms reported R&D activity, above the New Zealand average rate of 9%. The aggregate picture for R&D activity also masks a wide range of activity at the sub-sector level, from 39% for computer system design firms to 5% for auxiliary finance and insurance firms.

Exports

- Overall, 24% of knowledge intensive services firms exported in 2011, which is close to the New Zealand average. Their contribution is increasingly important, accounting for \$2.5b of services exports in 2011.
- Australia, the US and Europe together accounted for more than two-thirds of exports by knowledge intensive services firms in 2011.
- Distance from markets was the top barrier reported by current exporters. Limited experience in expanding beyond New Zealand was the largest barrier for potential exporters.

Executive summary: professional, scientific and technical services sub-sector

General

- The professional, scientific and technical services sub-sector incorporates firms providing services such as scientific research, architecture, engineering design and consultancy, specialist design, law, accounting, advertising, market research, and management consultancy.
- What these firms have in common is provision of the specialist technical and professional expertise that underpins exporting and other activities across all sectors of the economy. This expertise generally requires a high level of training and tertiary qualifications. Salaries and wages in this sector are 40% (\$31,000) above the New Zealand average, reflecting the high qualification levels.

Business and employment

- Professional, scientific and technical services firms account for 40% of knowledge intensive services firms and more than a third of employees. Firms in this sector can be found throughout the country, but are disproportionately concentrated in Auckland, Wellington and Hamilton.
- They are also providing important services to the Canterbury rebuild, highlighted by a 65% increase in engineering, design and consulting firm employees in Christchurch between 2010 and 2013.
- The effect of the GFC is evident in declining numbers of firms and the number of employees after several years of strong growth. Numbers of firms and employees have since recovered to above their pre-GFC peak. Overall, there were more than 23,000 employees added to this sub-sector during the last decade.

Innovation and expansion

- In 2011, 45% of professional, scientific and technical services firms reported innovation activity, close to the New Zealand average. The proportion of firms reporting R&D activity is also close to the New Zealand average at 7%. These average overall innovation and R&D rates are pulled down by lower innovation rates reported by accounting and legal services firms.
- Nineteen per cent of professional, scientific and technical services firms invested in expansion in 2012, less than any other sector except retail trade.

Exports

- Professional, scientific and technical services firms export a lower proportion of their output than average (5% in 2007). But their contribution to other firms' exports was higher than average (22% of their output in 2007).
- Exports by professional, scientific and technical services firms were valued at \$794 million in 2013, lower than in 2009, but considerably higher than in 2004. These firms generated approximately another \$700 million through 'management fees between related parties'.
- Low market demand and increased competition was the top barrier reported by existing professional, scientific and technical services exporters. For potential exporters the largest barrier was limited access to finance for expansion. Distance from markets was the next most important barrier for both existing and potential exporters.



DEFINITION

Knowledge intensive services sectors and the economy

Knowledge intensive services providers are a vital part of the ecosystems of other sectors, supporting entrepreneurial activity, innovation and growth, as these quotations show

- *Knowledge intensive business services (KIBS) are often considered to be one of the hallmarks of the knowledge based economy. The KIBS sector consists of firms that have emerged to help other organisations for which external sources of knowledge are required.*
 - *European Monitoring Centre on Change, Knowledge-intensive business services – what future?*
- *When New Zealand was a major seller of butter and cheese to the UK, the engineering and accounting professions had a huge role to play because we needed clear understandings of margins and distributable earnings (to farmers), plus we had to be able to build plants that in world terms were efficient. These were therefore underpinning skill-sets, but not the only ones. With time, others have also developed and also made major contributions.*
 - *Dairy industry leader.*
- *The rise and rapid adaptation of New Zealand protein farming were intertwined with the development of finance, processing, distribution and shipping to form a sophisticated mechanism connecting the farms to their markets.*
 - *James Belich, Paradise Reforged, (2001)*
- *Silicon valley is incredibly relationship driven. What we realised was that the venture capitalist and the law firm and the accounting firm and the banker can really be your partners. Those relationships really drive commercial value and commercial ability. What is that ecosystem? That ecosystem is all those service providers that stand on the side-lines who really act as your cheerleaders, that take an idea and pick up the phone. You know you may start with the law firm, but the law firm is going to call Kleiner Perkins the venture capital firm. Kleiner Perkins is going to call KPMG the accounting firm... And things are done very differently, even among our traditional accounting and banking solutions... Because there is the recognition that someone is going to be the next Google... [They] do everything possible to make that entrepreneur successful in the process, and really figure out what that partnership needs to look like. And that's what that ecosystem is about.*
 - *Deborah Perry Piscione, author of The Secrets of Silicon Valley, London School of Economics Public Lecture, 8 July 2013, (Podcast).*

What are the knowledge intensive services sectors?

This report uses an OECD definition for knowledge intensive 'market services'*

What are knowledge intensive services sectors?

- This report uses the definition of knowledge intensive 'market services' published in OECD Science, Technology and Industry Scoreboard, 2011.
- While high technology manufacturing can be defined by the percentage of revenues spent on research and development (R&D 'intensity'), many service industries perform relatively limited amounts of formal R&D. The OECD has used other metrics, such as workforce skill composition and the level of investment in information technology, to classify certain sectors or activities as 'knowledge intensive'.
- The definition captures a very wide range of activities that account for around a fifth of New Zealand's GDP. Drawing on the OECD's definition, the following services sectors are classified as knowledge intensive:
 - information media and telecommunications
 - financial and insurance services
 - professional scientific and technical services
 - post and courier pick-up services
 - rental and hiring services (except real-estate)
 - commission based wholesaling
 - employment services
 - other administrative services.
- The full list of sectors captured using Australia and New Zealand Standard Industrial Classification (ANZSIC) codes is provided on p.34.

Not a sector...

- In a formal sense knowledge intensive services in itself is not a sector. The firms captured do not all share a similar market or

produce a similar service. For example, the service a law firm provides is quite different from that of an engineering or IT firm, or a soil testing laboratory.

...but a set of diverse and complex capabilities

- What these sectors have in common is that the services provided typically require technical or professional skills and qualifications.
- Examples of knowledge intensive activities include research and development (R&D), management consulting, information and communications services, human resource management and employment services, legal services (including those related to intellectual property rights) accounting, financing, marketing and advertising. Larger firms will retain some of these capabilities in-house. Most firms, however, will contract outside providers on an as-needed basis.

Role in the economy

- Knowledge intensive services providers are a critical part of a modern economy. The knowledge and technical expertise they deliver supports competitiveness, growth and innovation both in specific sectors and across the economy as a whole. For example:
 - Processed food manufacturers use design and marketing services to develop packaging and branding
 - Logistics businesses use IT to manage freight movements
 - High technology manufacturers use intellectual property lawyers to protect their IP
- In addition, knowledge intensive services firms in their own right generate services exports and/or may build large international businesses. The engineering firms BECA and Opus International are examples of firms that engage in both activities.

Knowledge intensive services and the learning economy

Long-standing strengths

- Firms in New Zealand's knowledge intensive service sectors have built up a considerable depth of knowledge over many years as part of the ecosystem of our traditional exporting sectors. The competitiveness of New Zealand's dairy industry is not just due to New Zealand's natural resource endowment (other temperate countries can grow grass) but also about the complexity and sophistication of the broader dairy industry ecosystem.
- At one end of the value chain this includes rural accountants and lawyers, farm advisors and scientists researching animal genetics and new pasture varieties. At the other end of the value chain it may include market researchers, brand experts and the expertise in the finance, contracting and regulatory compliance required to facilitate trade.
- In colloquial terms, the New Zealand economy 'knows how to succeed in dairy', based on many years of experience and private and public investment in science, fixed capital, market development and human capability. The complexity and depth of the system provides competitive advantage and is difficult for competitors to quickly replicate.

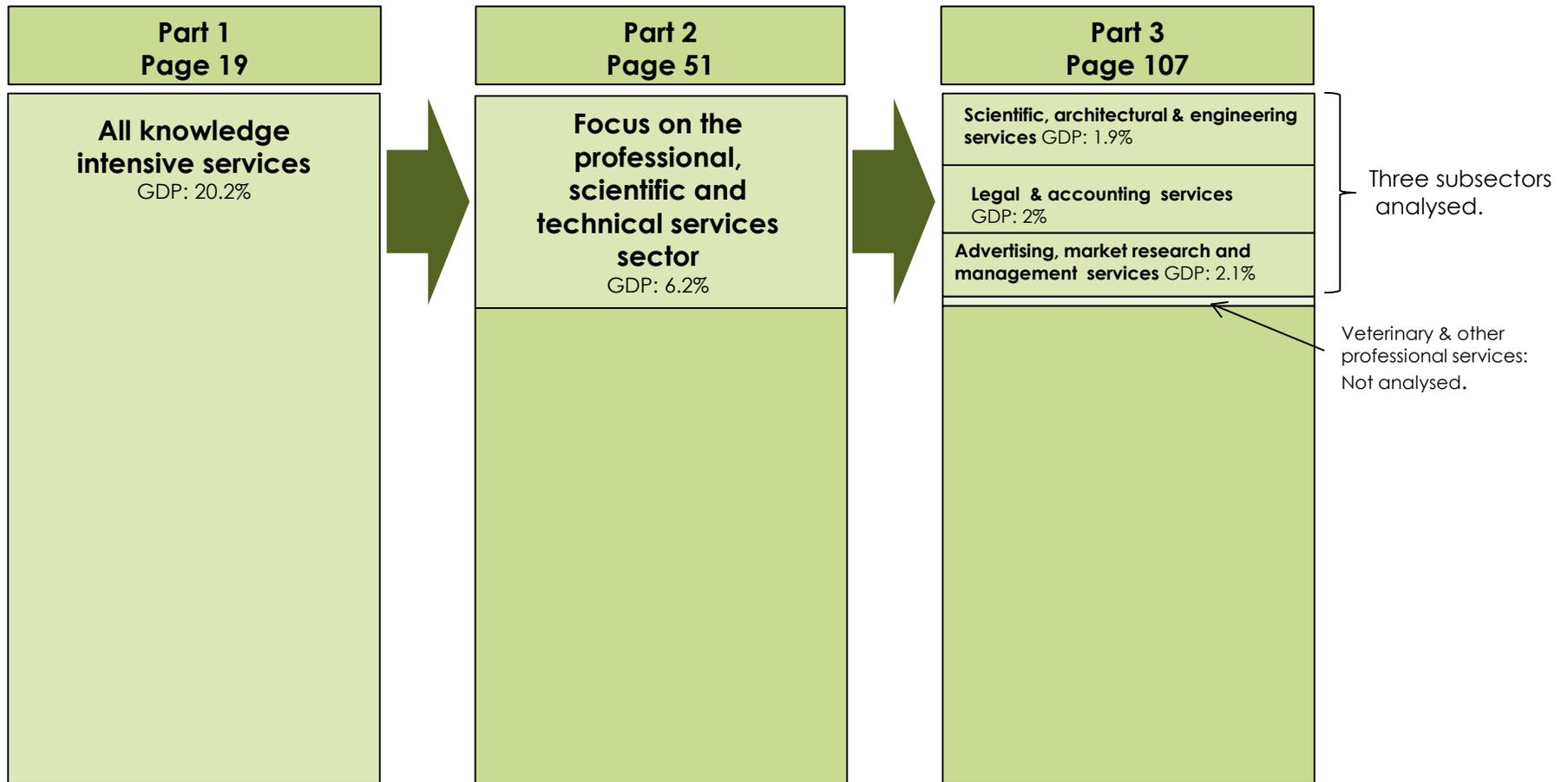
Developing new strengths

- Looking at New Zealand's historical economic development, it is clear that it takes time for the economy to develop new strengths and capabilities; to 'learn' a new industry.
- For example, the land in Marlborough was always capable of growing wine grapes, but a successful wine industry required the development of a sophisticated set of capabilities in (for example) marketing, finance and logistics and a supporting science capability (as well as wine-making).

- Currently New Zealand is developing some strengths in the technology sectors such as high technology manufacturing and IT services, particularly utilising the software as a service model. (See the companion reports on high technology manufacturing and information and communications technology).
- The emerging success of firms in these sectors is obviously due to the entrepreneurs involved, but also due to the capabilities that have developed in the supporting ecosystem in the last 10-15 years. That is, accountants, lawyers and bankers who understand the structure and dynamics of technology businesses, who have developed local and international networks with key industry players and market participants, and who can deliver quality advice to firms and investors.
- An institution like Callaghan Innovation – as a major research funder and knowledge broker – also has a critical role to play.
- Effectively, what we are seeing is the economy 'learning' how to succeed in the technology sectors, and in this learning process the knowledge intensive services sectors play a critical role.
- The quality and depth of these 'knowledge networks' together with the quality of local human capital can create a comparative advantage for an economy in sectors such as IT services, which are otherwise highly mobile internationally.

Structure of this report

This report provides aggregated data on knowledge intensive services sectors; then drills into the professional, scientific & technical services sector and its key subsectors



Note on sector names

- The formal name for ANZSIC Code M is Professional, Scientific and Technical Services. This classification includes computer system design, which is the focus of the companion report on ICT.
- In this report the term 'professional scientific and technical services' refers only to ANZSIC code M69 and so in all cases excludes ANZSIC code 70 'computer system design'.



PART ONE

KNOWLEDGE INTENSIVE SERVICES SNAPSHOT AND KEY THEMES

Knowledge intensive services

Cross-cutting sector

Situation

The definition of knowledge intensive services used in this report is based on the definition of 'knowledge intensive market' services published in OECD Science, Technology and Industry Scoreboard 2011. While manufacturing technology intensity can be defined by R&D intensity, many service industries perform relatively limited amounts of formal R&D, so other metrics such as workforce skill composition and intensity of investment in ICT equipment have been used.

Scorecard						Example firms			
Measure	Total	% of NZ*	Growth (1 year)	Growth (5 yr CAGR)	Growth (10 yr CAGR)	Firm	Turnover (\$m)	Employees	Ownership
GDP 2011 (nominal)	\$34,755m	20%	0.1%	5.1%	n/a	Beca	\$612m (2013 est)	2400	Private
Real GDP 2012	n/a	n/a	n/a	n/a	n/a	Cawthron Institute	\$34m (2013 est)	200	Cawthron Trust
Goods exports 2012	n/a	n/a	n/a	n/a	n/a	PricewaterhouseCoopers	\$330m (2013 est)	1300	Private
Employment 2012	431,844	18.80%	2.1%	0.70%	2.7%	AJ Park	\$37m (2013 est)	220	Private
Value added / employees 2011	\$79,789	105.70%	-5.4%	1.70%	NA%	Warren & Mahoney	\$17m (2013 est)	105	Private
Investment in fixed assets 2011	\$3,018	10.40%	-28.8%	NA%	NA%				
Number of firms 2013	103,687	21.9%	0.2%	1.0%	4.0%				

Industry level financial performance					Export value by type of service		Export value by destination	
	Total		Growth (1 yr)		Services exported by knowledge intensive service firms	Exports (NZ\$m; 2011)	Country	Exports (NZ\$m; 2011)
	This sector	All sectors	This sector	All sectors				
Total income per firm 2012#	\$1,305,610	\$1,377,888	14.8%	6.5%	Computer services	\$447m	Australia	\$860m
Total income per employee 2012*	\$419,300	\$327,400	11.5%	4.9%	Management fees between related parties	\$290m	USA	\$523m
Surplus per employee 2012#	\$106,300	\$32,100	78.4%	32.1%	Communication services	\$243m	UK	\$178m
Return on equity 2012#	14.0%	8.6%	up	up	Financial services	\$207m	Japan	\$72m
Debt ratio (liabilities/assets) 2012#	77.0%	57.4%	down	down	Software royalties	\$168m	France	\$55m
Fixed assets per worker 2011	n/a	\$168,533	n/a	1.1%	Other	\$1,139	Other	\$806
					TOTAL all service types	\$2,494m	TOTAL all countries	\$2,494m

* NZ is total employing firms, except for productivity where it is the total measured sector

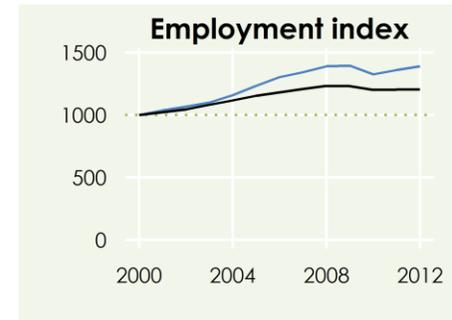
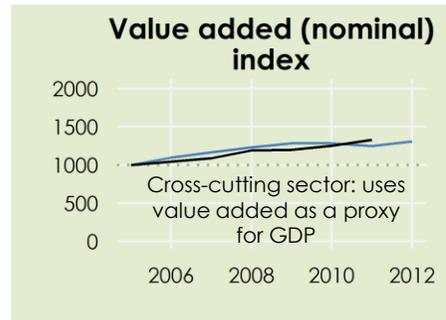
** Cross-cutting sector: uses value added per worker for productivity, NZ average = 100%

All sectors total excludes some industries: refer to methodology and sources

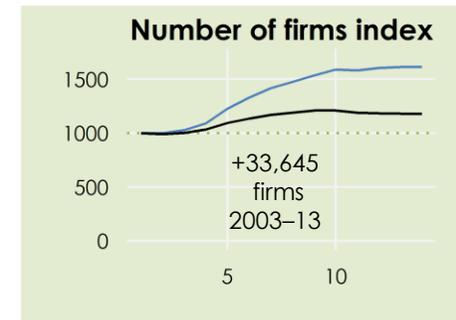
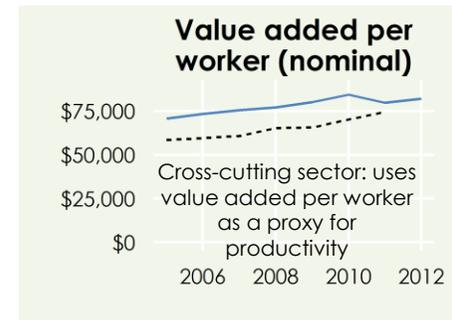
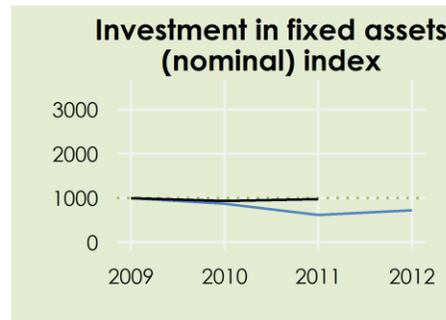
Key trends, various timeframes: 10-year index (base=1000) except GDP per worker is \$ values – this sector vs all other sectors

Comment

- Share of GDP flat at around 20%
- Large employer: 431,844 workers (including self-employed)
- More jobs overall: +120,891 (2000–12)
- Lost jobs: -21,177(2009-10)
- Gained jobs: +19,638 (2011–12)
- Productivity growth below average
- Large increase in number of firms overall +33,645 (2003–2013), but growth in firm numbers flat from 2008
- Fall in Investment in fixed assets 2010–11
- Above average R&D rate (13% of firms) and innovation rate (54% of firms)



No goods exports



Key

- Knowledge-intensive services
- Other employing sectors
- - - - Starting point = 1000
- - - - Average for all measured sectors

R&D & innovation rates	Export barriers: Current exporters	% firms	Export barriers: Future exporters	% firms	Internationalisation	%
R&D rate (% of firms)	1. Distance from markets		1. Limited experience in expanding beyond NZ		% of knowledge intensive service firms exporting	24% (2011)
Innovation rate (% of firms)	2. Low market demand or increased competition in overseas markets		2. Limited knowledge about specific markets		% of knowledge intensive service firms with overseas holdings	7%
	3. Other		3. Limited access to finance		% of knowledge intensive service firms >50% foreign owned	13%

- High
- Medium
- Low

Key themes

A number of key themes emerged in the knowledge intensive services sectors

Theme	Description	Details
Integral part of the ecosystem of other sectors	The knowledge intensive services sector provides a wide range of knowledge, information, expertise and services essential to other industry sectors and the economy generally. Self described as facilitators, enablers, external supporters and problem solvers.	<ul style="list-style-type: none"> Services include quality assurance for export products, legal assistance with offshore acquisitions, analysis and research for the positioning of a fast moving consumer goods brand, designing a commercial building, improving the performance of plant machinery or creating computer simulation experiments to advance scientific discovery and analysis. Also may provide innovative and creative solutions to other firms, industries and the government.
Provision of outsourced services to other firms	Firms across the economy look to professional service firms to provide specialised and complex services.	<ul style="list-style-type: none"> <i>Just as the distinction between goods and services is blurred, so is the distinction between employment and contracted services as inputs to production... Organisations cannot efficiently obtain the full variety and quality of services they require on an in-house basis... Increasing outsourcing explains part, but by no means all, of the increasing employment in the services sector.</i> – New Zealand Productivity Commission
Strong (but predominantly in-direct) contributor to exports	Knowledge intensive services sectors contribute significantly to assisting and facilitating other sectors to export (e.g. food and beverage), but comparatively few export directly.	<ul style="list-style-type: none"> Exports from knowledge intensive services firms were valued at \$2.5 billion in 2011. However, only 1.2% of knowledge intensive services firms contribute directly to exports. 22% of the output from professional, scientific & technical services firms (a subset of knowledge intensive services) contributed to other firms' exports (that is as inputs used in the production of other firms' exports). <i>We are doing a reasonable amount of research work at the moment for a company that makes steel alloy bars used for construction connections, including analysis and testing. These are exported globally...So that's part of how you enrich export products.</i> – CE, large engineering firm
Internationally connected	The largest knowledge intensive services firms, particularly in engineering, architecture, accounting, legal and scientific research, are building international businesses and/or utilising international networks to access specialist knowledge and capabilities.	<ul style="list-style-type: none"> BECA and Opus International both have substantial international businesses. <i>It's very hard to be a specialist in a small market place. [Our firm] has specialist centres of excellence.. in various places around the world in telecommunications, healthcare, oil and gas and so on... When opportunities come up in New Zealand, more often than not we will access the centre of excellence and/or make them available to our clients as part of the overall pitch.</i> – Accounting firm <i>One of our biggest sources of revenue, if not our single biggest source is actually staff on secondment to overseas offices.</i> – Accounting firm

Key themes

A number of key themes emerged from the knowledge intensive services sector

Theme	Description	Details
International outsourcing / international networks	Lower value and/or routine work is increasingly being outsourced to offices or other firms in lower cost countries.	<ul style="list-style-type: none"> • <i>What's becoming important in the world is that the right work is done by the right person at the right price. So in the oil and gas industry a lot of the bulk work happens in lower cost locations and that becomes appropriate because those lower cost locations get a chance to build their skill level. And what this means is it becomes a network of work moving around.</i> – CE engineering firm
Importance of personal and inter/intra-firm networks	Building and maintaining networks helps to generate business and to establish multi-disciplinary project teams.	<ul style="list-style-type: none"> • This is a highly collaborative and connected sector that actively facilitates connectivity across firms, industries and markets. • Through establishing strong interconnections Knowledge Intensive Services firms are part of an international value chain that sees New Zealand working on more complex projects with other specialists in offshore markets. Complex problems require complex solutions, use of multi-disciplinary teams is becoming more common. The ability to work collaboratively and convey complicated and detailed information in an understandable way is necessary as this sector advances.
Technology changing work practices and business models	ICT facilitating access to the latest international knowledge and also to subcontract work to and from New Zealand so the right work is done by the right people at the right price.	<ul style="list-style-type: none"> • The sector is heavily reliant on technology for sourcing, compiling, analysing, and sharing information and knowledge. New technology is driving efficiencies. • <i>Most of our people now are almost self sufficient. They write their own reports, they do their own spread sheeting work, they are mobile so they can work anywhere in the world. They can work from home if they need to, they can work from the client's if they need to. Just the mobility and flexibility are significant.</i> – Accounting firm
Impact of the Global Financial Crisis	The impact of the GFC is clearly evident in the data.	<ul style="list-style-type: none"> • The number of knowledge intensive services firms has been flat since 2008. • Employment (including self-employed) peaked in 2008 with 433,383 workers. The sector lost 21,000 jobs in 2009–10, but has since recovered to 431,844 workers in 2012. • The GFC had minimal impact on firm's whose core business was infrastructure due to increased Government investment during this time. • Other industries in this sector (legal, accounting, design, market research) experienced a drop in business enquiries and revenue. Business models shifted as the environment became increasingly competitive.

Key themes

A number of key themes emerged from the knowledge intensive services sector

Theme	Description	Details
Research & development advantage	There is a widespread perception that New Zealand has some cost and culture advantages in research and development.	<ul style="list-style-type: none"> Exports of R&D services in 2012: \$151m. These grew at a compound annual growth rate of 5% from 2007-2012. The US takes 46% of the total and Australia 36%. <i>Our small scale tends to make us generalists. We've got broader rather than deeper, so I do think that it's more than a myth that we tend to be good at working across different topics.</i> – Scientist
Co-innovators / knowledge disseminators	Knowledge intensive services firms provide specialist knowledge and expertise to firms in other sectors, often acting as co-innovators.	<ul style="list-style-type: none"> Knowledge intensive services firms may perform key roles in the innovation process as: <ul style="list-style-type: none"> Facilitators of innovation supporting the client during the process that leads to an innovation. Carriers of innovation, transferring existing knowledge and innovations between organisations, industries or networks, or within the organisation so that it can be applied in a new context. Sources of innovation playing a major role in initiating and developing innovations within client organisations.
Australia and other traditional markets matter	The Australian market is critical to New Zealand's knowledge intensive services sector.	<ul style="list-style-type: none"> Exporters of knowledge intensive services derived 35% of their export income from Australia and more than two thirds of their export income from New Zealand's traditional markets (Australia, the US and Europe).
Key part of the developing ecosystem for technology sector	Since 2000 the supporting ecosystem for technology sectors has developed in complexity and depth from a low base, providing a platform for future growth.	<ul style="list-style-type: none"> Components of the ecosystem include venture and angel capital, incubators, innovation parks / hubs, awards and competitions, NZTE programmes, increasing numbers of serial entrepreneurs, lawyers and accountants specialising in technology and venture capital, university owned commercialisation and innovation companies, spinouts from existing firms, start-ups based on university or CRI intellectual property, and some large exporting firms. <i>Professional services firms are steadily improving their offerings for the technology sector, as the sector has high profile work and significant growth potential.</i> –Partner, technology law firm

Knowledge transfer

Industry commented on the role played in knowledge transfer between disciplines, between sectors and internationally

- *New Zealand is a relatively small market place so we have specialist areas like agriculture and other areas but it's very hard to be a specialist in a small market place. [Our firm] has specialist centres of excellence. Some are quite significant operations...in various places around the world in telecommunications, healthcare, oil and gas and so on. They have a huge amount of knowledge, sector knowledge and expertise. When opportunities come up in New Zealand, more often than not we will access the 'centre of excellence' and/or make them available to our clients as part of the overall pitch...We just did something in the oil and gas sector recently. I had no experience in that sector before, but overnight what we were able to learn and add and bring to it was just immense...The one thing that we do have to sell is knowledge and experience ...there's immense effort and resource involved in knowledge management.*
 - *Senior executive, accounting firm, large*
- *(Interaction with scientists internationally) This is very important for us because we don't have a big science pool within New Zealand so the capacity to tap into international networks is crucial. The idea of building international networks and international hubs is actually really important. The world is going to become increasingly connected in this space and the turnover of ideas and the half-life of new products is going to get much shorter. So being able to pick up new ideas as they are emerging from those networks, rather than waiting a few years to find out about them, is going to be really important to get the best benefit out science.*
 - *Scientist, education and research institution*

Knowledge transfer *continued*

- *One of the best ways to drive innovation is to bring a whole lot of diverse ideas together, so that people can share them and think about them in new ways. Innovation can happen at the interfaces of disciplines or between groups of people that haven't worked together before. I think that an important role of hubs is to tease out opportunities and to build connections where they haven't previously existed.*
 - *Scientist, education and research institution*
- *The reality is that probably for the first time in history, media is in the hands of the people. For communication businesses this means getting more flexible, dynamic and intuitive in the way we work. And to be more fluid, the way we collaborate with other specialist creative services is critical, because you can't do it all. Building informal networks and opportunities for collaboration is becoming more and more important. Does the government have a role to play in helping to encourage these economies of scope through infrastructure investment? Possibly. We could certainly get better at it, and it would be wonderful to think we could establish the creative services equivalent of Silicon Valley in New Zealand. We certainly have the talent and the ability to attract it.*
 - *Senior executive, design business, medium*



THE GOVERNMENT'S BUSINESS GROWTH AGENDA



The Government's Business Growth Agenda

Actions to improve availability of skills

Growing the innovation workforce

- Increase investment in engineering studies at tertiary institutions and lift graduate numbers by 500 per annum by 2017.
- Collect and provide better information on career prospects to students and the tertiary sector.
- Highlight the role of entrepreneurship in business innovation through annual Prime Minister's Business Scholarships.
- Investigate highlighting innovation careers in science, design, engineering and maths to school students and their families.
- Establish annual Prime Minister's Science Prizes to acknowledge and reward scientific achievement.
- Maintain internationally competitive personal tax rates that encourage highly-skilled workers to work from New Zealand.
- Lift the profile of science through the appointment of the Prime Minister's Chief Science Advisor.
- Complete a stocktake of post-PhD employment opportunities in New Zealand and make policy changes if required.
- Institute the Rutherford Fellowships to provide greater opportunities for early stage researchers.

Strengthening tertiary education

- Purchase additional tertiary places as required to meet demand across the sector, including in engineering.
- Investigate allowing more flexibility for high quality public and private providers to adjust offerings and grow their institutions.

Attracting skilled migrants and investors

- Review investor, entrepreneur and worker policy settings with a view to attracting migrants with the right skills and capital to invest.
- Introduce Silver Fern Visa to provide employers with greater access to young skilled migrants.
- Implement Immigration Global Management System upgrade and network configuration.
- Review the Essential Skills in Demand lists, to examine their effectiveness in addressing skills shortages in the short- and long-term.



The Government's Business Growth Agenda

Actions to improve investment and access to capital

Strengthening equity markets

- Partially-list four State-owned enterprises on the NZX exchange.
- Investigate options for lower cost public listing.
- Pass the Financial Markets Conduct Act to make it easier for listed companies to raise capital.
- Make it easier for businesses to offer employee share schemes.
- Pass the Financial Reporting Act to reduce unnecessary financial reporting costs for business.
- Established the Financial Markets Authority to promote and facilitate the development of fair, efficient and transparent financial markets.

Supporting early stage and growth capital

- Increase access to capital for small, high-growth businesses by supporting the New Zealand Venture Investment Fund.
- Deliver targeted services such as Better by Capital to help internationalising New Zealand firms raise capital.
- Enhance New Zealand Export Credit Office products and services.
- Enable crowd funding and peer-to-peer lending.
- Provide more options for SMEs to raise capital by clarifying and widening disclosure exceptions for SMEs seeking to raise capital (e.g. offers to experienced investors, small offers).

- Implement improvements to incubator programmes, including an additional \$31.3m over four years for a new repayable grants for start-ups programme.
- Implement improvements to business R&D grants.

Attracting foreign investment

- Encourage a more positive environment for international investment and explain the benefits to New Zealanders.
- Align business law between New Zealand and Australia.



The Government's Business Growth Agenda

Actions to improve investment and access to capital

Better regulation to lift confidence in our financial markets

- Deliver regulations under the Financial Markets Conduct (FMC) Act that require simplified financial product disclosures.
- Introduce new requirements for financial services providers and advisors to increase investor confidence in the financial services industry.
- Establish the Financial Markets Authority (FMA) to promote and facilitate the development of fair, efficient and transparent financial markets.
- License and monitor trustees to improve the credibility and accountability of the industry.
- Amendments to enable funds domiciling.
- Ensure robust governance arrangements for publicly offered financial products.

Building international linkages

- Establish a small advanced economies group to leverage opportunities for innovation and growth.
- Look for mutually beneficial science investment opportunities with Singapore.
- Work to achieve research and innovation opportunities identified in the China country strategy.
- Actively encourage more multinational companies (MNCs) to conduct research in New Zealand.
- Continue to actively support the Global Research Alliance on Agricultural Greenhouse Gases, including through the New Zealand Fund for Global Partnerships in Livestock Emissions Research.



The Government's Business Growth Agenda

Actions to support exporters and businesses looking to expand internationally

Delivering a compelling New Zealand Story

- Develop with key stakeholders a broad, compelling, and flexible New Zealand Story that works for a range of exporters and sectors, including tourism and education, and for immigration.
- Incorporate New Zealand's unique Māori cultural dimension to enhance the value of the New Zealand Story.
- Develop a toolkit of elements (e.g. branding, photos, guides) that will help tell the New Zealand Story.
- Facilitate the use of New Zealand branding by private sector companies.

Improving access to international markets

- Implement the NZ Inc. India Strategy to boost trade in goods and services.
- Implement the NZ Inc. China Strategy to boost trade in goods and services.
- Develop NZ Inc. country and regional strategies for Australia; the US; ASEAN; the Gulf Cooperation Council; and Europe.
- Adapt New Zealand's offshore footprint to better meet the needs of business.
- Advance mutual recognition of imputation and franking credits with Australia.

Strengthening high-value manufacturing and services

- Develop Advanced Technology Institute (ATI, now called Callaghan Innovation).
- Roll out ultra-fast broadband (UFB) to enable exporters to competitively deliver services offshore.
- Roll out ultra-fast broadband through fibre to 75 per cent of New Zealanders by end of 2019.
- Roll out the Rural Broadband Initiative to deliver high quality broadband and increase connectivity.
- With ATI, Better by Design, Better by Lean, Better by Strategy and Primary Growth Partnership, assist firms to grow international capability.
- Establish mechanisms to secure commercial export opportunities on the basis of core public sector intellectual property and expertise.
- Develop stronger NZ Inc. approach with business on cyber security.
- Identify key issues for commercial service exporters and promote export prospects.



The Government's Business Growth Agenda

Actions to encourage business Innovation and scientific research

Encouraging business innovation

- Further leverage Better by Design Programme to encourage firms to undertake design-led innovation.
- Implement core contract funding for eligible independent research institutes.
- Help businesses interact more effectively with research institutions.
- Review Centres of Research Excellence (CoRE) and evaluate opportunities for a flexible or a cross-institutional research model.
- Complete implementation of the Health Innovation Hub and ensure it meets needs of medical researchers.
- Complete the development and utilisation of the Food Innovation Network.
- Improve the standards infrastructure to support productivity and innovation.
- Implement improvements to incubator programmes.
- Additionally \$31.3m over four years has been set aside for a new repayable grants for start-ups programme.
- Secure New Zealand's role alongside Australia in the Square Kilometre Array project.

Boosting public science investment

- Launch the National Science Challenges to seek answers to core science questions New Zealand faces.
- Develop a statement of science priorities to clearly articulate the core target areas for science research.
- Continue to increase annual public science and innovation funding towards 0.8 per cent of GDP as fiscal conditions allow.



KNOWLEDGE INTENSIVE SERVICES SECTORS: GDP AND EMPLOYMENT

Knowledge intensive* services sectors

Using the OECD definition, the following sectors and/or sub-sectors are considered to be 'knowledge intensive'; a wide range of activities are captured

ANZSIC code		Comment
B101	Petroleum & mineral exploration	See companion report on Petroleum and Minerals
F38	Commission Based Wholesaling	See Main Report, Wholesale Trade
G4273	Antique and Used Goods Retailing	See Main Report, Retail Trade
I510	Postal and Courier Pick-up and Delivery Services	See Main report, Logistics (transport)
J5414	Directory and Mailing List Publishing	See section in the Main report on Information Media and Telecommunications and companion in-depth report ICT.
J5420	Software Publishing	
J552	Sound Recording and Music Publishing	
J57	Internet Publishing and Broadcasting	
J58	Telecommunications Services	
J59	Internet Service Providers, Web Search Portals and Data Processing Services	
J602	Other Information Services	
K	Financial and Insurance Services	
L66	Rental and Hiring Services (except Real Estate)	See Main Report, Rental, Hiring and Real Estate Services
M691	Scientific Research Services	Collectively the sub-sectors in ANZSIC code M69 make up Professional, Scientific and Technical Services.
M692	Architectural, Engineering and Technical Services	
M693	Legal and Accounting Services	
M694	Advertising Services	
M695	Market Research and Statistical Services	
M696	Management and Other Consulting Services	
M699	Other Professional, Scientific and Technical Services	
M70	Computer Systems Design and Related Services	See Companion ICT report
N721	Employment Services	See Main Report, administrative and support services
N729	Other Administrative Services	
N7311	Buildings Cleaning Services	
N7312	Buildings Pest Control Services	
N732	Packaging and Labelling Services	
O7712	Investigation and Security Services	
P822	Educational Support Services	
S9422	Electronic (except Domestic Appliance) and Precision Equipment Repair and Maintenance	See Main Report, administrative and support services
S953200	Photographic Film Processing	

Source: Australian and New Zealand Standard Industrial Classification 2006 ('ANZSIC')

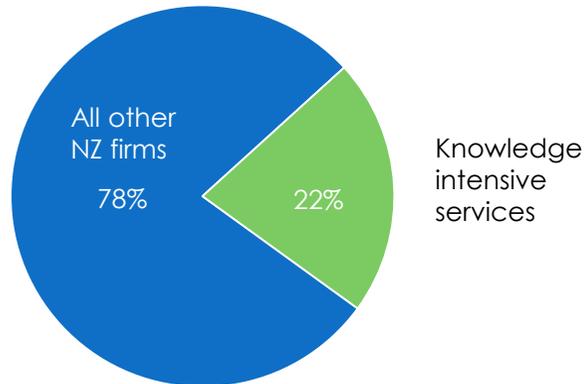
* The 2013 edition will use a new definition, including "Information and Communication", "Finance and insurance", and "Professional, scientific and technical activities".

Share of economy

Knowledge intensive services sectors account for 20% of GDP, a fifth of all firms, 19% of employment and 4% of exports

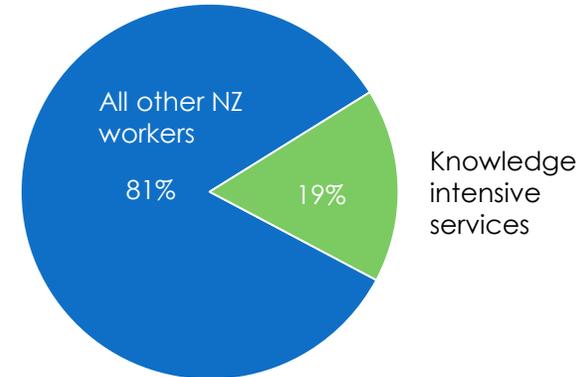
Per cent of firms in New Zealand

Firms; 2012



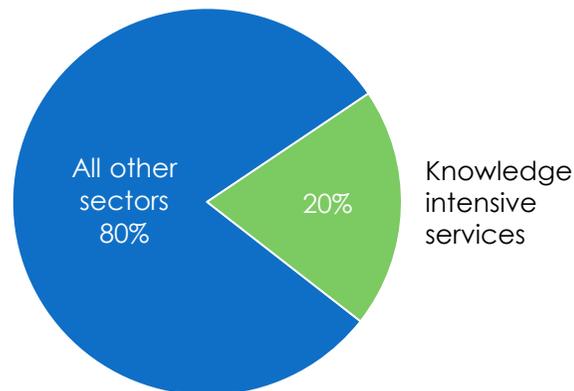
Per cent of employment in New Zealand

Employees plus self-employed; 2012



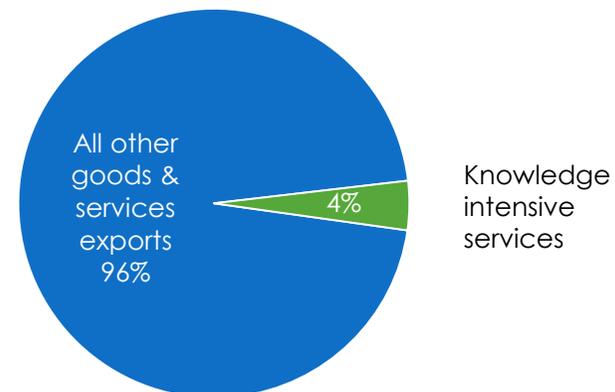
Per cent contribution to GDP

GDP (expenditure); 2011



Per cent contribution to total exports

Total exports; 2011

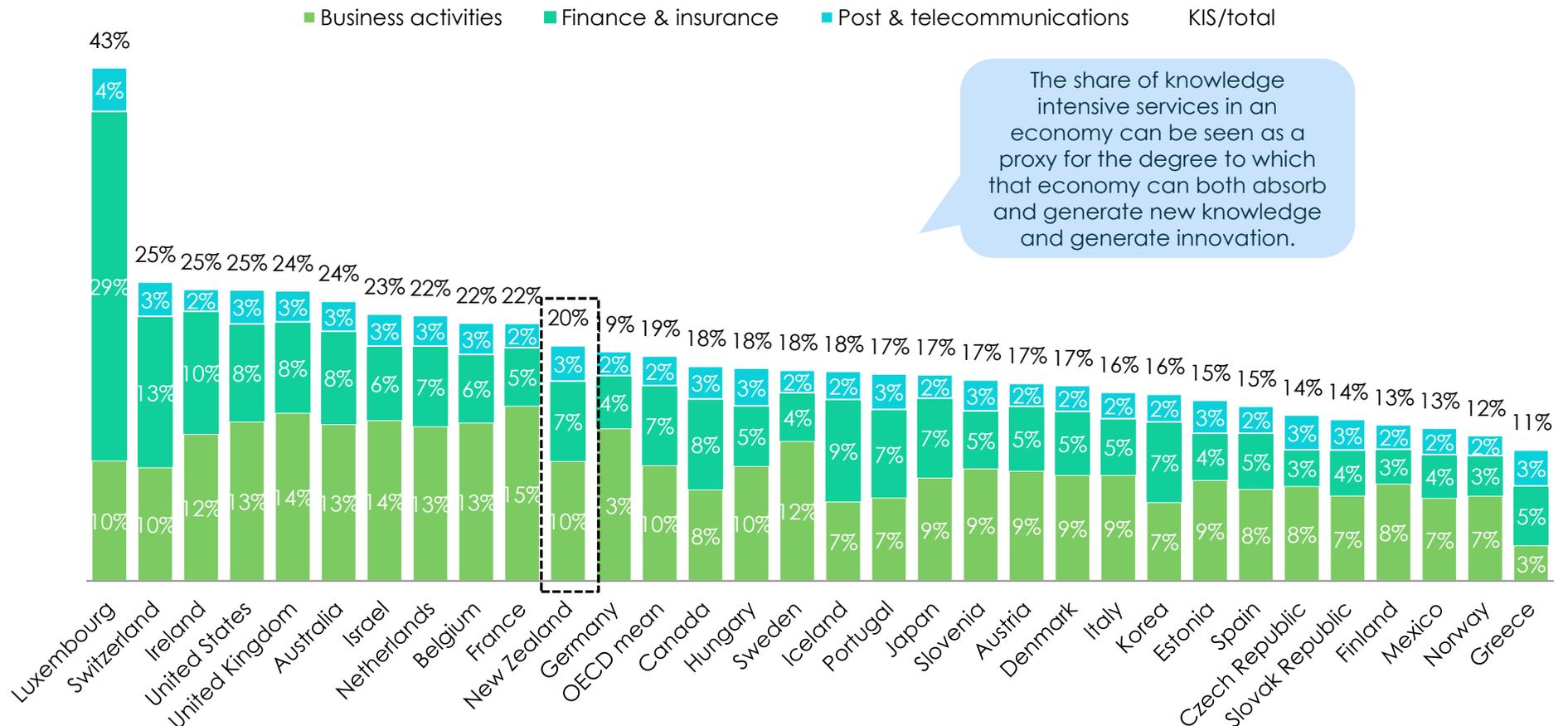


Contribution to GDP

Knowledge intensive services firms accounted for 20% of New Zealand's GDP in 2006, about average for an OECD country

Value added of the knowledge intensive services sectors as a share of the total economy

% of total economy, 2006 (latest comparative data available)

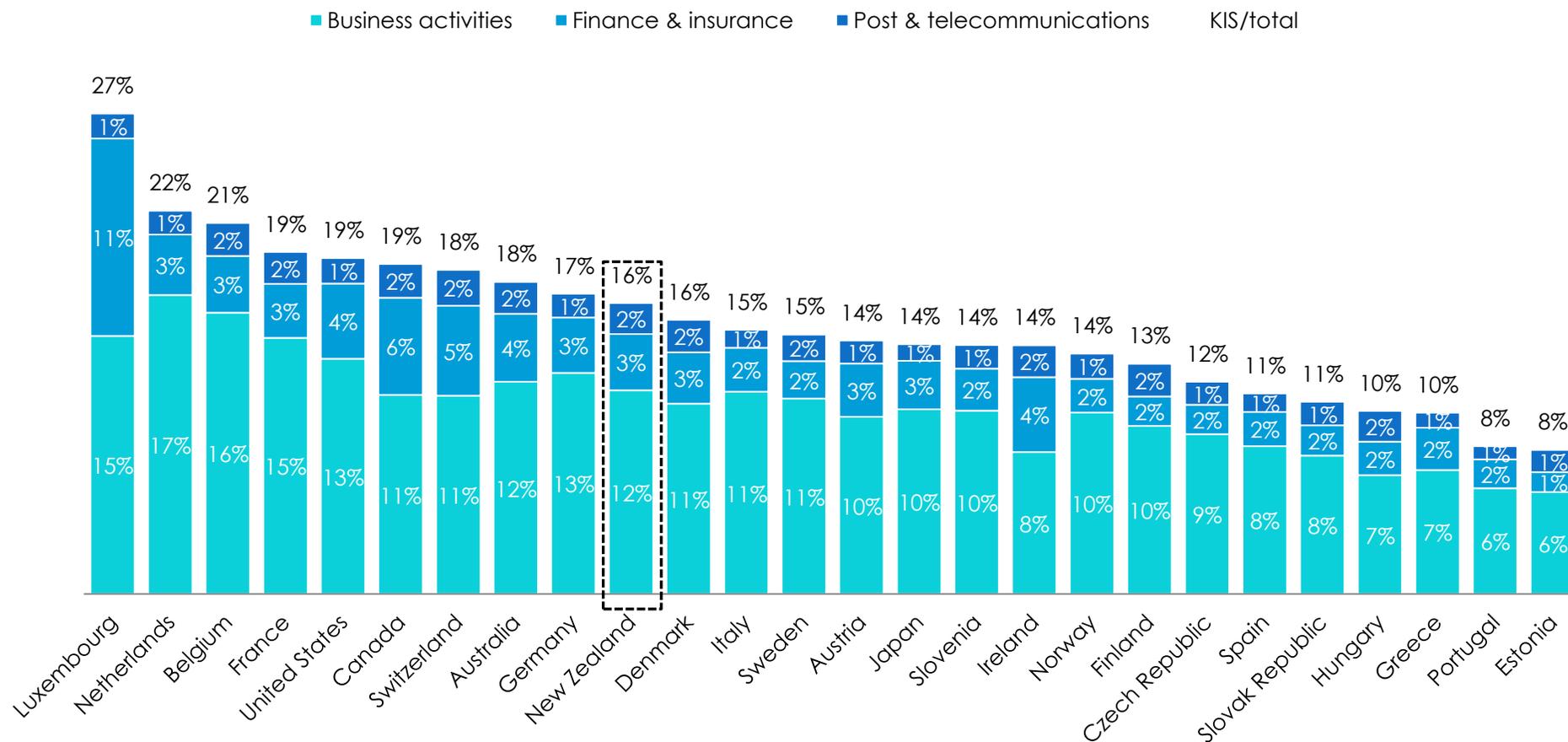


Contribution to employment

Knowledge intensive services accounted for 16% of New Zealand's employment in 2006, around the OECD average

Employment in the knowledge intensive services sectors as a share of total employment

% of total employment, 2006 (latest comparative data available)

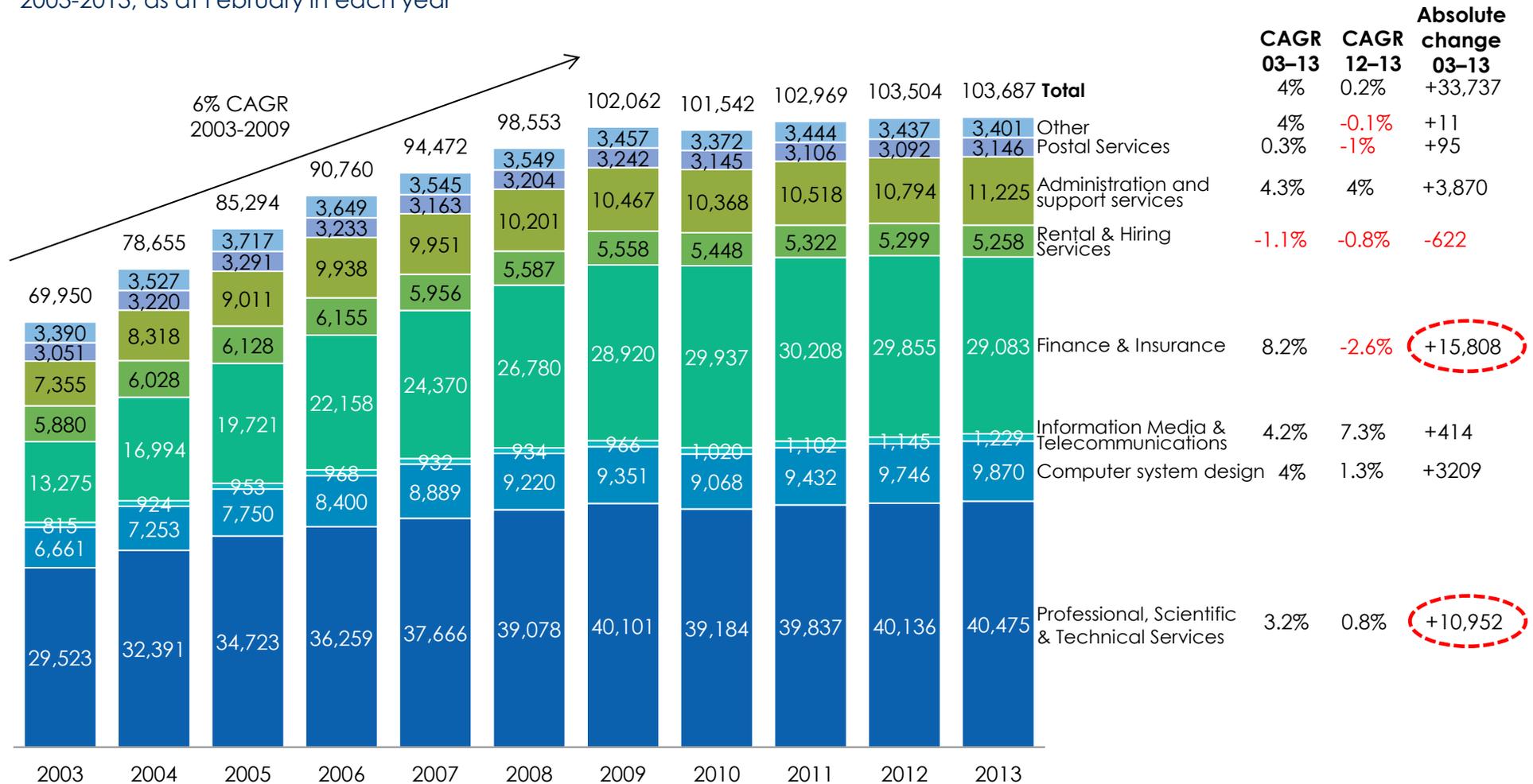


Number of firms by sub-sector

The number of firms grew at 6% per annum to 2009, driven by finance and insurance and professional, scientific and technical services, but growth has been slow since the GFC

Number of knowledge intensive services firms by sector

2003-2013, as at February in each year

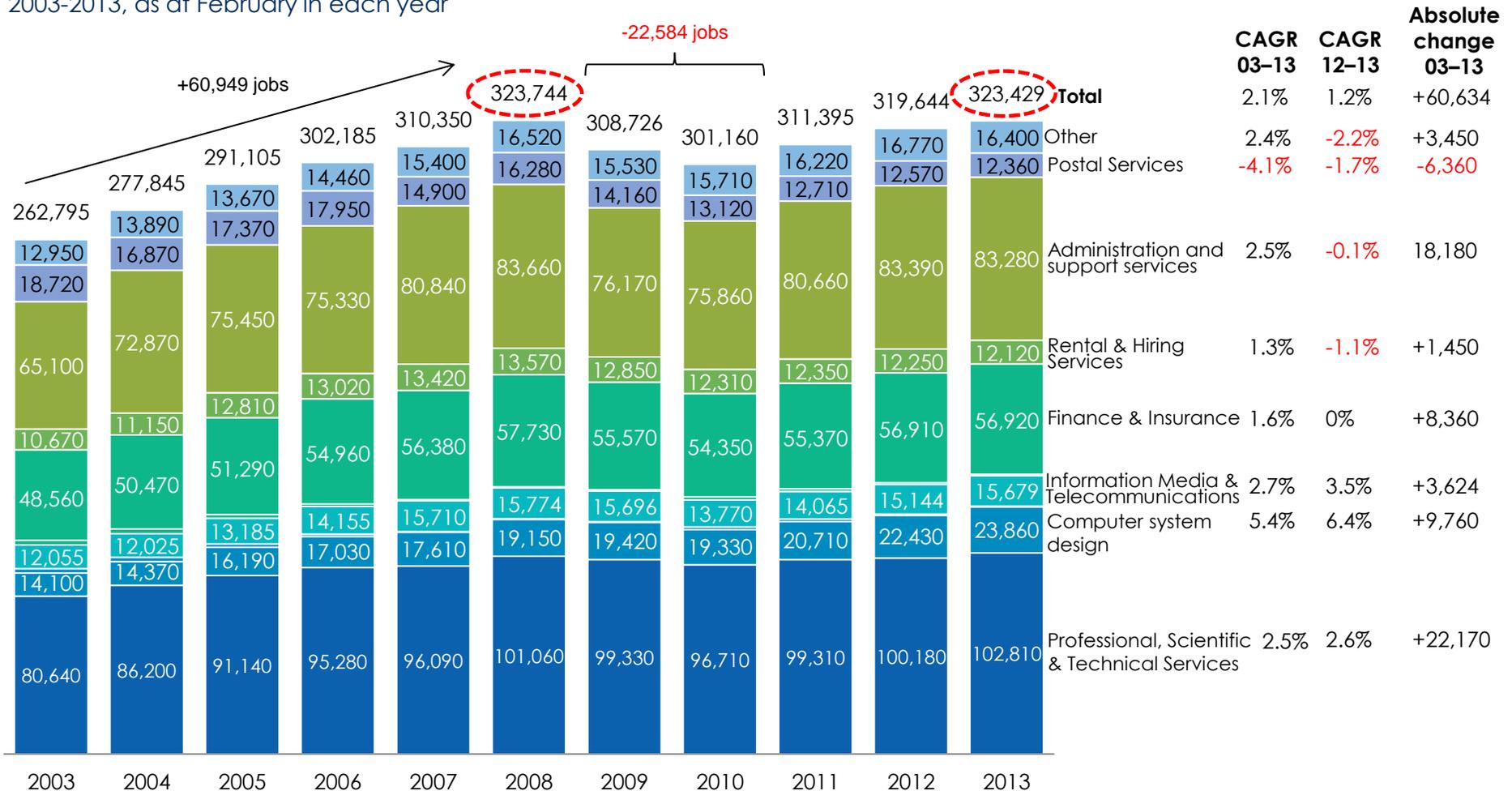


Number of employees by sub-sector

Knowledge intensive services added 60,949 jobs to 2008; employment has recovered to 2008 levels after jobs lost during the GFC

Number of employees (excluding self-employed) in knowledge-intensive services, by sub-sector

2003-2013, as at February in each year



Source: Statistics New Zealand, Business Demography Statistics

Impact of the GFC

Industry commented on the impact of the GFC on business

- *I will explain how the GFC affected us...For a period of 6 months we seemed to fall into a hole, in particular in the corporate finance side. We went, in the space of one month, from our busiest ever month to our worst ever month. I remember it well from July to August.*
 - *Senior executive, accounting firm, large*
- *During the GFC a lot of the people that were seconded (offshore) short term were pushed back to us quickly. We had much higher retention during that period because there were much less opportunities available offshore for the younger ones than there normally is. That's well and truly alive again and the mobility rate is high again.*
 - *Senior executive, accounting firm, large*
- *The GFC changed everything. Financial pressure came down on everyone, but for professional services like design, doing the same or more for less can only mean doing things quicker or with less experienced staff. This is very tough, because you've still got to apply the same amount of thinking and rigour to get quality creative solutions. So the new norm of demonstrable ROI poses a fundamental challenge for creative businesses in balancing the value of creative output and rewarding experienced talent.*
 - *Senior executive, design business, medium*



EXPORTS FROM KNOWLEDGE INTENSIVE SERVICES SECTORS

Analysis of exports

The following provides services export data at two levels of granularity



Analysis of exports: all commercial services

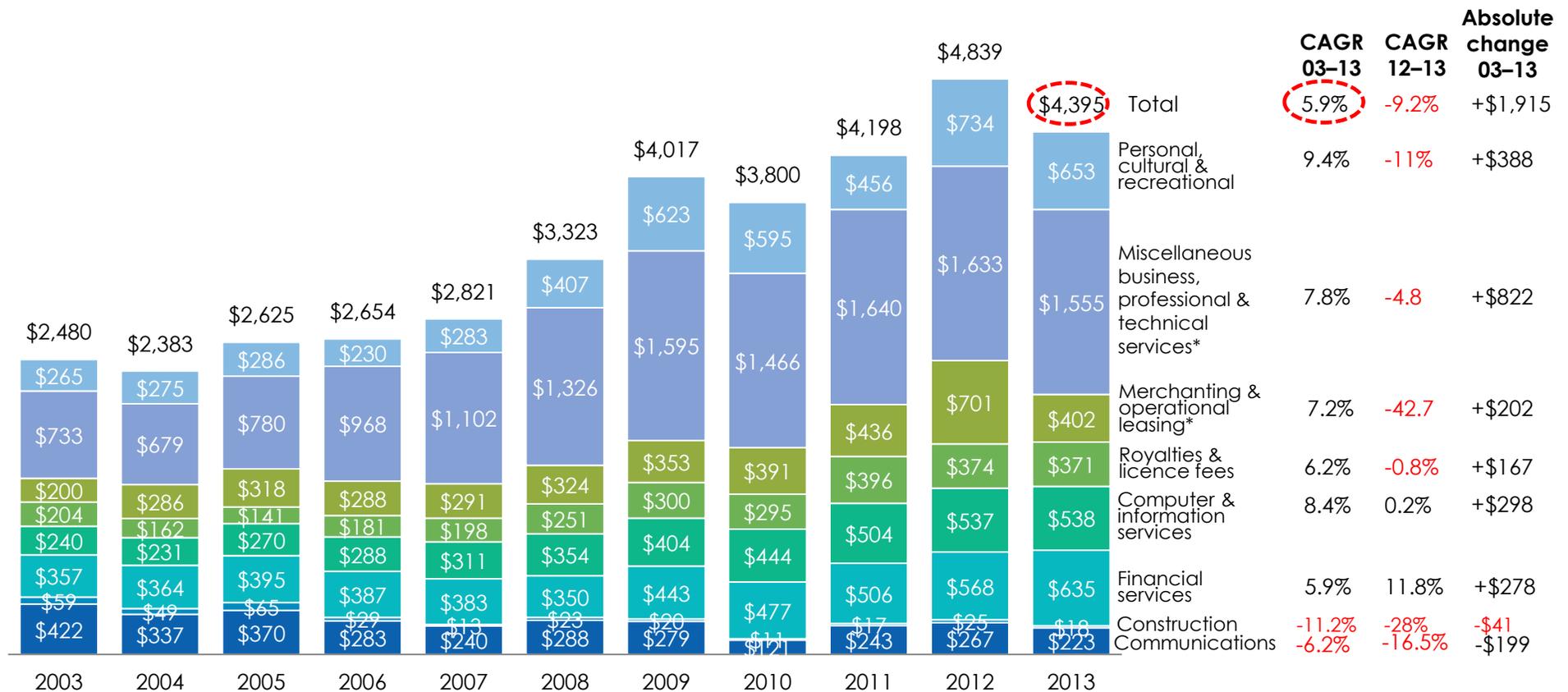


Total commercial services exports by type

New Zealand's commercial services exports grew at 5.9% per annum in the ten years to 2013; all categories grew above 5% except construction and communications services

Exports of commercial services (includes exports by sectors other than knowledge intensive services)

\$m; 2003–2013



Source: Statistics New Zealand, Balance of Payments

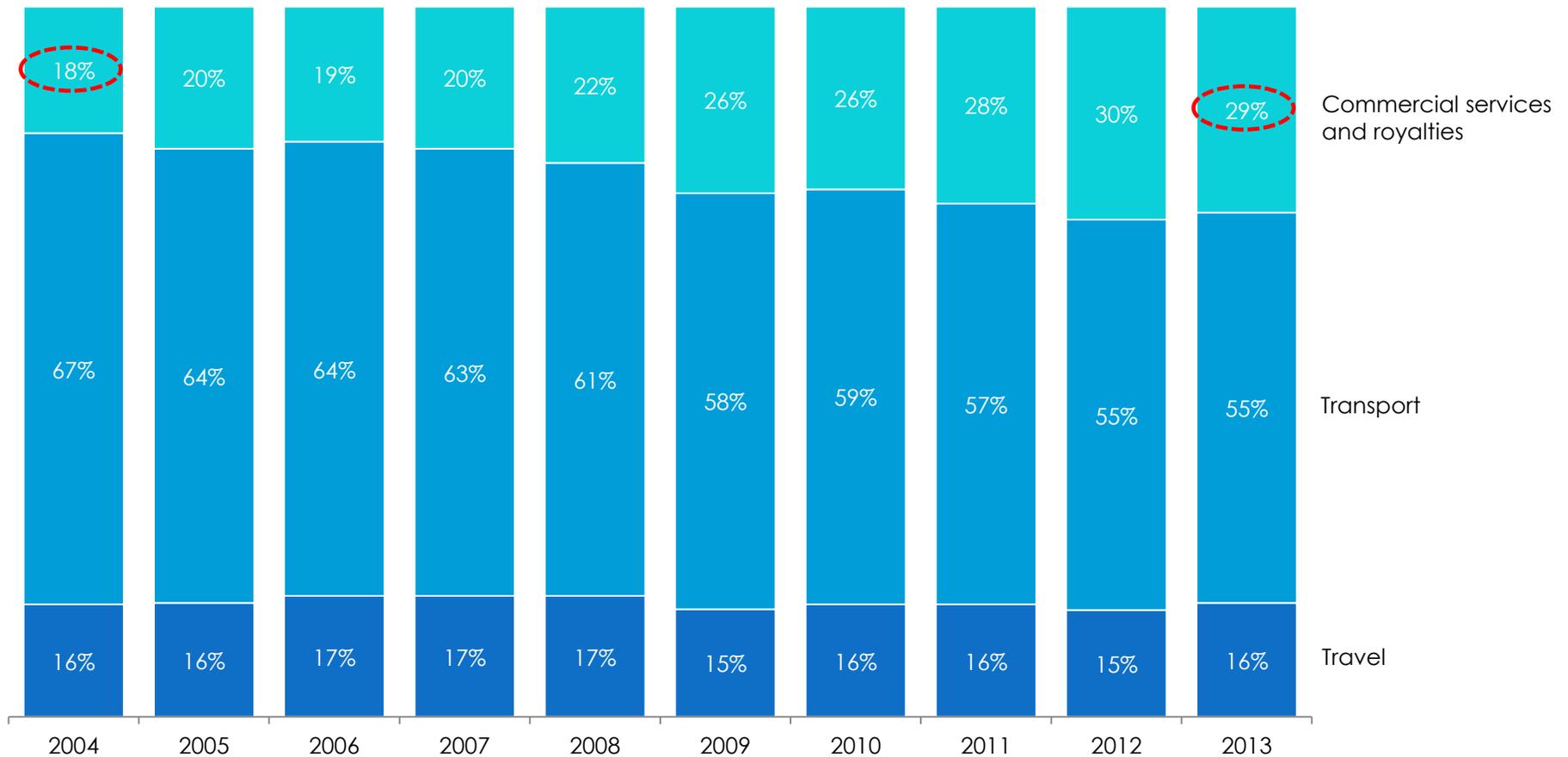
* Merchanting is sales less purchases of goods by New Zealand enterprises, where the goods do not enter New Zealand..

Commercial services exports share of all services exports

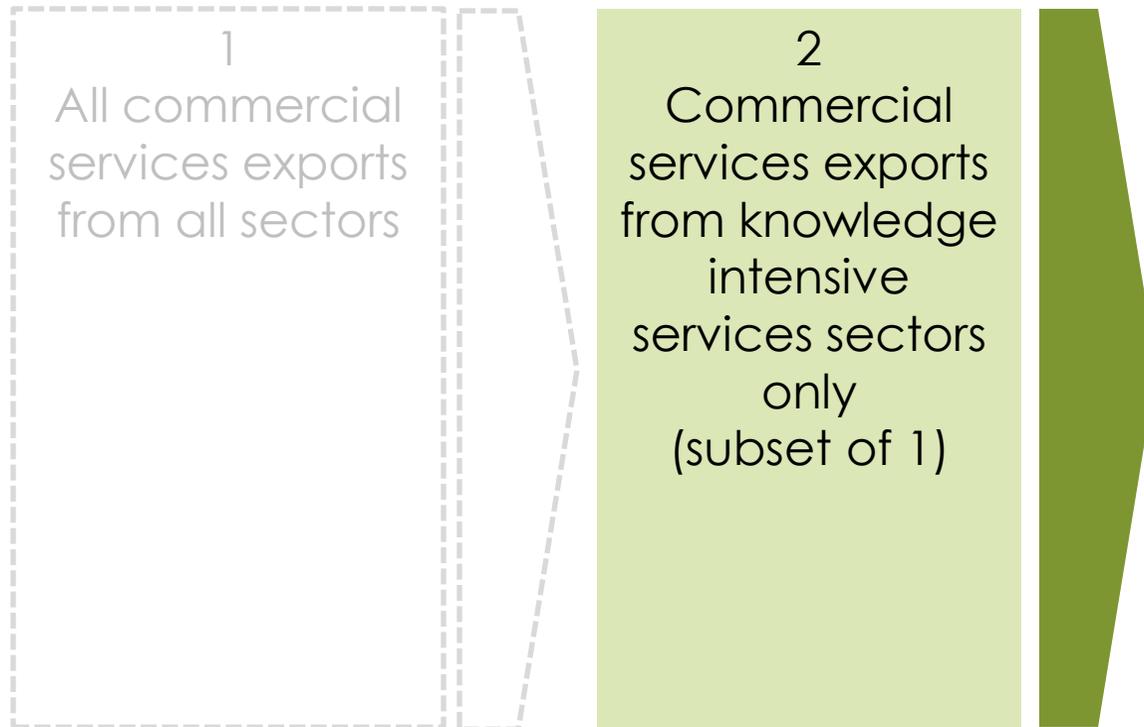
Commercial services and royalties are steadily increasing as a percentage of all services exports

Exports of services

%; 2004–2013



Exports by knowledge intensive services sectors

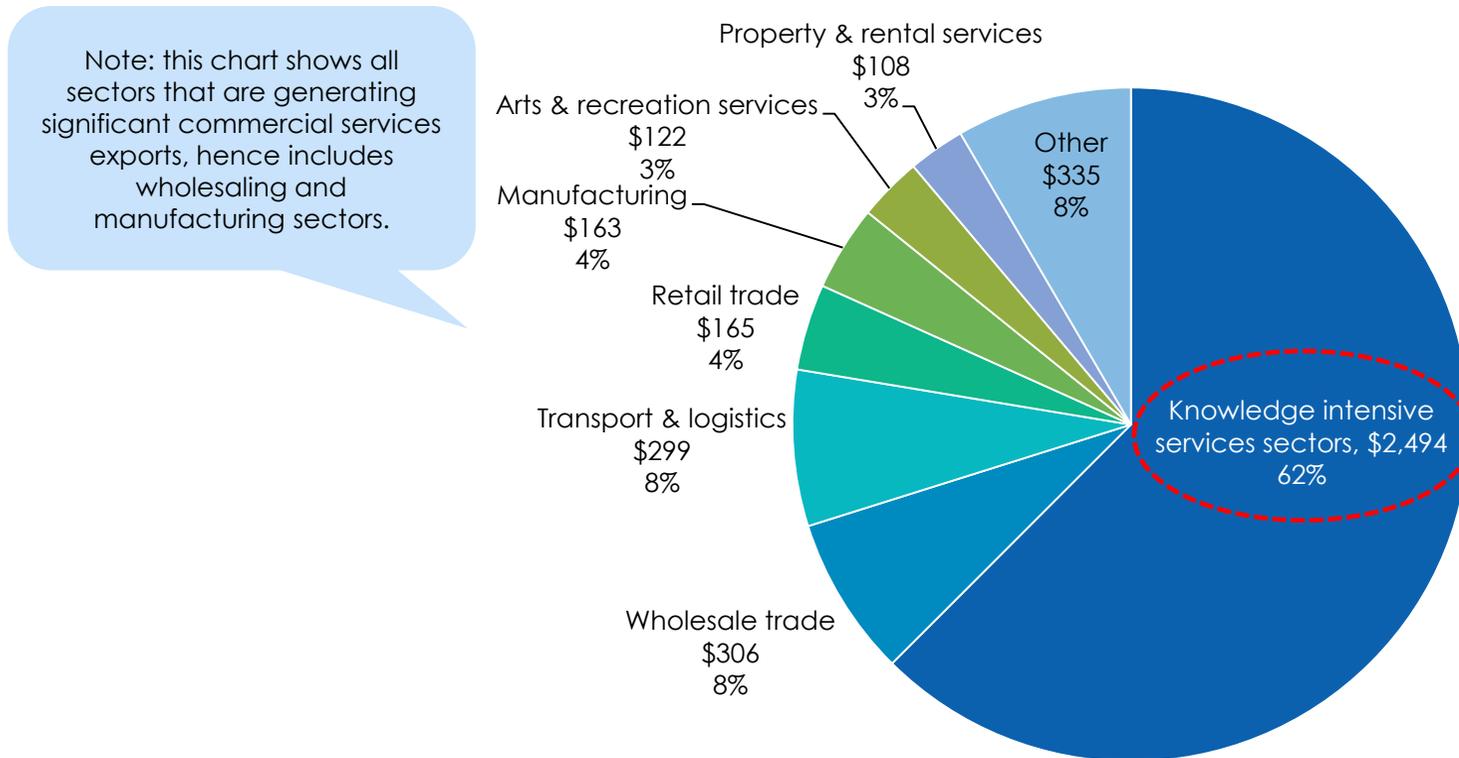


Value of exports from knowledge intensive services sectors

Knowledge intensive services sectors generated \$2.494 billion of exports in 2011, 62% of all commercial services exports

Exports of commercial services by sector

NZ\$m; financial year ended June 2011 (latest available data by sector)

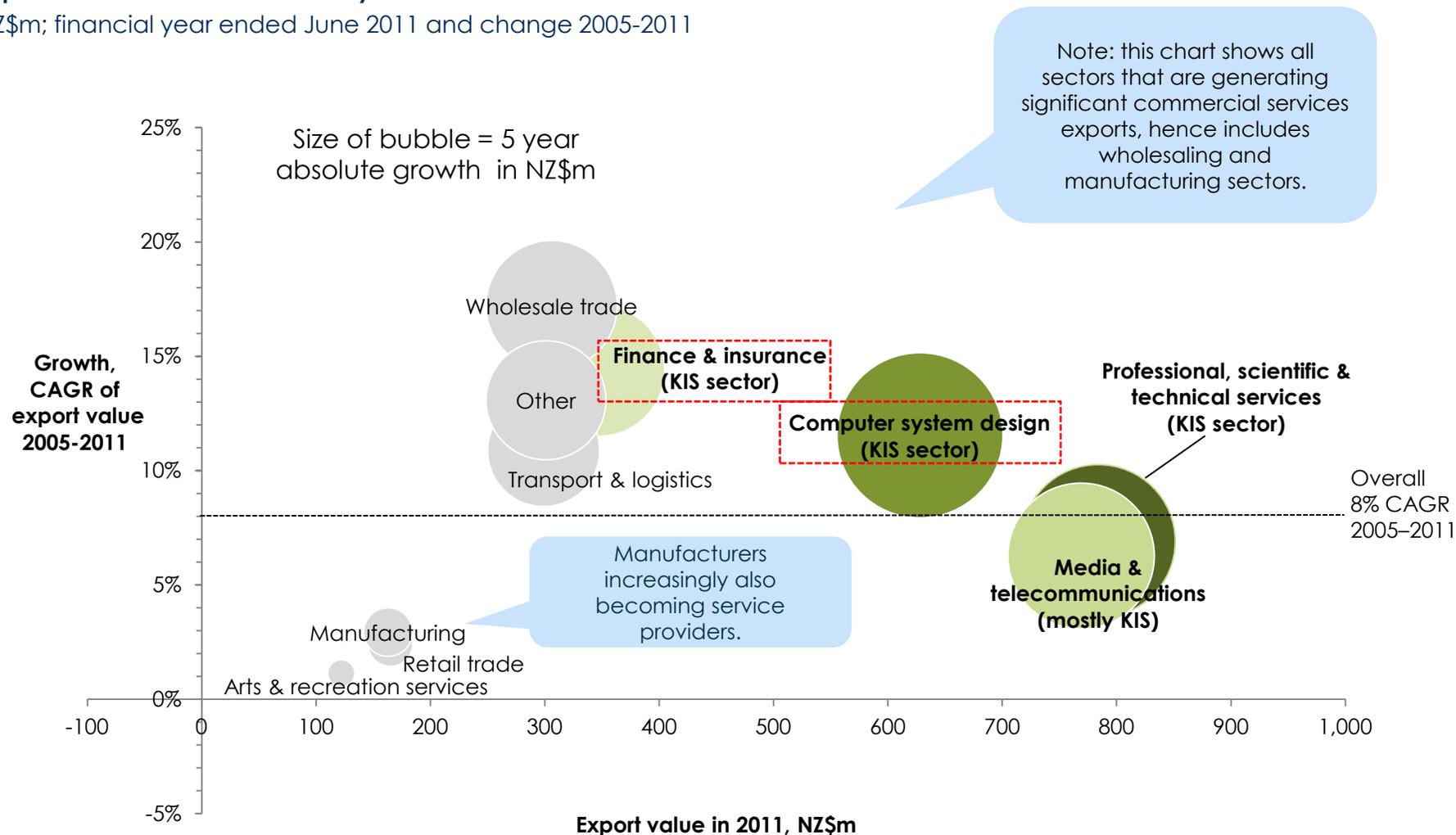


Export value and growth

Of the knowledge intensive services sectors (green), computer system design and finance and insurance stand out for absolute export value and growth

Exports of commercial services by sector

NZ\$m; financial year ended June 2011 and change 2005-2011



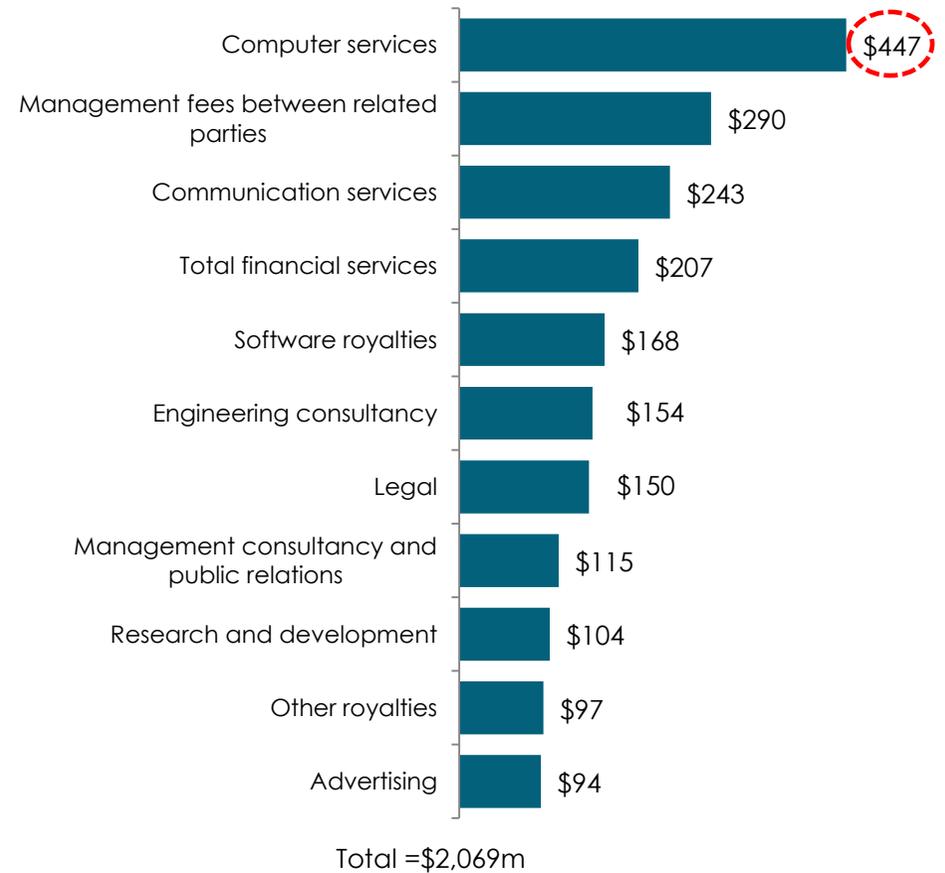
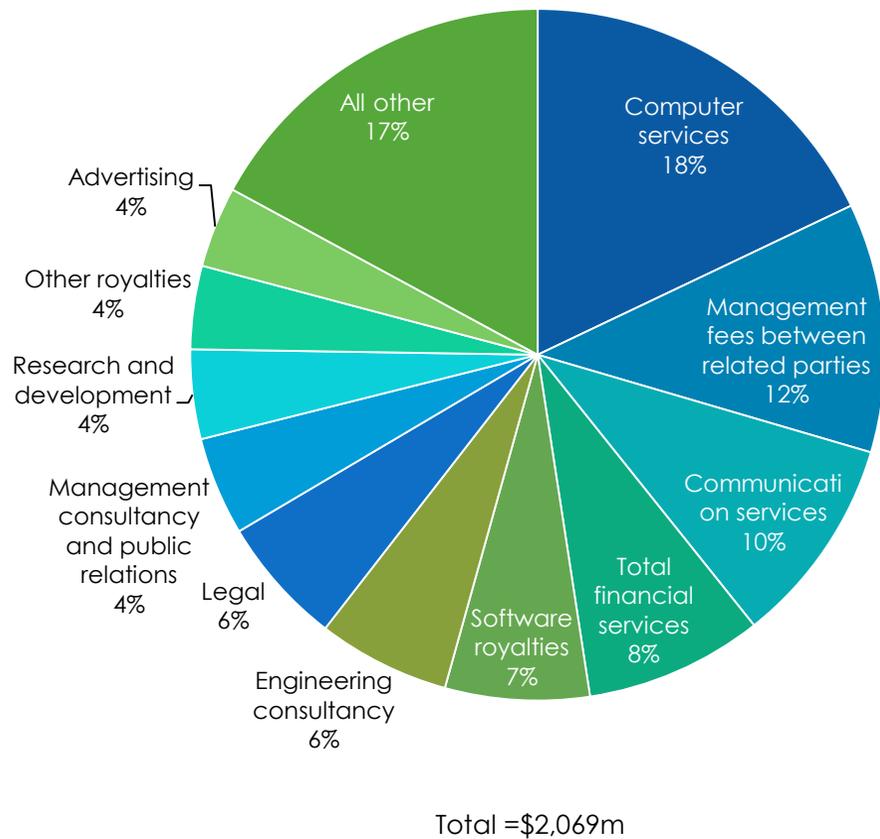
Exports by type of service exported

Knowledge intensive services exports span a wide range of services

Commercial export value of New Zealand's knowledge intensive services firms

NZ\$m; financial year ended June 2011 (latest available data by sector)

Note: this chart provides data on the types of services that knowledge intensive services firms are exporting.





PART TWO

FOCUS ON PROFESSIONAL, SCIENTIFIC & TECHNICAL SERVICES

Definition and snapshot

Professional services sub-sectors

The professional services sector includes computer system design (a focus of the ICT report) and professional, scientific & technical services (main focus of this report)

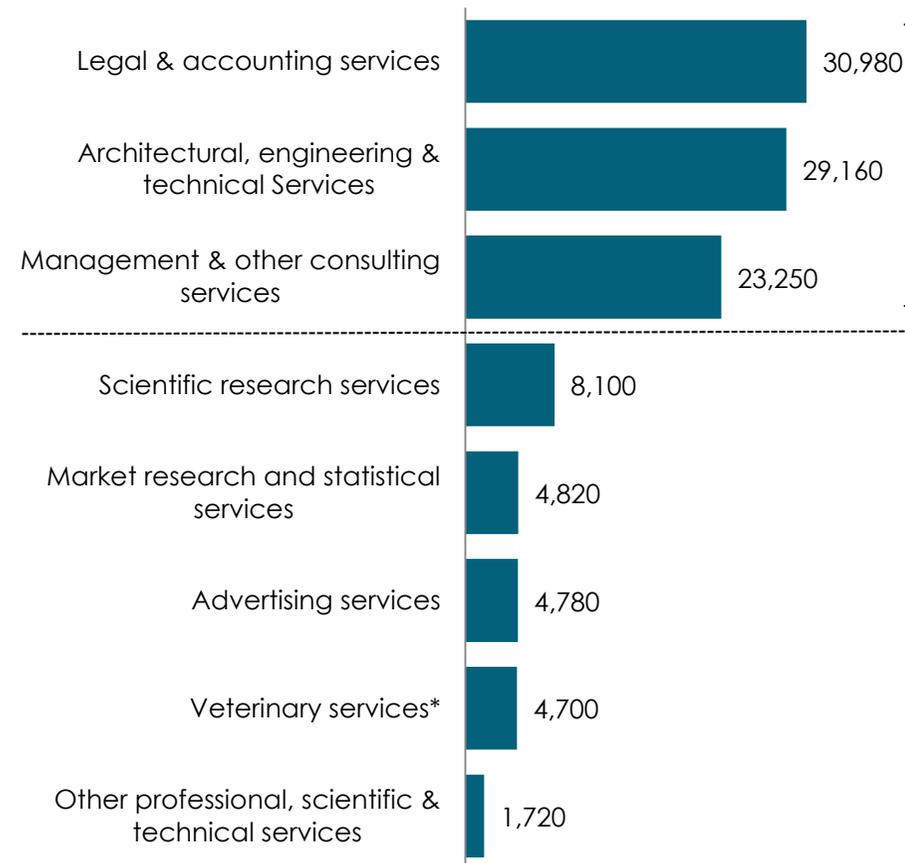
Sub-sector	Description	ANZSIC code*	Examples
Computer system design Focus of the companion ICT report.	Firms engaged in providing expertise in the field of information technology. Includes consulting services around computer hardware programming and software, internet and web design. Also includes customised software development (except software publishing), software installation services and systems analysis services.	M70	Orion Healthcare
Professional, scientific & technical services (excluding computer system design)	<p>Firms providing services such as scientific research, architecture, engineering, law, accountancy, advertising, market research, management and other consultancy and veterinary science.</p> <p>The remainder of this report focuses on professional, scientific & technical services (excluding computer system design).</p> <p>See separate report on Information and Communications Technology (ICT) for analysis of computer system design, available from www.mbie.govt.nz</p>	M69	Beca

Comparative size of professional, scientific & technical services sub-sectors

Management & related consulting services, legal & accounting services and architectural, engineering and technical services account for 78% of professional, scientific & technical services employees

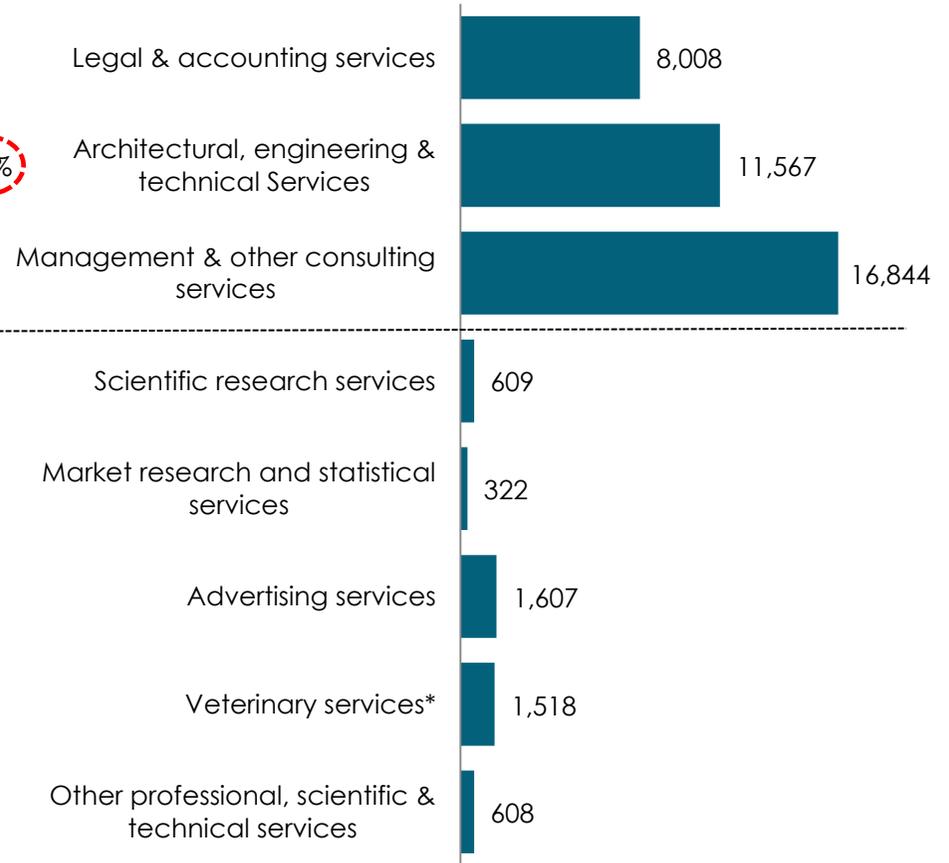
Number of employees* by sub-sector

Employees; 2013



Number of firms by sub-sector

Firms; 2013



Professional, scientific & technical services

Situation

ANZSIC code M69 (excludes M70 computer design and related services)

These services include scientific research, architecture, engineering, law, accountancy, advertising, market research, management and other consultancy, veterinary science and professional photography. Firms in this category typically specialise and sell their expertise. In most cases, equipment and materials are not major inputs. *Note: vets are not included in knowledge intensive services.*

Scorecard						Example firms			
Measure	Total	% of NZ*	Growth (1 year)	Growth (5 yr CAGR)	Growth (10 yr CAGR)	Firm	Turnover (\$m)	Employees	Ownership
GDP 2011 (nominal)	\$10,675m	6.2%	4.2%	3.70%	6.1%	Beca	\$612m (2013 est)	2,400	Private
Real GDP 2012	n/a	n/a	n/a	n/a	n/a	Cawthron Institute	\$34m (2013 est)	200	Cawthron Trust
Goods exports 2012	n/a	n/a	n/a	n/a	n/a	PriceWaterhouseCoopers	\$330m (2013 est)	1,300	Private
Employment 2012	168,624	7.3%	0.4%	0.40%	2.6%	AJ Park	\$37m (2013 est)	220	Private
Value added / employment 2010 (nominal)**	\$63,564	84.2%*	2.5%	2.90%	3.1%	Warren & Mahoney	\$17m (2013 est)	105	Private
Investment in fixed assets 2011	\$953m	3%	-0.9%	1.50%	1.5%				
Number of firms 2013	41,083	8.7%	0.8%	0.70%	3.2%				

Industry level financial performance					Export value by type of service		Exports value by destination	
	Total		Growth (1yr)		Services exported by firms in this sector	Exports (NZ\$m; 2011)	Country	Exports (NZ\$m; 2012)
	This sector	All sectors	This sector	All sectors				
Total income per firm 2012 [#]	\$566,016	\$1,377,888	-3.4%	6.50%	Legal services	\$148m	Australia	\$317m
Total income per employee 2012 [#]	\$217,100	\$327,400	-5.6%	4.90%	Engineering consultancy services	\$140m	USA	\$145m
Surplus per employee 2012 [#]	\$34,000	\$32,100	-13%	32.10%	Research & development	\$90m	UK	\$67m
Return on equity 2012 [#]	19.3%	8.6%	down	up	Management consultancy & public relations	\$84m	Singapore	\$24m
Debt ratio (liabilities/assets) 2012 [#]	62.10%	57.4%	up	down	Advertising	\$78m	China	\$14m
Fixed assets per worker 2010	\$33,001	\$168,533	-1.5%	1.10%	Other	\$245m	Other incl. confidential	\$217m
					TOTAL All service types	\$784m	TOTAL All countries	\$784m

* NZ is total employing firms, except for productivity where it is the total measured sector .

** Uses value added/employment for productivity, NZ average = 100%.

All sectors total excludes some industries: refer to methodology and sources.

Professional, scientific & technical services

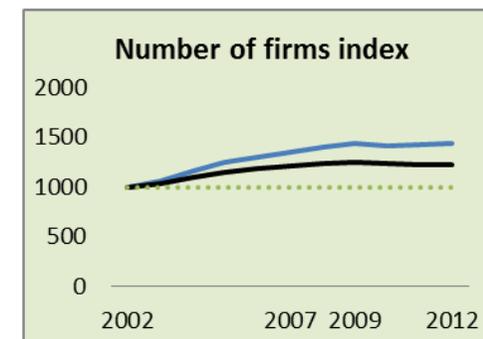
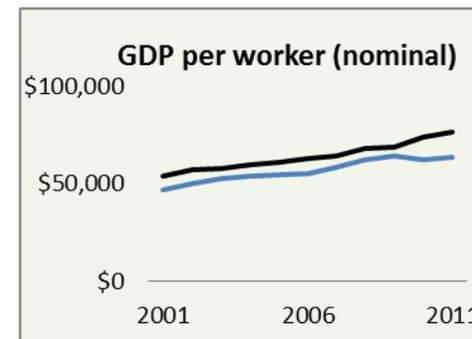
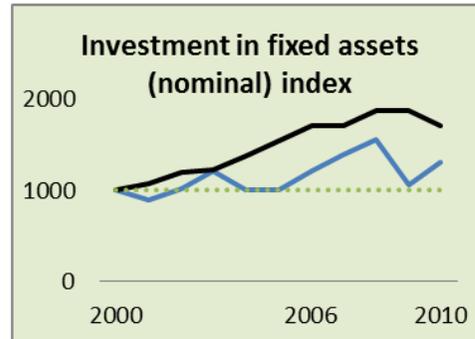
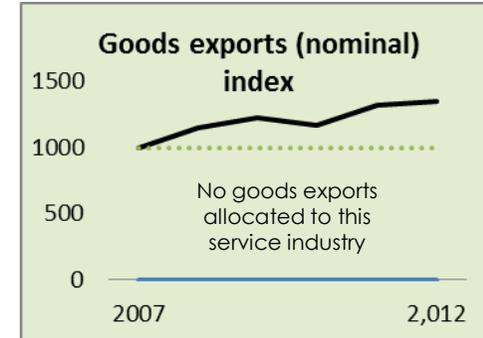
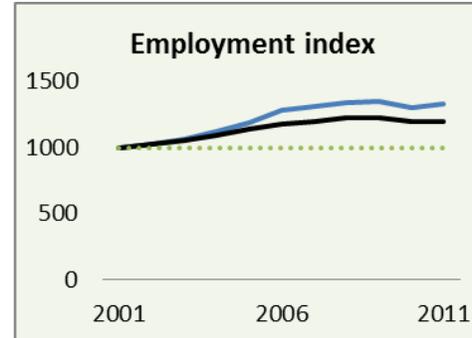
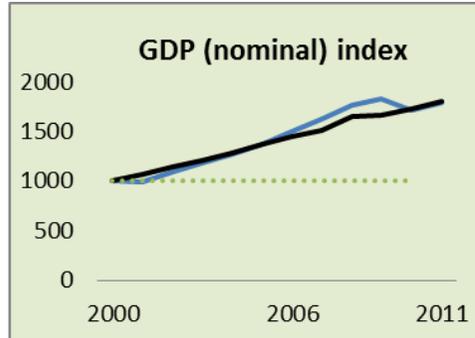
ANZSIC code M69

Situation

Key trends, various timeframes: 10-year index (base=1000) except GDP per worker is \$ values – this sector vs all other sectors

Comment

- Increasing share of GDP, employment, number of firms
- Large employer: 167,258 workers
- More jobs overall: +40,734 (2001–11)
- Lost jobs: -5,034 (2009–10)
- Created jobs: +2073 (2010–11)
- GDP per worker below average
- Investment in fixed assets stable, averaging \$90m per annum 2009–11
- Average R&D rate (8%) and innovation rate (45%)



Key

- Professional, scientific & technical services
- Other employing sectors

R&D & innovation rates	Export barriers: Current exporters	% firms	Export barriers: Future exporters	% firms	Internationalisation	%
R&D rate (% of firms)	1. Low market demand or increased competition in overseas markets		1. Limited access to finance for expansion beyond NZ		% of professional, scientific & technical services firms exporting	21%
Innovation rate (% of firms)	2. Distance from markets		2. Distance from markets		% of professional, scientific & technical services firms with overseas holdings	4%
	3. Other barriers		3. Limited experience in expanding beyond NZ		% of professional, scientific & technical services firms >50% foreign owned	4%

- High
- Medium
- Low



PROFESSIONAL, SCIENTIFIC & TECHNICAL SERVICES

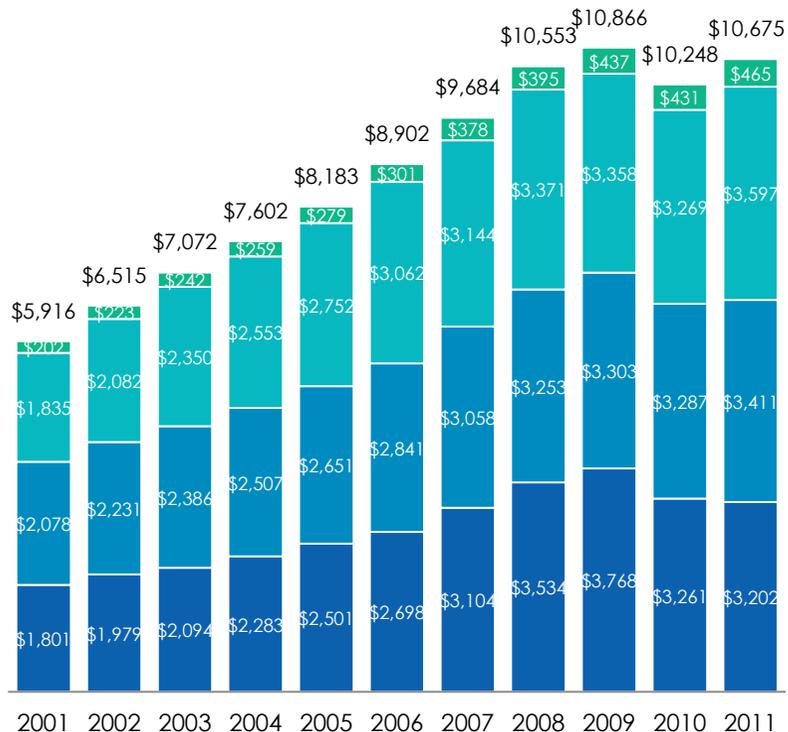
CONTRIBUTION TO THE ECONOMY

Contribution to GDP

Professional, scientific & technical service firms accounted for 6.2% of employing sectors' GDP in 2011, a level that has been relatively consistent for a decade

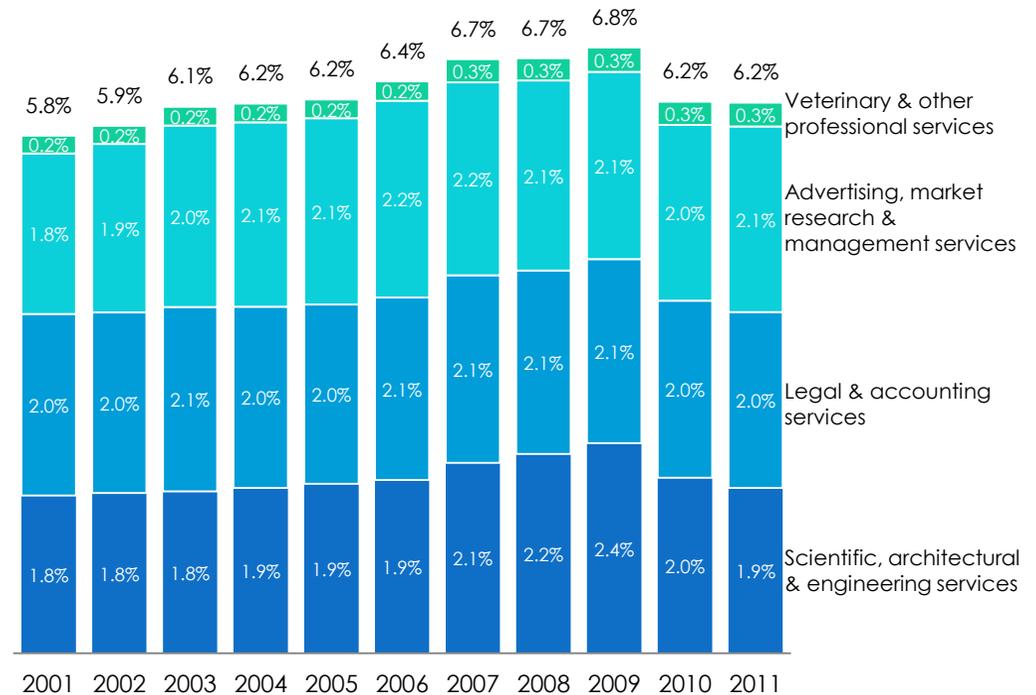
GDP by sub-sector

NZ\$m; nominal; 2001–2011



Percentage of total NZ GDP

% GDP; 2001–2011

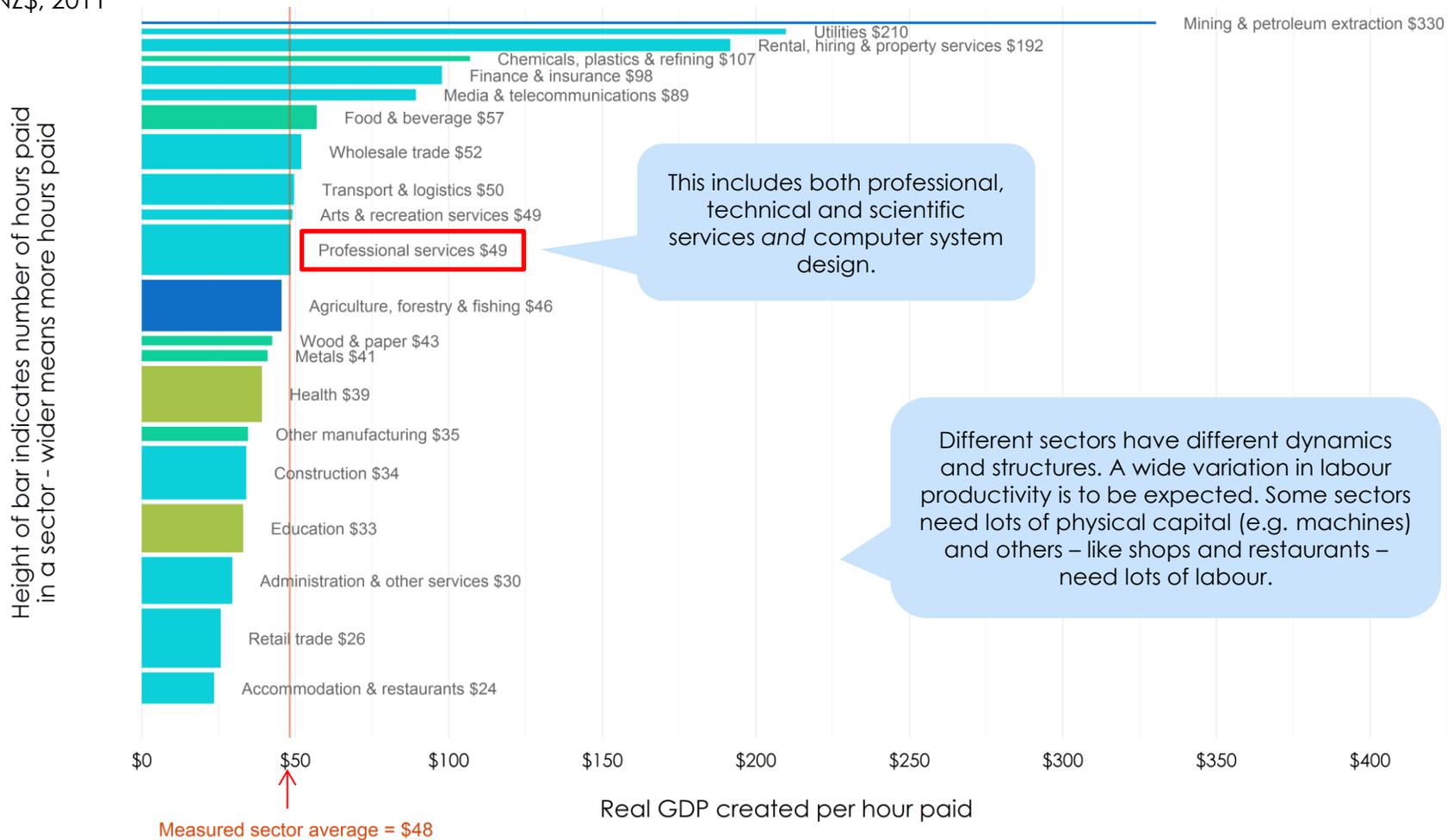


Labour productivity by sector

The professional services sector generated \$49 per hour worked in 2011; just above the average for the New Zealand economy as whole

Sector employment (total hours paid) vs sector GDP (real) per hour paid

NZ\$; 2011



Note: data for government administration, education, health, ICT, high technology manufacturing and knowledge intensive services is not measured.

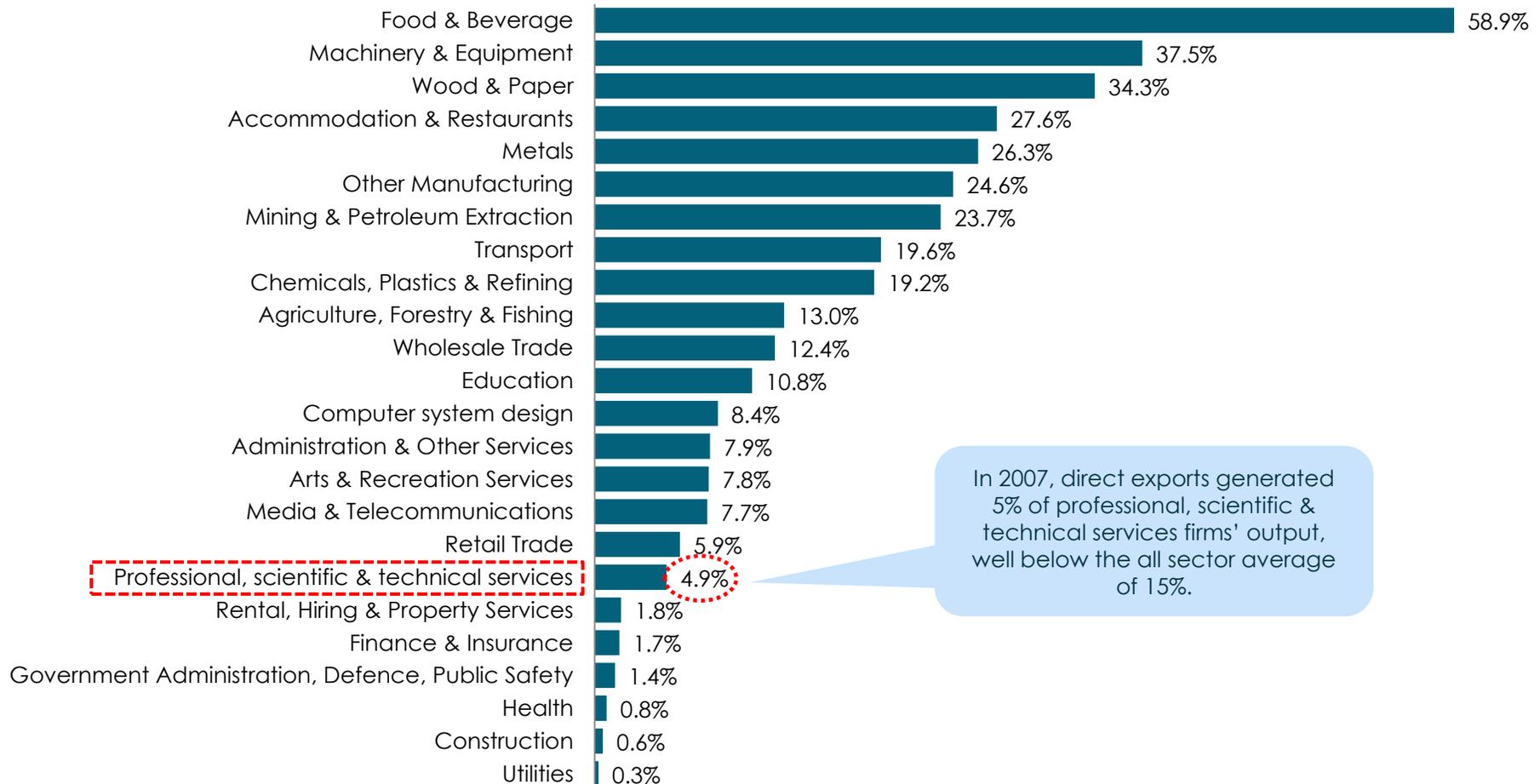
Source: Statistics New Zealand, National Accounts – Productivity Input Series year ended March 2012 (2013)

Share of income from *direct* exports

Based on direct exports as a percentage of output, professional, scientific & technical services is one of the least export-intensive sectors

Direct exports as a % of total sector gross output

2007; nominal (latest data available)

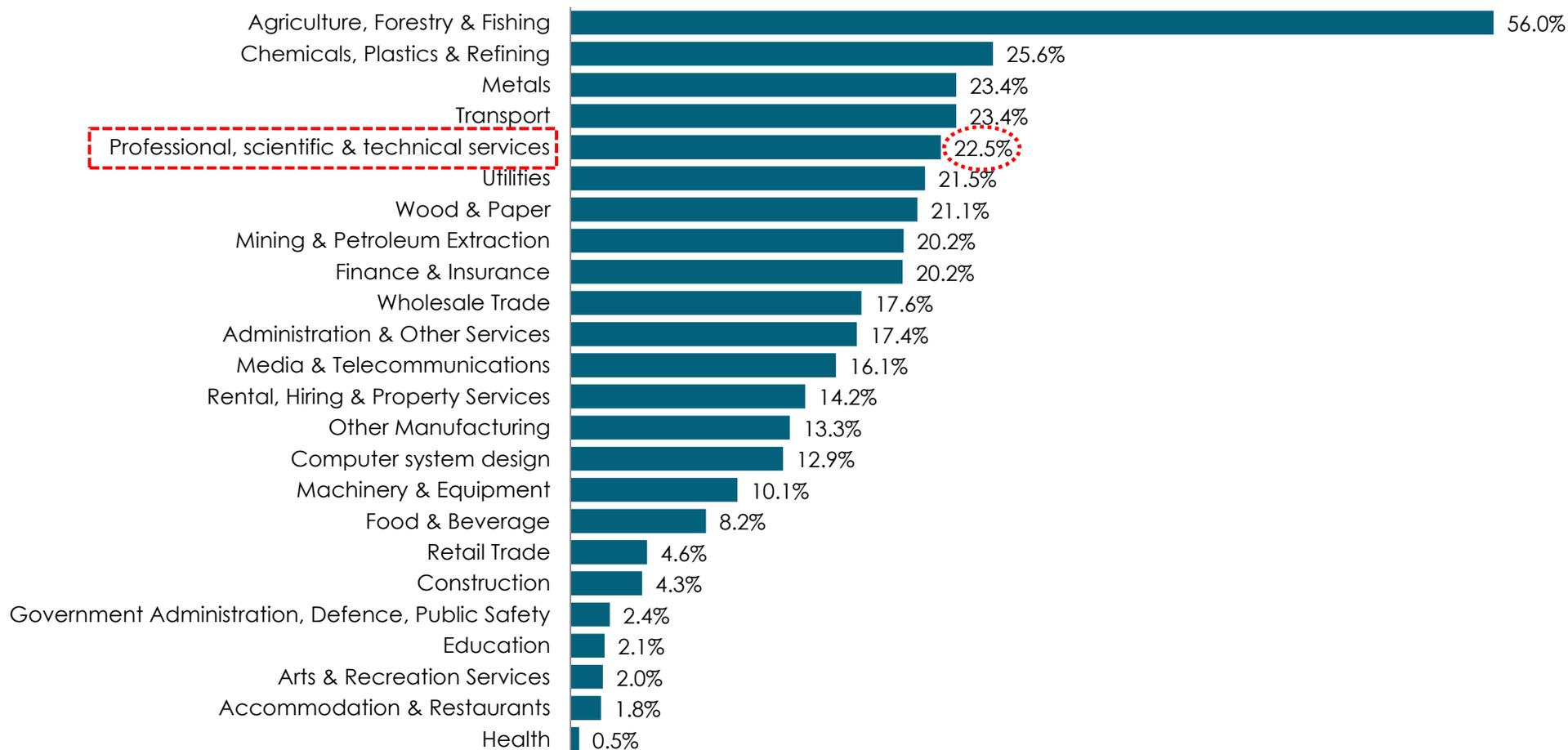


Share of income from *indirect* exports

But professional, scientific & technical services firms have one of the highest *indirect* contributions to exports; 22% of their output contributed to other firms' exports

Indirect exports as a % of total sector gross output

2007; nominal (latest data available)

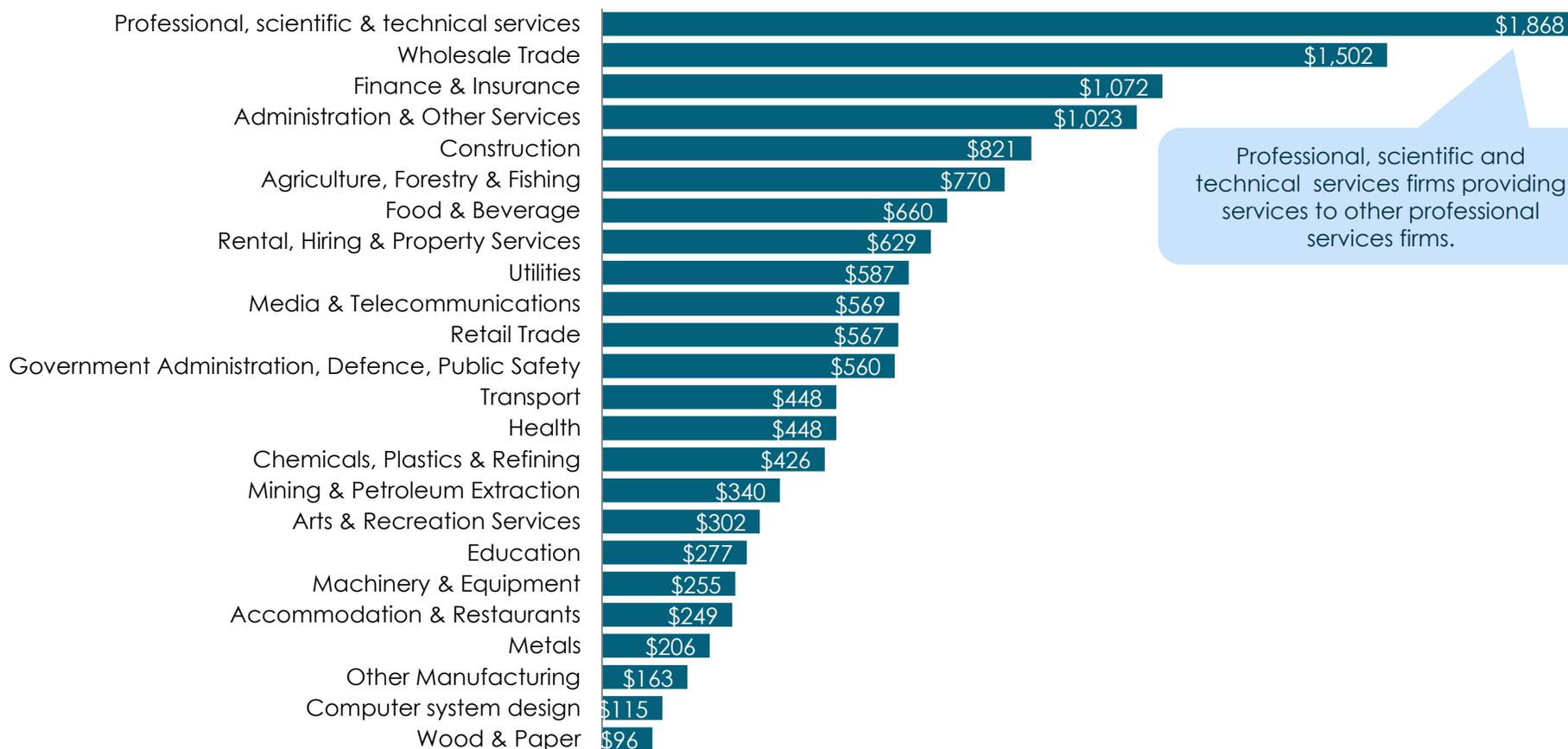


Use of output by other sectors in the economy

Professional, scientific & technical services firms supply services to all sectors in the economy

Purchases from professional, scientific & technical services firms

NZ\$m; 2007; nominal

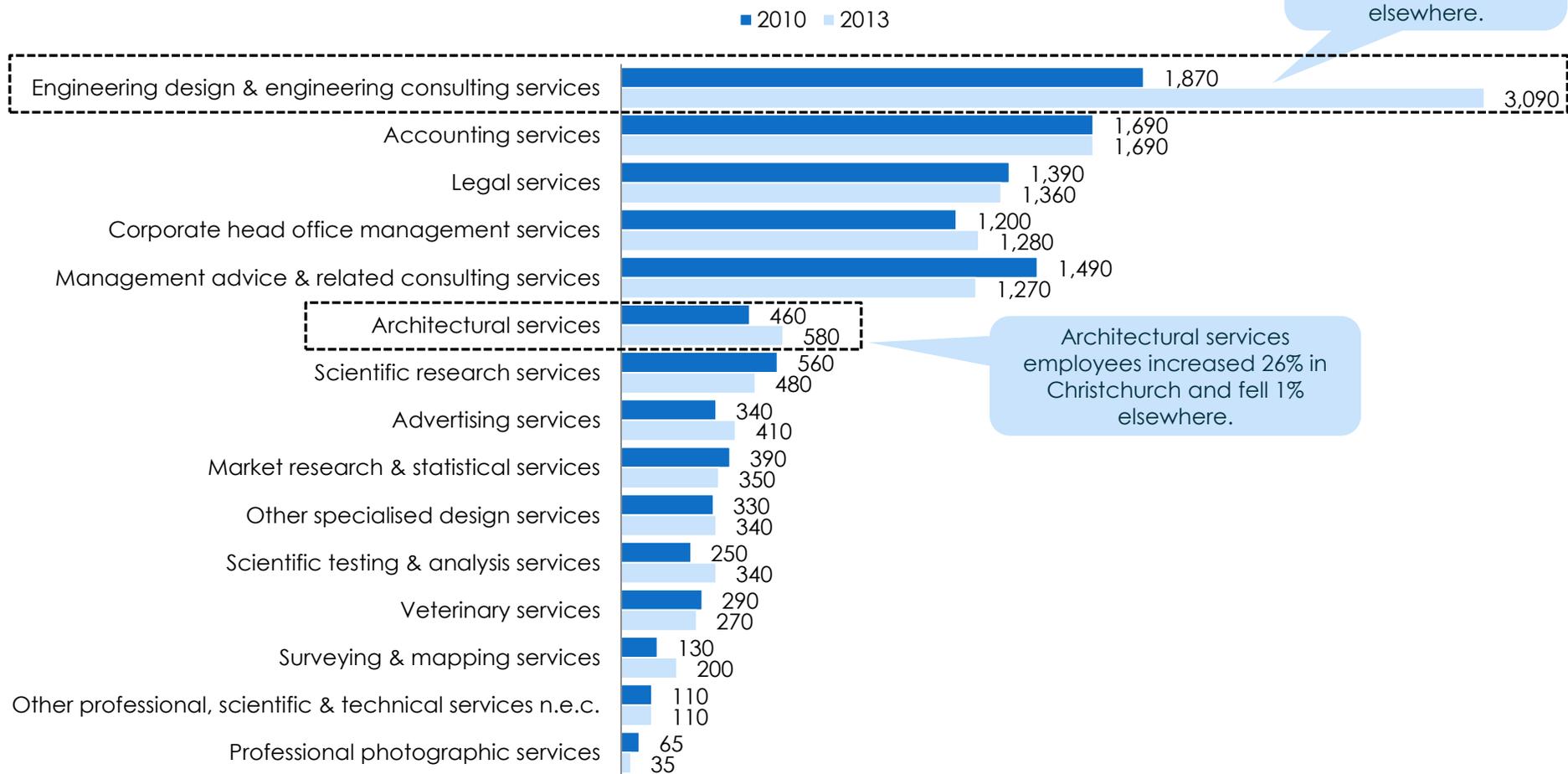


Canterbury rebuild

Professional, scientific & technical services are key inputs to the Canterbury rebuild, with a large increase in employment in engineering design and consulting services

Christchurch employees* in professional scientific & technical services

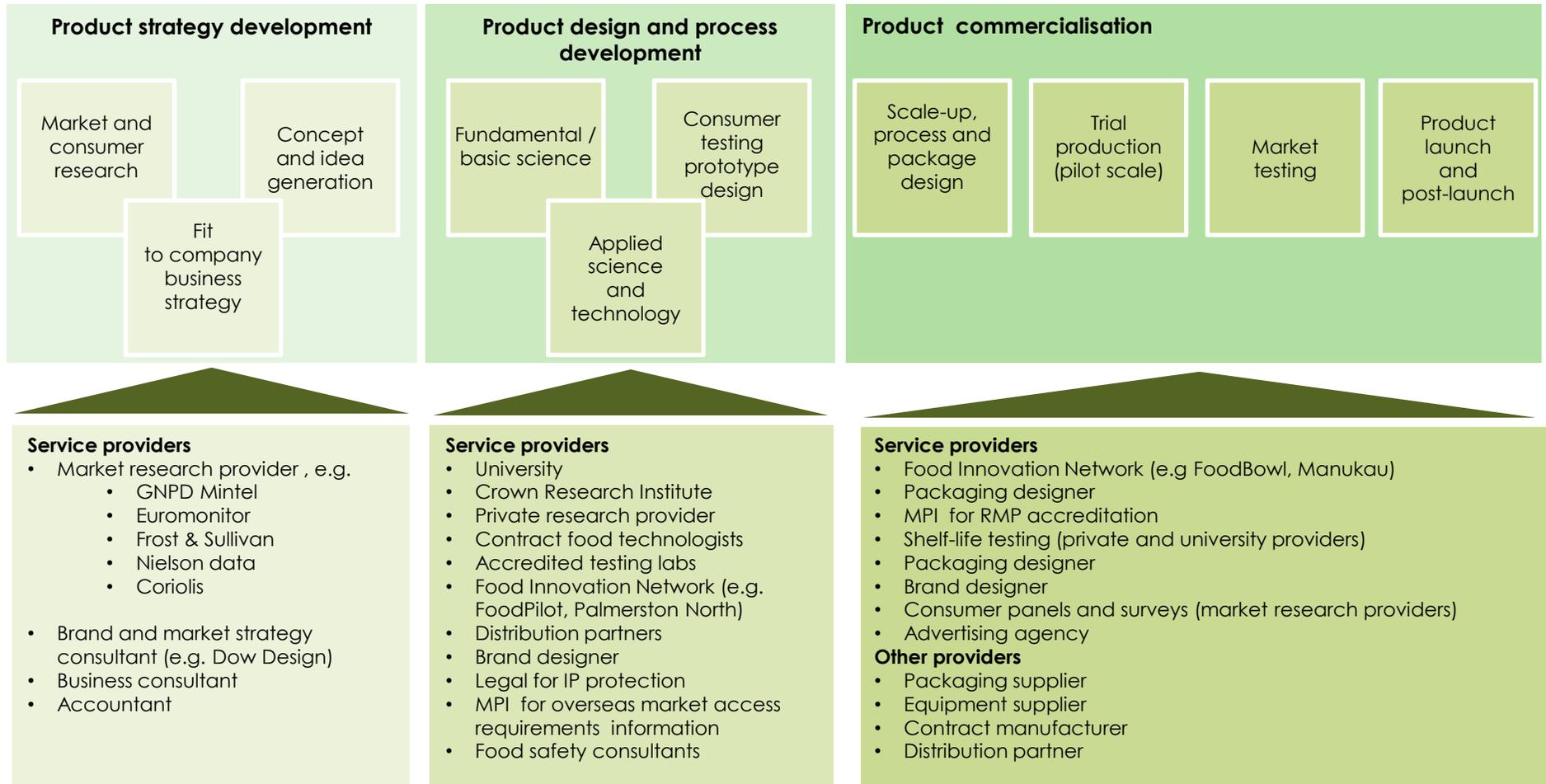
2010-2013



Ecosystem example: food and beverage sector

Processed foods manufacturers draw on a wide range of specialist technical, research, legal, accounting and design providers for new product development

Simplified model of the food product development chain



Ecosystem example: start-up technology company

A start-up IT company (e.g. with an idea for a cloud-based product) will typically need to contract for a wide range of specialist advice and expertise

Simplified model of services that support start-up and early stage technology businesses

Start-up/early stage	Growth
Business structure <ul style="list-style-type: none">• Lawyer• Accountant/tax advisor	<ul style="list-style-type: none">• As the business grows, a similar pool of service providers is required, but the business may transition to using larger providers with more capabilities and a wider network of relationships, e.g. internationally• The biggest shift will be use of services required to facilitate capital raising
Product development <ul style="list-style-type: none">• Intellectual property lawyer/patent attorney• Branding/design services• Software and web development (may be outsourced to contractors in firm's early stages)• Better by Design (NZTE* Programme)• Callaghan Innovation (R&D grants)	
Business strategy development <ul style="list-style-type: none">• Business management consultants• Incubators• Investors (Angel/Venture)	<ul style="list-style-type: none">• <i>For early stage technology businesses, finding good people to work with is often dependent on word of mouth. While the overall standard of professional advice in New Zealand is very high, without good recommendations from industry insiders, early stage companies can have difficulty linking with advisers who are able to provide high quality advice tailored to the peculiar needs of the early stage sector.</i><ul style="list-style-type: none">– Partner, technology law firm• <i>Technology companies can need a lot of support from professional advisers when exporting goods and services. Sales and distribution models (e.g. contract and commercial terms) often need to be created from scratch, which is often unnecessary with, for example, commodity exporters who sell on standard industry terms. Also, terms tend to vary more from deal to deal for any complex technology product or service.</i><ul style="list-style-type: none">– Partner, technology law firm• <i>Early stage start-ups can access a lot of free advice and support in New Zealand, over coffees. However, an expectation of free advice does not go down so well in Silicon Valley, where 'free' advice comes with an expectation of payback down the track.</i><ul style="list-style-type: none">– Partner, technology law firm
Capital raising <ul style="list-style-type: none">• Investment bankers• Investment brokers• Better by Capital (NZTE* programme)	
Other sources of advice <ul style="list-style-type: none">• Independent directors• Advisory board members	

Impact on the economy

Industry insights into the services provided to clients

- *The knowledge intensive services sector...it's a facilitator and an enabler to other parts of the economy. It impacts the way in which people invest capital, the way in which people get a better return from their operating expenditure, it's important for the development of all parts of the New Zealand economy.*
 - *Senior executive, engineering firm, large*
- *Audit and tax which are compliance related ...[and are] the traditional side of the business...the constructive side. A lot of people just see it as compliance but the constructive side gives confidence and helps support the capital markets in New Zealand, be it the stock markets or lenders. Arguably if there's not strong capital markets then firms will have difficulty getting capital, which in turn would restrict their ability to expand...It's seen as being compliant but in actual fact it's really supporting capital markets.*
 - *Senior executive, accounting firm, large*
- *Science provides a whole lot of services to our economy. The Fonterra contamination scare, for instance, shows the importance of scientific services in providing quality assurance and diagnosing potential problems in food products. Being able to assure customers overseas that we've got all the quality control in place is crucial. It is important to maintain the expertise behind these services, you might not use them every year but the fact you have it, is important over a longer time scale for your economy.*
 - *Scientist, education and research institution*
- *I'm a corporate finance partner. I'm involved in mergers and acquisitions, financing, management buy outs and those sorts of activities. A lot of our work is helping New Zealand companies to grow, so either attracting capital, attracting debt, identifying acquisition opportunities in New Zealand or off shore - helping them with acquisition opportunities.*
 - *Senior executive, accounting firm, large*
- *A large number of people working in the professional services sector in New Zealand have worked internationally, particularly in the UK, Australia and the US. This international experience, and the contacts that it provides, can be a significant asset for New Zealand exporters. However, until New Zealand has a greater focus on outward direct investment, as opposed to inward investment, this capability is an under-utilised resource for the New Zealand economy.*
 - *Partner, technology law firm*

Impact on the economy *continued*

- *Every New Zealand business operates in a legislative regulatory and policy context and so the role of the legal advisor is to assist those clients to understand that context, to comply with it and operate within it and/or change it if it is a barrier to commercial activity. It's an advisory role, a facilitation role...developing solutions to problems and barriers that come up along that path.*
 - *Senior partner, legal firm, large*
- *There's two aspects to the sort of work we do. One of those is around creating something and the other is making something go better. Generally we work with asset intensive industries and intensive asset owners, so it might be creating something which is going to be potentially a public service benefit or a business return benefit...Also we work in the space which is about making those things go better, so if you've got an existing asset how can you get a better performance out of it? If you've got a pulp mill, how can you make it produce more for less cost? Engineering is very much a knowledge industry and it's about trying to create some sort of enduring improvement in the built environment either by creating a better built environment or by providing improvements to the existing environment.*
 - *Senior executive, engineering firm, large*
- *We are doing a reasonable amount of research work at the moment for a company that makes steel alloy bars used for construction connections, including analysis and testing. These are exported globally...So that's part of how you enrich export products.*
 - *Senior executive, engineering firm, large*
- *We start off with working with an industry that we think has got potential, we talk to them about what their aspirations are for growth and what some of the constraints are for them getting there. Then we show them a whole lot of opportunities out of science, at an undeveloped stage, then start to refine those down and identify a pathway for a project or a set of approaches that are part of meeting that industry growth aspiration. The researcher is looking for someone with a capacity to grow, then introduce the innovation component and the high value end to be able to give them an edge to be internationally competitive, but also to be able to substantially grow their productivity.*
 - *Scientist, education and research institution*



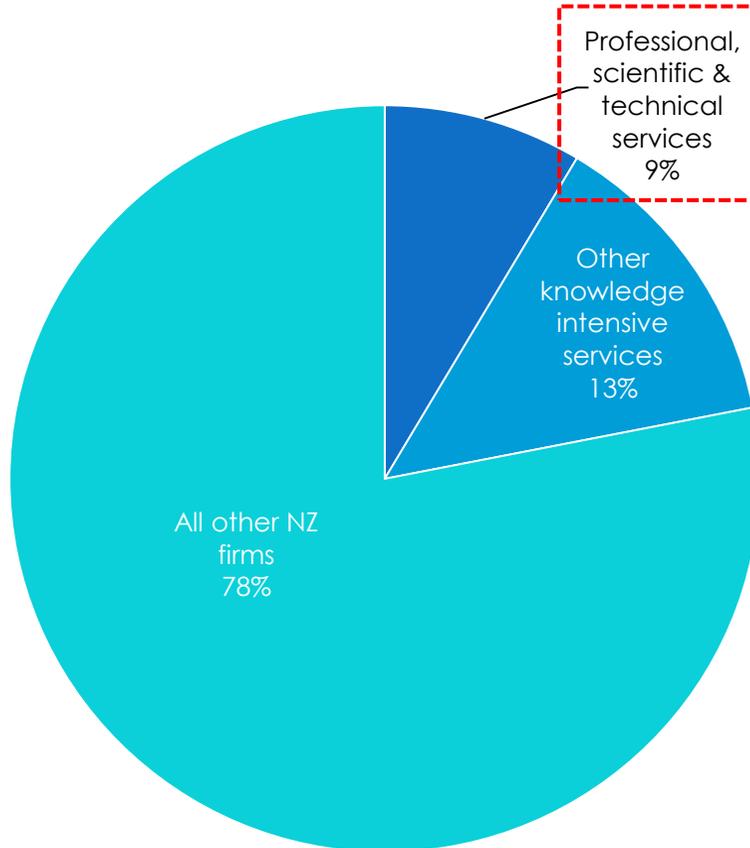
**PROFESSIONAL, SCIENTIFIC &
TECHNICAL SERVICES**

BUSINESS AND EMPLOYMENT

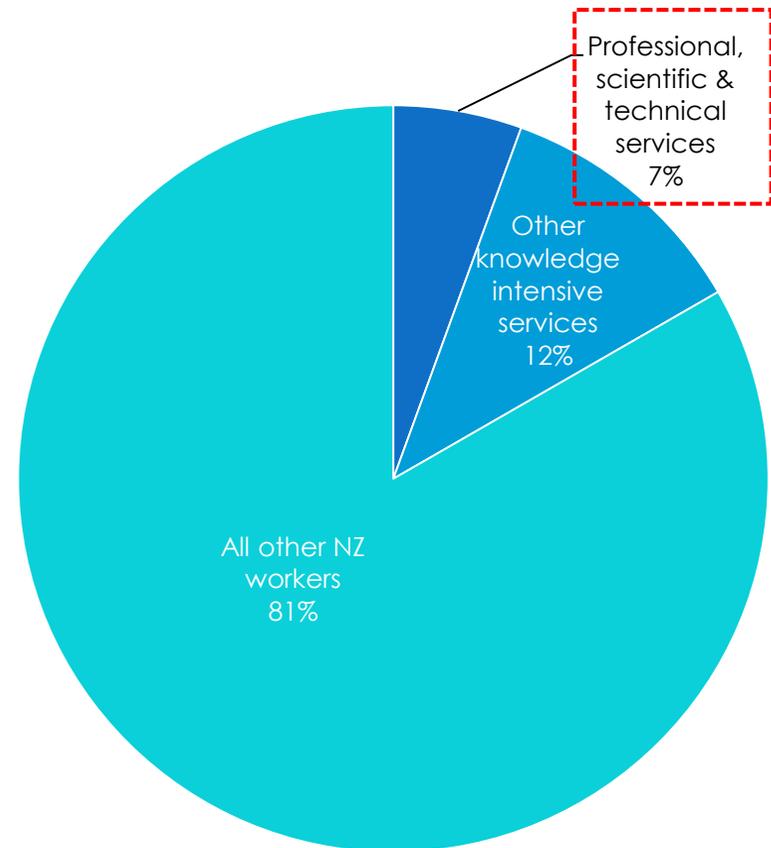
Share of firms and employment

Professional, scientific & technical services account for 9% of all firms and employ 7% of the workforce (including self-employed)

Share of firms
% firms, 2013



Share of employment
% workers, 2012

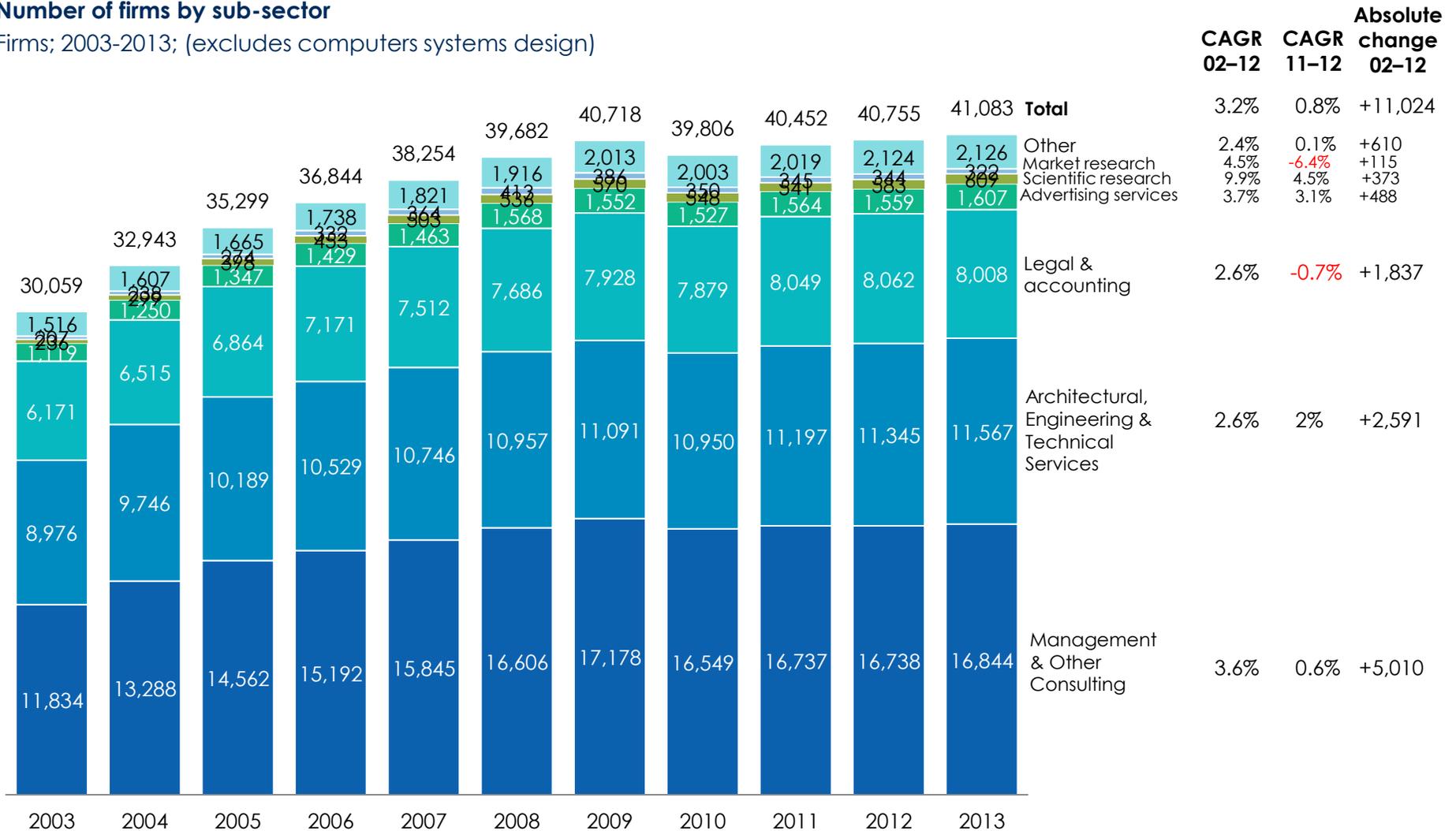


Number of firms by sub-sector

Growth in the number of firms has been relatively flat since 2009

Number of firms by sub-sector

Firms; 2003-2013; (excludes computers systems design)



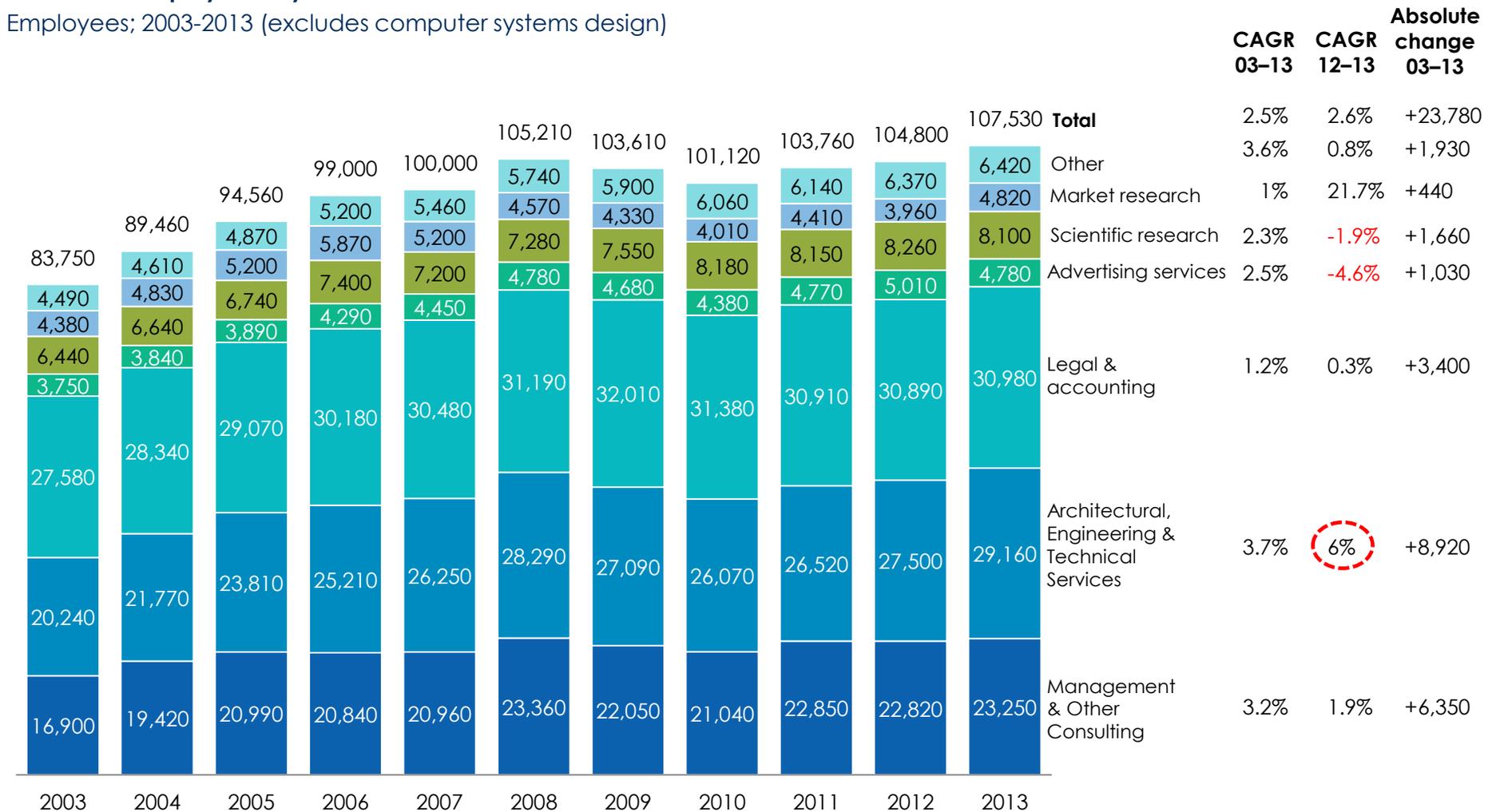
Source: Statistics New Zealand, Business Demography Statistics

Number of employees by sub-sector

Employment growth is recovering driven by architectural, engineering and technical services firms

Number of employees* by sub-sector

Employees; 2003-2013 (excludes computer systems design)



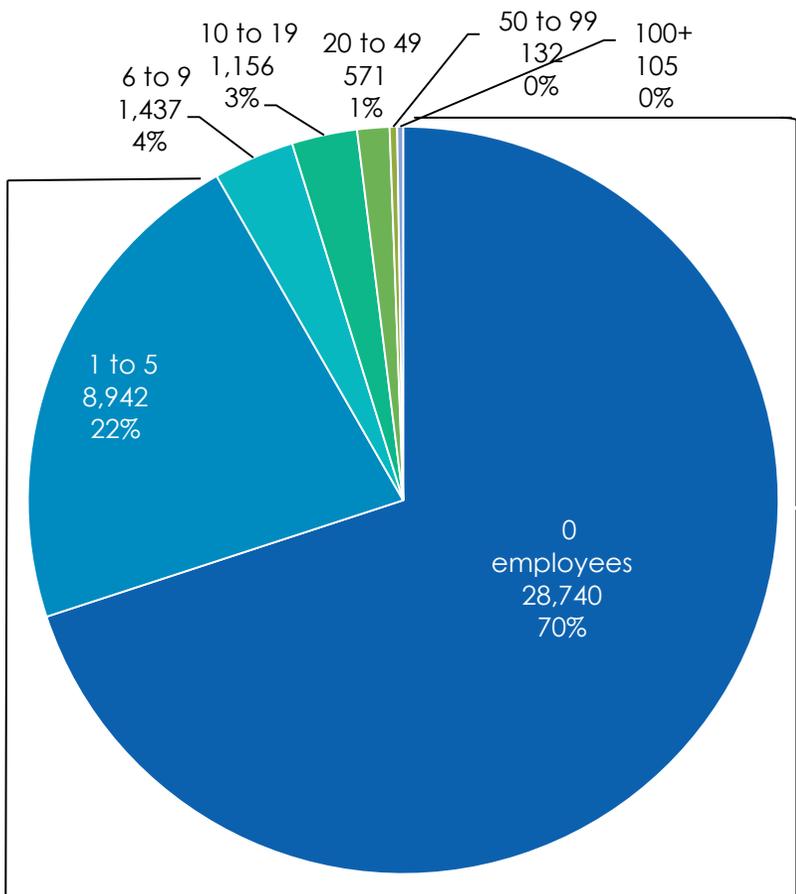
Source: Statistics New Zealand, Business Demography Statistics; *Excludes self-employed

Firms and employees by employment size

92% of professional, scientific & technical services firms have five or less employees; but total employment is spread relatively evenly across firm sizes

Number of firms by employment size

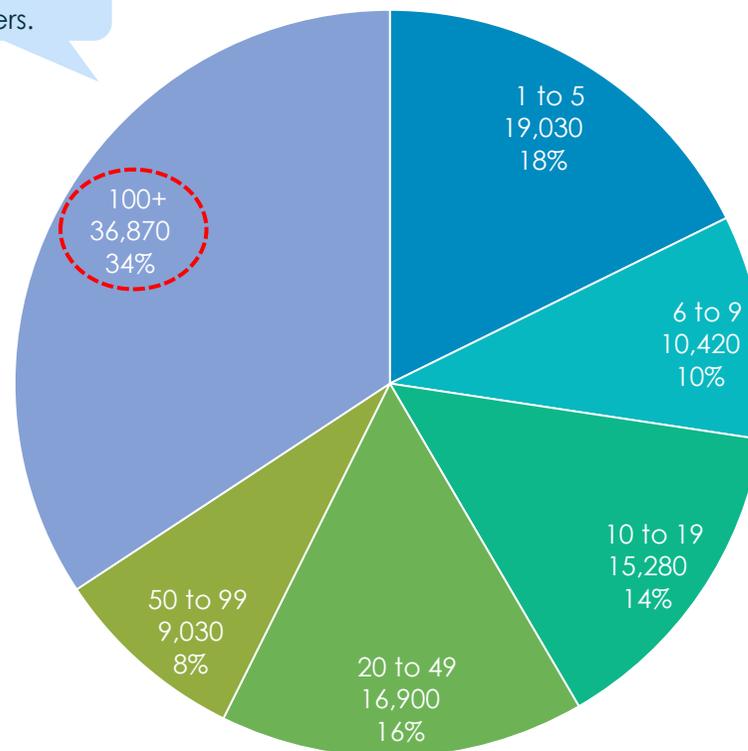
February 2013



Employees* by firm size

February 2013

105 firms employ 36,870 workers.

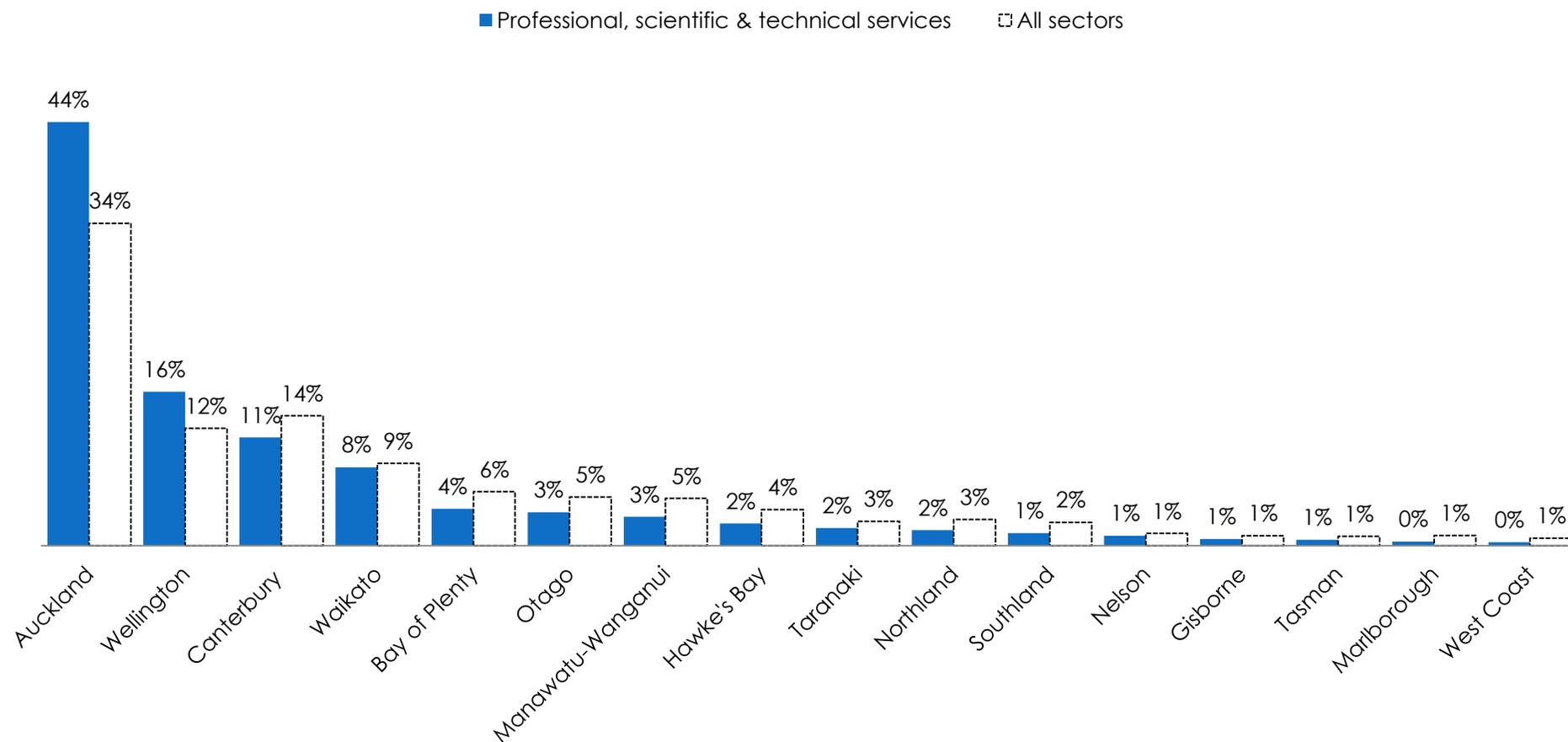


Location

Professional, scientific & technical services are disproportionately concentrated in Auckland, Wellington and (to a lesser extent) Hamilton

Share of professional, scientific & technical services employees* vs share of all employees*

2013



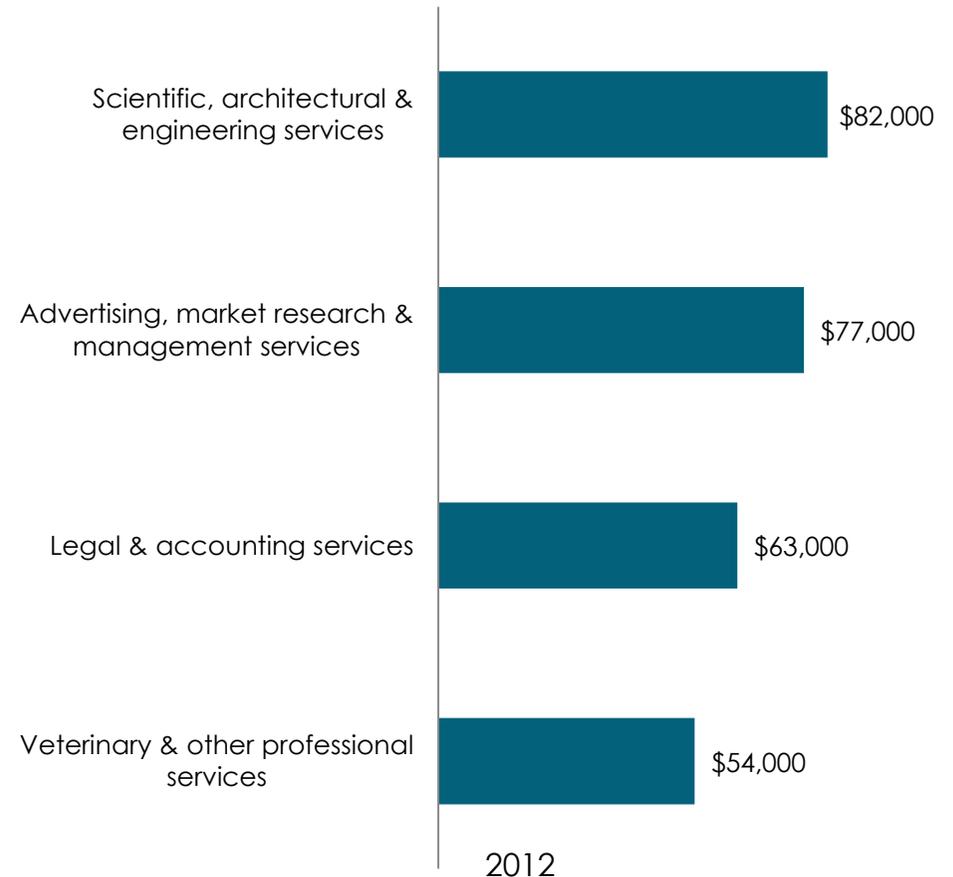
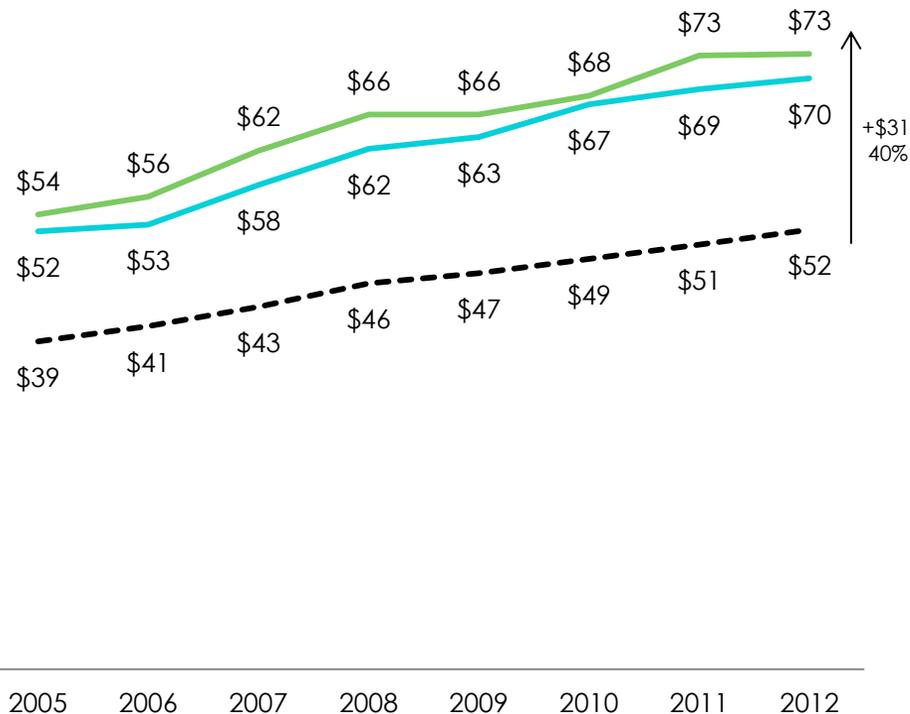
Salaries and wages paid

Workers in professional, scientific & technical services firms are paid \$31,000 (40%) more than the New Zealand average, reflecting higher qualification levels

Average wages paid

NZ\$000; nominal; 2005–2012

- Professional, scientific & technical services
- High technology manufacturing
- - - NZ average



Note: average wage is calculated by total salaries & wages paid, divided by number. of employees

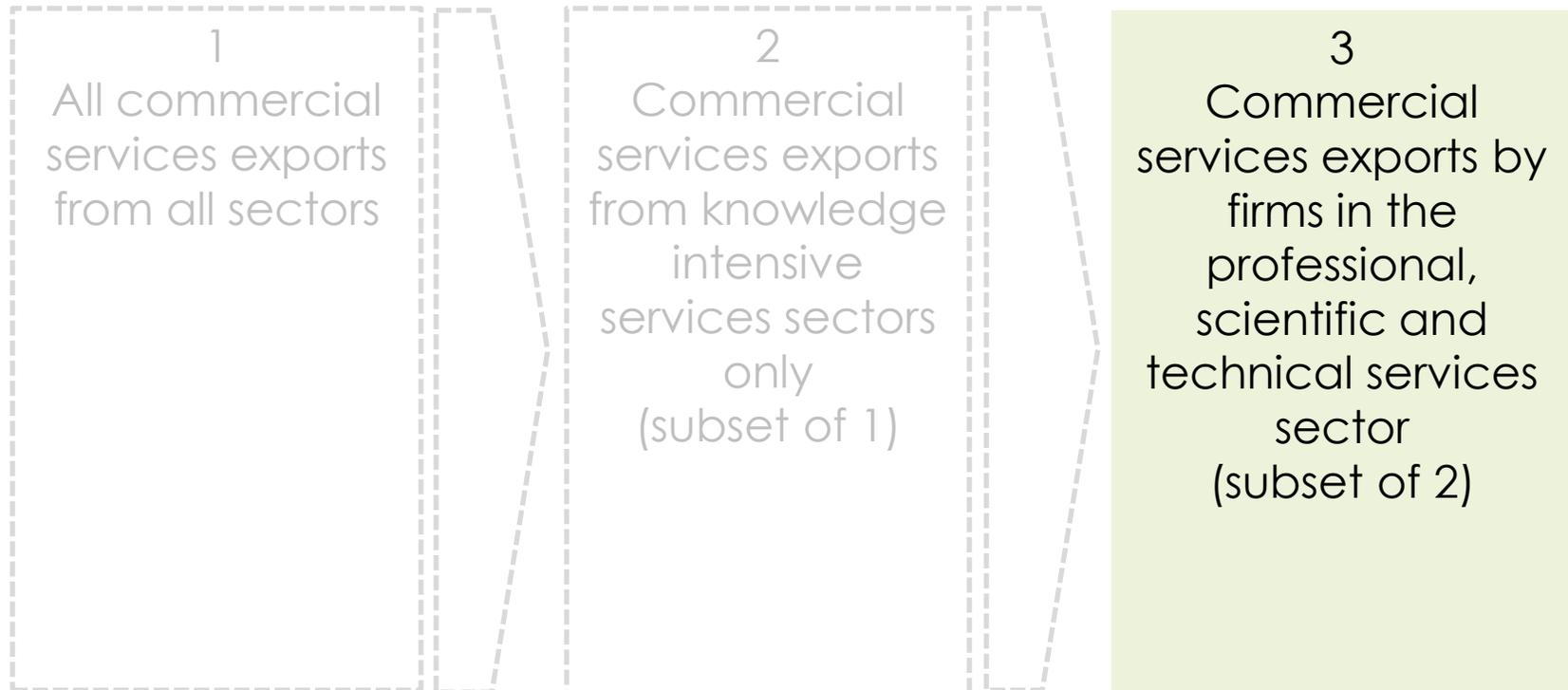
Source: Statistics New Zealand, Annual Enterprise Survey



PROFESSIONAL, SCIENTIFIC & TECHNICAL SERVICES

Exports

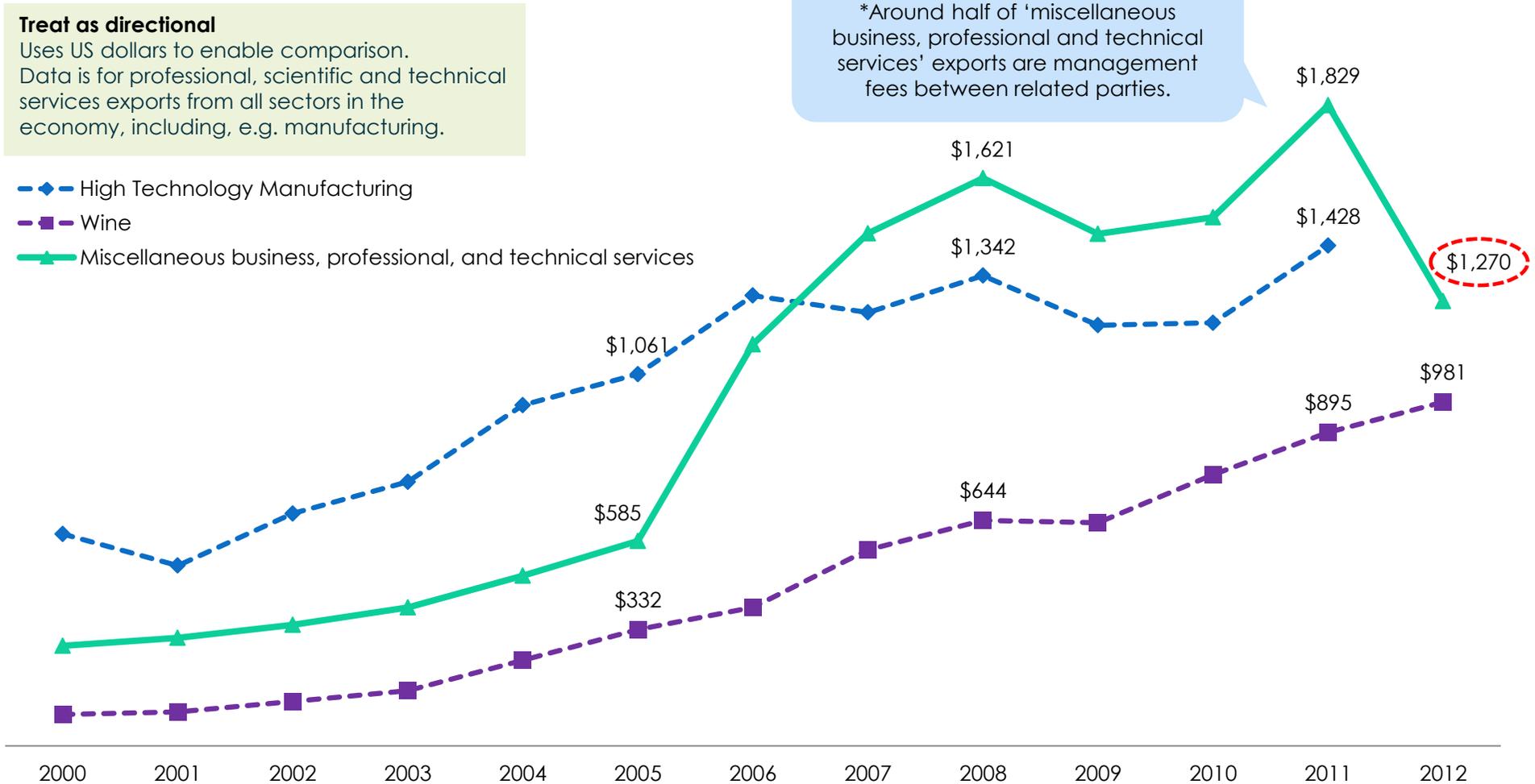
Commercial services exports by professional, scientific and technical services firms



Long-term rise in export value

Exports of professional, scientific & technical services have developed from small beginnings to become a significant export earner

NZ exports of high technology manufactured goods; wine and miscellaneous business, professional, scientific and technical services*
 US\$m; nominal; 2000–2012



* Around half of and miscellaneous business, professional technical services exports were management fees between related parties

Exports of professional, scientific & technical services from all sectors

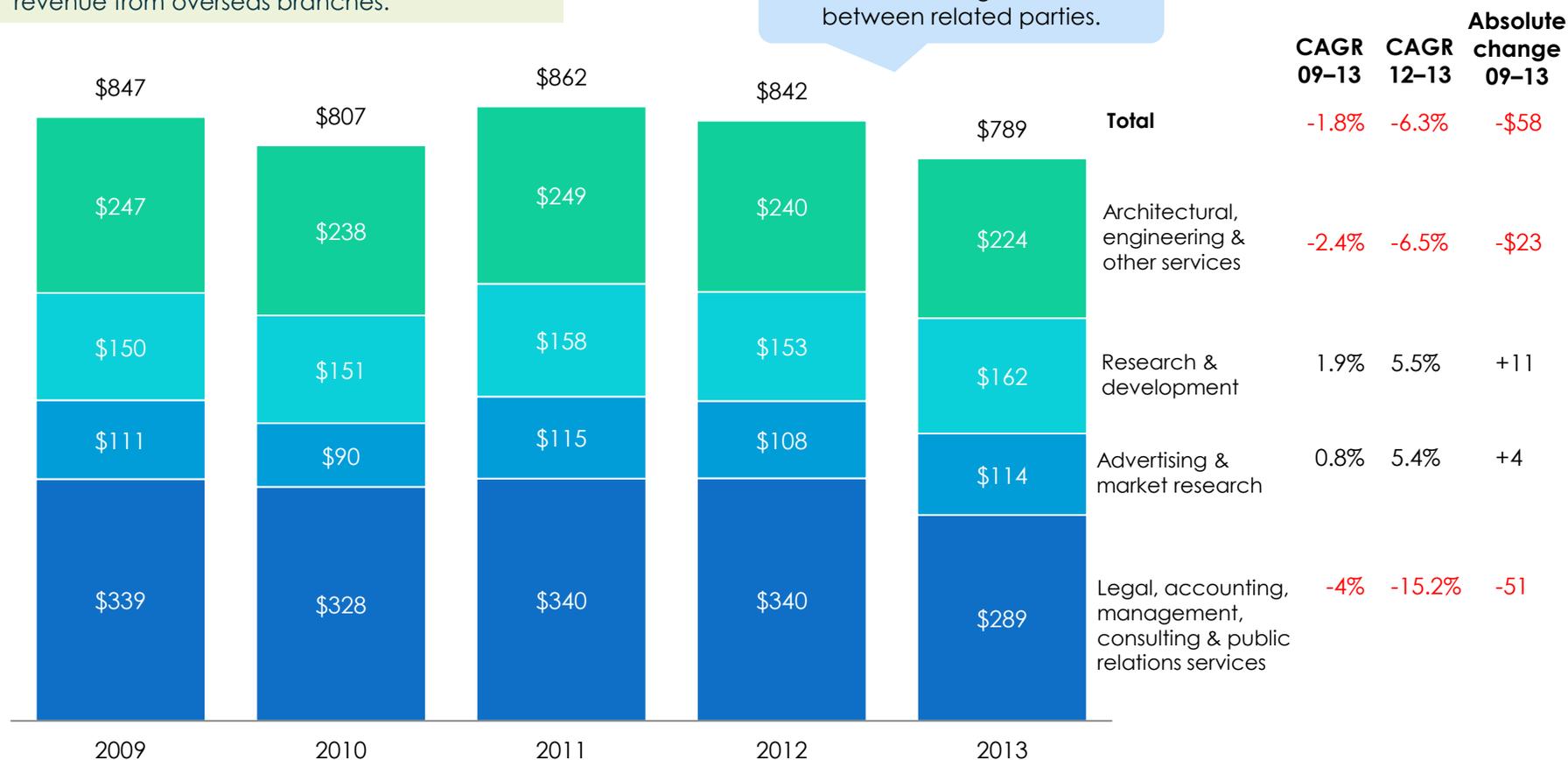
Overall exports have fallen back below 2009 levels despite increases in exports of R&D and advertising and market research services

Exports of services characteristic of professional, scientific & technical services firms (includes exports by other sectors)

NZ\$m; nominal; year ended June 2013

Note: the exports data does not include revenue from overseas branches.

Excludes management fees between related parties.



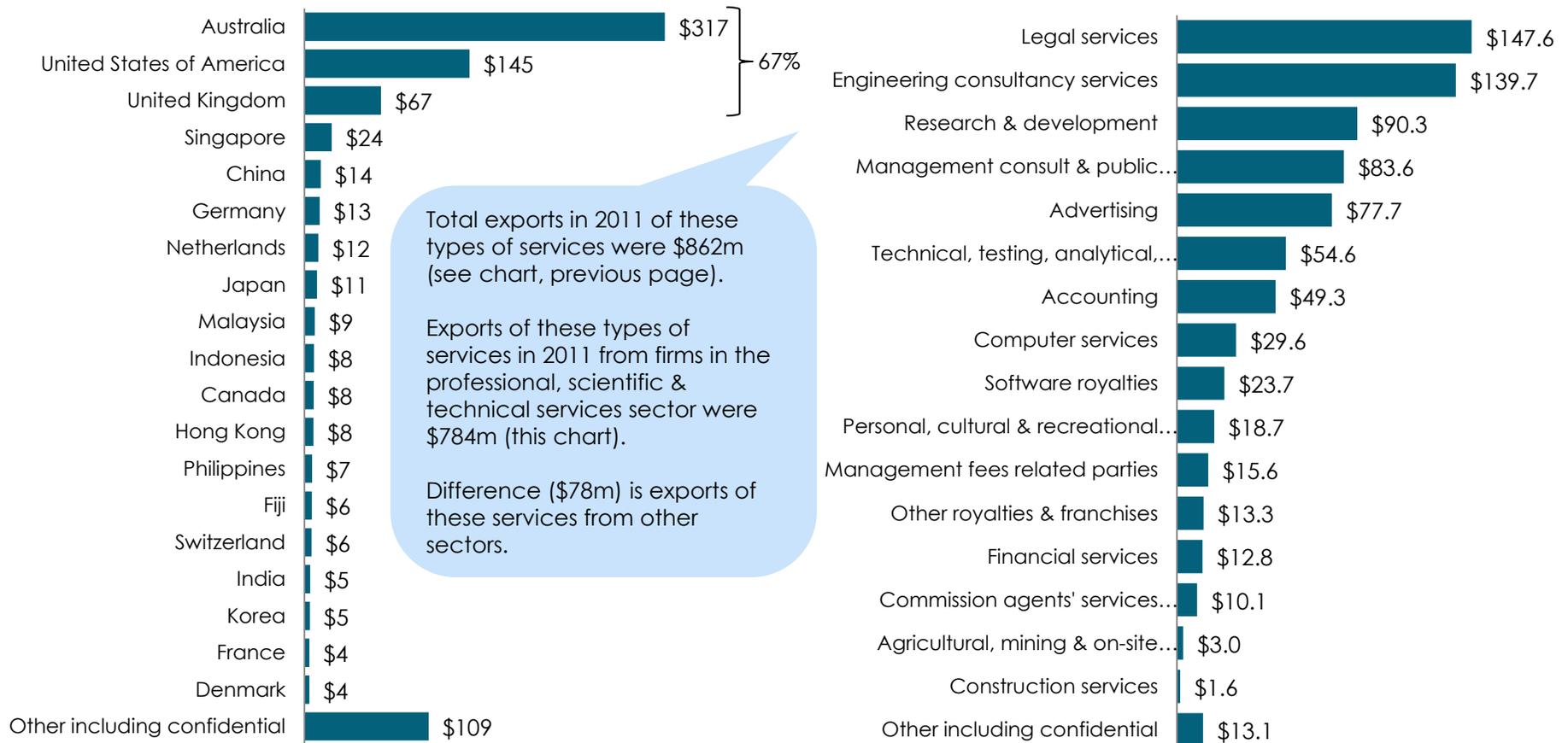
Key markets and type of service exported

In 2011 Australia, the USA and UK accounted for 67% of the exports by professional, scientific & technical services firms; a wide range of services were exported

NZ exports of commercial services by professional, scientific & technical services firms

NZ\$m; nominal; year ended June 2011 (latest available data by sector)

Services characteristic of the professional, scientific & technical services sector.

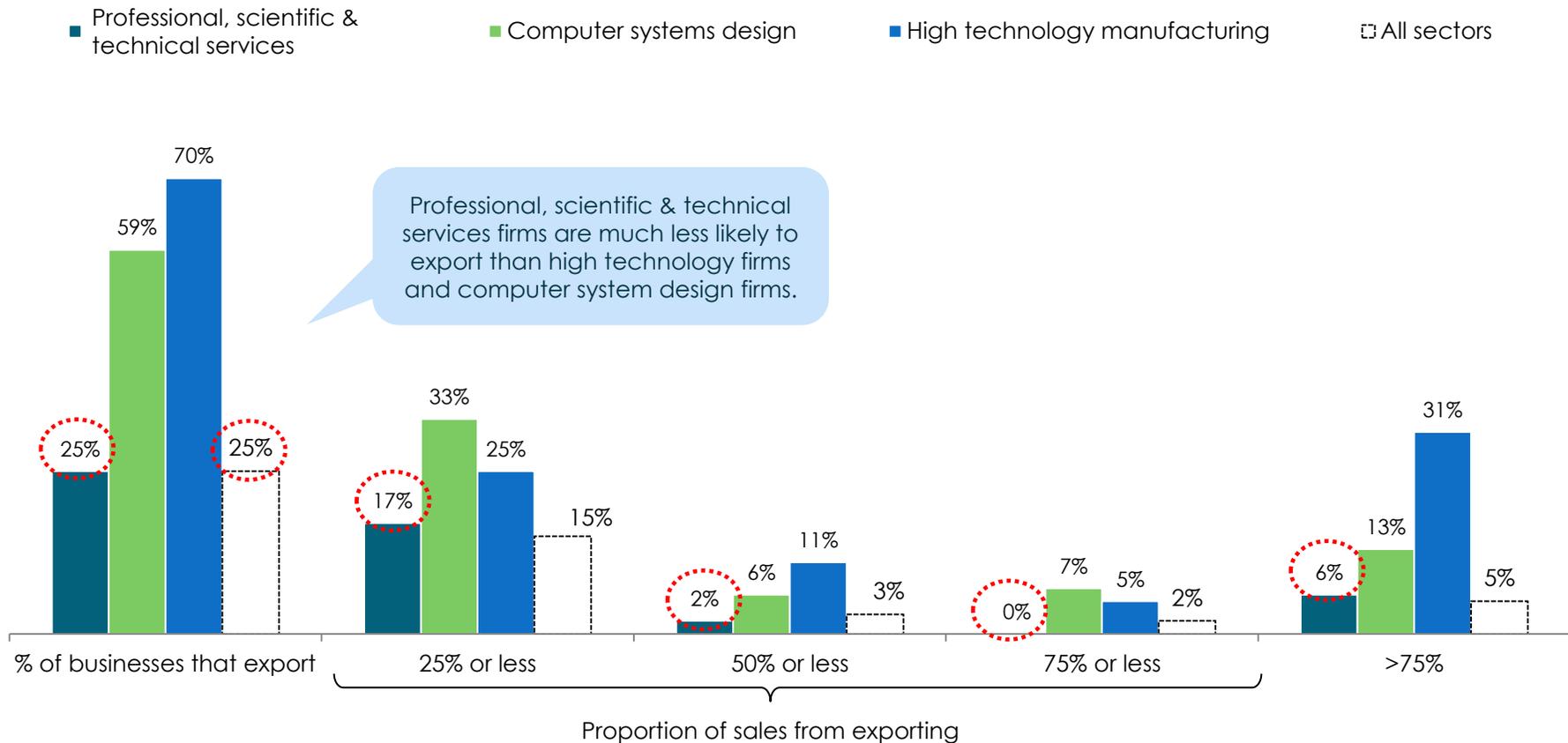


Export intensity

Twenty five per cent of professional, scientific & technical services firms export, the same as the proportion for all sectors

Number of firms reporting export sales

% of firms; 2012



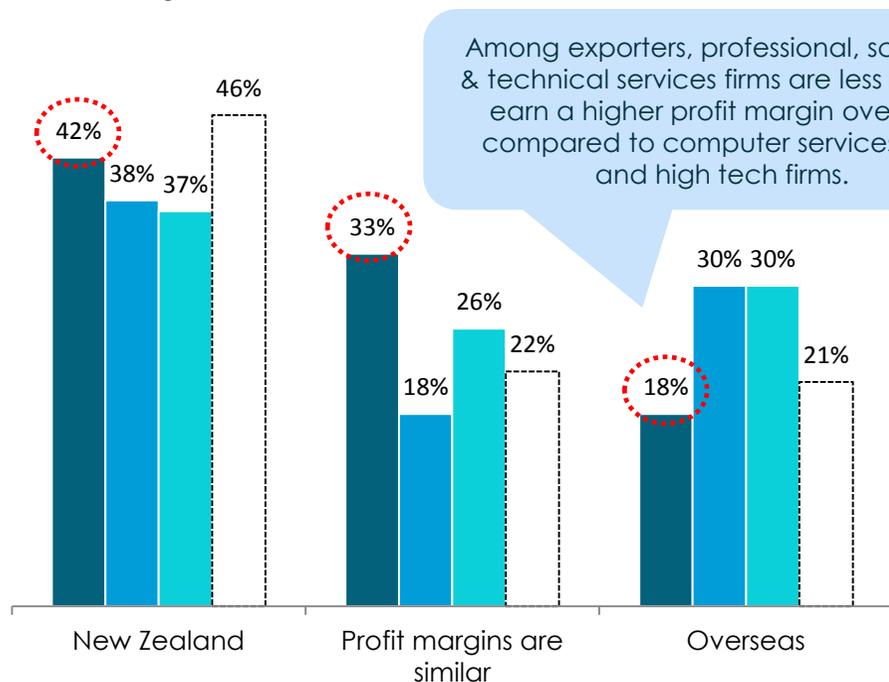
Location of higher profit margins

New Zealand exporters, including professional, scientific & technical services firms, tend to earn higher profits in New Zealand than overseas

Location of higher profit margins

% of exporting firms reporting each source; 2011

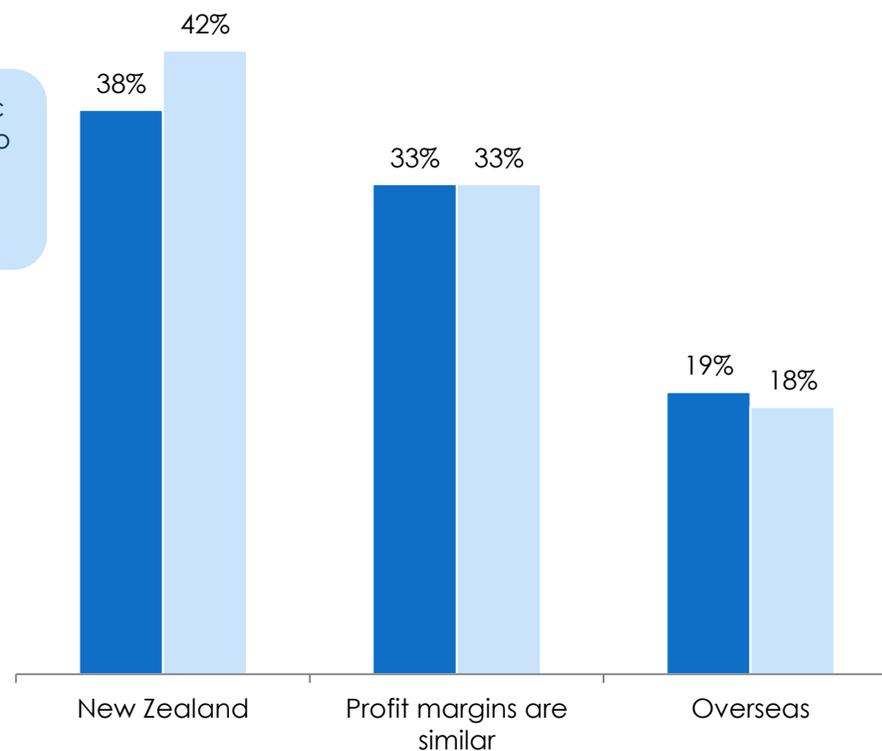
- Professional, scientific & technical services
- Computer systems design
- High technology manufacturing
- NZ average



Professional, scientific & technical services, 2011 vs 2007

% of exporters; 2007 & 2011

- 2007
- 2011



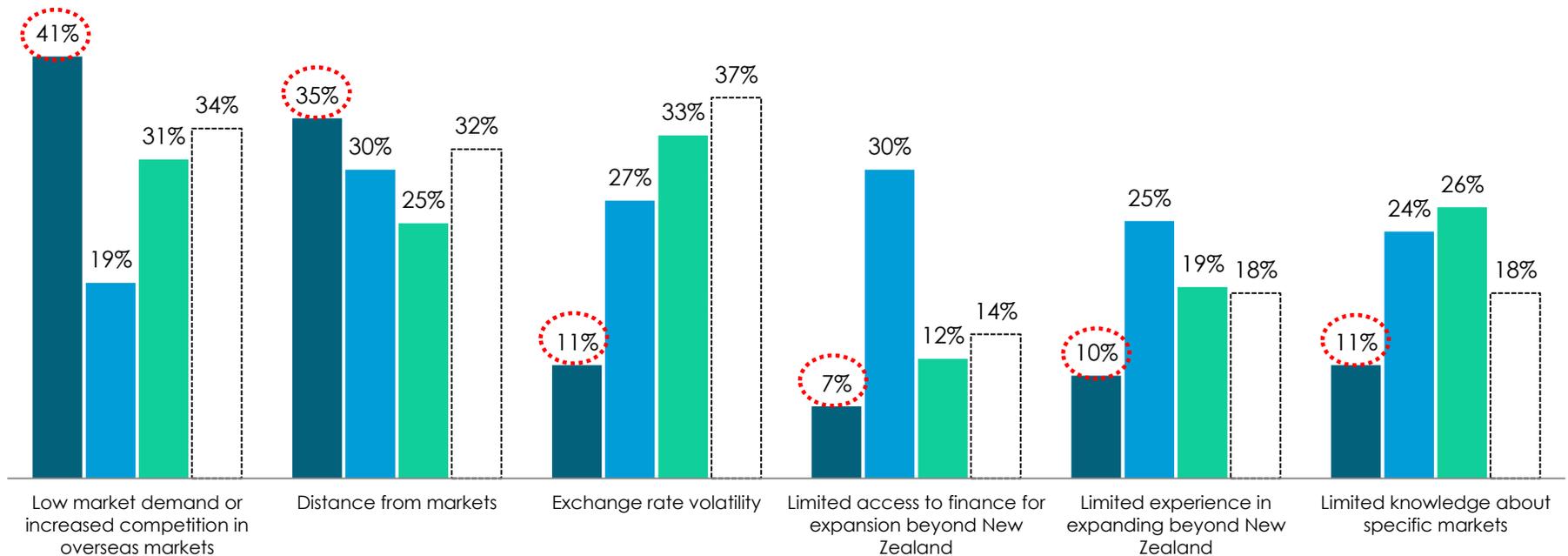
Leading barriers for existing exporters

Low market demand/increased competition and distance are the major barriers for professional, scientific and technical services exporters

Number of exporting firms reporting the following factors as barriers to exporting

% of firms; 2011

- Professional, scientific & technical services
- Computer systems design
- High technology manufacturing
- NZ average

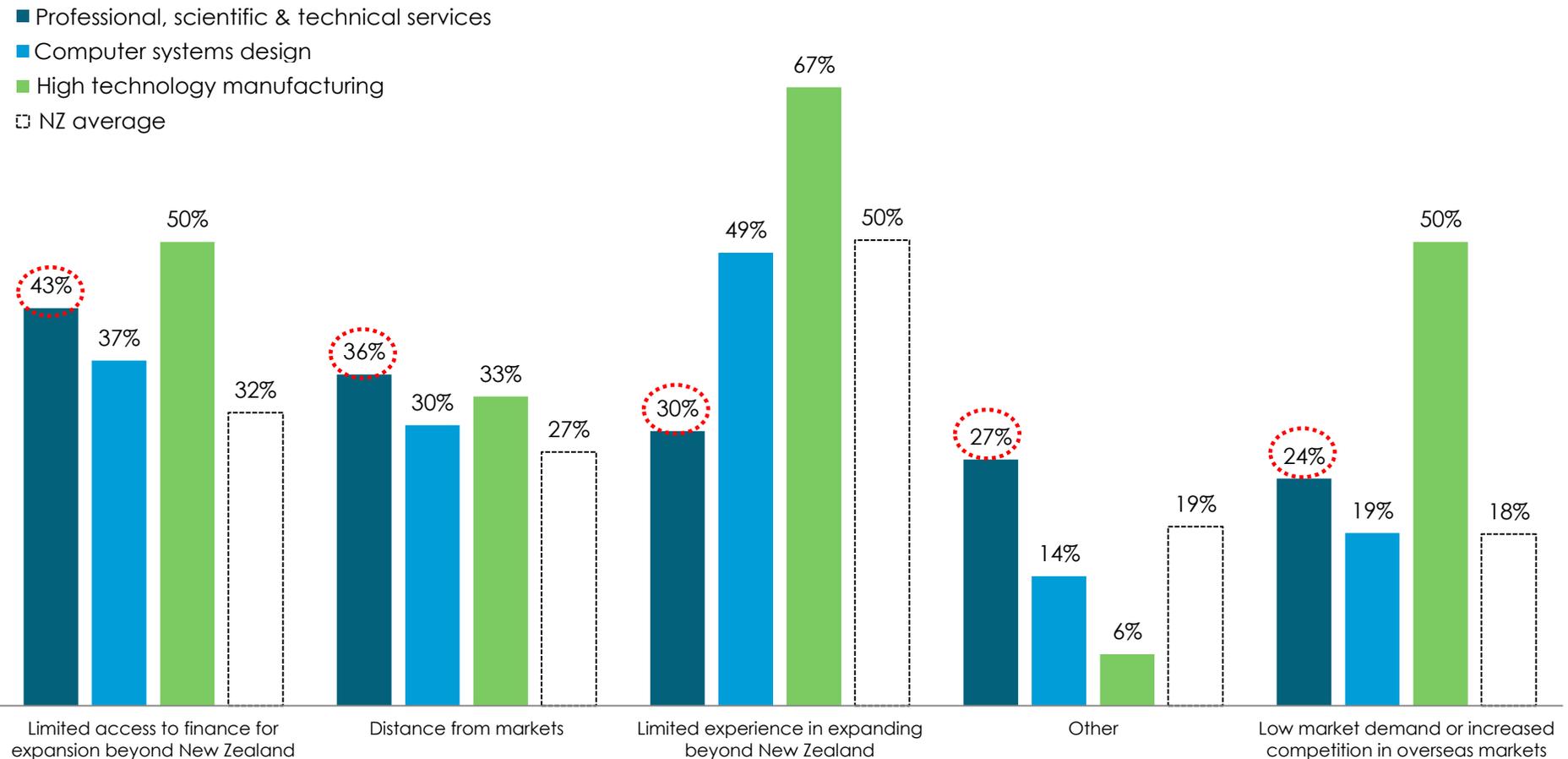


Leading barriers for potential exporters:

Limited access to finance for expansion beyond New Zealand and distance are the barriers most cited by potential professional, scientific & technical services exporters

Number of potential exporters reporting the following factors as barriers to exporting

% of firms; 2011



Globalisation and outsourcing

Industry commented on the increasing use of outsourcing for some processes

- *Discovery is one of those processes where, as law firms typically still charge on a time and attendance basis, and discovery can be very, very time intensive, the value that the process brings can be out of whack with the cost. Our large clients, with major pieces of litigation, have understood this and now most large scale discovery is outsourced to India...Instead of discovery costing a million dollars it costs say \$250,000 and it's a cost benefit trade-off for the clients. If a client wants to spend a million dollars on us and get the 'Rolls Royce' they can, but many want to spend \$250,000 (offshore) and get 'good enough'.*
 - *Senior partner, legal firm, large*
- *So what happens with globalisation is that things which we could do here once, because you had to be close to the client, don't need to be done here as much anymore. What's becoming important in the world is that the right work is done by the right person at the right price. So in the oil and gas industry a lot of the bulk work happens in lower cost locations and that becomes appropriate because those lower cost locations get a chance to build their skill level. And what this means is it becomes a network of work moving around.*
 - *Senior executive, engineering firm, large*

Globalisation and the role of New Zealand

Industry commented on the increasing complexity of work performed in New Zealand versus work performed in lower cost countries

- *I can see examples where New Zealand science teams are outsourcing bits and pieces to emerging economies, partly because its cheap, but also because we are increasingly seeing our role as synthesisers of complicated pieces of knowledge. I think that is happening around the western world.*
 - *Scientist, education and research institution*
- *New Zealand has to do certain kinds of work, over time that will become more about the knowledge, the creativity and the upfront work. Over time more of the bulk work will move to other locations.*
 - *Senior executive, engineering firm, large*
- *We are more and more playing a strategic role with our partners, rather than just simply designing buildings, which is our core business. We are becoming more key advisers to them...It often means doing research for them rather than simply designing buildings and it moves into the territory of master planning (setting of the framework for multiple actions at a later date). This is more than our firm of architects would traditionally have done...Knowing what your next footprint is going to look like is important to make sure that the footprint you are taking now is going to form part of a pattern, so that things are not haphazard and capital is not wasted.*
 - *Senior executive, architectural firm*
- *It would be fantastic to think that New Zealand was a centre of design excellence in 10 years time, where the Governments of Chile, Uruguay and Singapore would look to New Zealand as a country to partner with because of the respect for the way in which we do business, the speed at which we reach, the design abilities we have. That's entirely possible, it's almost inevitable actually. It's just a question of how long will it take and will it be a coordinated effort or will it be the efforts of determined individuals.*
 - *Senior executive, architectural firm*
- *New Zealanders have confidence in taking on quite challenging things. We are doing things now that five years ago we would have thought were the space of international grown up people, not us. Now we've found that we are as good as they are.*
 - *Senior executive, engineering firm, large*

Globalisation and the internationalisation of firm activities

Industry commented on the growing trend of moving people and work to offices in different international locations

- *One of our biggest sources of revenue, if not our single biggest source is actually staff on secondment to overseas offices...If you look at our client ledger, our other offices collectively, are our single biggest source of revenue...and in fact we've got a flood of people heading off soon...There seems to be quite an upturn in the US at the moment. We just can't supply them with enough people. So the various offices around the US, often auditors and others that have excess work...they will ask that we send certain people of certain age or experience, typically both, up for as long as we can so one month, three months, six months. They remain employees of the New Zealand firm but we have inter-office secondment arrangements ...You will find that we are big direct exporters. We are exporters of people. We are exporters of time.*
 - *Senior executive, accounting firm, large*
- *Part of the reason we have a global spread of operations with businesses in New Zealand, Australia, UK and Canada is that different countries encounter varying economic cycles and as such we can de-risk any adverse or sudden downward shift in any particular geographies...We (New Zealand) were doing very well through the GFC, with strong volumes of infrastructure work coming to the market place. In the UK the economy was impacted significantly more than New Zealand and as such we had to reduce our operations down to 250, with 95% of those working four day weeks...When the Christchurch earthquakes occurred and the largest demand was for structural engineering...we sent one of our very senior structural (seismic) engineers to the UK with a suitcase of work, and he set up a team of twelve existing structural staff in Cardiff...So we have a dedicated Christchurch rebuild structural design office based in Cardiff...We have some fantastic examples where a client has desperately required a piece of work undertaken in incredibly short time frames. We have utilised the 12 hour time difference with the UK to expedite work teams in New Zealand passing the baton to the UK at the end of our day to provide a 24 hour non stop service.*
 - *Senior executive, engineering firm, large*
- *We have provided the UK with a reasonable stream of work over the past four years or so which has substantially assisted their utilisation and retention of staff. We have subsequently secured a major commission in the UK along with a series of large variations. A reasonable amount of this work is now being undertaken in New Zealand by our transportation team which has helped buffer the recent lack of work in the roading market. This sharing of work which has been dubbed the 'Global Project Initiative', has done much to balance workloads across the world as well as connecting our staff.*
 - *Senior executive, engineering firm, large*



PROFESSIONAL, SCIENTIFIC & TECHNICAL SERVICES

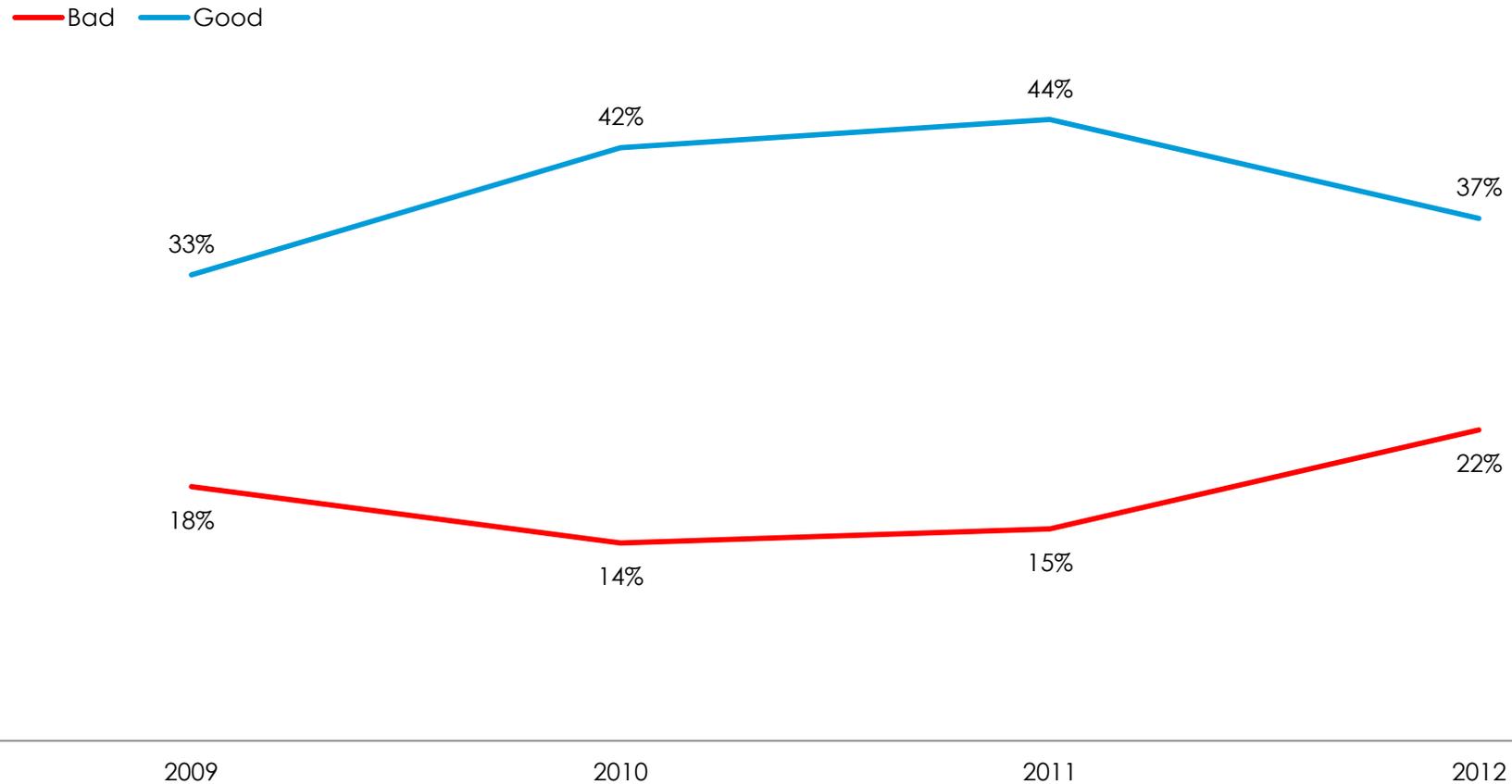
SKILLS

Workers' qualifications & quality

The perceived quality of available labour improved after the GFC, but declined in 2012

Perception of skilled labour in professional, scientific & technical services firms

% of firms reporting each perception; 2009–2012

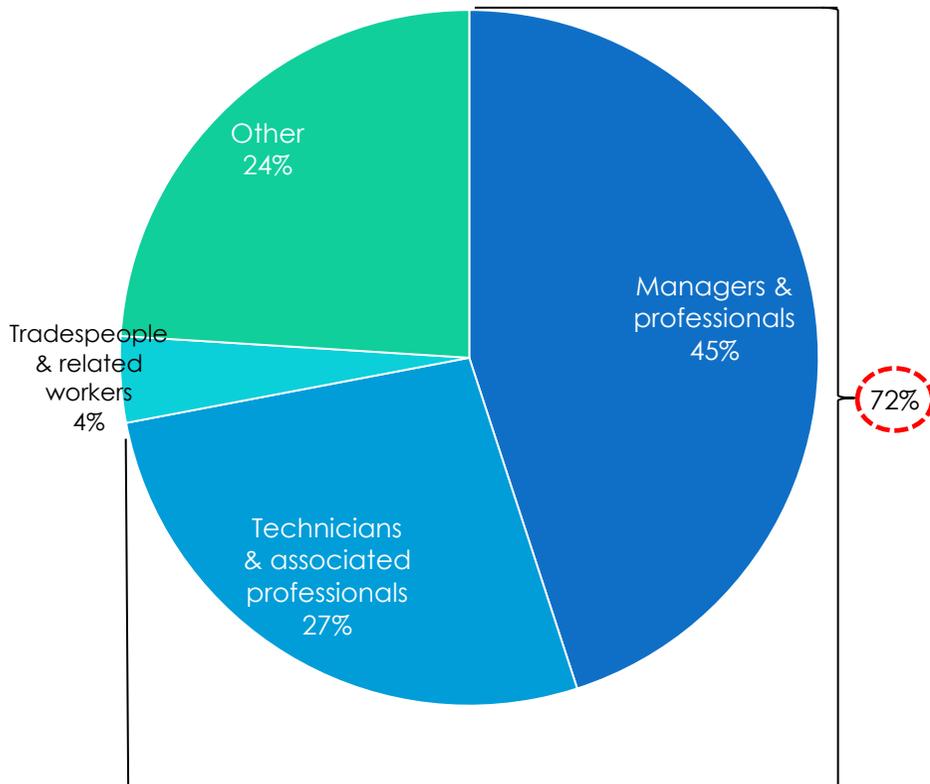


Recruitment

This sector has difficulty recruiting managers & professionals and technicians & associated professionals; these occupations account for 72% of the sector's employees

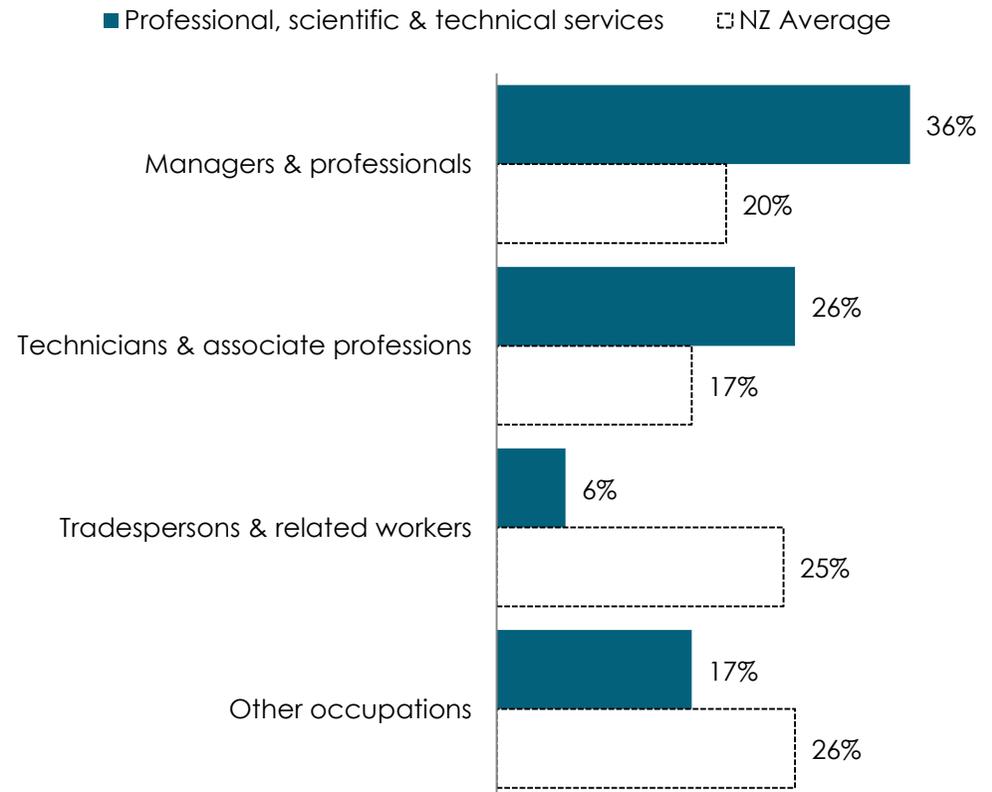
Workforce by occupation group

% of workforce: 2012 (firms with 6 or more employees)



Firms reporting severe or moderate difficulty hiring the following occupation groups

% of workforce: 2012 (firms with 6 or more employees)



Demand for people with wide range of skills

Industry commented on the increasing need for staff to hold skills beyond core capabilities

- *If you say 'how is business really done'- people do business with people that they like doing business with and people that they like. In our industry technical knowledge know-how and capability are taken as a given. So more often than not it's the softer side of things like reliability, enthusiasm, commitment, working relationships, friendships, networks, all of those sort of things, that are the distinguishing factor. As I said the technical is a given.*
 - *Senior executive, accounting firm, large*
- *The partners that have been sought more recently are from outside the firm, outside the accounting sector. People that have a wide network and have trusted standing in the business community. People who are known to understand business, are energetic and capable of accessing the required technical, knowledge or expertise and taking it to those companies. Distinct from a whole lot of accountants sitting in buildings waiting for someone to come and see them...They are hard people to find.*
 - *Senior executive, accounting firm, large*
- *The University of Auckland has been very good at providing science and engineering students with business skills. Something you hear a lot from the business community is that science graduates arrive in the workforce with good technical skills but they may be clueless about how to operate in a business environment. This may mean that our graduates are less prepared to enter a business environment in the first place, so their lack of skills can become a barrier to them. The tertiary sector today is trying to make students more comfortable to look in that direction and also making things easier for companies.*
 - *Scientist, education and research institution*

Graduates and junior staff

Industry commented on how the changing demands of the business environment is impacting on younger and less experienced employees

- *Something we are seeing at the moment is the large firms grappling with our clients emerging views on the number of junior and intermediate solicitors working on their matters...Some of our clients are saying 'Look we don't want young solicitors on our file, we want you (senior/partner) even though your hourly rates are more expensive. We came to (firm) because you are an expert, you know this. We want to see more of your time on the file. This is challenging for the traditional 'leverage model' that large law firms have employed in New Zealand and around the world over the last 20 years.*
 - *Senior partner, legal firm, large*
- *Students when they graduate from AUT or other design schools often say - "One day I want to work for (firm) but I know (firm) doesn't employ juniors, they like their designers to be experienced"....I think this is a nice reputation to have, you want to be known for excellence, but then you feel disappointed that you can't support your own industry. But what do you do? We get tough strategic briefs and we have to solve them quickly and efficiently, so you can't risk a junior working on them. That's mainly why I don't hire juniors, because we have very strategic briefs and our clients are expecting the best from us.*
 - *Senior executive, design business, medium*
- *More of the producing of drawing will progressively happen in different locations...Now it doesn't mean we will see job losses in New Zealand...but if you want your salary to keep going up you can't keep doing the same thing. If you are 100% on a CAD terminal, in 5 years time maybe you will be 70% on a CAD terminal and 30% managing someone in Jakarta to do that...You've got to make people aware that (skills) are not a static thing. If you learn one skill at the start of your life that's not going to see you all the way through if you want to keep growing your income.*
 - *Senior executive, engineering firm, large*
- *In New Zealand we employ 90 graduates a year and we employ 20-30 cadets in our drafting area. If we build drafting skills more quickly in other locations...it means that we want the people who join us as cadets now to become technicians, designers, and managers of other people earlier than they would have otherwise done.*
 - *Senior executive, engineering firm, large*

Graduates and junior staff *continued*

Industry commented on how the changing demands of the business environment is impacting on younger and less experienced employees

- *One of the things that is happening is that scientists are spending longer and longer periods of time in training. There are now some firms out there that want people who have completed post doctoral fellowships, when traditionally these have been the first step on the ladder to academia rather than the business world. Today it takes longer to get to the frontier of knowledge.*
 - *Scientist, education and research institution*
- *When you are solving complex problems, you need teams that are not discipline specific. You can no longer just hand that problem to a theoretical physicist or a carbohydrate chemist. You need teams with a range of skills and expertise. Today we have to teach students how to work in a multi-disciplinary environment and to do team-based science.*
 - *Scientist, education and research institution*



**PROFESSIONAL, SCIENTIFIC &
TECHNICAL SERVICES**

INNOVATION

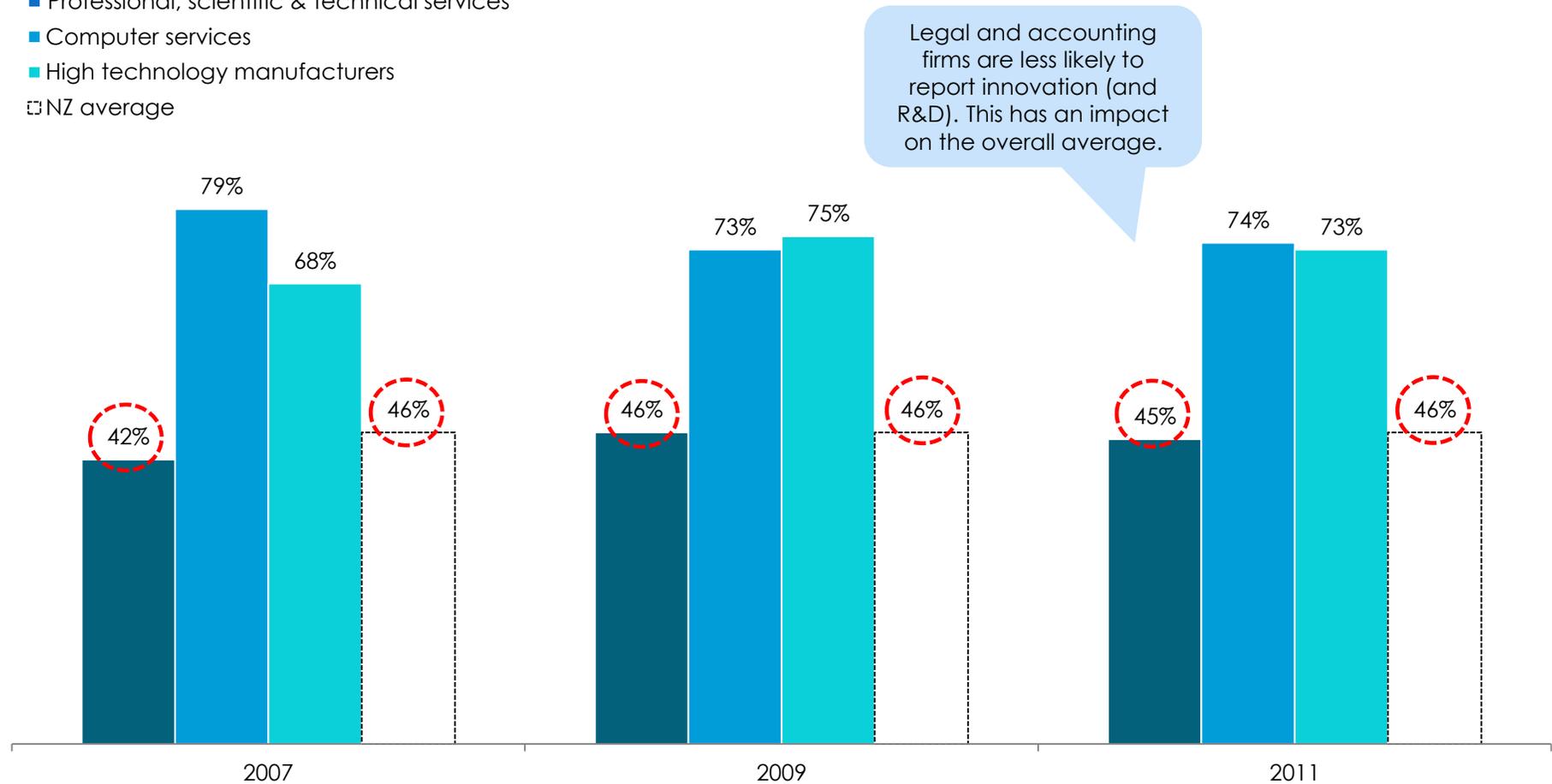
Innovation rate

The innovation rate for professional, scientific & technical services firms is around the average for all New Zealand firms

Firms reporting innovation

% of firms; 2007, 2009 & 2011

- Professional, scientific & technical services
- Computer services
- High technology manufacturers
- NZ average



Investment in expansion and R&D

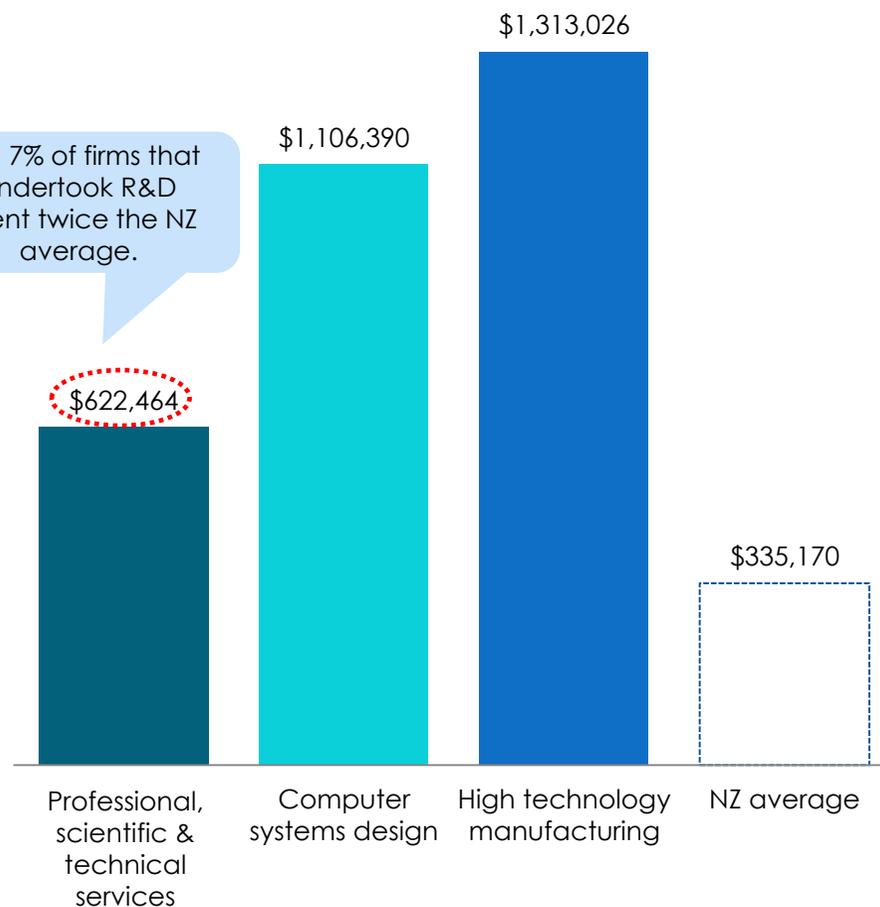
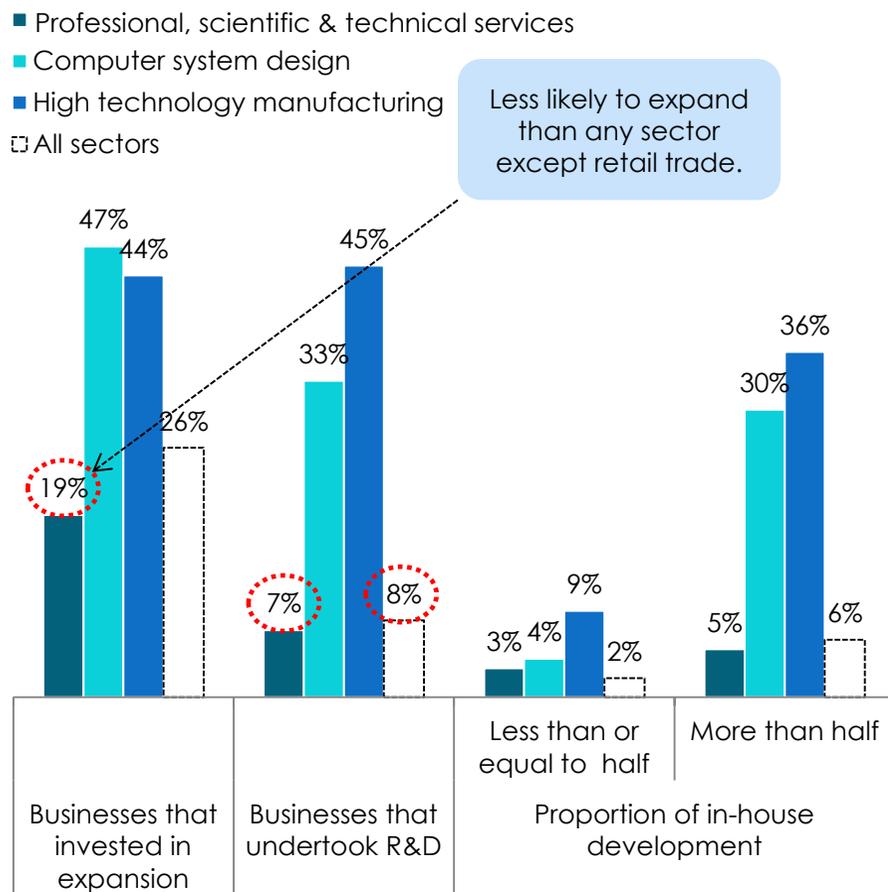
Nineteen per cent of professional, scientific & technical services firms invested in expansion in 2012, and 7% undertook R&D; both metrics below the New Zealand average

Investment in expansion and R&D

% of firms; 2012

R&D expenditure per firm that undertook R&D

NZ\$; 2012



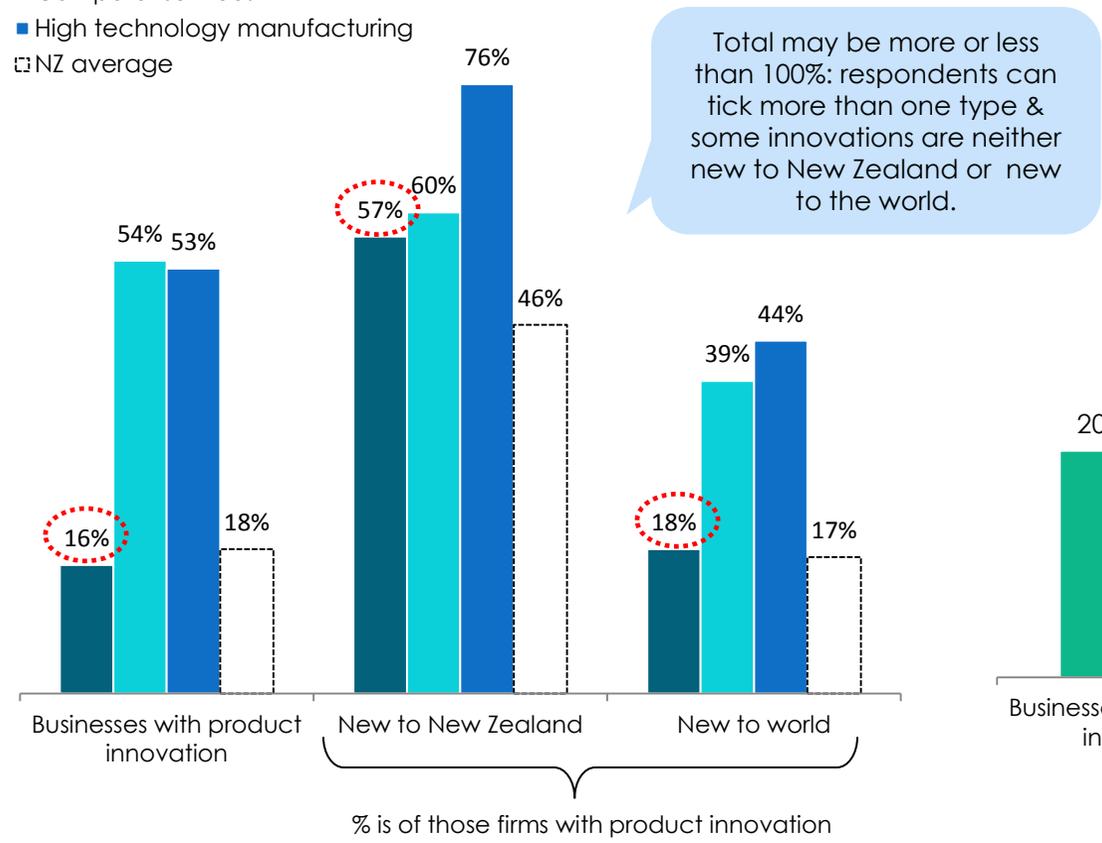
New-to-market product innovations

16% of professional, scientific & technical services firms reported product innovation; 57% of those with product innovations reported innovations new to New Zealand

Firms reporting new-to-market product innovations

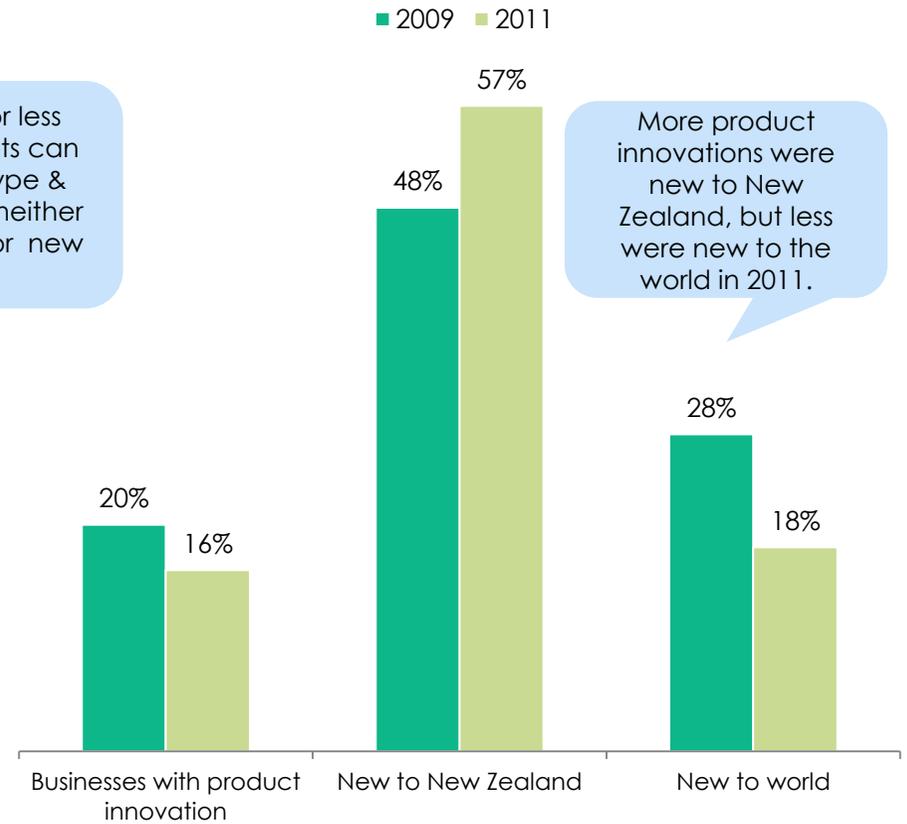
% of firms; 2011

- Professional, scientific & technical services
- Computer services
- High technology manufacturing
- NZ average



Firms reporting new-to-market product innovations, 2011 vs 2007

% of firms



Impacts of new technology

Industry gave examples of how digital technology is changing the way they work

- *New technology is changing the way that we work. We design our work places today to make it much easier for us to be connected...shifting much more to shared work spaces, wireless computing and portable devices. I work for a multi-site organisation, so the capacity to take your mobile devices and work anywhere in the country or overseas, and be connected as if you were just sitting at your desk, is a really big thing. The productivity lift that comes from that can be massive.*
 - *Scientist, education and research institution*
- *There's been very significant change to the provision of legal services driven by ICT over the last 20 years...for example our conflict checking process. When an instruction comes in we've got an electronic conflict check that each person does, it goes straight out to the whole firm by email and we can check whether or not that particular instruction raises conflict. If it does then it goes to the Conflicts and Ethics Committee and we work through this. Technology enables instantaneous communication with all authors...The quality and robustness of that process has dramatically changed.*
 - *Senior partner, legal firm, large*
- *We're about to get video conferencing on everybody's computer...so we can talk face-to-face with staff, partners and clients from all round the world...We have a fantastic depth of specialists in our business. We just need to ensure that our people know exactly what everybody else is a specialist in and then you just have to connect them up...it's about connecting people.*
 - *Senior executive, engineering firm, large*

Impacts of new technology continued

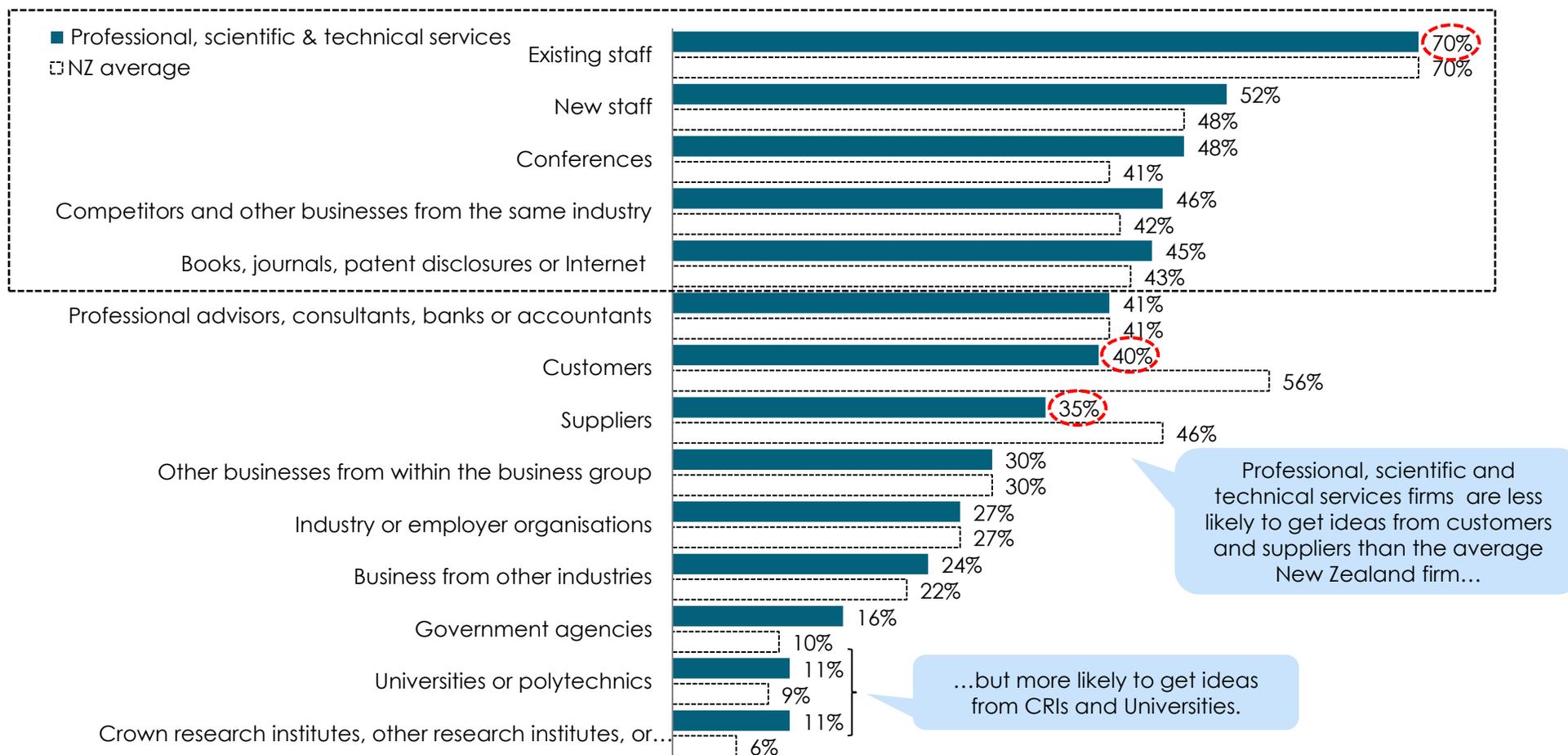
- *Accessing the knowledge that's available within (our) network previously would have been printed publications, which we probably wouldn't have even known existed. Nowadays all of this is kept on a global database by sector, by country, which we can go to, look at and access instantly. Firstly we can find it, secondly we can find it quickly and now we've got an efficient way of storing it, archiving it and indexing it.*
 - *Senior executive, accounting firm, large*
- *Most of our people now are almost self sufficient. They write their own reports, they do their own spread sheeting work, they are mobile so they can work anywhere in the world. They can work from home if they need to, they can work from the client's if they need to. Just the mobility and flexibility are significant.*
 - *Senior executive, accounting firm, large*
- *With engineering design you produce substantial amounts of data, including drawings. For some projects you probably have upward of 5,000 drawings. These are quite a complex document and size wise take up many megabytes. With improved developments in IT these can easily be despatched anywhere in the world. Our IT wasn't fantastic, and we certainly have some ground to make up, yet we've invested heavily in the last couple of years.*
 - *Senior executive, engineering firm, large*

Source of ideas for innovation

Professional, scientific & technical services firms (like firms in most other sectors) are most likely to get ideas for innovation from existing and new staff

Sources of ideas or information for innovation

% of firms reporting each source; 2011



Innovation and R&D: engineers

Engineers commented on the range of R&D and innovation undertaken in collaboration with clients

- *We have a string of materials testing laboratories across the country where we test all manner of construction materials to better understand strengths and strains. We also operate a large research centre which incorporates testing apparatus to stimulate earthquake loadings, the largest wind tunnel in the southern hemisphere and some fairly sophisticated monitoring equipment.*
 - *Senior executive, engineering firm, large*
- *An increasing part of the research we are doing is in human sciences, so studying behavioural sciences. We've got 48 staff...many of which are research based PhDs...In Christchurch we are co-funding a study with CERA to look at the behaviour of people post earthquake in terms of attitudes to relocating, what drives them away from Christchurch, and what can be done to draw them back into the city...It's a natural extension of infrastructure in that at the end of the day it is infrastructure design that is all about providing for the public in the first instance.*
 - *Senior executive, engineering firm, large*
- *Designing infrastructure is in itself inherently innovative...You might have common themes but mostly all clients have individual requirements and as such, the solution is unique. Most engineers and scientists enjoy the art of solving problems by deriving solutions and possibly do not acknowledge the fact that they are innovative. We're such a modest bunch.*
 - *Senior executive, engineering firm, large*

Innovation and R&D: scientists

Scientists provided insights into the potential of new technologies (including digital technologies) to drive growth, productivity and sustainability

- *(Looking ahead to the next 5-10 years) Much greater use of genomics into the biological industries is going to be really important. Robotics and remote sensing are also going to be important for the biological sector. Behind the farm gate, as well in terms of processing fruit and fish, we need to make greater use of these technologies to ensure really high product quality, food safety and so on. There's a capacity to extract a lot of value out of the biological economy by more use of high technology.*
 - *Scientist, education and research institution*
- *New technology into the seafood sector...precision seafood harvesting is a completely different way of catching fish. It's much more environmentally friendly and brings up a much better quality product.*
 - *Scientist, education and research institution*



PART THREE

PROFESSIONAL, SCIENTIFIC & TECHNICAL SERVICES SUB-SECTORS

- 1. Scientific, architectural & engineering
services**
1.9% of GDP

Architectural and engineering services

Firms in this sub-sector provide the expertise required to construct physical infrastructure, complex systems (e.g. electricity grids) and the built environment, as these examples show

Description

Architectural services includes planning and designing buildings and structures; or planning and designing the development of land. Engineering services involved in applying physical laws and principles of engineering in the design, development and utilisation of machines, materials, instruments, structures, processes and systems. Also includes surveying and mapping services, and scientific testing and analysis services such as physical or chemical testing, calibration testing, mechanical testing and thermal testing (but not medical testing).

Example firms	Services	Industry focus / clients
Opus International 3,000 staff (1,700 in NZ) \$460m turnover	Opus is a leading infrastructure consultancy offering end-to-end asset management and development services, including highway asset development and maintenance, architecture, structural design, infrastructure development, and asset management, water management and environmental planning. Operations in Australia, Canada, USA, UK.	Opus provides 39 specialist services across eight major sectors: buildings, transport, water, environmental, energy, resources, research and telecommunications.
Beca 3,000 staff (2,000 in NZ) \$450m turnover	Wide range of engineering, project management, planning, surveying, valuation, economics and computer services. Operations in Australia and Asia.	<i>Beca offers engineering consultancy, project and cost management, software technologies and valuation services to many types of businesses, including buildings(e.g. airports, hotels), government (schools, correctional facilities), industrial projects (factories, oil and gas), power (generation, transmission and distribution), transport (rail, roads, ports, land development) and water and waste management.</i> -www.beca.co.nz
Warren and Mahoney 164 staff \$27m turnover	Multidisciplinary architectural practice covering the disciplines of architecture, workplace, master planning, urban design and sustainable design.	Wide range of commercial, government, education and residential clients.
Transfield Worley 250 staff (est) \$23m (est)	Design consultant engineers, project management, procurement, construction management, maintenance management.	Specialists in petrochemical industry, forestry, dairy, food, wine, power distribution.
BQH Limited	Working from a cost management and quantity surveying background, BQH provide a broad range of commercial and management services to the built environment.	Wide range of infrastructure, commercial buildings and public facilities. 'We work with a diverse range of organisations, including property owners, developers, financiers, tenants, architects, engineers, central and local government, contractors, lawyers and accountants'. - www.bqh.co.nz

Scientific research services

Firms in this sub-sector undertake the basic and applied research that underpins a wide range of social and economic activities, as these examples show

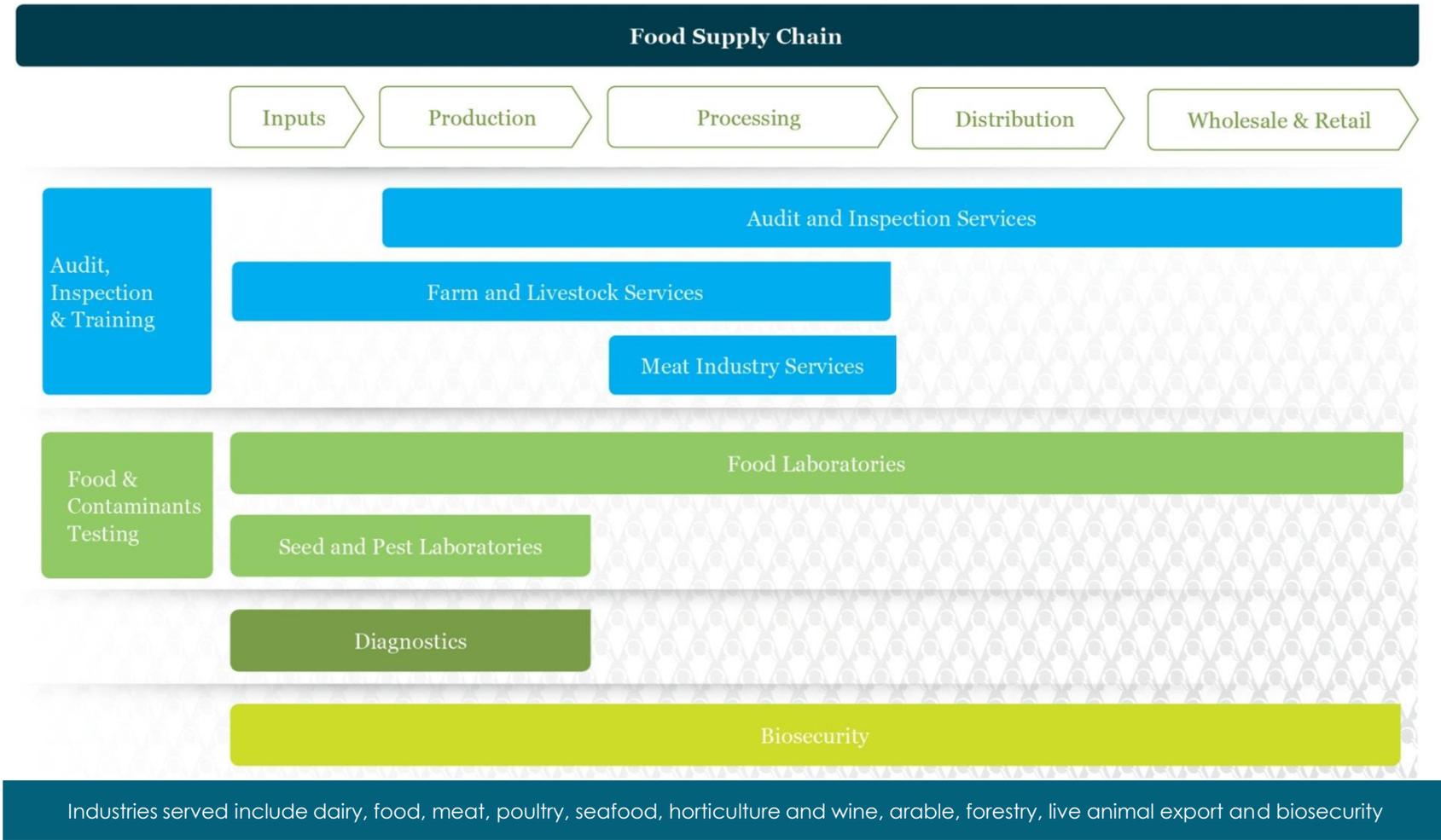
Description

Firms in this sector are mainly engaged in undertaking research in the agricultural, biological, physical or social sciences, either for themselves or for others. Includes basic and applied research, but importantly also includes scientific testing and monitoring as part of a wide range of activities. Examples include supporting biosecurity and food safety regimes, environmental management and public policy development.

Example firms	Services	Industry focus / clients
AsureQuality 1,700 staff at 140 sites across New Zealand, Australia and Singapore \$160m (est)	Comprehensive range of food safety and biosecurity services, including audit, inspection, verification and certification services, ante-mortem and post-mortem meat inspection, TB and disease control activities, training, farm assurance audits, biosecurity surveillance and response, food testing for pathogens, toxins, nutritional information and residues, routine and specialist chemical analyses, environmental characterisation, monitoring and investigations, industrial problem solving and product and food safety.	Producers, processors and retailers across the food and primary production sectors. <i>We undertake over 100 different types of audits across the livestock, horticulture, dairy, forestry, arable, seeds, apiculture, food processing and retail sectors and our meat inspectors inspect over 30 million animals annually.</i> – AsureQuality website.
Formula Foods Ltd 12 staff (est) \$2m (est)	Product development, technical consultancy, nutritional labelling and ingredient listings, water activity testing, analytical and microbiological testing, shelf life testing.	Food and beverage manufacturers.
Eurofins NZ 80 staff (est) \$15m (est)	Analysis of food, water, waste water, swimming pools, rivers, streams, landfills, chemistry, microbiology, cooling towers, IANZ testing.	Food and beverage sectors, environmental management, agro-science and pharmaceuticals.
Cawthron Institute 200 staff \$33m (est)	Science services include marine and freshwater, biosecurity, aquaculture, algal biotechnology, Cawthron analytical services.	Research contracts with a wide range of clients including government departments, local government, aquaculture industry, natural products industry, and collaborative partnerships with New Zealand and international research institutions.
Bioresearchers 10 staff \$1.6m	Assessment of environmental effects; mitigation and environmental management plans; environmental monitoring programmes; flora and fauna surveys and management; restoration and habitat development; baseline data collection: ecology, hydrology, sediment analysis, physical and chemical parameters.	Land developers, local and central government (e.g. New Zealand Land Transport Authority, Watercare Services); firms undertaking large developments with environmental impacts or require environmental monitoring, e.g. New Zealand Steel, mining and quarrying industries.
Hill Laboratories 320 staff (est) \$53m (est)	Agriculture, environmental and food analytical testing. Six locations in New Zealand and offices in China and Japan.	Tests for soil, plant and crop, food, honey, pesticides, milk, compost, swab and surface, effluent, wine, water, air quality environment.

Ecosystem example: AsureQuality services

AsureQuality provides services to producers, processors, retailers, and regulators across the food supply chain, as this chart shows



Scientific research services: Crown Research Institutes

New Zealand's Crown Research Institutes (CRIs) provide a wide range of both public good, sector and business focused science and research services

CRI	Scope of operation
AgResearch 850 staff \$160m (2013)	<p>AgResearch is the lead CRI in the following areas: pasture-based animal production systems, new pasture plant varieties, agriculture-derived greenhouse gas mitigation and pastoral climate change adaptation, agri-food and bio-based products and agri-technologies, integrated social and biophysical research to support pastoral, agri-food and agri-technology sector development.</p> <p>AgResearch works with other research providers and end-users to contribute to the development of the following areas: biosecurity, land, soil and freshwater management, climate change adaptation and mitigation, food and beverage sector (including foods for human nutrition and health, food technologies and food safety).</p>
Plant and Food Research \$119m (2013) 900 staff (est)	<p>Plant and Food Research is the lead CRI in the following areas: novel fruit, vegetable and crop cultivars for the horticultural and arable industries; sustainable production and processing systems for the horticultural and arable industries, plant- and seafood-based foods, ingredients and biomaterials.</p> <p>Plant and Food Research works with other research providers and end-users to contribute to the development of the following areas: biosecurity, land, soil and freshwater management, climate change adaptation, seafood and food and beverage sectors (including foods for human nutrition and health and food technologies), pastoral forage varieties.</p>
Institute of Environmental Science and Research (ESR) 390 staff \$62m (2013)	<p>Forensic science services, harm prevention from drugs and alcohol, surveillance of human pathogens and zoonotic diseases, domestic and export food safety in partnership with the regulator, impacts of the environment on human health, including groundwater, fresh and drinking water quality and safe biowaste use, integrated social and biophysical research to support decision making in the environmental, public health and justice sectors.</p> <p>ESR works with other research providers and end-users to contribute to the development of the following areas: assessing and responding to chemical, biological, radiological and explosive events and environmental threats, including adverse human impacts on natural resources, biosecurity and freshwater management, climate change adaptation and mitigation.</p>
Geological and Nuclear Science (GNS) 360 staff \$71.8m (2013)	<p>Geothermal energy, oil, gas, gas-hydrates (including carbon sequestration), mineral and geobiological resources, geological hazards, risk mitigation and societal impacts of natural hazards, earth-system processes and landscape evolution, groundwater processes and quality, the geological component of global environmental processes and climate change, application of nuclear and isotope science and ion beam technology.</p> <p>GNS Science will work with other research providers and end-users to contribute to the development of the following areas: high-value manufacturing, freshwater management, hazards management, ocean floor exploration, climate change adaptation and mitigation, Antarctica.</p>

Scientific research services: Crown Research Institutes *continued*

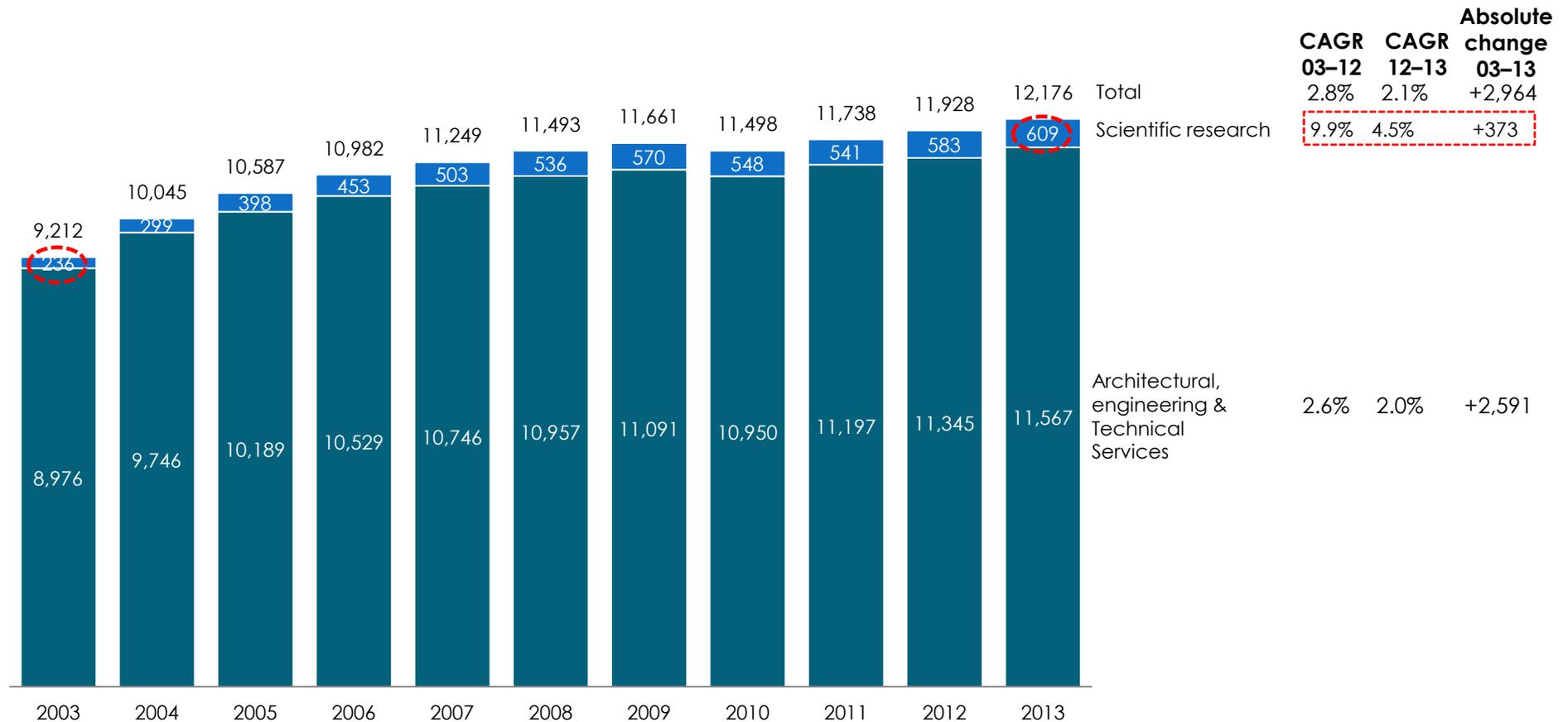
CRI	Scope of operation
<p>Landcare Research 330 staff \$55m (2013)</p>	<p>Landcare Research is the lead CRI in the following areas: catchment-level ecosystems (including wetlands) and related ecosystem services, terrestrial vertebrate pest control, terrestrial carbon processes and inventory, and other greenhouse gases from soil and land, land cover, land-use capability and effects, and spatial land information that integrates across sectors and scales, soil characterisation, processes and services, integrated social and biophysical research to support sustainable land resource management, including natural and urban environments.</p> <p>Landcare Research works with other research providers and end-users to contribute to the development of the following areas: biosecurity, land, soil and freshwater management, climate change adaptation and mitigation, industry and business environmental performance, including verification, indigenous forestry, urban environments, Antarctica.</p>
<p>National Institute of Water and Atmospheric Research (NIWA) 600 staff \$121m (2013)</p>	<p>NIWA is the lead CRI in the following areas: aquatic resources and environments (with a focus on surface freshwaters and coastal environments), oceans, freshwater and marine fisheries, aquaculture, climate and atmosphere, climate and weather hazards, aquatic and atmospheric-based energy resources, aquatic biodiversity (including biosystematics) and biosecurity.</p> <p>NIWA will work with other research providers and end-users to contribute to the development of the following areas: biosecurity, freshwater and hazards management, climate change adaptation and mitigation, ocean floor exploration, seafood sector, urban environments, Antarctica.</p>
<p>Scion 298 staff \$45m (2013)</p>	<p>Scion is the lead CRI in the following areas: sustainable forest management and tree improvement, forestry biosecurity and risk management and mitigation, wood processing, wood-related bioenergy, waste streams and other biomaterials, forestry and forestry-based ecosystem services to inform land-use decision making.</p> <p>Scion will work with other research providers and end-users to contribute to the development of the following areas: biosecurity land, soil and freshwater management, climate change adaptation and mitigation, indigenous forestry, industrial biotechnology and high-value manufacturing.</p>

Number of firms

Firm numbers in scientific, architectural and engineering services have been resilient through the GFC; the number of scientific research firms has doubled since 2003

Number of firms by sub-sector

Firms; 2003-2013



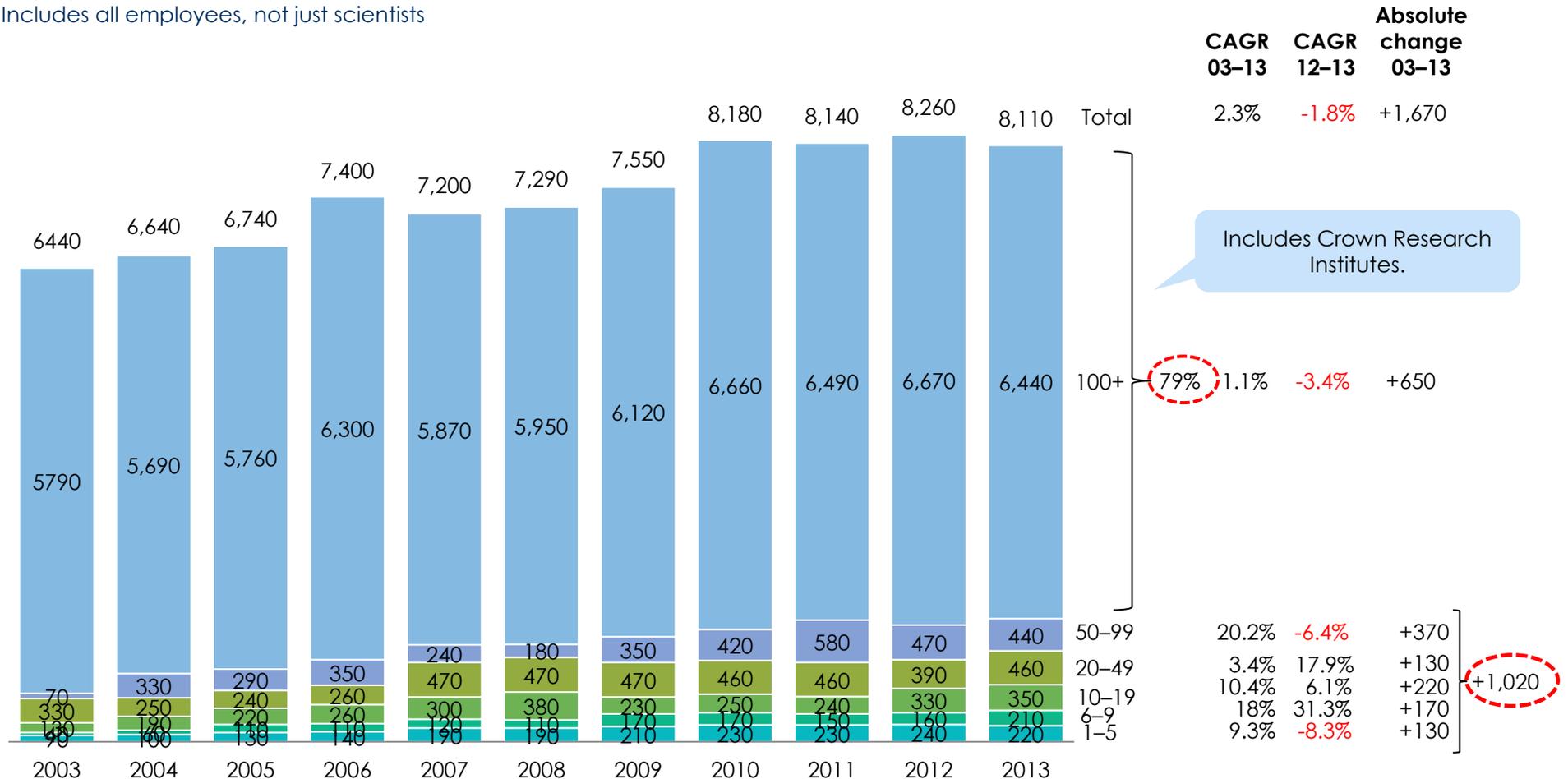
Employees* by firm size: scientific research services

Large firms (100+ employees) account for 79% of employment in scientific research services; job growth is being generated by smaller firms

Number of employees* by firm size

Employees; as at February 2003-2013

Includes all employees, not just scientists

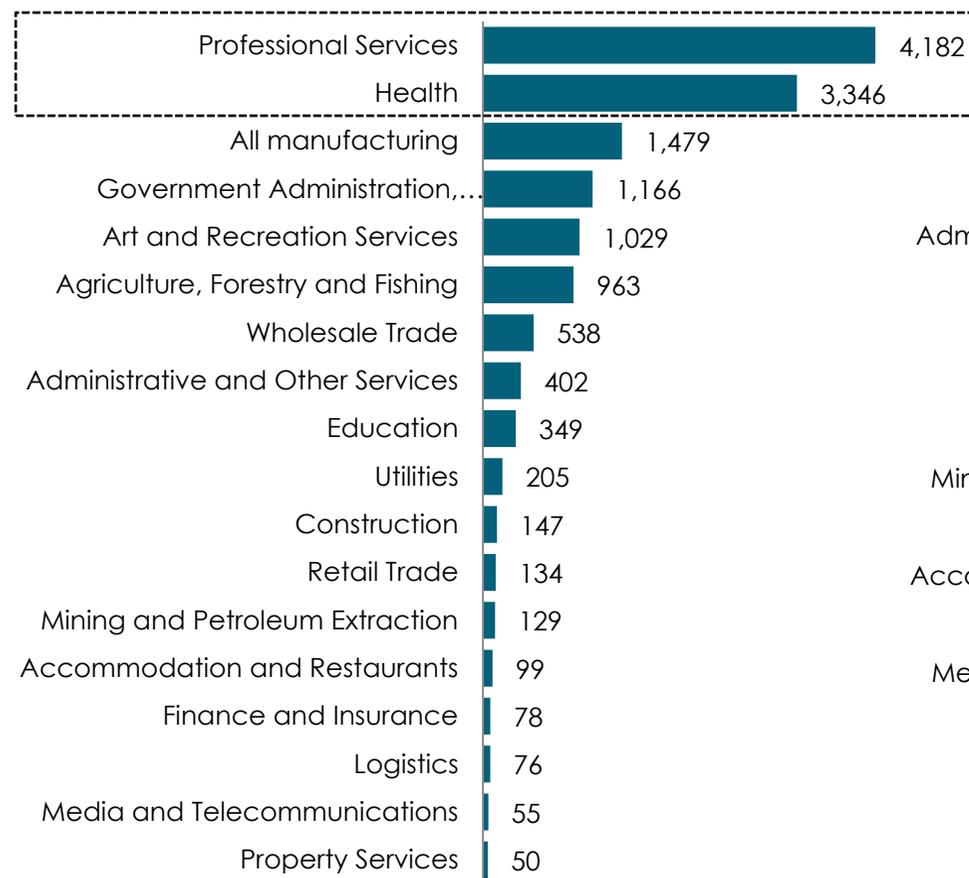


Science jobs by sector

Science jobs concentrated in the health and professional services sectors (including computer system design); health added 2,345 science jobs in the period 2003–2012

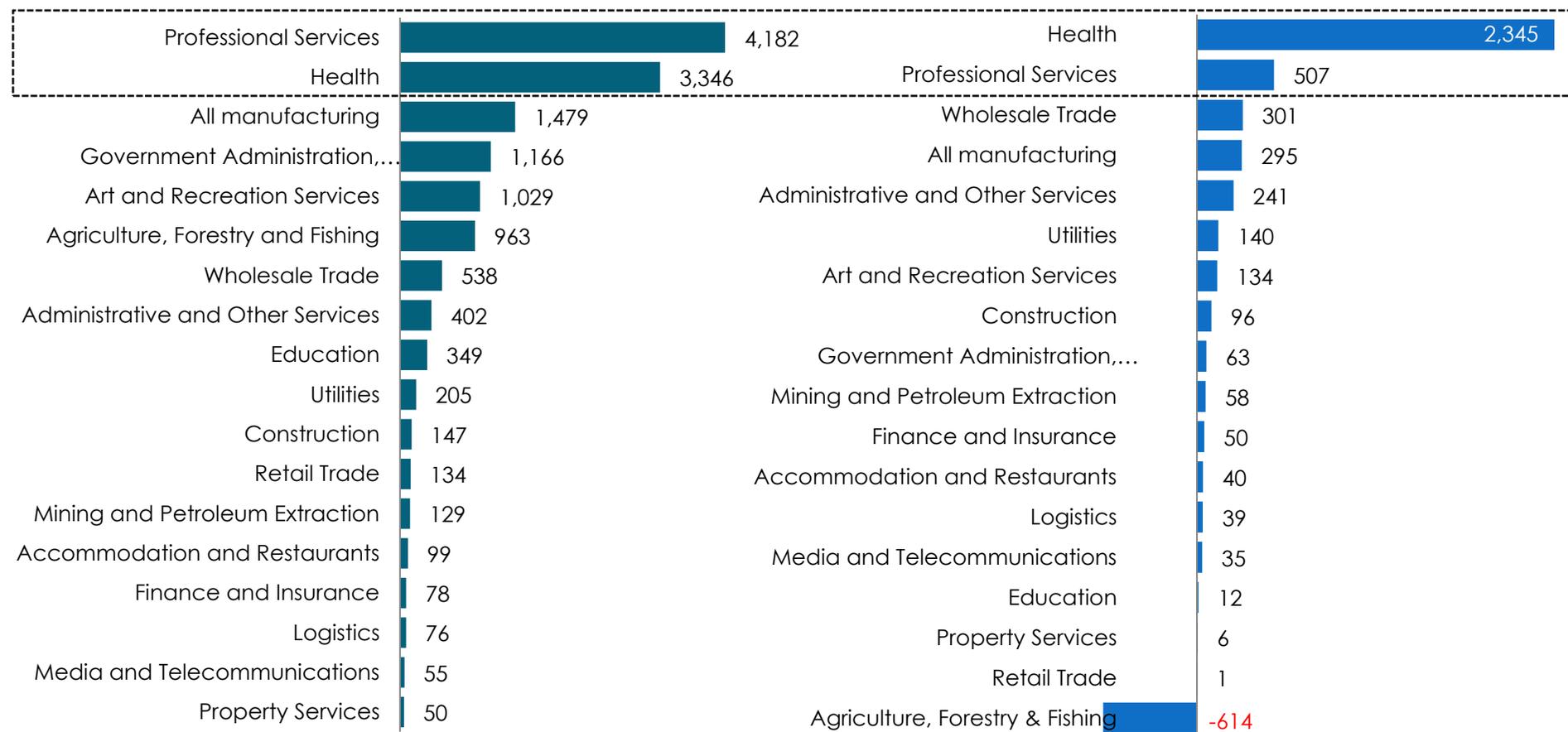
Numbers of workers in science occupations by sector

Scientists; 2012



10 year absolute change in science occupations by sector

Growth in employment of scientists; 2003–2012



Employees* by firm size: architectural, engineering & technical services

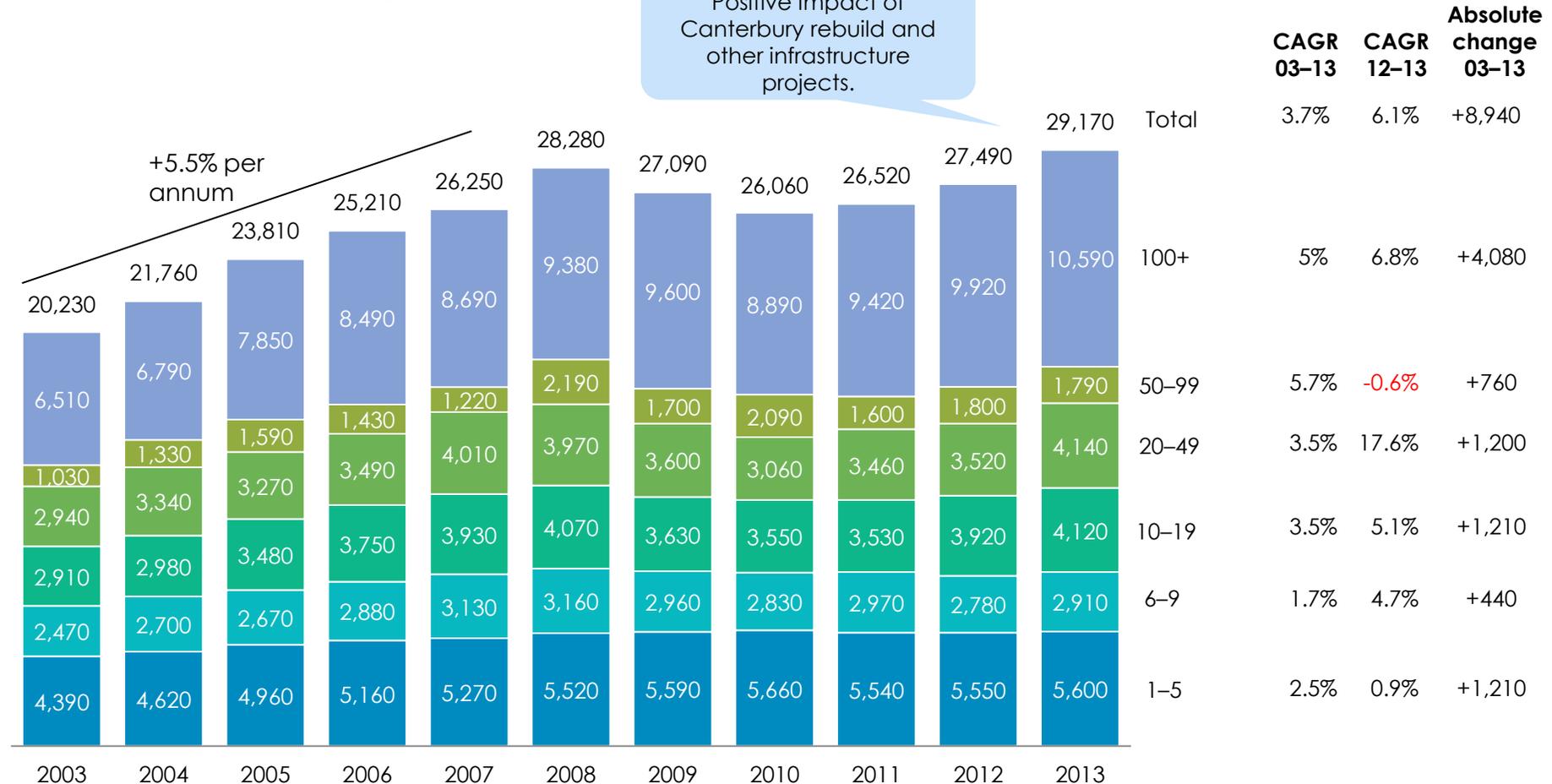
The GFC had a clear impact in 2009/10, but employment is recovering strongly across most firm sizes

Number of employees* by firm size

Employees; as at February 2003-2013

Includes all employees, not just engineers

Positive Impact of Canterbury rebuild and other infrastructure projects.

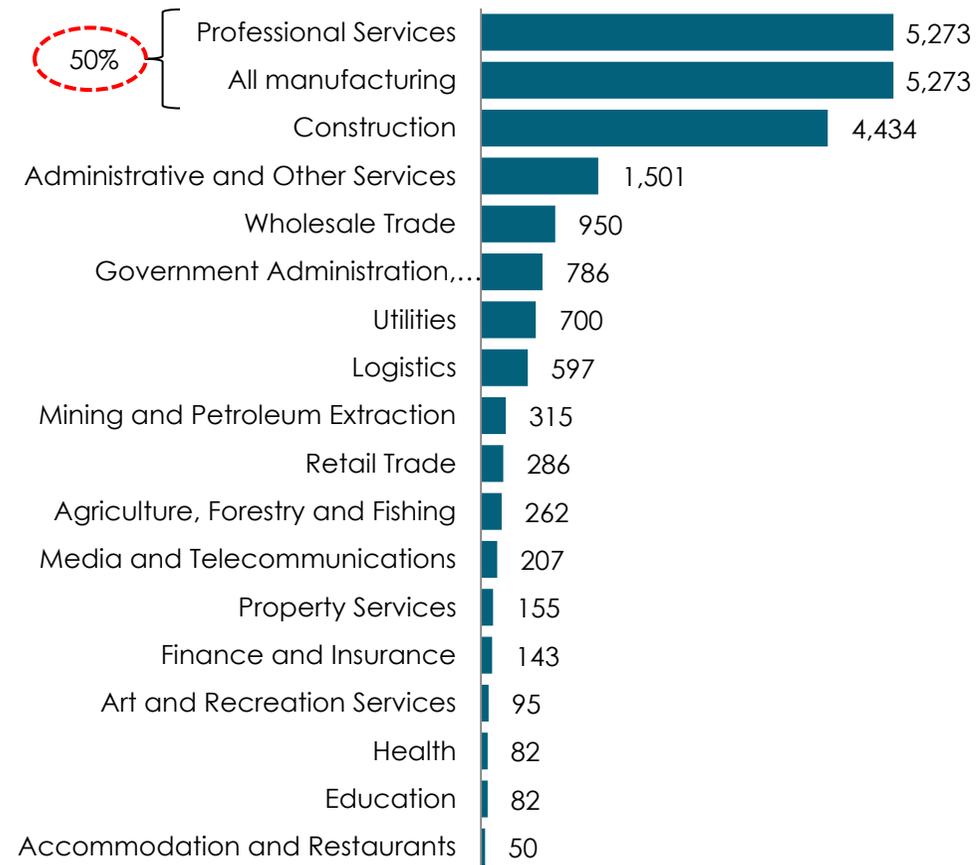


Engineering jobs by sector

The professional services and manufacturing sectors together account for a half of all engineering jobs; construction added the most engineers since 2003

Numbers of workers in engineering occupations by sector

Engineers; 2012



10 year absolute change in engineering occupations by sector

Growth in employment of engineers; 2003–2012



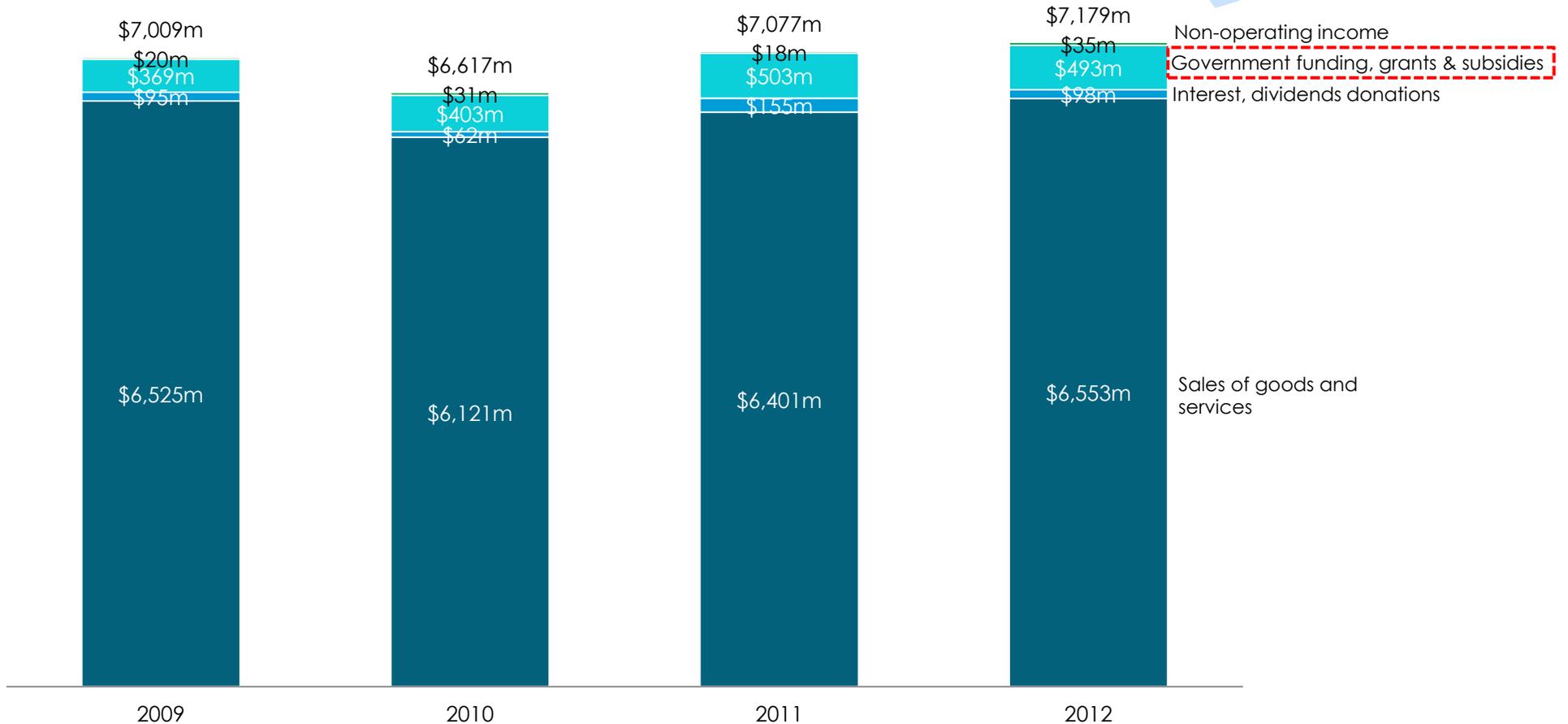
Revenue

The combined annual revenue for scientific, architectural, and engineering services fell in 2010, but has increased in 2011 and 2012

Sources of income: scientific, architectural, and engineering services

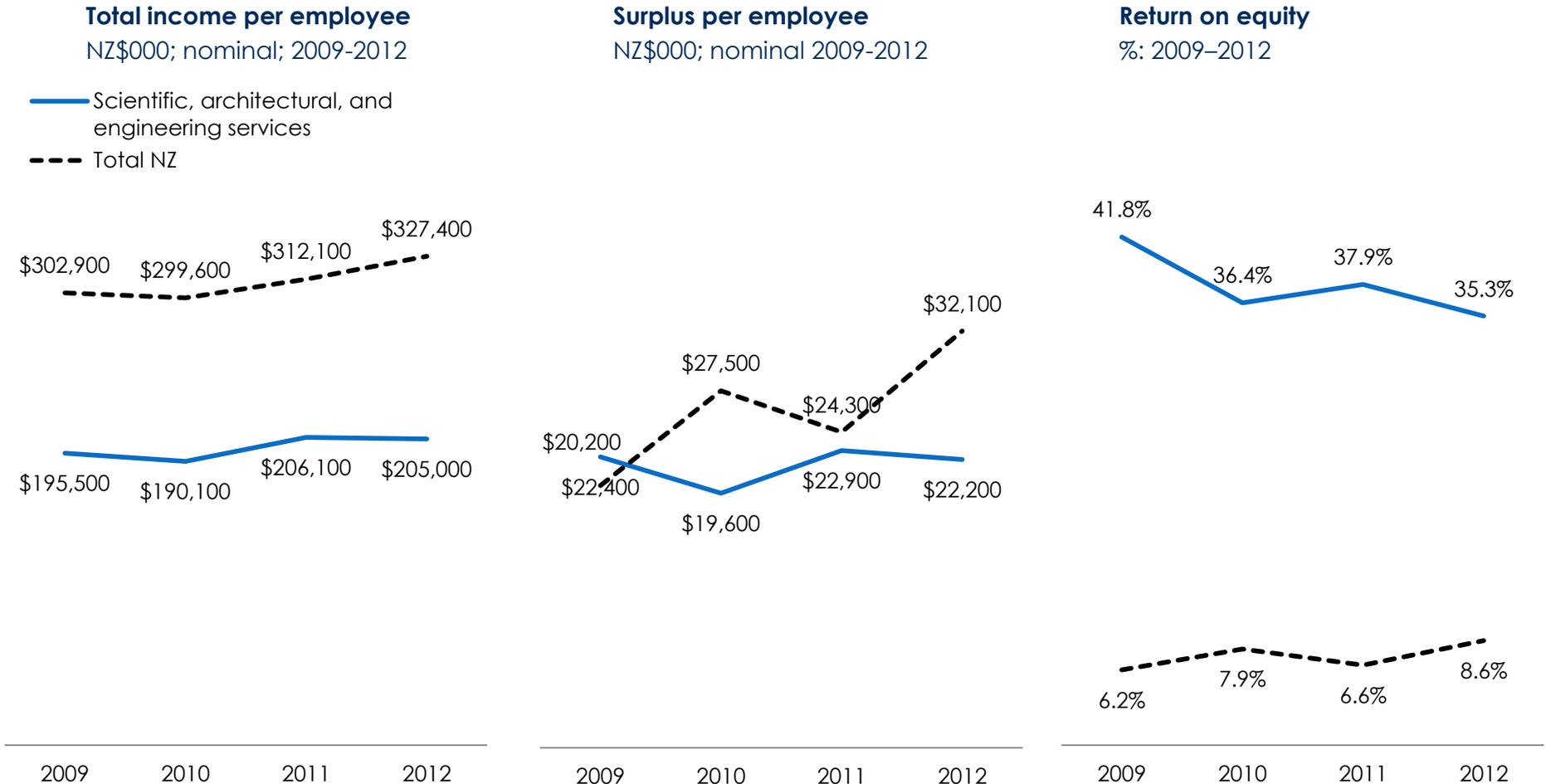
NZ\$m; nominal; 2009–2012

Crown Research Institutes (included in scientific research services) received \$369m government funding and \$326m income from other sources in the year to June 2012.



Financial performance

Scientific, architectural, and engineering services firms generate less revenue and profits per worker than the New Zealand average



Impact of the GFC

Architects and engineers commented on the impact of the GFC on their business

- *The Government invested in infrastructure development through the GFC, which was fantastic. In fact some of our busiest years were during the global financial crisis. The Government then expected the private sector to continue and take the lead, however with continued depressed economic conditions this did not occur...so work dramatically fell off. Following the tragic earthquake in Christchurch, the focus shifted through a series of phases of immediate response to rebuild, requiring significant engineering input and substantively filled the gap in the market.*
 - Senior executive, engineering firm, large
- *We knew it was coming. We were prepared for it psychologically. We didn't know how big it was going to be...It didn't really affect us because architects like engineers have lag time both ways, whether or not it's going up or down...When things have turned to custard we don't really get belted around immediately, we get a slow erosion...It didn't really hit us until 2011 ...we had four, five or six clients ring up and put projects on hold in the space of a week or two, we just knew then what we thought was coming had arrived...Our response was that we had to let ten or twelve people go, that righted the ship in terms of overheads versus income...The compounding effects of the global recovery, New Zealand's resilience economically, the earthquakes in Christchurch and the resurgence in Auckland combined (means) we are now extremely busy.*
 - Senior executive, architectural firm



2. Legal & accounting services

2% of GDP

Legal & accounting services

Firms in this sub-sector provide the expertise required to structure commercial operations and personal affairs, resolve disputes and comply with the law, as these examples show

Description

Legal firms in this sub-sector provide legal representation, advice and the preparation of legal documents. The main activities include advocate services, barrister and solicitor services, conveyancing services, legal aid, notary services, patent attorney services and title-searching services. Accounting firms provide accounting services such as auditing of accounting records, preparing financial statements, preparing tax returns and bookkeeping.

Example firms	Services	Industry focus / clients
PriceWaterhouse-Coopers 1,200 staff (est) \$330m (est)	Wide range of professional services, including advisory, assurance, tax and business services.	Energy, utilities and mining, entertainment and media, financial services, healthcare, industrial manufacturing, local government and infrastructure, Maori business services, retail and consumer, technology, telecommunications and China business.
KPMG 900 staff (est) \$204m (est)	Wide range of professional services specialising in audit, tax and advisory services.	Agribusiness and food, automotive, building, construction and real estate, technology, communications and media, consumer products, diversified industrials, electronics, software and services, energy and natural resources, financial services, government, health, infrastructure, retail and transport.
Deloitte 1000 staff \$120m (est)	Chartered accountants, management consultants, personnel recruitment, business advisors, corporate finance, mergers and acquisitions, taxation consultancy.	Education, health, financial services, energy, infrastructure, local government, Maori business, primary sector, public sector, telecommunications, media and technology, wine.
EY (Ernst and Young) 650 staff (est) \$165m (est)	Assurance, tax, transaction and advisory.	Asset management, automotive, banking and capital markets, consumer products, government and public sector, insurance, life sciences (includes biotechnology, medical technology and pharmaceuticals), media and entertainment, oil and gas, power and utilities, private equity, real estate (includes construction, hospitality and leisure) technology and telecommunications.
Sellar and Sellar (Masterton) 16 staff (est) \$2.6m (est)	Tax advice, business development, investment planning, financial planning, investment management, financial reporting, auditing, bookkeeping, superannuation, annual reports, risk management, investments, quarterlies, consolidation, tax preparation.	Diverse range of industries from hospitality, automotive, aviation, real estate, retail, building, and the trades, through to the mainstay of the hinterland – viticulture and farming.

Legal and accounting services *continued*

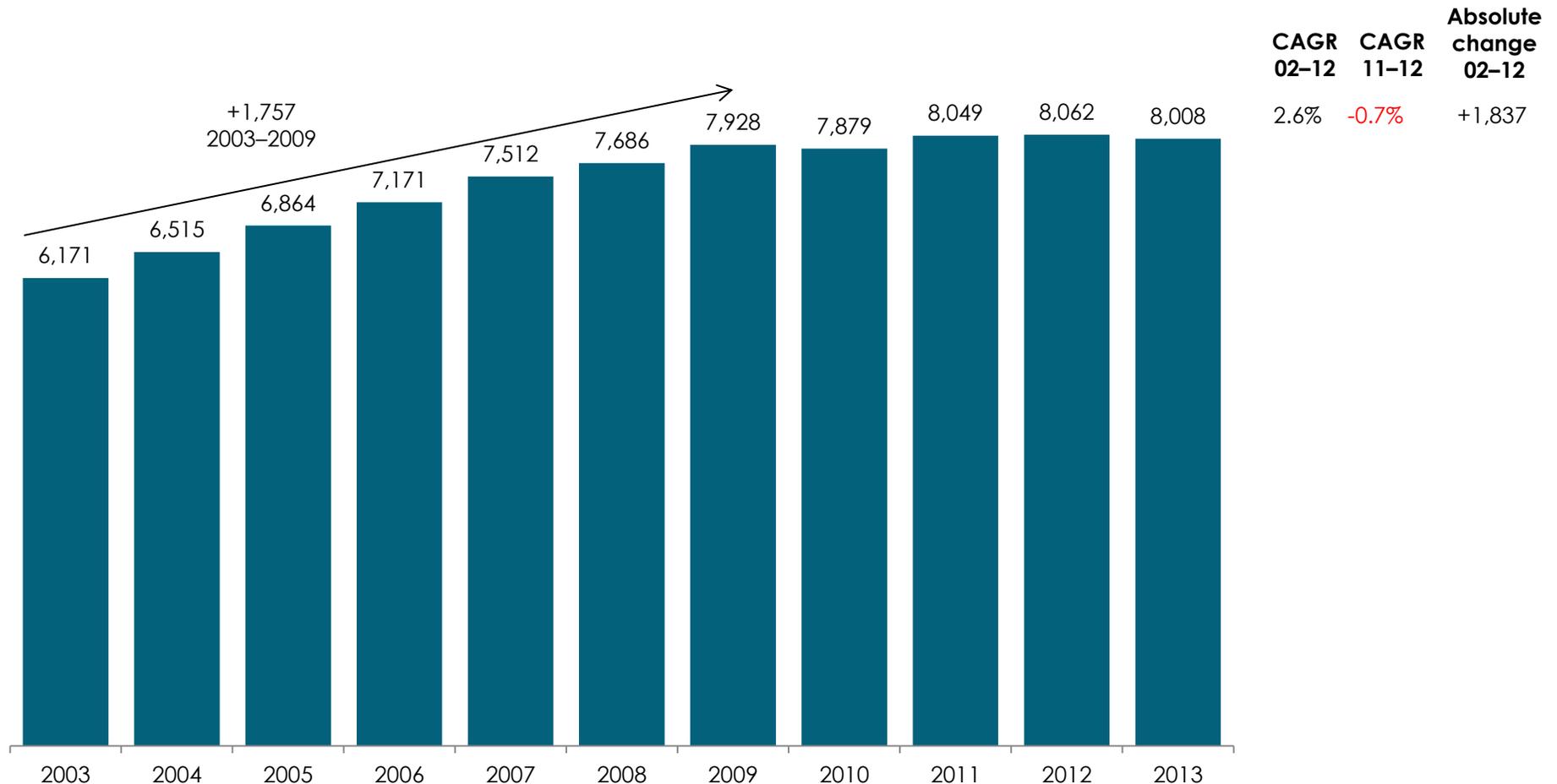
Description		
Example firms	Services	Industry focus / clients
Russell McVeagh 350 staff (est) \$66m (est)	Legal advice on competition, corporate advisory, employment, finance, litigation, property, public law and policy, environment, planning and natural resources and tax.	Represents leading corporations, financial institutions, state-owned enterprises, government entities and multi-national companies on complex, challenging and high-profile transactions.
Simpson Grierson 430 staff (est)* \$71m (est)*	Legal advice on corporate, banking, shipping, town planning, international law, tax, litigation etc. Management consultants – company expansions, joint venture, contract negotiation, change management, acquisitions etc.	Clients include: New Zealand major trading banks, financial institutions, local and central government, large corporates, accounting firms, forestry sector (Fletcher Challenge Forests), aviation sector (Pacific Blue, Air Canada, American Airlines) – to name a few.
Kensington Swan 200 staff (est) \$33.4 (est)*	Patent and trademark agents – copyright consultants and licensing, research services, intellectual property, patent lawyers. Legal advice – commercial, banking, tax, litigation, town planning, corporate finance, immigration etc.	Clients include: IBM NZ Ltd, CentrePort, Taranaki Land Ltd, Gazley Tory Motor Group, Spicers Portfolio Management, New Zealand Guardian Trust, MBBL, Perpetual Trust, Public Trust, Downer Engineering Ltd, Mainzeal, local and central government (e.g. Wanganui District Council).
Bell Gully 350 staff (est) \$58m (est)	Full service firm, delivering services through five key legal departments – corporate and commercial, banking and finance, litigation, property and tax.	Clients range across all industries from start-ups to multinationals, local and international, financial institutions and government agencies.
Simmonds-Stewart 7 staff	Corporate and commercial law firm for technology companies and investors.	Clients include: ICT, software, web, medical devices, life sciences, and electronics businesses.
AJ Park 220 staff (est) 36m (est)	Intellectual property specialists: patents, trademarks and branding, copyright, registered designs, domain names, licensing, IP agreements, commercial contracts, due diligence.	Clients include: Whittakers Chocolate, Weta Workshop, EROAD, Kono NZ, Tait Limited, Dollop Puddings, Les Mills International, Fonterra, Sistema, Formway Design Studio, Manuka Health NZ, Pumpkin Patch Ltd.

Number of firms

Legal and accounting services added 1,757 firms in the period 2003 to 2009, but firm numbers have been flat since

Number of firms

Firms; as at February 2003–2013



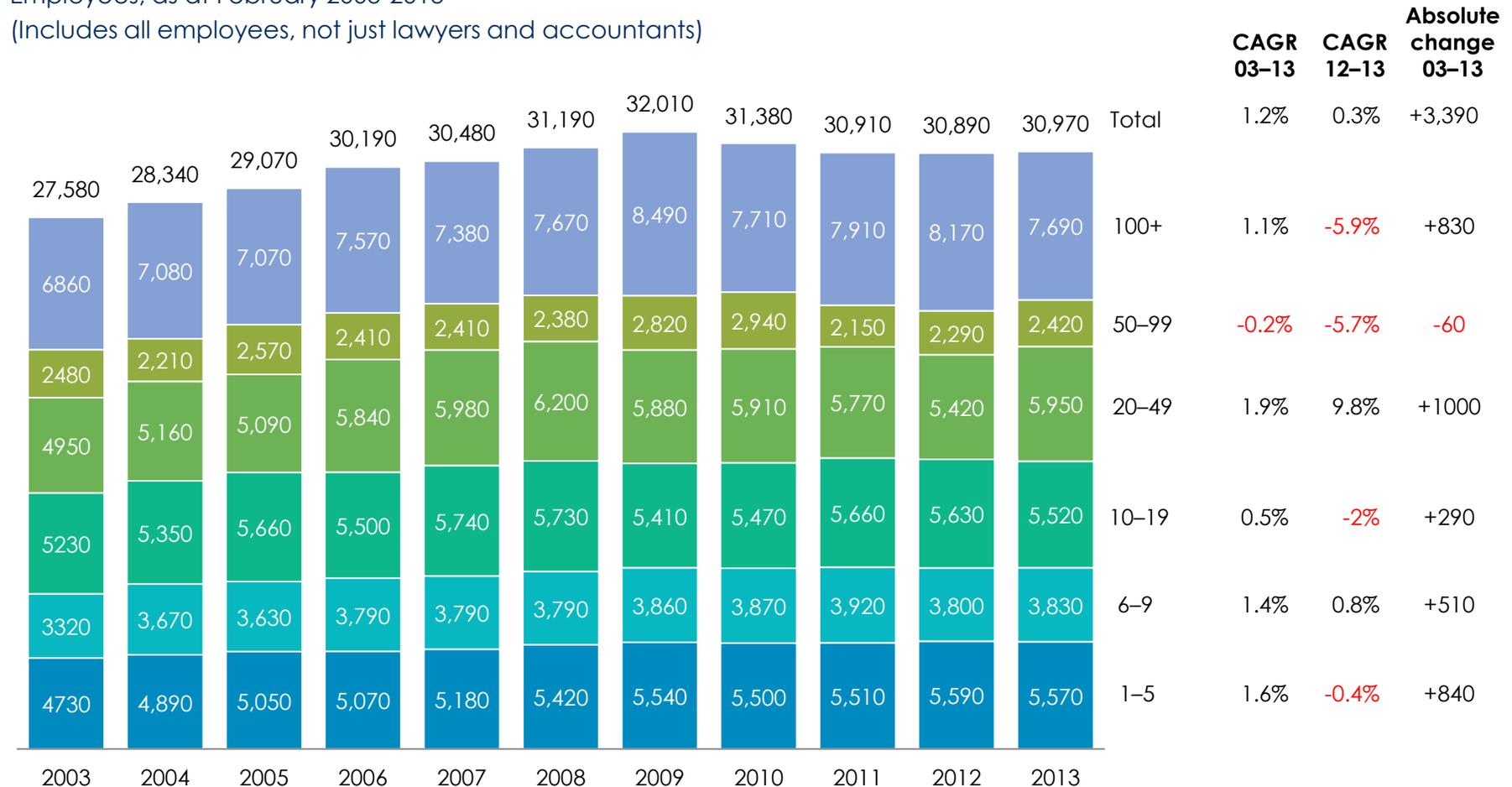
Employees* by firm size

The number of legal and accounting services employees has grown just 1.2% in the ten years to 2013; job growth flat since 2011

Number of employees* by firm size

Employees; as at February 2003-2013

(Includes all employees, not just lawyers and accountants)

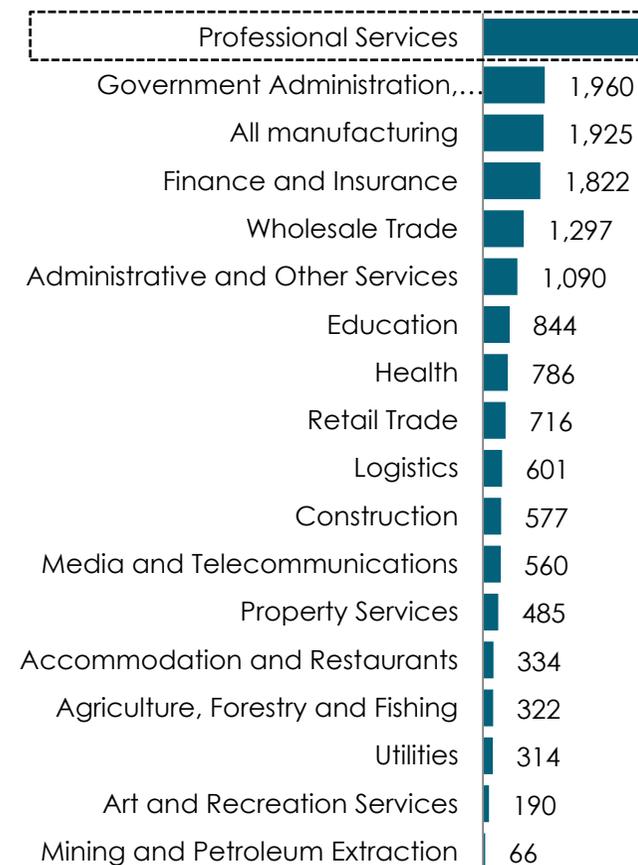


Accounting profession jobs by sector

The professional services sector employed close to half of all accountants in 2012 and generated 73% of new accounting jobs between 2003 and 2012

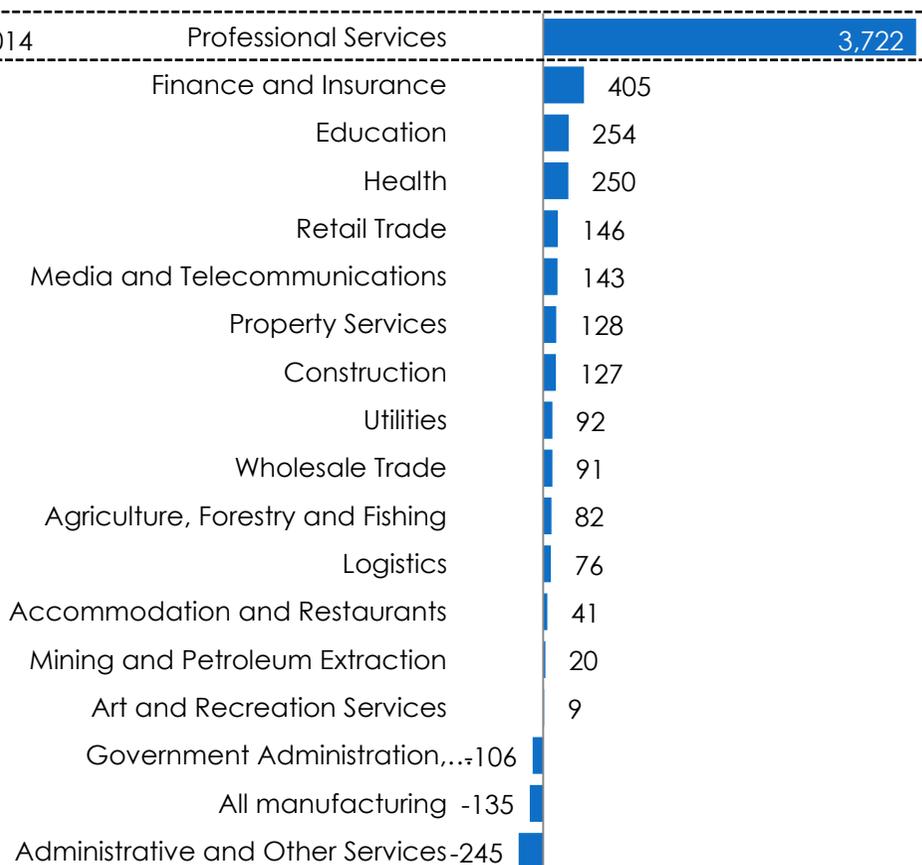
Numbers of workers in accounting occupations by sector

Accountants; 2012



10 year absolute change in accounting occupations by sector

Growth in employment of accountants; 2003–2012



Legal profession jobs by sector

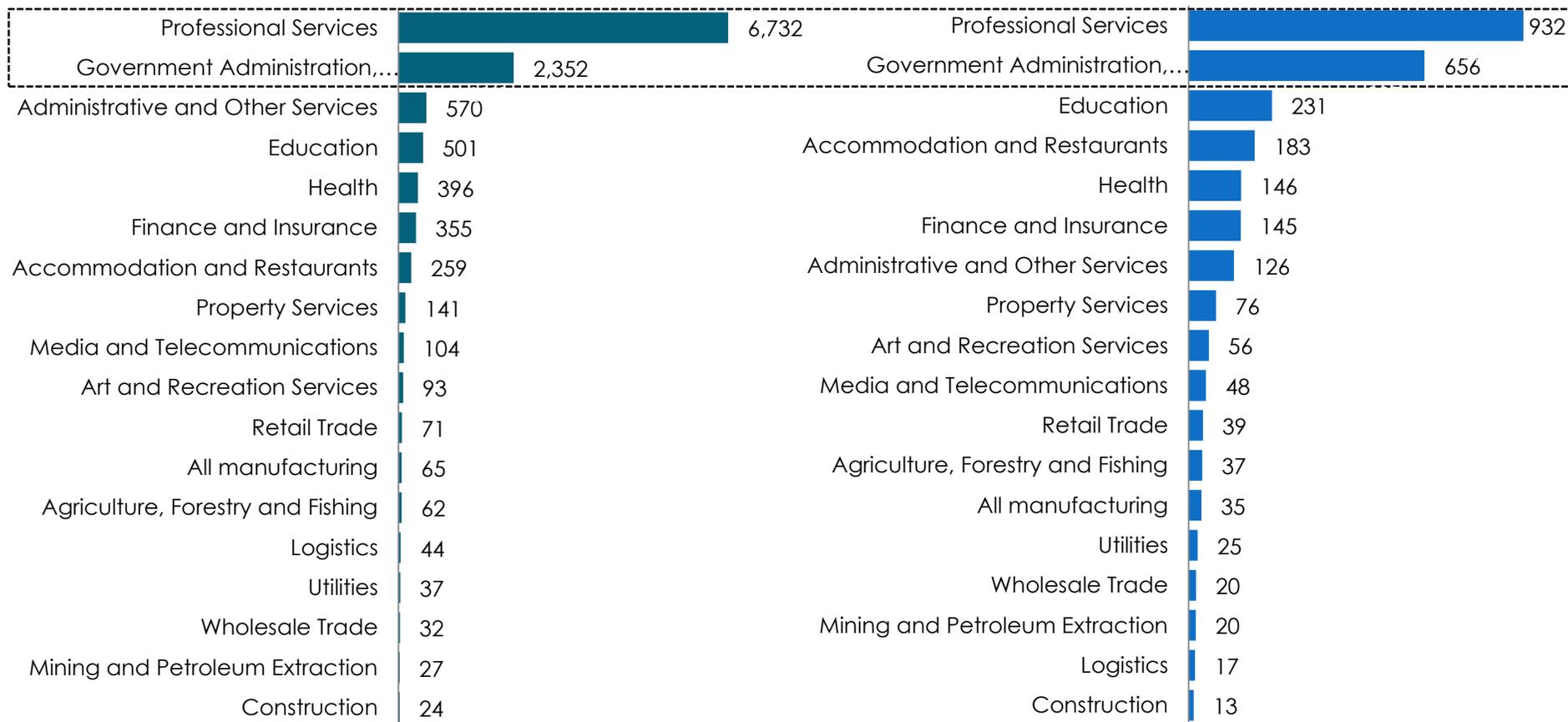
Most lawyers are employed in the professional services sector and government administration

Numbers of workers in legal occupations by sector

Lawyers; 2012

10 year absolute change in legal occupations by sector

Growth in employment of lawyers; 2003–2012

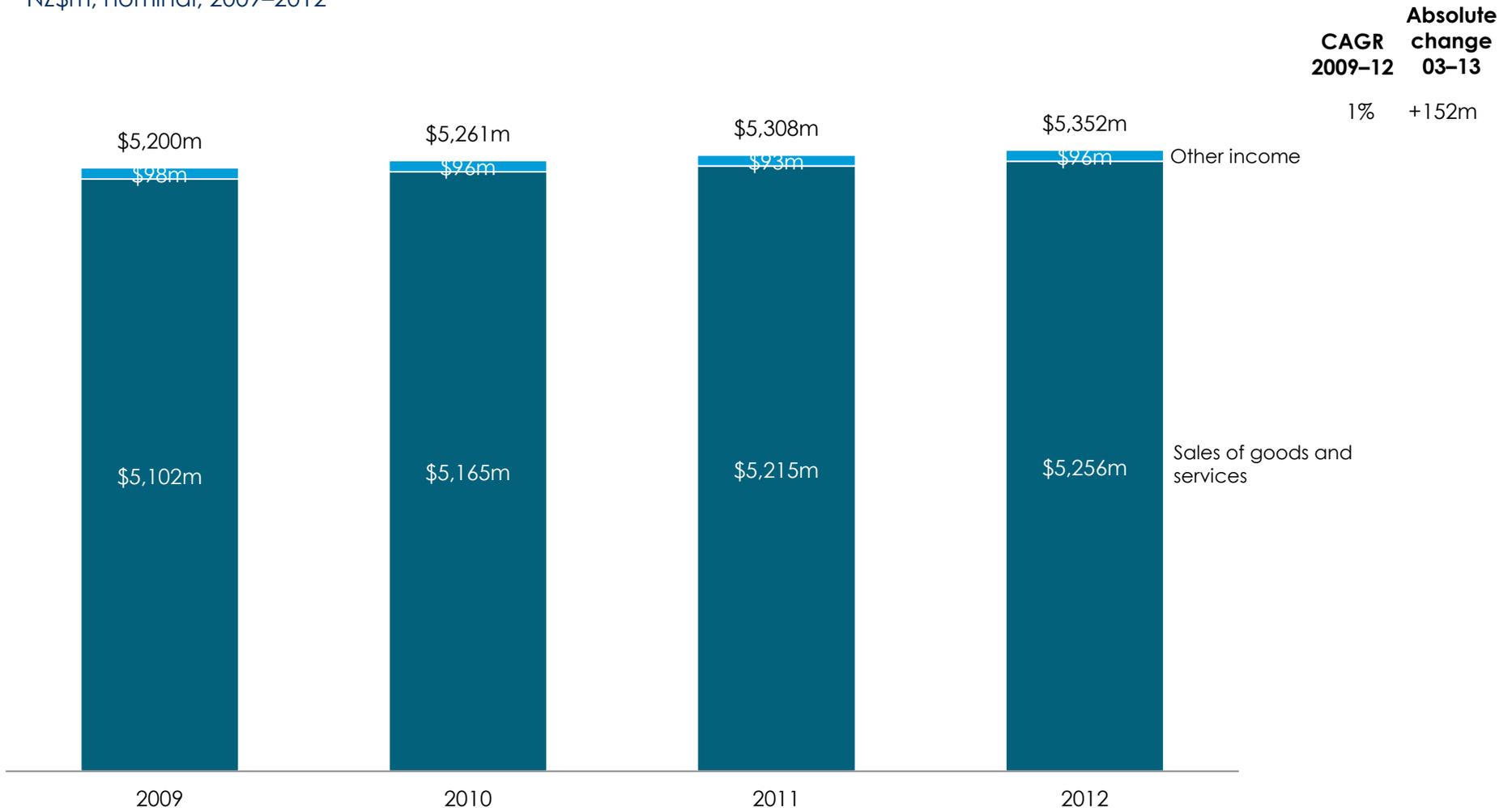


Revenue

The combined annual revenue for legal and accounting services grew a steady 1% per annum between 2009 and 2012

Total income: Legal and accounting services

NZ\$m; nominal; 2009–2012

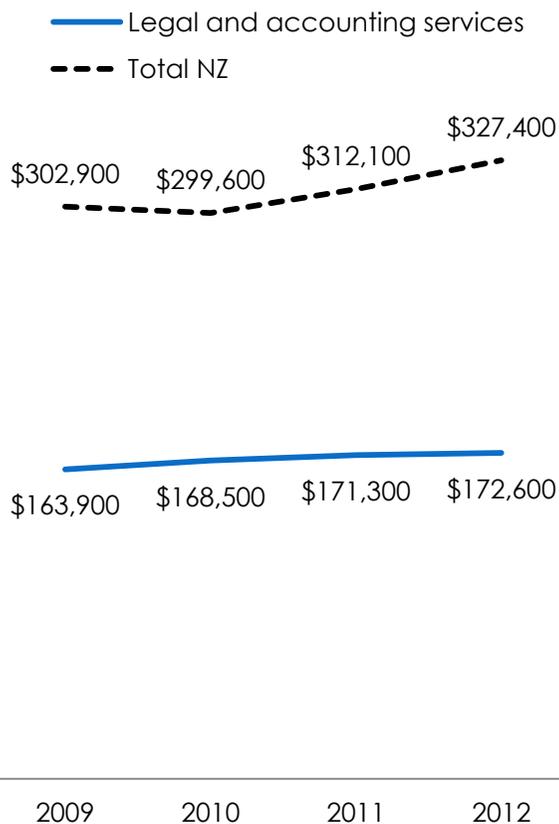


Financial performance

Legal and accounting services firms produce lower income but higher profit per employee than the New Zealand average; the return on equity is much higher than average

Total income per employee

NZ\$000; nominal; 2009-2012



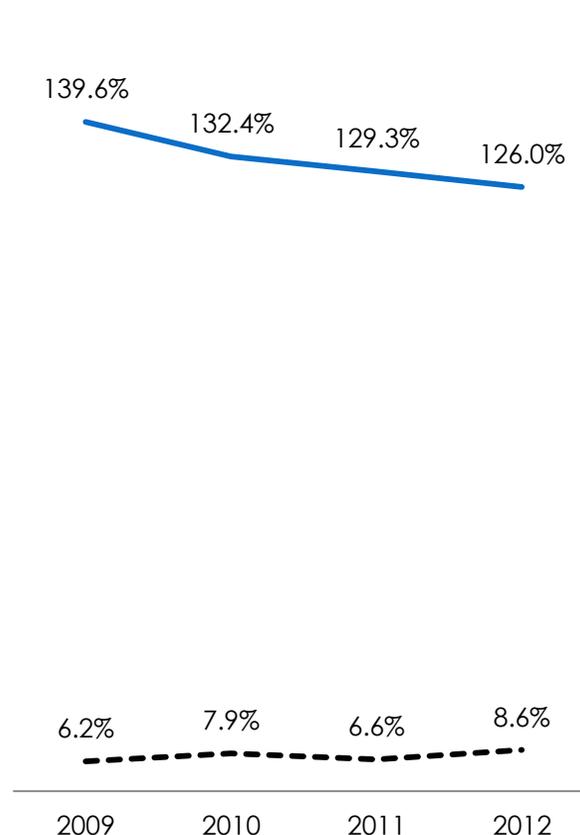
Surplus per employee

NZ\$000; nominal 2009-2012



Return on equity

%: 2009-2012





3. ADVERTISING, MARKET RESEARCH & MANAGEMENT SERVICES

2.1% of GDP

Management and related consulting services

Firms in this sub-sector provide a range of highly specialised management expertise which most firms would not have the scale or ongoing need to build and retain in-house

Description

Firms in this sub-sector provide management advice and related consulting services on business or personnel management policies or practices. Also included are firms mainly engaged in managing public figures such as entertainers.

Example firms	Services	Industry focus / clients
Azimuth Consulting Ltd 200 staff (est) \$35m (est)	Business improvement and management consultancy services e.g. value chain alignment, business process improvement, value for money reviews and plans, business planning, feasibility studies, management consultancy, strategic management of 'mission critical' projects, business re-engineering, organisational reviews, change management. Also information management and planning services.	Clients include: ASB Bank, Fonterra, ANZ, Air New Zealand, Ministry of Justice, Dept. of Conservation, Massey University, Meridian Energy, Transpower, Vodafone, Might River Power, Westpac, New Zealand Police, Mobil, Shell Todd, Placemakers.
Growth Management Consulting Ltd 5 staff (est) \$0.5m (est)	Range of seminars, workshops and consulting services focusing on pitch development and delivery, business planning and strategy and advisory services.	Wide range of start-up and established companies. <i>GMC accelerates the growth and failure of NZ companies by removing clutter and simplifying business growth.</i> -GMC flyer
Sysdoc 100 staff (est) \$17m (est)	Offers a broad range of business solutions which integrate process improvement, business documentation, knowledge management, training and change management.	Inland Revenue, ESR, Ericsson, Department of Internal Affairs, London Underground, IBM, Fonterra, Anglian Water, Chevron, Exel, T-Mobile, Air New Zealand - Engineering Services, Office Angels, Network Rail, AT&T, Reed Elsevier, MAF (MPI), Public Trust, Westpac, ASB.
NZIER 25 staff (est) \$5m 9est)	Cost benefit analysis, economic impact analysis, evaluation, expert witness services, forecasting and modelling, market analysis, market and regulatory design.	Competition and market regulation, economic performance, health, education and social policy, infrastructure and transport, natural resources and agriculture, policy and evaluation, trade.
Sapere Research Group 40 staff (est) \$12m (est)	Independent expert testimony, strategic advisory services, data analytics and other advice., particularly in energy and natural resources, forensic accounting, health policy and analysis, public policy and regulation	Sapere provides independent expert testimony, strategic advisory services, data analytics and other advice to Australasia's private sector corporate clients, major law firms, government agencies, and regulatory bodies.

Advertising services

Firms in this sub-sector provide expertise in communications, media campaigns and brand development and execution, as these examples show

Description

This class consists of units mainly engaged in providing advertising services such as the creation of advertising campaigns and materials; and media planning and buying (i.e. placing advertisements).

Example firms	Services	Industry focus / clients
Clemenger BBDO 60 staff (est) \$68m (est)	Comprehensive range of communications services, brand consultancy, direct marketing, new media, consumer insights and research, media planning and buying and graphic design.	Clients include the New Zealand Transport Authority, Mitsubishi, New Zealand Post, FlyBuys, Guthrie Bowron, Beaurepaires, Civil Defence, Dulux, Inland Revenue Department, KiwiRail, Ministry of Primary Industries, Wellington Phoenix, Positively Wellington Tourism, Quitline, Radio New Zealand, The Treasury and the Wellington Writers Walk.
M&C Saatchi 15 staff (est) \$8m (est)	Advertising agency providing services based on three pillars: brand, retail and digital.	Manages 100% Pure New Zealand campaign for Tourism New Zealand.
Ogilvy and Mather 200 staff \$200m	Fully integrated marketing communications company, with expertise in brand advertising, retail advertising, direct marketing, customer relationship management, media strategy and buying, interactive marketing, public relations and activation.	Clients in Auckland City Council, Pernod Ricard, Holden New Zealand, NZ Pork, Tip Top, Briscoe Group, Restaurant Brands, many others.
Colenso BBDO Ltd 130 staff \$126m (2006)	Fully integrated communication and marketing solutions.	Clients include BNZ, Michael Hill Jeweller, Fresh Up, Dominion Breweries and many others.
Dow Design	Packaging design, strategic development and brand planning, new product development. <i>"Taking your business strategy, aligning it to a brand strategy and translating that into a design strategy is our core strength."</i>	A wide range of clients in food and beverage, lifestyle and fashion, retail and manufacturing.

Market research and statistical services

Firms in this sub-sector provide much of the information and analysis that underpins strategy and decision making for other firms and industries, as these examples show

Description

Firms in this sector provide market research or statistical services such as the systematic gathering, recording, tabulating and presenting of marketing and public opinion data. This typically involves the application of highly sophisticated quantitative and qualitative research techniques and the capture and analysis of large data sets. For example, Nielsen data collected from supermarkets permits clients to examine key business trends by product, category, store, chain, or market for one brand or an entire competitive set'. The information generated by these firms supports the efficient operation of markets.

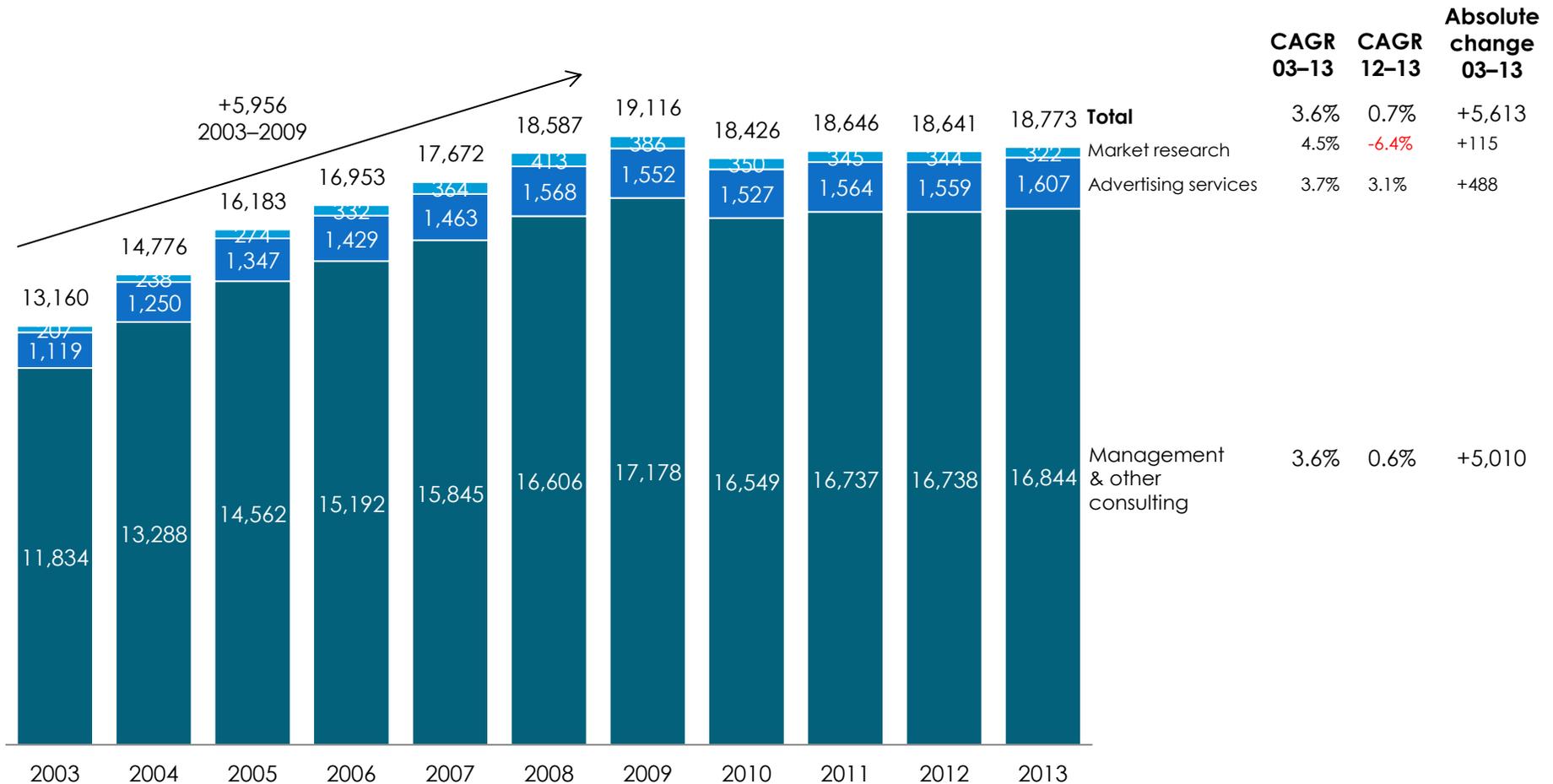
Example firms	Services	Industry focus / clients
Statistics New Zealand 1000 staff (est)	A government department and New Zealand's national statistical office. New Zealand's major source of official statistics and leader of the Official Statistics System.	Official statistics are used by central and local government, Māori, businesses, communities, researchers, and the public to: inform debate and research; understand New Zealand's environment, economy, and society; and make decisions that contribute to New Zealand's economic and social development.
Colmar Brunton (Millward Brown) 150 staff (est) \$20m (est)	Services include qualitative and quantitative research, youth research, social research, marketing science, sensory evaluation, panels and surveys	Global firm with many clients across most sectors.
Datamine 24 staff (est) \$4m (est)	Extraction and analysis of customer database information.	Banking, insurance, government, retail, fast moving consumer goods, entertainment, telecommunications, energy, not for profit sector.
IDC 11 staff (est) \$3–4m (est)	Global IT market research, data reports and bulletins, New Zealand specific IT market research, industry newsletters, customised consulting for single clients.	Information technology, telecommunications and consumer technology markets.
Nielsen 150 staff \$30m (est)	Retail management, consumer panels, assortment and in-store space, consumer research, retailer services, analytic consulting, decision support. Global services.	Advertising, agriculture, automotive, consumer packaged goods. Financial services, government and social, media, online, retailing, telecommunications, travel and tourism.
The Survey Company Ltd 4 staff (est) \$750,000 (est)	Specialists in the development of web-based survey solutions.	Human resource and marketing professionals.

Number of firms by sub-sector

Advertising, market research & management services added 5,956 firms to 2009; firm numbers have been flat since

Number of firms by sub-sector

Firms; as at February 2003-2013

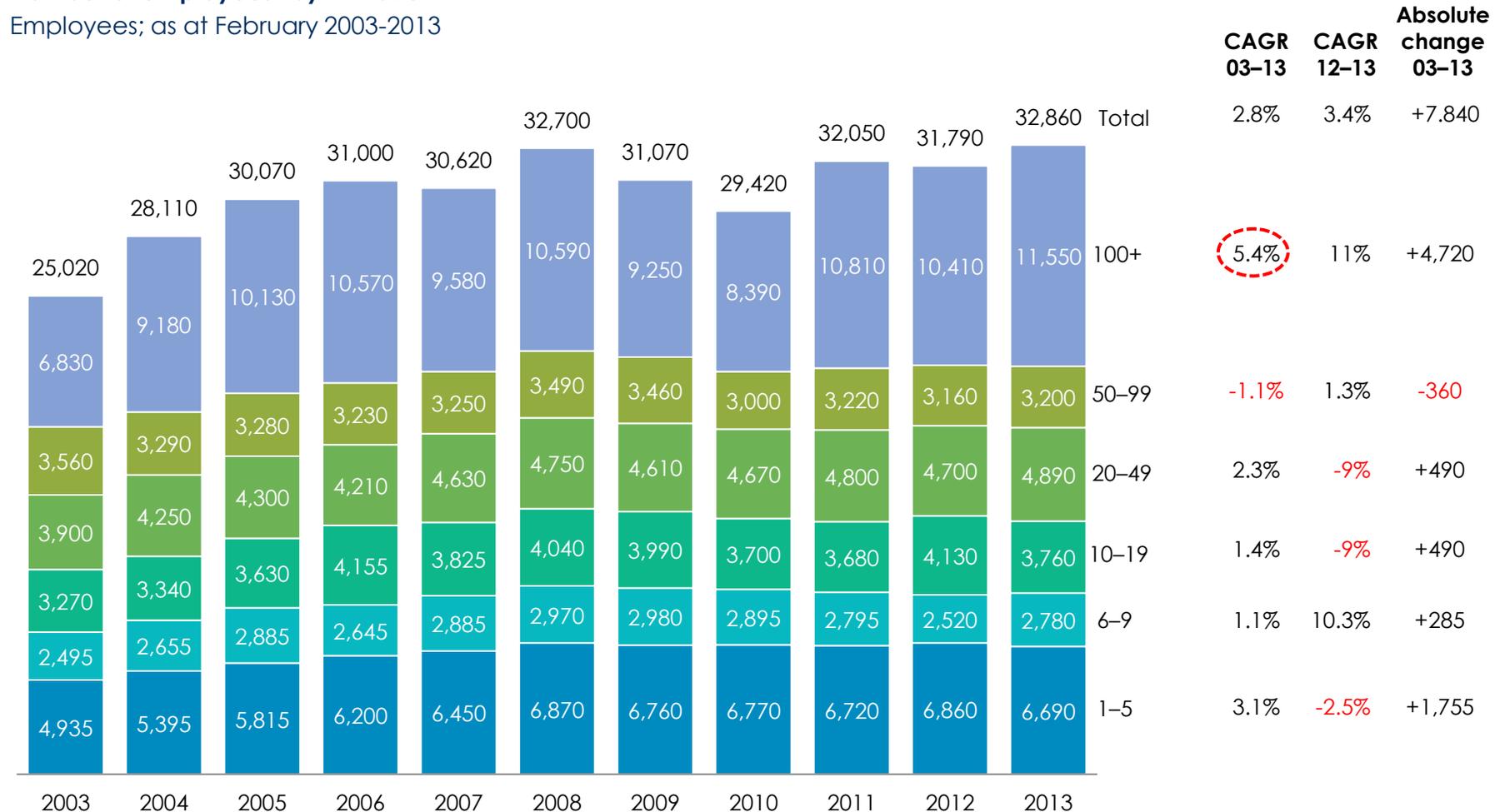


Employees* by firm size

Large firms in advertising, market research and management services are driving employment growth in 2013, after shedding jobs in 2009 and 2010

Number of employees* by firm size

Employees; as at February 2003-2013

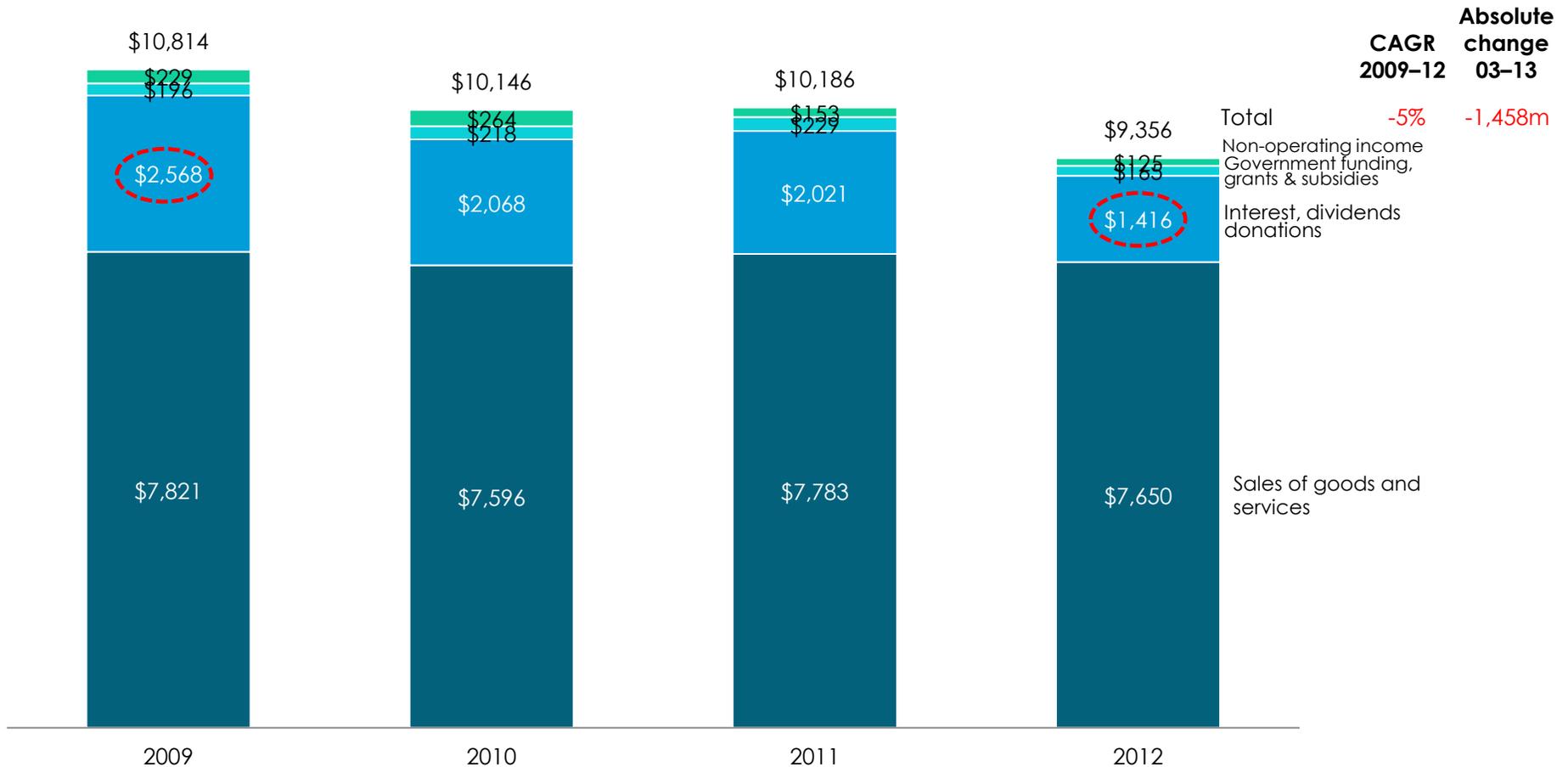


Revenue

Advertising, market research and management services firms' revenue has fallen by 5% per annum since 2009; driven by drop in interest, dividends and donations received

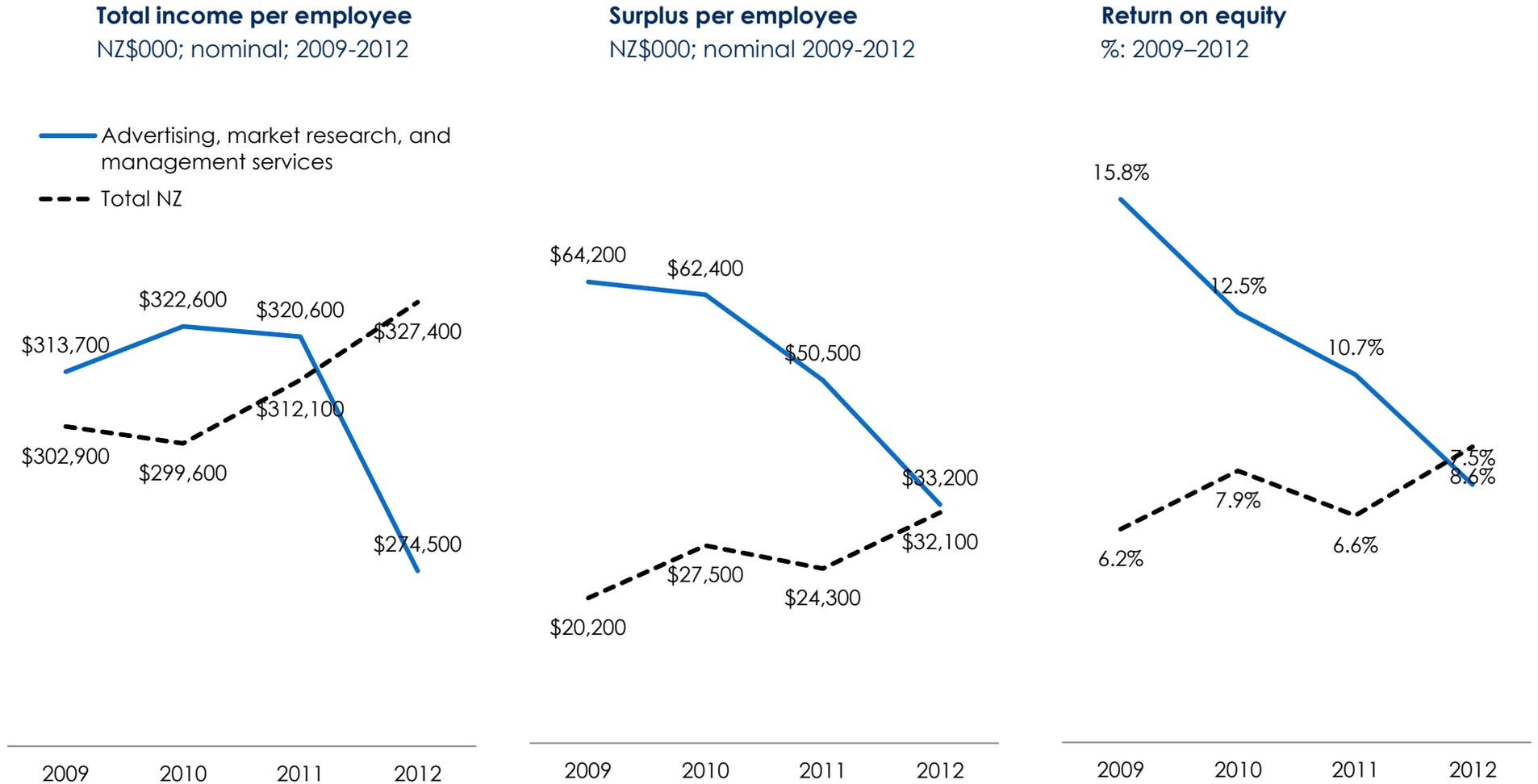
Total income: advertising, market research and management services

NZ\$m; nominal; 2009–2012



Financial performance

Advertising, market research and management services used to generate more revenue and profits per worker than the New Zealand average, but this premium has eroded away since 2009





APPENDIX: METHODOLOGY, DATA SOURCES AND LIMITATIONS

Economic terms and definitions

The report uses the following economic metrics

Term	Definition	Comment
Employment	The number of people who earned money from employment (wages and salary earners) and/or self-employment. For tourism it is full-time equivalent (FTE) employees producing goods and services sold directly to tourists. Some more detailed analyses use numbers of employees (excluding self-employed).	Cross-cutting sectors (excluding tourism) Statistics New Zealand, Linked Employee Employer Data (LEED), custom job. Tourism Direct employment in tourism (FTEs) and employment (FTEs) in tourism as a % of total.
Goods exports	The value of goods of domestic origin (excluding re-exports) exported from New Zealand to another country. Note: sector exports values will exclude items suppressed in accordance with Statistics New Zealand's confidentiality policy. Exclusions are noted where applicable.	All sectors Merchandise (goods) exports have been obtained by matching commodities to the ANZSIC06 industry that characteristically produces them. (Statistics New Zealand, MBIE calculations)
Investment in fixed assets (gross fixed capital formation)	A measure of the outlays of producers on durable fixed assets (e.g. buildings, vehicles, plant and machinery, hydro-electric construction, roading and improvements to land). 'Gross' indicates that consumption of fixed capital is not deducted from the value of the outlays.	Cross-cutting sectors (excluding tourism) Uses additions less disposals of fixed assets (custom job). Note: this data has not been through the System of National Accounts, so is indicative only.
Nominal GDP (Gross domestic product)	The value of goods and services produced in New Zealand, after deducting the cost of goods and services used in the production process. 'Nominal' means not adjusted for inflation.	Cross-cutting sectors (excluding tourism) A proxy for GDP has been used to provide indicative estimates. These have not been verified through the System of National Accounts.
Number of firms (number of enterprises)	The number of businesses or service entities operating in the sector in New Zealand. It covers all types of business or service entities, including companies, self-employed individuals, voluntary organisations and government departments.	Cross-cutting sectors (excluding tourism) Uses customised Business Demography Statistics, number of enterprises. Not available for Tourism.
Productivity	A measure of how efficiently inputs are used within the economy to produce outputs. Productivity is calculated by dividing the sector's real GDP by the number of hours paid. Real GDP per hour paid is used. For the cross-cutting sectors nominal GDP per employee is substituted.	Cross-cutting sectors (excluding tourism) For cross-cutting sectors real GDP is replaced by nominal GDP, and hours paid is replaced by number of employees; hence calculation is nominal GDP divided by number of employees.
Real GDP (Gross domestic product)	GDP adjusted to remove the effect of price changes/inflation to show the change in the volume of goods and services produced in New Zealand. In this report, it is expressed in constant 2010 prices.	Cross-cutting sectors (including tourism) Data not available.

Financial terms and definitions

The report uses the following financial metrics

Term	Definition	Comment
Capital stock per worker	Indicates capital intensity. The capital stock includes fixed assets such as buildings, roads and machinery, and intangible items such as software and exploration expenditure, less accumulated depreciation.	Cross-cutting sectors (excluding tourism) n/a Tourism Capital stock, divided by employment (fte).
Debt ratio	Debt ratio equals total liabilities of all firms in sector divided by total assets of all firms in sector.	Cross-cutting sectors (excluding tourism) Statistics New Zealand, Annual Enterprise Survey statistics, custom job.
Return on equity	Surplus before income tax divided by shareholders' funds.	Cross-cutting sectors (excluding tourism) Statistics New Zealand, Annual Enterprise Survey statistics, custom job.
Surplus per employee	Surplus before income tax of all firms in sector divided by rolling mean employment.	Cross-cutting sectors (excluding tourism) Statistics New Zealand, Annual Enterprise Survey statistics, custom job.
Total income per employee	Total income of all firms in sector divided by rolling mean employment. Total income includes sales, interest, dividends, donations, government funding, grants and subsidies, and non-operating income.	Cross-cutting sectors (excluding tourism) Statistics New Zealand, Annual Enterprise Survey statistics, custom job.
Total income per firm	Total income of all firms in sector divided by the number of firms in the sector. Income includes sales, interest, dividends, donations, government funding, grants and subsidies, and non-operating income.	Cross-cutting sectors (excluding tourism) Statistics New Zealand, Annual Enterprise Survey statistics, custom job.

Sources: economic data

The following sources were used for economic data

Metric	Source for standard ANZSIC sectors	Source for tourism	Source for other cross-cutting sectors
Nominal GDP	Statistics New Zealand, Infoshare Database, System of National Accounts 1993, SND, GDP(P), Nominal, Actual, ANZSIC06 industry groups (Annual-Mar).	Statistics New Zealand, Tourism Satellite Account: 2013, Table 1 Tourism expenditure by component, Direct tourism value added.	Statistics New Zealand, value added estimates from customised Annual Enterprise Survey tables. Note: this data has not been through the System of National Accounts, so is indicative only.
Real GDP	Statistics New Zealand, Infoshare Database, National Accounts, System of National Accounts 1993, SND, GDP(P), Chain-volume, Actual, ANZSIC06 industry groups (Annual-Mar). Adjusted so that 2011 real GDP = 2011 Nominal GDP.	n/a	n/a
Goods exports	Statistics New Zealand, merchandise exports, obtained by matching commodities to the ANZSIC06 industry that characteristically produces them. Note: sector exports values will exclude items suppressed in accordance with Statistics New Zealand's confidentiality policy. For more information, see http://www.stats.govt.nz/about_us/policies-and-protocols/trade-confidentiality.aspx	n/a	Statistics New Zealand, merchandise exports, obtained by matching commodities to the ANZSIC06 industry that characteristically produces them

Sources: economic data *continued*

Metric	Source for standard ANZSIC Sectors	Source for tourism	Source for other cross-cutting sectors
Employment	<p>Statistics New Zealand, Table Builder, Linked Employer-Employee Data (LEED) Tables (annual), Table 1.6: Main Earnings Source by Industry (NZSIOC): employees and self-employed.</p> <p>Some more detailed analyses use numbers of employees (excluding self-employed) from Statistics New Zealand's Business Demography Statistics.</p>	<p>Statistics New Zealand, Tourism Satellite Account: 2012, Table 4, Direct employment in tourism (FTEs) and Employment (FTEs) in tourism as a percentage of total. See http://www.stats.govt.nz/browse_for_stats/industry_sectors/Tourism/tourism-satellite-account-2012/tourism-employment.aspx for more information on the tourism FTE measure.</p>	<p>Statistics New Zealand, LEED, custom job.</p>
Productivity	<p>Real GDP divided by hours paid. Hours paid data from Statistics New Zealand, Infoshare Database, Productivity Input Series – Industry Level (ANZSIC06) (Annual–Mar), Hours, Gross. Manufacturing hours paid for 2010 split into manufacturing sub-sectors using QES hours paid and rated back using productivity indexes from Statistics New Zealand.</p>	<p>Substituted nominal GDP per employee.</p>	<p>Substituted nominal value added/employment.</p>
Investment in fixed assets	<p>Statistics New Zealand, Infoshare database, System of National Accounts 1993 – SND, Series, GDP(E), Nominal, Actual, Asset type (Annual–Mar), Gross Fixed Capital Formation.</p> <p>The all sector total excludes some industries – see note on the following page.</p>	<p>Statistics New Zealand, Tourism Satellite Account – TSA, Table: Gross Fixed Capital Formation by Asset Type and by Industry (ANZSIC06) (Annual–Mar). Note: data only available for certain years up to 2009.</p>	<p>Statistics New Zealand, Additions less disposals of fixed assets from customised Annual Enterprise Survey tables. Note: this data has not been through the System of National Accounts, so is indicative only.</p>
Number of firms	<p>Statistics New Zealand Table Builder, Business Demography Statistics, Detailed Industry for Enterprises, number of enterprises.</p>	<p>n/a</p>	<p>Customised Business Demography Statistics, number of enterprises.</p>

Sources: financial data

The following sources were used for financial data

Metric	Source for standard ANZSIC Sectors	Source for tourism	Source for high & medium-high technology manufacturing
Surplus per employee	Statistics New Zealand, Annual Enterprise Survey release, surplus per employee count. The all sector total excludes some industries – see note below.	n/a	Statistics New Zealand, customised Annual Enterprise Survey data, surplus per employee count.
Return on equity	Statistics New Zealand, Annual Enterprise Survey release, return on equity. Total excludes some industries – see note below.	n/a	Statistics New Zealand, customised Annual Enterprise Survey data, return on equity.
Debt ratio	Statistics New Zealand, Annual Enterprise Survey release, total liabilities (current and other) divided by total assets. The all sector total excludes some industries - see note below.	n/a	Statistics New Zealand, customised Annual Enterprise Survey data, total liabilities (current and other) divided by total assets.
Capital stock per worker	Statistics New Zealand, National Accounts (Industry Benchmarks): Year ended March 2010, Table 14 Net capital stock by industry, current prices (replacement cost), 1987–2010, divided by employment.	Statistics New Zealand, Tourism Satellite Account, capital stock, divided by employment. Note: capital stock data is only available up to 2012 and does not incorporate the National Accounts revisions published in November 2013.	n/a

Note: AES data excludes residential property operators, foreign government representation, religious services, private households employing staff and superannuation funds.

Sources: Business Operations Survey, example firms, and others

Business Operations Survey

The Business Operations Survey collects information on the operations of New Zealand businesses. This information is used to quantify business behaviour, capacity and performance. The survey gives insights into business activities, barriers, and motivations, and the effects behind New Zealand business operations.

Data from the Business Operations Survey was used to calculate barriers to exporting and innovation, innovation and R&D rates by sector; the rate of outward direct investment and foreign direct investment by sector, and percentage of firms in a sector reporting overseas income.

Size of Business Operations Survey

The survey is run annually and typically information is collected from approximately 36,000 firms operating in New Zealand with six employees or more.

Customised data for the Sectors Report

Data for the cross-cutting sectors (information and communications technology, high technology manufacturing, tourism, and knowledge intensive services) and some of the manufacturing sectors was provided by Statistics New Zealand as a custom job. This data may be below the level the survey is designed for and so should be treated with caution.

Detailed information on the Business Operations Survey is available from www.stats.govt.nz

Example firms: sources and limitations

The example firms are sourced from the Kompass database, Management Magazine's top 200 firms (2012), plus various websites, annual reports and the TIN 100 publication (2012).

Firms allocated to sectors in this report may not match firms included in official statistics. Statistics New Zealand does not release firm level data. In most cases numbers employed and turnover quoted for example firms are estimates.

MBIE welcomes corrections to the data for the example firms.

Other sources

Other data sources, such as the Comtrade database, are noted on the page on which they occur.

Export data limitations

This report attributes exports to sectors by mapping products and services to the sector most likely to produce them

Classifying exports by sector

Statistics on exports are collected according to product or service type and not according to the sector that generates the exports.

Statistics New Zealand collects goods trade statistics using the New Zealand Harmonised System Classification 2012 (NZHSC). This is based on the World Customs Organization's (WCO) Harmonized Commodity Description and Coding System (HS).

Firms are classified into sectors using the Australian and New Zealand Industrial Classification (ANZSIC) system.

To obtain insight into the export performance of sectors for this report, Statistics New Zealand prepared a concordance that maps HS codes (how goods exports are classified) to ANZSIC codes (how sectors are classified).

This concordance allocates exports to sectors based on the **type of product the sector is most likely to produce**. Hence, logs and fruit are attributed to the agriculture, forestry & fishing sector, while sawn wood products are attributed to the wood & paper sector, and milk powder and frozen beef are attributed to food & beverage manufacturing.

Treat with caution

The export data for sectors provided in this report is believed to be broadly correct, but should be treated with caution. The method used means that some sectors which clearly do export, have no or few exports allocated.

The clearest example is the wholesaling sector. Many wholesalers operating in New Zealand export products on behalf of the producers of those products, or purchase and on-sell them overseas. These exports are attributed to the sector that manufactured, grew, harvested or mined them, rather than to the wholesaling sector. Experimental data from Statistics New Zealand indicates that the value of goods exports by wholesale trade firms was around \$8b in 2011.

Services exports

Statistics New Zealand publishes services exports data by service type as part of its balance of payments statistics every quarter. These are calculated using a variety of different surveys and administrative data sources.

In this report, we have allocated exports of transportation, insurance and government services not included elsewhere to the logistics, finance & insurance, and government sectors, respectively.

Commercial services by sector came from an industry breakdown from the Census of International Trade in Services and Royalties: Year ended June 2011 (not available for 2012).

There is no breakdown of travel exports by sector. Travel exports include all spending on goods and services by non-resident visitors to New Zealand. It overlaps considerably with tourism exports, but includes spending by international students here for more than a year as well as those here for up to a year (whereas tourism only includes those here for up to a year) and excludes tourists' international airfares (which are included in tourism, but are part of transportation exports in the balance of payments).

Further reading: information on the New Zealand economy

Publication	Available from
The Regional Economic Activity Report 2013 The Regional Economic Activity Report presents available official economic data on New Zealand's 16 regions. The report, which will be annual, provides regional economic information sourced from a number of government agencies.	www.mbie.govt.nz
Regional Government Expenditure Report The Regional Government Expenditure Report provides the first ever snapshot and analysis of estimated central government spending for each region in New Zealand.	www.mbie.govt.nz
Situation and Outlook for Primary Industries (SOPI) 2013 Published annually, this report provides up-to-date information about the performance of New Zealand's primary sectors – dairy, meat and wool, forestry, horticulture, arable and, for the first time, seafood – and gives independent forecasts of future prospects.	www.mpi.govt.nz
The Food and Beverage Information Project reports The project pulls together all the available information on the food and beverage industry into one place, in a form which is familiar and useful to business. Over 20 reports are available on every aspect of New Zealand's food industry, including information on export market and investment opportunities. New and updated reports are released annually.	www.foodandbeverage.govt.nz
Tourism Satellite Account (2013) Published annually, the Tourism Satellite Account provides a picture of the role tourism plays in New Zealand, including the changing levels and impact of tourism activity, and the industry's contribution to the economy.	www.stats.govt.nz



Further reading: The Government's Business Growth Agenda reports

Publication	Available from:
<p>Building innovation The building innovation work stream of the Business Growth Agenda aims to grow New Zealand's economy by encouraging and enabling investment in research and development, and lifting the value of public investments in science and research.</p>	<p>www.mbie.govt.nz</p>
<p>Export markets The export markets work stream of the Business Growth Agenda aims to increase exports by New Zealand businesses, which is necessary to lift New Zealand's economic growth and living standards.</p>	<p>www.mbie.govt.nz</p>
<p>Building infrastructure The building infrastructure work stream of the Business Growth Agenda aims to provide the physical platform that will support sustained economic growth.</p>	<p>www.mbie.govt.nz</p>
<p>Natural resources The building natural resources work stream of the Business Growth Agenda aims to make better use of New Zealand's abundant natural resources, so we can continue to grow our economy and look after our environment.</p>	<p>www.mbie.govt.nz</p>
<p>Skilled and safe workplaces The skilled and safe workplaces work stream of the Business Growth Agenda aims to improve the safety of the workforce and build sustained economic growth through a skilled and responsive labour market.</p>	<p>www.mbie.govt.nz</p>
<p>Building capital markets The building capital markets work stream of the Business Growth Agenda aims to ensure New Zealand has high performing capital markets that support investment, growth and jobs.</p>	<p>www.mbie.govt.nz</p>
<p>Business Growth Agenda Progress Report 2013 The Business Growth Agenda Progress Report 2013 shows the significant progress the Government has made across each of the six areas that are critical to business success and growth: Export Markets, Capital Markets, Innovation, Skilled and Safe Workplaces, Natural Resources and Infrastructure.</p>	<p>www.mbie.govt.nz</p>

The Ministry of Business, Innovation & Employment (MBIE) welcomes comment and feedback on this report, and on the measures the Government is taking to facilitate the development of competitive and successful knowledge intensive services. Email: sectors.reports@mbie.govt.nz

