

ANNUAL TELECOMMUNICATIONS MONITORING REPORT

2014



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Executive Summary

This is the Commerce Commission's eighth annual telecommunications market monitoring report. It is produced as part of the Commission's ongoing monitoring of the evolution of competition in the telecommunications sector in New Zealand.

The past 17 months have been eventful for the telecommunications industry with some highlights being the sale of valuable 700MHz spectrum for 4G mobile use, further industry consolidation, better-value mobile bundles, increasing average broadband speeds, and the launch of multiple streaming services.

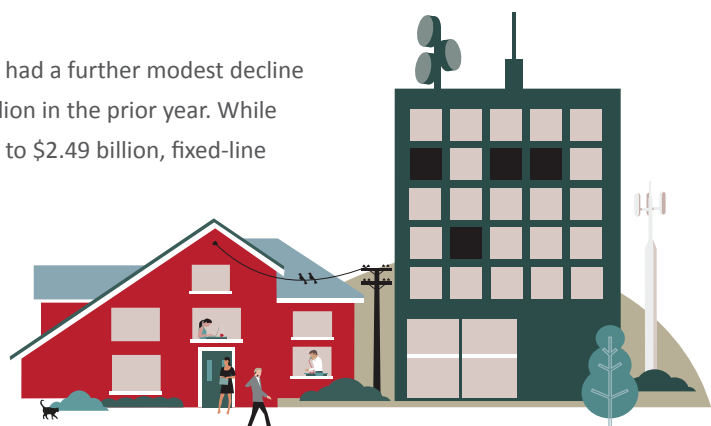
The UFB fibre network roll-out continued to underpin a high level of investment by the telecommunications industry. Investment increased again to reach \$1.69 billion, equal to the previous high set in 2008/09.

Fixed broadband connections continued growing to reach 1.39 million as at 30 June 2014, up from 1.32 million in the prior year. Average data consumed per connection again increased strongly to reach 32GB, up from 26GB in the prior year.

Fixed-line connections were static. While there has been a gradual decline in households getting a voice service over their fixed-line, retaining a fixed-line is usually necessary to consume reasonable quantities of data.

Fixed-line calling volumes continued their decline to hit 8.26 billion minutes. Mobile calling minutes continued their rebound, to nearly offset the fall in fixed minutes, and reach a new high of 5.3 billion minutes for 2013/14.

Total retail telecommunications revenues had a further modest decline in 2013/14 to \$5.17 billion from \$5.21 billion in the prior year. While there was a small rise in mobile revenues to \$2.49 billion, fixed-line revenues fell to \$2.68 billion.



NZ telecommunications snapshot statistics	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
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Total industry metrics

Total telecommunications retail revenue (\$bn)	4.92	4.9	4.92	4.93	4.96	5.03	5.52	5.21	5.17
Total telecommunications investment (\$bn)	0.92	1.07	1.18	1.69	1.55	1.24	1.27	1.58	1.69
Average monthly household telecommunications spend (\$) ^a		126	–	–	145	–	–	142	–

Fixed-line metrics

Fixed lines (mil)	1.85	1.85	1.86	1.87	1.88	1.88	1.88	1.85	1.85
Total fixed broadband connections (mil)	0.48	0.68	0.85	0.98	1.05 ^b	1.14	1.24	1.32	1.39
Fixed-line broadband connections per 100 pop	11.6	16.3	19.8	22.8	24.5	26	28	29.5	31
Average broadband speed – Akamai Q4 (kbps)	–	–	2.7	3	3.4	3.7	4	5.3	7.3
Number of unbundled lines (000's)	–	–	3	37	67	98	116	129	131
Resold Telecom phone lines (000's)	–	168	262	326	374	414	440	421	409
Wholesale broadband lines (not Spark) (000's)	100	165	251	285	312	362	420	455	463
Chargeable fixed call minutes (bn)	7.29	6.91	6.71	6.67	6.25	6.12	5.71	5.47	5.13
Non-chargeable fixed call minutes (bn)	–	–	5.31	5.06	4.65	4.45	4.29	3.50	3.13
Total fixed-line retail revenues (\$bn)	2.99	2.93	2.93	2.88	2.89	2.89	2.83	2.77	2.68
Spark share of fixed-line rental revenues (%)	80	79	78	76	71	68	62	60	58

Mobile metrics

Mobile connections (mil)	3.8	4.25	4.58	4.7	4.7 ^c	4.8	4.9	4.9	5.3
Active mobile connections per 100 population	92	102	108	109	108	110	111	110	118
Share mobile prepaid (%)	68.2	67.8	67.6	66.1	67.2	65.7	64.9	63.3	63.6
Mobile voice call minutes (bn)	2.76	3.17	3.66	4.24	4.44	4.40	4.42	4.77	5.30
SMS messages sent (bn)	–	–	–	11.4	12.8	13.6	13.9	13	12
Total mobile retail revenues (\$bn)	1.93	1.97	2.00	2.05	2.07	2.14	2.38	2.44	2.49

a. Data published every three years.

b. From this year onwards this measure no longer includes fixed wireless subscribers.

c. From this year onwards, this is connections active in the last 90 days rather than six months as was previously used.

Introduction

Purpose of this report

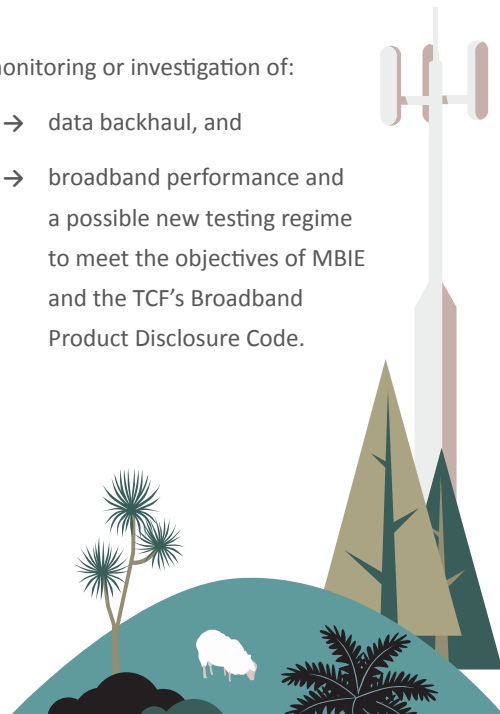
This is the Commerce Commission's eighth annual telecommunications market monitoring report. It looks at the state of telecommunications markets in New Zealand and developments that occurred largely during the 2014 calendar year. The report also examines trends in telecommunications markets for the period since the Commission started its monitoring in 2006.

The Commission is interested in the state of telecommunications markets because of its function of promoting competition in these markets by regulating some wholesale prices and conditions. Telecommunications markets are complex, and a range of indicators have to be analysed to get an indication of the overall state of competition.

This report is released under section 9A of the Telecommunications Act 2001, which requires the Commission to monitor telecommunications markets and generally make available reports, summaries, and information resulting from the monitoring. This monitoring is in addition to that associated with specific determinations.

Our other section 9A activities currently include the monitoring or investigation of:

- high concentration levels in the business segment of the mobile market,
- mobile device-locking to operators' networks,
- national roaming and infrastructure sharing for mobile networks,
- internet traffic management practices,
- data backhaul, and
- broadband performance and a possible new testing regime to meet the objectives of MBIE and the TCF's Broadband Product Disclosure Code.



Data sources

Since the publication of its first annual telecommunications market monitoring report in March 2008, the Commission has continued to collect data from telecommunications operators, to understand trends in the New Zealand telecommunications markets and to inform the industry and the public.¹

The data in this report originates from various sources,² but mainly from the Commission's 2013/14 Telecommunications Industry Questionnaire and prior year questionnaires. The data from this industry questionnaire relates to the year ending 30 June 2014, but more recent industry data is also used where available.

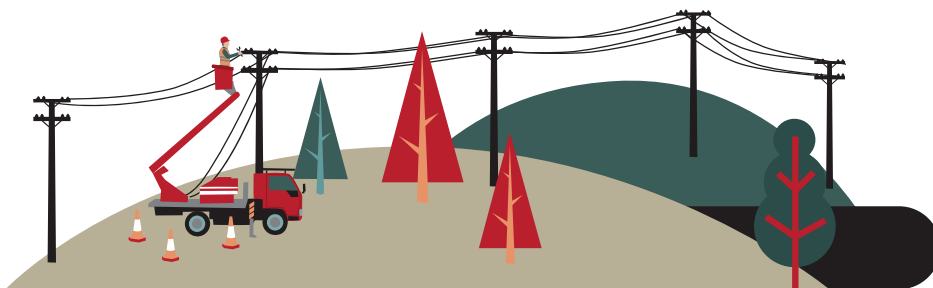
The mobile part of the 2013/14 questionnaire was updated in order to better monitor new trends in the market.³ There have been many changes in both the supply and demand for mobile services. These include the bundling of minutes; texts and data becoming predominant; and the rise of new services such as machine-to-machine (M2M) services.

A consequence of the change in mobile data collection is that revenue is now mostly categorised by type of plan rather than asking respondents to allocate bundled revenue to individual services.

The data used is sometimes revised by the respondents or the Commission when it appears inaccurate, an error has been made, or it was an estimate. Consequently, some prior year figures used previously have been revised. Some of the data submitted by respondents for the current year was estimated. We have also had to estimate some data to make up for omissions by some operators.

The Commission would like to thank operators who submitted data for this report and looks forward to their continued cooperation.

The Commission welcomes any comments or feedback on any aspect of this report.



1. Commerce Commission, 'Market Monitoring': comcom.govt.nz/IndustryRegulation/Telecommunications/MonitoringandReporting/DecisionsList.aspx
2. Where publicly available data has been used, for example from annual financial reports, its sources are indicated accordingly.
3. Some of the new data requested was not available retrospectively on the respondent's systems.

Market overview

This section gives an overview of telecommunications markets by observing levels of investment, and changes in subscribers, call volumes, and industry revenues. It also notes significant industry events.

The 2014 year and first few months of 2015 have seen a lot of changes in the telecommunications industry. A list of many of these changes is given in the 'Year in review' section at the end of this report. Some of the more significant changes are summarised below.

700MHz spectrum auction completed

The 700MHz spectrum auction process was completed in June 2014 with mobile carriers Telecom, Vodafone and 2degrees getting their final allocation of frequencies in this spectrum band to enable them to provide improved 4G mobile services. Compared to 3G, 4G can provide much higher data speeds to consumers.

The 700MHz spectrum is particularly valuable for 4G mobile networks because it covers larger areas and will propagate through the walls of buildings much better than the 1800MHz spectrum already in use. The economic benefits of enabling the 700MHz spectrum to be used for 4G mobile services were estimated by the government at up to NZ\$2.4 billion over 10 years.

Orcon sold again

In June 2014 CallPlus, New Zealand's third largest ISP, announced that it was purchasing Orcon, the fourth largest ISP. Orcon had been sold by its previous owner, Kordia, to a consortium of investors only a little over a year earlier in April 2013.

The latest sale was completed in July 2014 but Orcon has continued to trade as an independent brand. CallPlus, which also owns Slingshot and Flip, considers the purchase gives it a combined share of around 15% of the retail market. Economies of scale can be important in the telecommunications industry.

Telecom becomes Spark

In August 2014, New Zealand's largest telecommunications retailer and former incumbent Telecom changed its name to Spark. The new name reflected industry changes, with the company doing more than providing copper-line telephone services and Chorus now owning the fixed-line access network.

Wholesale copper pricing reduced but not finalised

From 1 December 2014, the price Chorus could charge for wholesale broadband access over a copper line, known as UBA (unbundled bitstream access), reduced to a benchmarked cost-based price. This new price had been set by an earlier benchmarking process, but a final pricing review (FPP) to further reset prices according to the outcome of cost modelling was requested. Draft FPP prices were released on 2 December 2014 and a further draft will be released on 2 July 2015.

Fibre becoming more common

The UFB project is starting to have some impact, with the number of fibre connections continuing to increase rapidly from a small base. The government recently reported that, as at 31 March 2015, the number of UFB connections exceeded 85,000 and fibre passed more than 618,000 premises.

While fibre brings much faster broadband speeds to consumers for only a little more cost, it can also provide large savings to businesses requiring more than one telephone line for voice services. Businesses can purchase a voice service provided over one fibre that is equivalent to what previously required multiple copper telephone lines, and at a lower price.

New online streaming services keep arriving

Multiple new video streaming services offering TV series and/or movies over broadband were launched in the second half of 2014 and early 2015. These are pay-per-view and/or have a fixed monthly subscription. Spark launched its Lightbox service in August 2014, Video Ezy launched VideoEzyOnDemand in September 2014, Sky TV launched its Neon service in February 2015, after some delays, and US-founded Netflix arrived in New Zealand in March 2015. They joined the existing Quickflix and EzyFlix and free streaming services such as TVNZ OnDemand. Later in 2015 Freeview Plus will become available on new TVs and, with the help of a broadband connection, will integrate on-demand services for free-to-air content with live Freeview channels.

The uptake of such data-hungry services should be helped by recent price reductions by Spark and Vodafone for their unlimited fixed-line broadband and phone bundles. Both providers now charge \$99 per month for bundles with unlimited data, and such bundles can be obtained for the same price or less from competing retailers such as Slingshot and Snap.

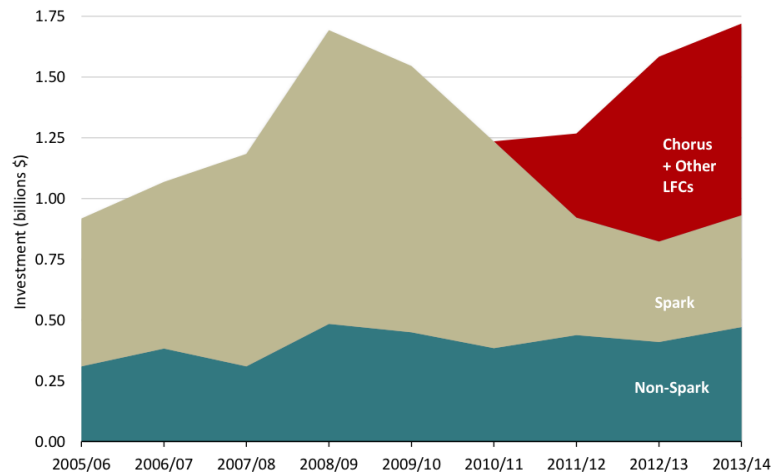
2degrees buys Snap

The much signalled move into the fixed-line market by mobile operator 2degrees finally came about in March 2015 with its purchase of ISP Snap. The two companies plan to combine under the 2degrees brand to deliver broadband and mobile services to consumers nationwide like the other retailers who have mobile networks. 2degrees is also investigating partnering with content providers.

UFB continues to underpin high level of telecommunications investment

Telecommunications industry investment continued at a high level in 2013/14, rising somewhat from the prior year, underpinned by the continued UFB fibre roll-out being undertaken by LFCs as shown in *Figure 1*. Total reported investment by the telecommunications industry reached \$1.69 billion in 2013/14, equalling the peak reached in 2008/09.

Figure 1: Telecommunications investment



The current high level of telecommunications investment continues to include more ‘hard’ investment in physical network infrastructure compared to the 2008/09 peak when there was a lot of ‘soft’ investment in IT, product development, and systems. This can be seen from *Figure 2*.

Figure 2: Investment by component

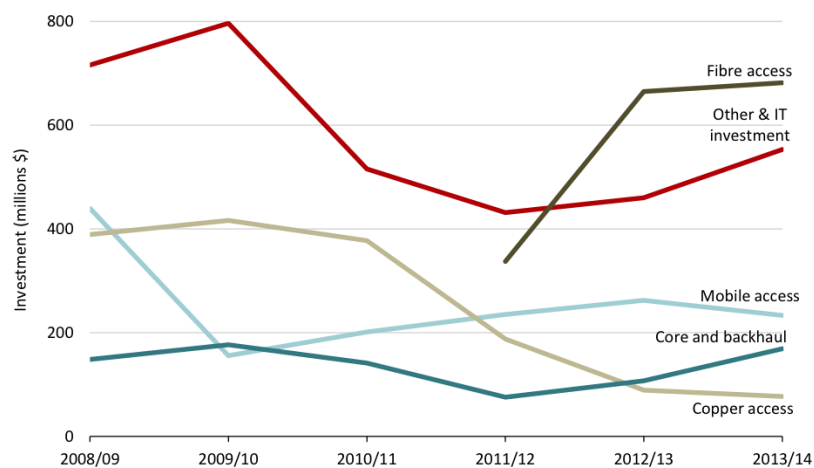


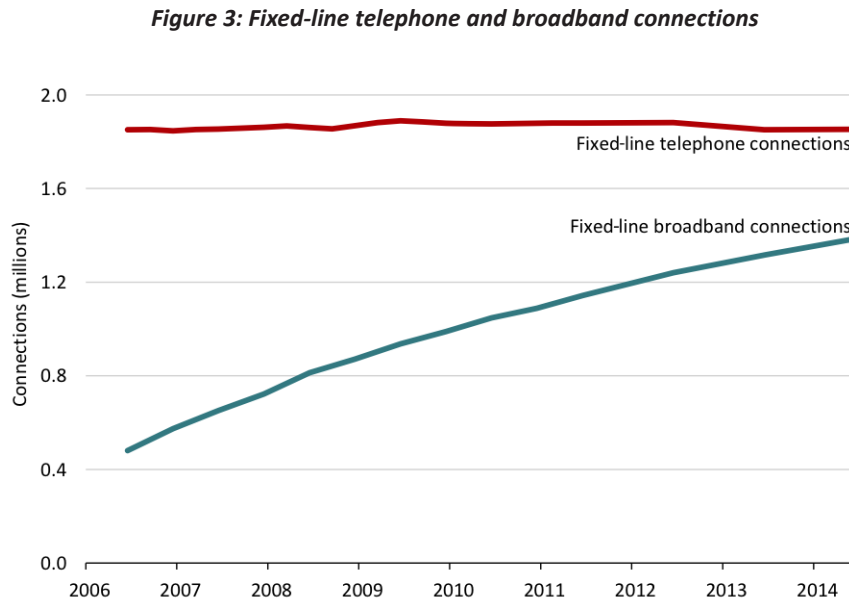
Figure 2 shows trends in the various components of total telecommunications investment, with investment in the fixed access network split into copper and fibre access from the 2011/12 year. There would have been negligible annual investment in fibre access before that date.

Investment in the fibre access network has increased dramatically in recent years on the back of the UFB project, and maintained its high level in 2013/14 as mentioned above. Investment in core and backhaul networks increased significantly in 2013/14 to reach \$215 million.

Broadband connections of all types continue to grow

Telecommunications voice services are delivered over fixed-line connections and wireless connections. Nearly all types of fixed-line connection can be used to deliver a broadband service. Most wireless services can also deliver a broadband service, provided the user has an appropriate mobile phone or other wireless device.

Figure 3 shows that the number of fixed-line telephone connections has essentially remained static, while fixed-line broadband connections have continued to grow steadily and reached 1.39 million in mid-2014.



It appears that the total number of fixed-line connections is not in decline despite the rising use of mobile devices. This may be because the large amounts of data being used by households are generally only able to be delivered cost-effectively by a fixed-line connection. The continued roll-out of fibre also offers the opportunity to get very high speed broadband.

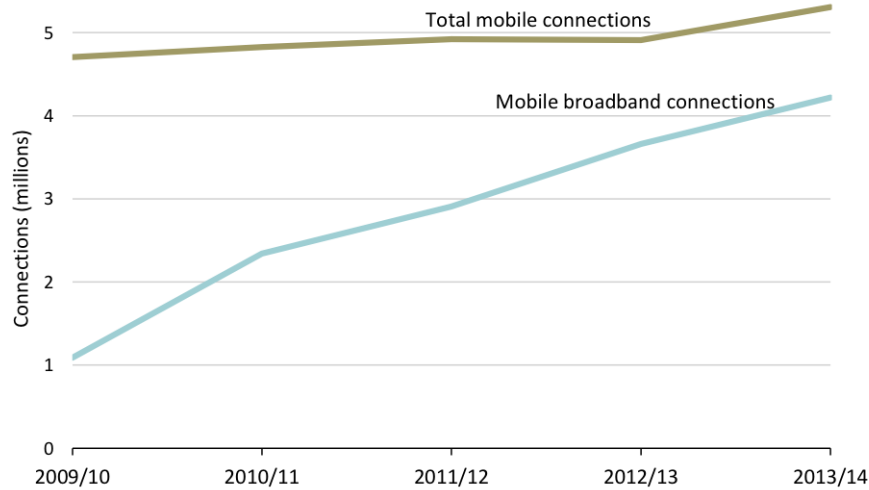
The OECD compares the rate of broadband penetration between countries by measuring connections per 100 of population. As at 30 June 2014, New Zealand had 31.2 fixed-line broadband subscriptions per 100 of population, compared with the OECD average of 27.4. This gave New Zealand a continued ranking of 15 out of 34 OECD countries, ahead of the US at 16 and Australia at 20.

Households need only one fixed-line connection, so the number of fixed-line connections is much less than the actual number of users served by those lines. This is in contrast to mobile connections, which tend to serve one user or less as many mobile users have more than one mobile device.

Although mobile broadband is a newer service than fixed-line broadband, it has become more accessible with the rapid growth in smartphone use in recent years.

Figure 4 shows total mobile connections mostly grew slowly over the four years to 2013/14, while the number of mobile connections that were also mobile broadband connections⁴ rose rapidly to reach a high proportion (80%) of total mobile connections.

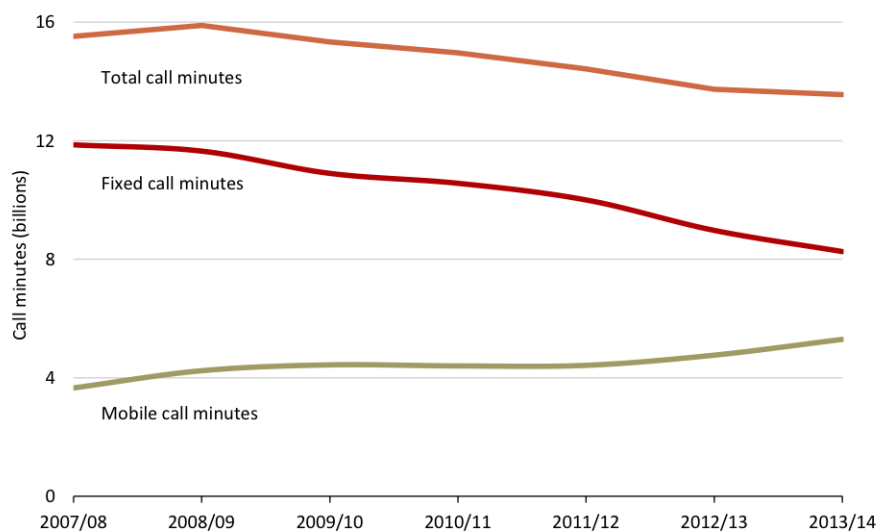
Figure 4: Total mobile and mobile broadband connections



Calling volumes continue opposing trends

Figure 5 shows that total calling minutes continued their gradual decline started after 2008/09, with fixed and mobile calling continuing their opposing trends of mobile rising and fixed falling.

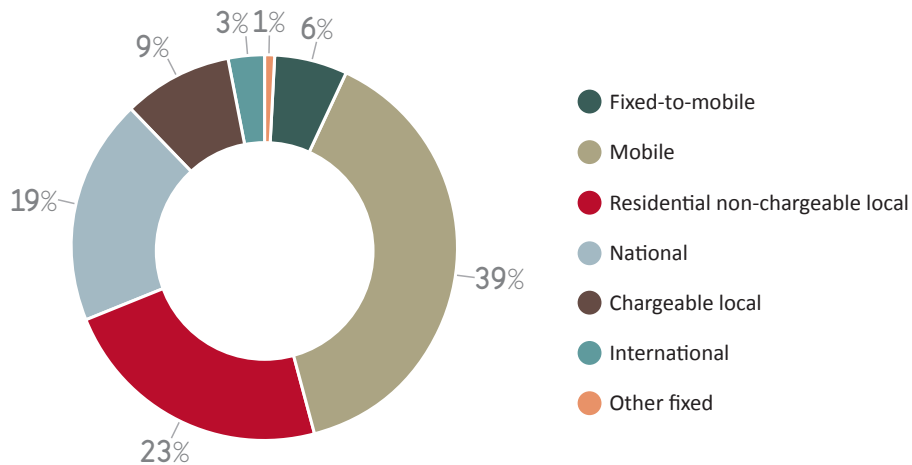
Figure 5: Fixed, mobile, and total calling minutes



4. This is mobile broadband connections as defined by the OECD and includes dedicated data-only connections and add-ons as well as casual mobile broadband use by other mobile users in the prior three months.

Residential non-chargeable, or 'free' local calling, now makes up 23% of total calling minutes, while total mobile calling has grown to 39% of total calling minutes, as shown in *Figure 6*. National calling is down one percentage point from the prior year at 19%.

Figure 6: 2013/14 calling minutes by call type

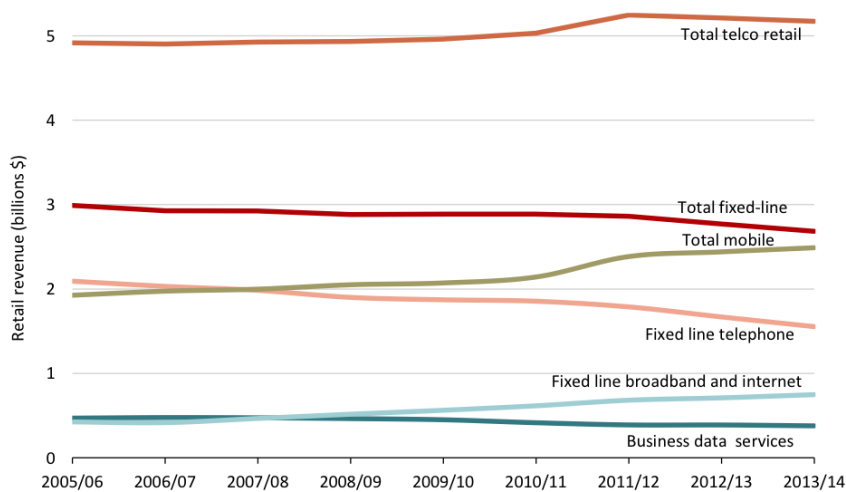


Total revenue rise declines again

Surveyed telecommunications industry retail revenues had essentially been flat for five years before appearing to pick up in 2011/12. However, total revenue fell slightly in 2012/13 and again in 2013/14 to \$5.17 billion.

Figure 7 shows that, like calling, total mobile and fixed revenues have opposing trends, although the fixed-line broadband and internet component has continued to rise while all other fixed-line revenues continued to fall.

Figure 7: Telecommunications retail revenues by service



Retail fixed-line market

This section examines the fixed-line market. It starts with an overview of the market and then looks at the fixed-line voice market, followed by the fixed-line broadband market, international price comparisons, and concludes with broadband quality.

Market overview

Spark (formerly Telecom) continues to be the largest fixed-line retailer. While it is no longer vertically integrated because Chorus owns the copper access network, it continues to provide a nationwide voice, broadband and data services for its own customers, and also voice services for many customers served by its competitors.



Vodafone is the second biggest fixed-line retailer. It owns the cable broadband network that covers much of Wellington and Christchurch. It also makes extensive use of Unbundled Copper Local Loops (UCLL) and resale services to provide fixed-line retail services in other locations around New Zealand.

Some way behind Vodafone but well ahead of the rest of the fixed-line retailers is CallPlus, which sells its services under the brands Slingshot, Flip, CallPlus, 2Talk and now Orcon. It also makes use of UCLL and resale services.

UCLL requires retailers to install their own infrastructure in exchanges, which gives them more control over the quality of the service and a cost-based price. Nearly all exchanges with a reasonable number of lines have now been unbundled, although many exchanges have only one or two retailers providing an unbundled service.

The alternative to unbundling on the copper network is for retailers to buy a wholesale UBA service from Chorus. This requires less investment in infrastructure but gives less control over the service.

Where lines have been cabinetised – meaning broadband is supplied from a fibre-fed cabinet closer to end-user premises – unbundling line from the cabinet is generally not economic for retailers. Instead, they purchase UBA from the cabinet (Sub-Loop UBA or SLUBA), but may provide voice from the exchange using their own equipment by buying a Sub-Loop Extension Service (SLES). This means nearly all retailers using UCLL also use UBA services in order to provide broadband to both cabinetised lines and lines served by exchanges that have not been unbundled.

Some retailers use only UBA services to provide broadband. These retailers include WorldxChange, Trustpower, and Snap.⁵ Retailers using UBA usually bundle a conventional dedicated voice service with broadband to allow consumers to have all their fixed-line services on one bill from that retailer. Retailers buying UBA now also always have to pay a line access charge equal to the price of UCLL.

5. A number of other very small telecommunications retailers also operate in New Zealand.

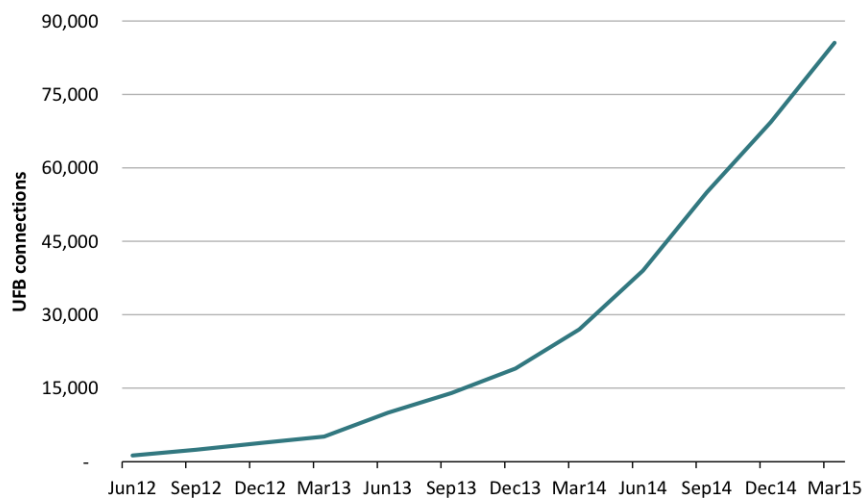
Where a line is not unbundled, retailers usually purchase a conventional voice service from Spark, but in some areas a Baseband service can be purchased from Chorus that allows the retailer to offer a conventional voice service directly. The other option for delivering a voice service is to deliver voice as data using VoIP via a bitstream service, like Orcon does with its Genius service. This means the retailer can avoid buying a conventional dedicated analogue voice service.

An ever-growing number of end-users have a fibre access network running past their homes or businesses, with fibre progressively being rolled out by the winners of the UFB tender. Fibre now passes more than 618,000 premises. The wholesalers of fibre are Chorus for most of the country, NorthPower in Whangarei, Ultra Fast Fibre led by WEL Networks in Hamilton, Tauranga, Tokoroa, New Plymouth, Hawera, and Whanganui, and Enable Networks in Christchurch.

Consumers have to purchase telecommunications services delivered by fibre from an independent retailer. Fibre retailers now include Spark, Vodafone, Orcon/Slingshot/CallPlus, WorldxChange, Trustpower, Snap, Compass and MyRepublic.

Figure 8 shows that the number of consumers, including businesses, getting connected to the UFB network to purchase fibre services has continued to increase rapidly, reaching 85,000 by the end of March 2015.

Figure 8: UFB Connections

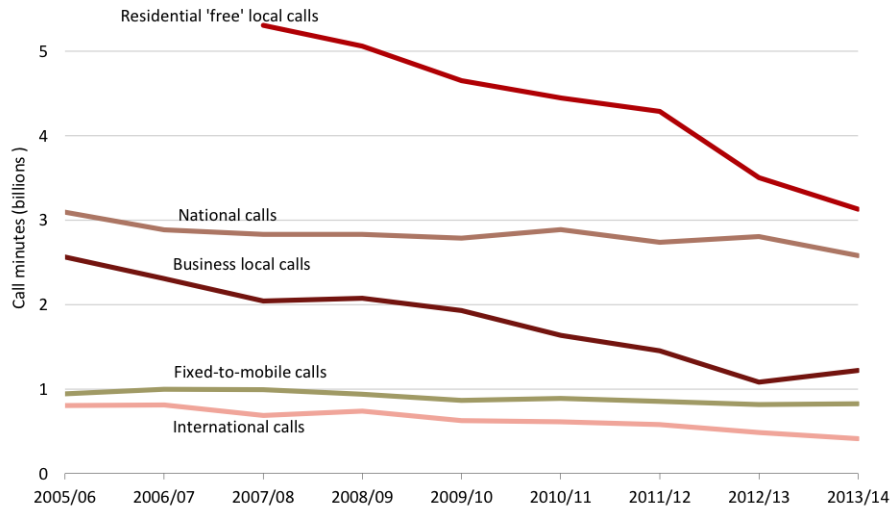


While fibre brings much faster broadband speeds to consumers for only a little more cost, it can also provide significant savings to businesses requiring more than one telephone line for voice services. Businesses can purchase voice services provided over one fibre line equivalent to what previously required multiple copper telephone lines, and the service is available at a much lower price than multiple copper lines.

Fall in calling largely continues

Figure 9 shows that most forms of fixed-line calling again continued to decline in 2013/14. Business local calling appeared to have bucked the trend and risen, although it is possible it was under-reported in the prior year. Fixed-to-mobile calling has probably held up because there has been increased calling on the mobile networks.

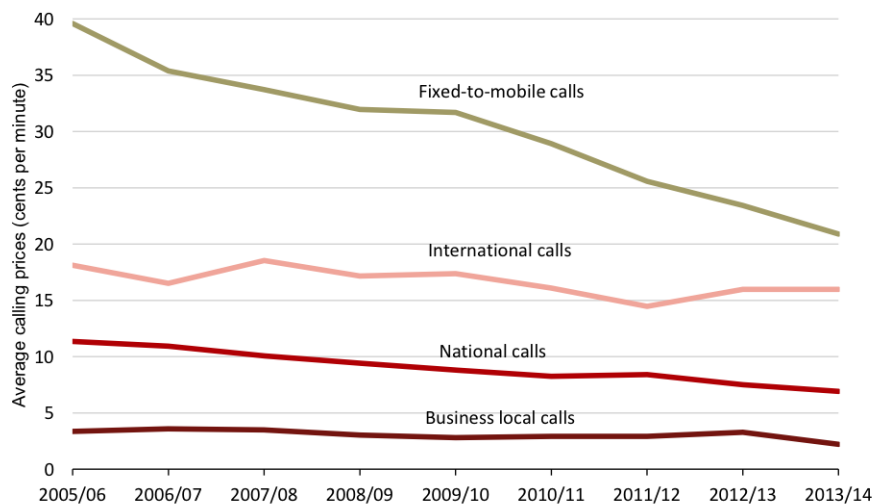
Figure 9: Fixed-line retail call minutes by call type



The number of consumers and businesses using Voice over Internet Protocol (VoIP) rather than the Public Switched Telephone Network (PSTN) voice service requiring a dedicated low-frequency service has continued to increase. Where VoIP calls connect to the PSTN and the VoIP operator charges for the service, the minutes and revenues are required to be included in the data captured for this report. We are not able to capture the increasing number of VoIP to VoIP calls that never enter the PSTN.

Figure 10 shows there was a continuing fall in the prices of most call types. The biggest fall came for fixed-to-mobile calling, where the average price (excluding GST) decreased to 20cpm (cents per minute). The mobile termination rate is regulated and is the main wholesale cost of providing the retail service.

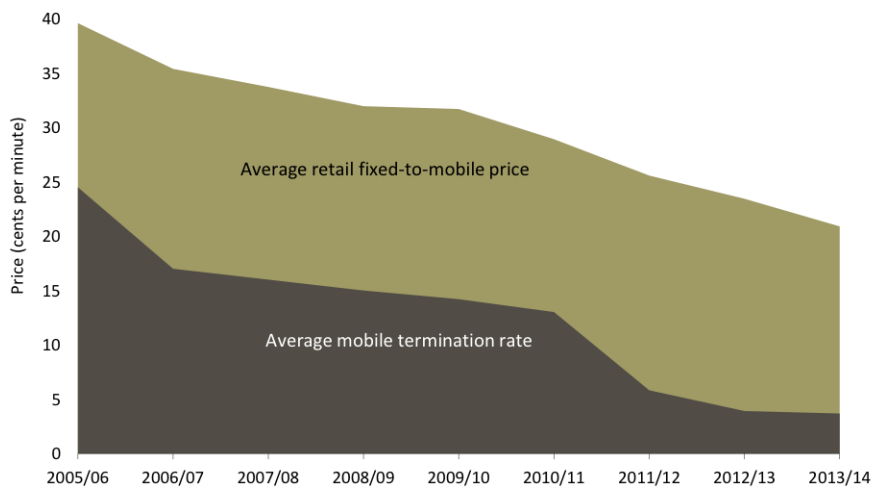
Figure 10: Average fixed-line calling prices by type



The mobile termination rate had the last of its regulated reductions to 3.56cpm on 1 April 2014, giving an average mobile termination rate of 3.68cpm for the 2013/14 year. The first regulated cut to 7.68cpm took effect on 6 May 2011, so had little impact on the average for the 2010/11 year. The main impact came in 2011/12, which had an average mobile termination rate of 5.82cpm.

Figure 11 shows how the falling mobile termination rate has been passed through into retail prices over time.

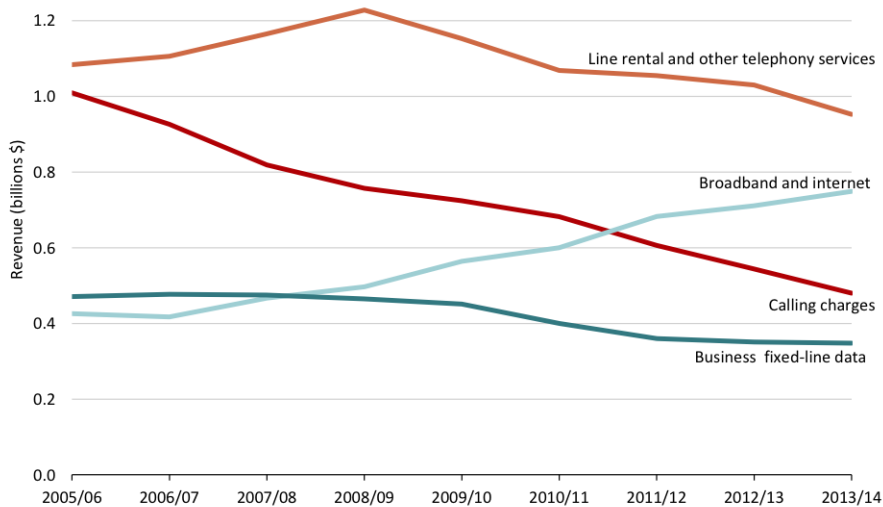
Figure 11: Trend in average fixed-to-mobile wholesale and retail prices



All but broadband revenues continue to fall

All forms of fixed-line revenues apart from broadband and internet fell again in 2013/14, as can be seen in Figure 12. These distinctions are becoming less meaningful with the continuing move to services being sold in a bundle and then revenues having to be allocated to the individual services.

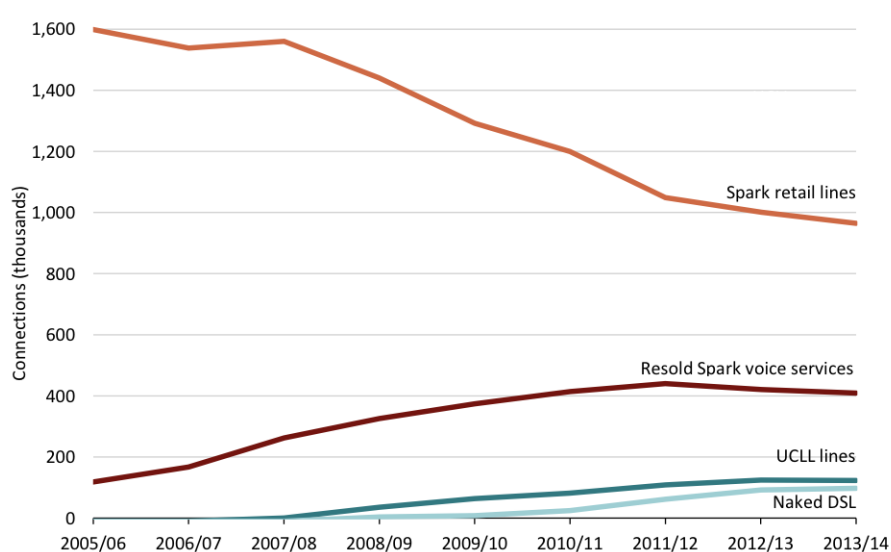
Figure 12: Fixed-line retail revenues by type



Spark's retail and wholesale voice share continues to decline

The number of fixed voice lines retailed or wholesaled by Spark continues to decline, as can be seen in *Figure 13*. Spark continues to wholesale its analogue voice service to help its competitors serve most of the non-Spark retail telephone lines. This number started dropping in recent years too but only slowly. Reasons for the drop are likely to include competitors buying a Baseband service from Chorus to allow them to provide their own analogue voice service. The availability of Baseband was limited geographically, but Chorus very recently announced that it is launching 'Baseband IP Extended' on 31 July 2015 to increase coverage.

Figure 13: Telecom and fixed-line services



The number of unbundled lines where Telecom's competitors provide their own broadband and voice service is now increasing only very slowly.⁶ The growth in the number of naked DSL broadband lines, where voice is delivered as data using VoIP or no voice service is provided at all, has also slowed down.

The other fixed-line technologies by which customers can be served are cable and fibre. These are available in some areas only but the availability of fibre is increasing rapidly as the UFB roll-out proceeds, as detailed earlier. For fibre customers the voice service is VoIP. Spark originally had to get customers to retain a copper connection in order to provide a voice service, but it very recently announced it would now be providing a VoIP service to its fibre customers and would start to disconnect the copper connections of fibre customers.⁷

Last year we speculated that as the number of the retail customers being served by fibre started to become material, the number of broadband customers being served by copper lines might start to decline. This trend had not materialised by the end of the 2013/14 year but with increasing uptake of VDSL (higher speed broadband over copper), the number of broadband customers being served by ADSL did start to fall from early in the 2013/14 year.

6. Chorus recently advised they double-counted some lines, so revised down the number to around 123,000 in early 2015.

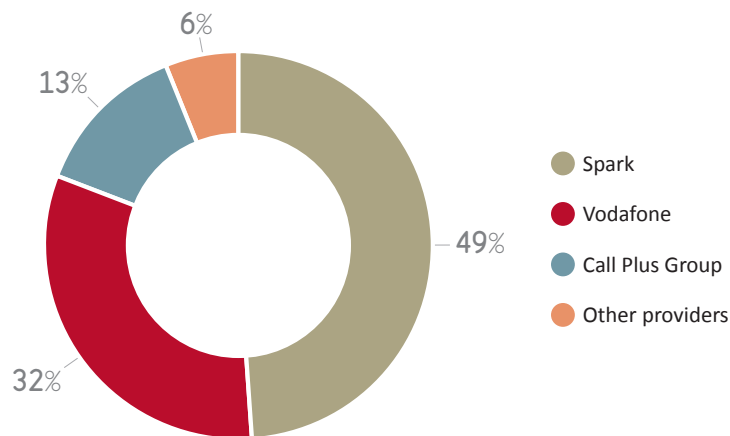
7. <http://www.sparknz.co.nz/news/ultra-fibre-new/>

Further consolidation in broadband market

The retail fixed-line broadband market continued to grow and had reached 1.39 million connections by 30 June 2014. It has now undergone further consolidation with the purchase of Orcon by the CallPlus group. These were the third and fourth placed retailers so the purchase should have helped create a stronger competitor to the much larger first and second placed retailers.

The Commission has again estimated the main ISPs' fixed-line broadband market shares by connection to allow them to be made public. Like last year, we took the survey results from the World Internet Project,⁸ and adjusted these for the fact that Spark competitors had a 51% share of the retail fixed-line broadband market as at 30 June 2014.⁹ The resulting estimated market share estimates are shown in *Figure 14*. We note that the CallPlus Group claims to have grown its market share by several percentage points since the survey was undertaken.

Figure 14: Estimated ISP market share



Vodafone retails around one-third of all fixed-line broadband connections. CallPlus, under its various brands of Slingshot, CallPlus, Flip and now Orcon, is clearly the third player with roughly half the broadband connections of Vodafone. All the remaining retailers have an estimated market share totalling 6%.

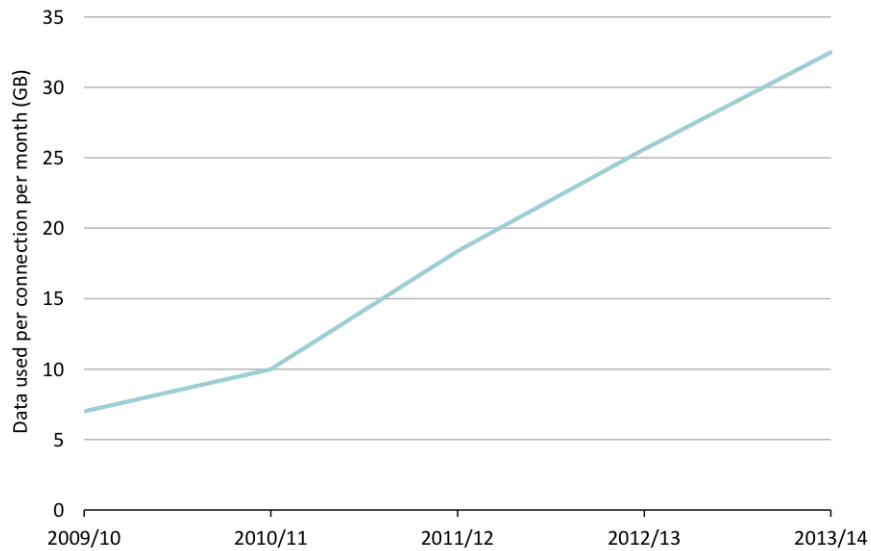
8. Gibson, A., Miller, M., Smith, P., Bell, A., Crothers, C. (2013). *The Internet in New Zealand 2013*. Auckland, New Zealand: Institute of Culture, Discourse & Communication, AUT University.

9. Spark's market share was increased to 49% while the share of Other was reduced by the same amount. 2degrees, not being a fixed-line ISP, was removed and had its market share distributed among the other ISPs.

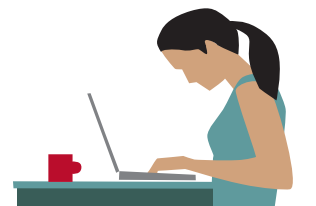
Broadband subscribers using more data

Figure 15 shows that the amount of fixed-line data traffic used by fixed-line broadband subscribers is continuing to increase rapidly. The Commission's survey data indicates that the average amount of data used by each fixed-line broadband subscriber rose from around 10GB per month in 2010/11 to 32GB per month in 2013/14. We estimate consumption was around 7GB in 2009/10.

Figure 15: Fixed-line broadband data consumption



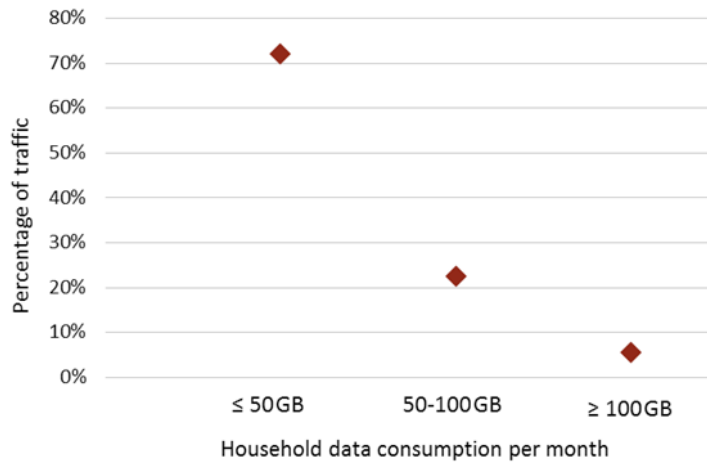
Actual household broadband consumption varies greatly from the average, with a minority of households consuming many times more than the average. The Commission does not collect data on the distribution of household broadband consumption but we have found some Cisco data that indicates this.¹⁰



10. http://www.cisco.com/web/solutions/sp/vni/vni_forecast_highlights/index.html

Figure 16 shows that, according to Cisco, in 2014 72% of New Zealand households used less than 50GB of internet data a month while only 6% used over 100GB. Cisco estimated that the average household used 41GB of internet data per month.

Figure 16: Household internet traffic distribution



Source: Cisco

Some fixed-line data is used to service mobile devices via WiFi, both in the home and out and about, with many offices, shops, and public facilities offering a WiFi service. Spark is now using most of its public phone call boxes as WiFi transmitters for its mobile customers. Making use of alternative technologies to supply data to mobile devices is known as mobile data offloading, and its growth is further discussed in the 'Consumer' chapter of this report.

Mixed results in broadband price benchmarking

Most consumers now buy their fixed-line telecommunications services in a bundle that includes a voice service and a broadband service. Furthermore, most consumers spend more time online than on the phone and so are probably more concerned about the amount of data they get in their bundle for the price than the per-minute price of phone calls.

To get an indication of how New Zealand fixed-line broadband prices compare to those overseas, we have compared the New Zealand price against an overseas average price¹¹ for broadband and voice bundles for various levels of usage and speed. An increasing number of households are using their fixed-line connection to purchase broadband only, so we have also compared the price of naked broadband services.

We have used the same benchmarking approach and baskets as were described in our report, International Price Comparison for Retail Fixed-line Telecommunications Services 2013. Prices were compared in the second half of 2014, so inevitably some have changed but the exercise is still worthwhile as a snapshot in time. It is worth noting that benchmark data provider Teligen now includes Slingshot brand plans in their dataset as the third New Zealand operator rather than CallPlus, after it was pointed out that the CallPlus branded plans were aimed at businesses. The inclusion of Slingshot meant that the New Zealand prices used were more competitive as Slingshot generally undercuts the top two broadband retailers.

Table 1 shows that New Zealand prices for broadband plus voice bundles were mostly above the average of the benchmarked set of countries, although New Zealand was right on the average for the 30GB basket and a substantial 22% below average for the 30GB 30Mbps fibre basket. The relevant fibre price had dropped substantially since the last benchmarking, partially because of the use of Slingshot for the New Zealand benchmark.

Table 1: Results of fixed-line broadband + voice benchmarking

Broadband + voice basket	NZ rank	Sept 2014 price (NZD PPP)			NZ % price var. from	
		NZ	Australia	Average	Australia	Average
30GB 10Mbps (DSL, cable)	20/32	69	62	69	11%	0%
60GB 10Mbps (DSL, cable)	23/32	79	62	70	27%	13%
150GB 10Mbps (DSL, cable)	25/32	89	83	73	7%	22%
30GB 30Mbps fibre	10/28	69	88	88	-22%	-22%
150GB 100Mbps fibre	17/27	129	120	131	8%	-1%

Source: Teligen

11. The countries included in the average vary because not all have comparable plans. They are mostly OECD countries but some extra European countries are also included in the Teligen database.

Table 2 shows New Zealand's prices for naked broadband plans were more competitive, with prices for the lower-use baskets coming in below the average for the benchmarked countries. This is a familiar pattern because in most of the rest of the world, fixed-line broadband services are differentiated only by speed and data is usually unlimited. In New Zealand, the retail premium charged for larger amounts of data or unlimited data pushes the price above the international average.

Table 2: Results of fixed-line naked broadband benchmarking

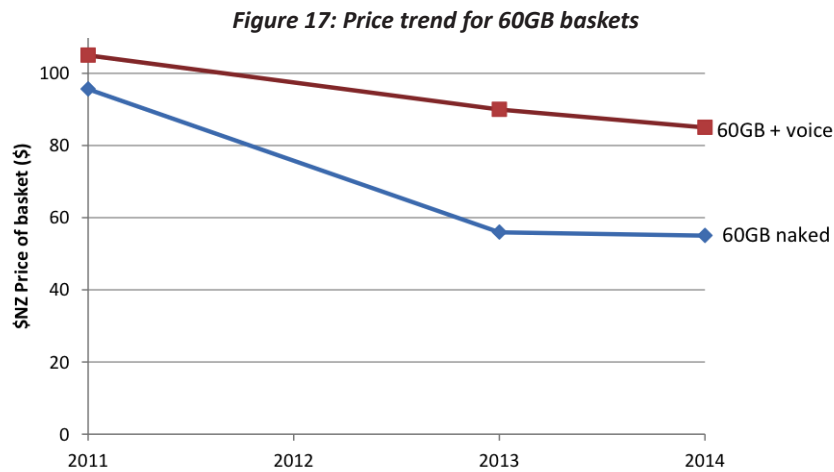
Naked broadband basket	NZ rank	Sept 2014 price (NZD PPP)			NZ % price var. from	
		NZ	Australia	Average	Australia	Average
30GB 10Mbps (DSL, cable)	19/39	55	62	61	-12%	-9%
60GB 10Mbps (DSL, cable)	19/39	55	62	61	-12%	-10%
150GB 10Mbps (DSL, cable)	29/39	75	62	63	20%	19%
30GB 30Mbps fibre	23/34	65	68	61	-4%	7%
150GB 100Mbps fibre	28/34	109	99	88	10%	23%

Source: Teligon

Broadband prices continued to trend down in 2014

The rapidly changing nature of the broadband market makes it difficult to find a consistent time series to track over time to observe trends. The only consistent basket we could track back to 2011 was the 60GB basket for both the bundled and naked service. Even with that, 60GB is no longer a standard offer and the basket is now filled with an 80GB plan. The 60GB plus voice basket was limited to standard Spark/Telecom and Vodafone plans for consistency for the time series. The 60GB naked basket has sometimes used plans not widely available, like a naked cable broadband plan in 2013, so for 2014 we allowed it to be filled with a Slingshot plan.

Figure 17 shows the price of the 60GB broadband plus voice bundle further decreased in 2014 to \$85 from \$90 in 2013. While the Spark 80GB broadband and voice bundle that filled the basket increased in price to \$89 in February 2015, the Slingshot version of the plan is available at \$84.



Source: Teligen

The price of the benchmarked 60GB naked plan had only a very minor decrease by \$1 to \$55 in 2014, although the Slingshot plan used was universally available compared to the naked cable broadband plan benchmarked in 2013. Again, there has been a subsequent price rise in February 2015, with the Slingshot 80GB naked broadband plan price increasing to \$59.

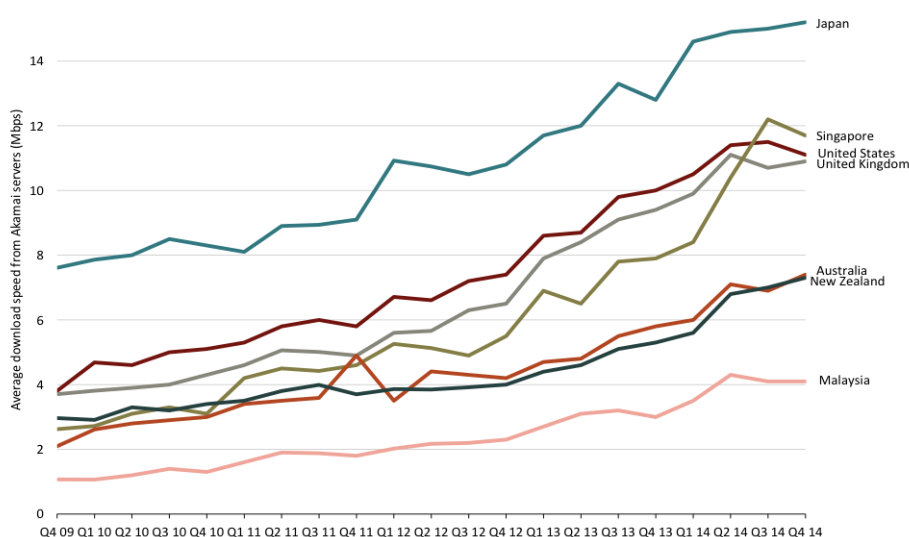
Significant rise in average broadband speed

An indication of broadband quality is the average download speed being achieved by end-users. It is difficult to track this measure over time on a consistent basis, especially when the speed of plans being purchased and typical consumption is rising.

Data distribution company Akamai¹² provides data about average throughput speeds achieved by internet users (from delivery of large content files such as operating system updates from a distributed system of servers typically located at ISPs).¹³

New Zealand's average broadband speed, as measured by Akamai and shown in *Figure 18*, had another significant improvement over the year to reach 7.3Mbps in the fourth quarter of 2014, up from 5.3Mbps in Q4 2013. New Zealand is neck and neck with Australia, with the rise in average speed for both countries likely driven by the gradual migration of customers to higher-speed cable plans and high-speed fibre plans, where available. New Zealand also has some migration to higher-speed copper VDSL plans, which are widely available.

Figure 18: Average download speeds by country



Source: Akamai

Actual broadband speeds are generally lower than those given by speed test applications because such applications generally give the maximum possible speed that could be achieved when downloading a large file. Networks also tend to be configured to maximise the results of speed-test applications.

12. Akamai website: www.akamai.com

13. The testing carried out by Akamai has been described as 'in the network, third party testing'. Akamai measures speeds locally so speeds are not affected by international backhaul, and measured as delivering a real service unlikely to be influenced by specific ISPs or users. Akamai measures a significant number of individual downloads because it delivers data to virtually every broadband connection in the country (including connections that do not use DSL technology).

Retail mobile market

This section examines the mobile market. It begins with an overview of the market and then looks at the mobile revenues, mobile voice traffic, and mobile data. It concludes with international price comparisons.

Market overview

New Zealand has three mobile network operators: Spark (formerly Telecom), Vodafone, and 2degrees. The first two have been operating in New Zealand since the 1990s, while 2degrees only entered the market in 2009.

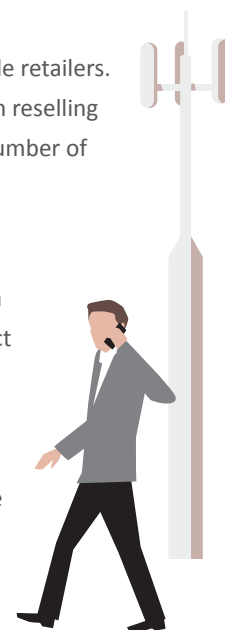
Vodafone and 2degrees operate 2G GSM networks, and all three mobile providers operate 3G networks that allow mobile broadband to be provided in addition to voice and text messages. Vodafone and Spark (as Telecom) started rolling out 4G LTE networks in 2013, and 2degrees followed in 2014.

4G can provide much higher data speeds to consumers, similar to what can be achieved with fixed-line copper connections although not necessarily with the same reliability and consistency. The 4G LTE Advanced version of the technology is able to combine two or more frequency bands together to deliver even higher data speeds. Both Spark and Vodafone have already trialled this technology and increased network capacity to allow speeds as high as 350Mbps.

Vodafone and Spark's mobile networks are both nationwide, reaching around 97% of the population. 4G coverage is less but it is widespread in Auckland, Wellington and Christchurch and some other provincial cities, depending on the network. 2degrees now has its own infrastructure in most major towns and cities, reaching around 88% of the population. It relies on a national roaming agreement with Vodafone to provide coverage outside those areas.

The three mobile network operators in New Zealand are the only significant mobile retailers. While there is a handful of mobile virtual network operators (MVNOs) who rely on reselling services purchased from the mobile network operators, none have a significant number of customers. The total number of MVNO subscribers is only around 20,000.

Skinny is a separate brand of Spark's rather than an MVNO. It started life as a 'youth' brand in early 2012 before a makeover in late 2013 to reposition itself as a budget brand. The latter strategy was more successful and Skinny started to attract a significant share of consumers switching mobile provider. In February 2015, Skinny launched an advertising campaign that stated that 158,344 customers had joined it in the last year. Prepay customers have a high rate of churn, averaging around 40% per annum in New Zealand, so Skinny's recently active customer base is not necessarily as high as the annual additions.



Just under two-thirds of mobile subscribers in New Zealand use prepaid plans. This means New Zealanders have one of the highest preferences for prepaid plans in the OECD. In 2011, the percentage of mobile prepaid subscribers in OECD countries ranged from 1% to 85%, with an average of 41% compared to New Zealand then at 66%.

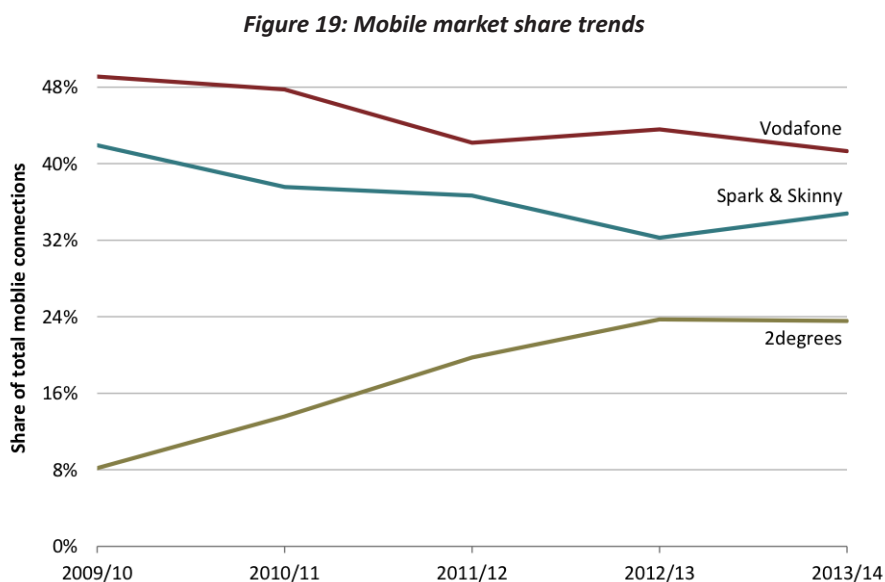
Rebound from earlier Spark switch-off

We reported in our 2013 annual monitoring report that Spark (as Telecom) had switched off its CDMA mobile network on 31 July 2012. This caused its reported mobile subscriber numbers to drop significantly, but many of those disconnections were likely to have been for occasional use phones that have only gradually been replaced. The rebound indicated by the significant rise in connections to 5.3 million in 2013/14 was, therefore, not unexpected.

For consistency reasons we have adjusted upwards the 2012/13 mobile connections figure to 4.9 million. The Commission has in recent years endeavoured to collect mobile subscriptions using international best practice of taking connections active in the 90 days prior. Vodafone and Spark for their public reporting use a 180 day active rule.

Spark claws back market share while 2degrees marks time

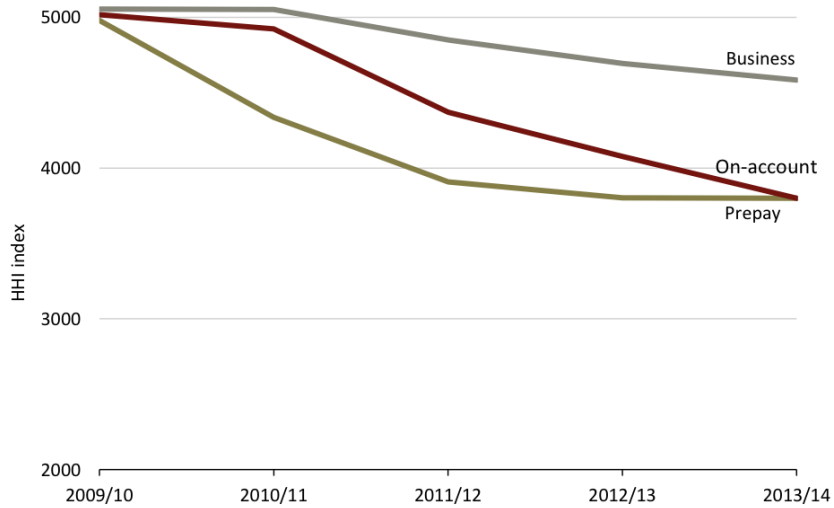
Figure 19 shows that in terms of market share measured by connections, Spark, together with sub-brand Skinny, in 2013/14 gained back most of the market share lost in the prior year, while Vodafone resumed the slow decline it commenced in 2008/09. 2degrees gained only enough new connections to allow it to maintain its market share at just under 24%.



As we have mentioned before, 2degrees’ share of mobile revenues is less than its share of connections, given its smaller share of higher-value customers.

Figure 20 shows HHIs for each of the prepay, on-account and business mobile market segments over the last few years, calculated from each operator's share of revenue in those markets. It indicates that market concentration in the on-account mobile market segment lessened in the 2013/14 year to reach the same level as the prepay market. Concentration in the business market segment fell only a little to remain markedly higher. As with prior years, this was largely due to 2degrees' very small share of business market revenues.

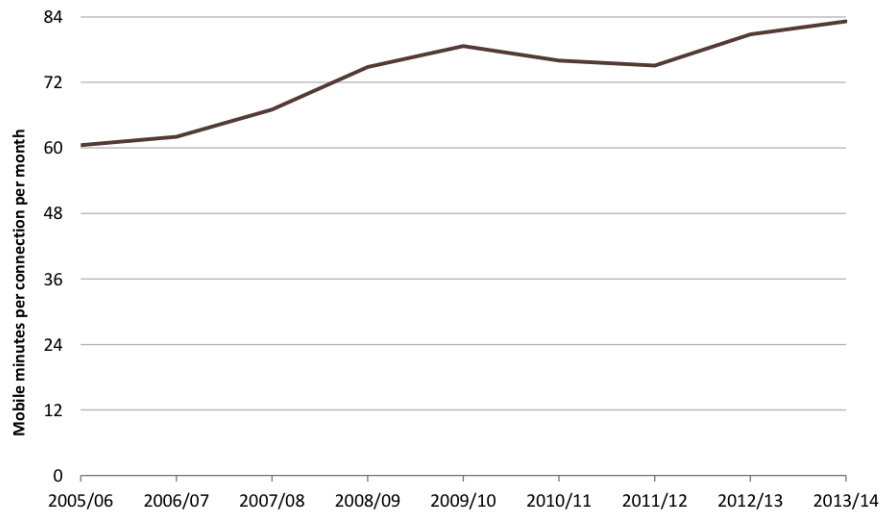
Figure 20: Revenue share HHI by market segment



Mobile voice minutes per connection continue to climb

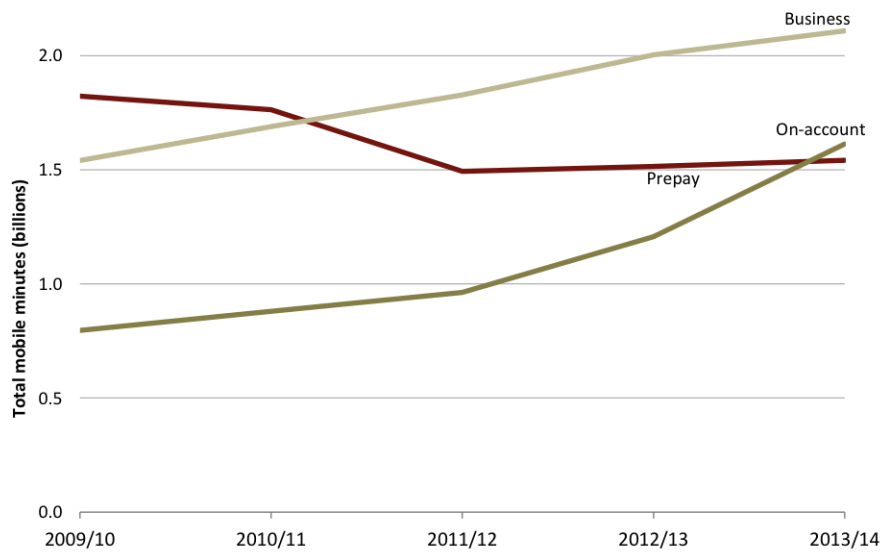
People are talking more on their mobile phones, because mobile minutes per connection continued to grow in 2013/14 following its rebound in 2012/13, as shown in *Figure 21*. Average consumption reached 83 minutes per connection per month.

Figure 21: Retail mobile voice minutes per connection



The modest growth in average mobile minutes per connection hides underlying trends of faster growth in consumption in the on-account and business segments, as shown by *Figure 22*. The increase is probably driven by the ongoing trend for mobile operators to provide ever larger buckets of ‘free’ minutes in increasingly competitive priced bundles.

Figure 22: Mobile minutes by market segment

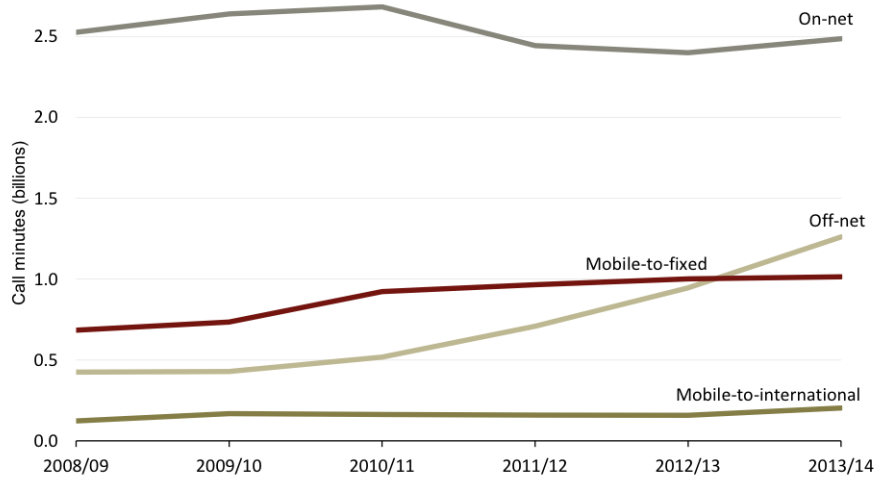


The flat trend in prepay minutes could have been driven by a continued fall in the amount of traffic driven by Vodafone’s once highly popular BestMate add-on, and Spark reactivating some occasional use customers previously served by its CDMA network.

Off-net calling shows strongest growth

The growth in mobile calling has largely continued to come from increased off-net calling (calling between users on different mobile networks), as can be seen in *Figure 23*. On-net calling (calling between users on the same mobile network) has started to grow again after falling for two years.

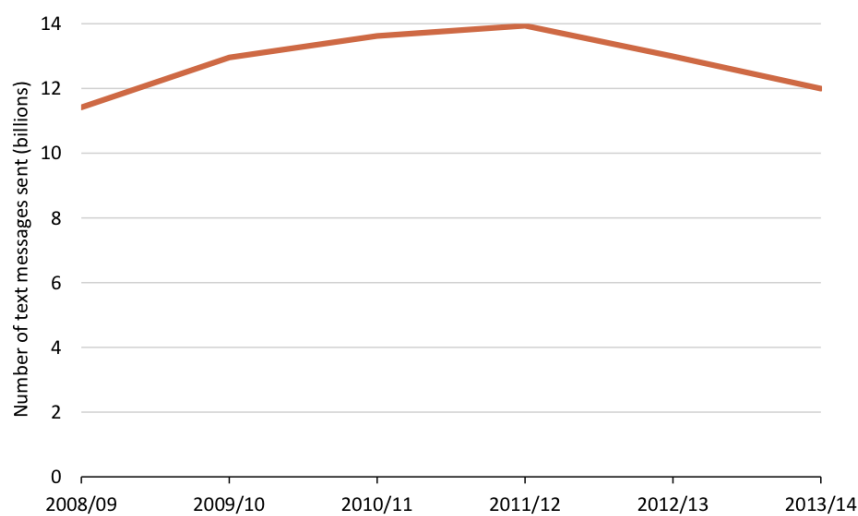
Figure 23: Mobile call volumes by call type



Texting continues to slide from peak

The use of text messaging continues to decline, probably due to a continued increase in instant messaging. *Figure 24* shows that text message volumes fell from a peak of nearly 14 billion in 2011/12 to 12 billion in 2013/14, which is 188 per month per connection.

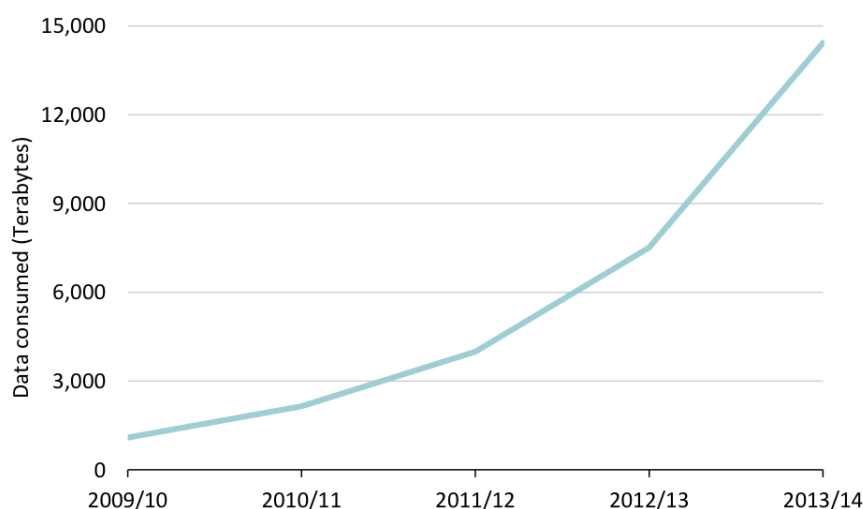
Figure 24: Text volumes



Mobile data consumption nearly doubles again

The amount of mobile data consumed by retail customers has yet again nearly doubled from the previous year, as shown in *Figure 25*. The amount of data consumed per mobile connection at 229MB is still small compared to the 32GB consumed per fixed-line connection, even accounting for the fact that most fixed lines have multiple users and are often used for mobile data offloading via WiFi. This suggests that strong growth in mobile data consumption is likely to continue for the foreseeable future.

Figure 25: Mobile data retail consumption



New Zealand below average price for all levels of mobile phone usage

Nearly all mobile phone users buy a bundle of minutes, texts and data. Furthermore, the bundles purchased have 'buckets' of minutes, texts and data that often never come close to being 'emptied'. This makes it challenging to separately price these components on a consistent basis. We have therefore decided to largely evaluate New Zealand mobile pricing by looking at the cost of filling various-sized baskets compared to overseas. Generally both prepaid and on-account mobile plans are included. This is the benchmarking approach described in our report, *International Price Comparison for Retail Mobile Telecommunications services 2013*. For each basket, a mobile call is generally a little under two minutes.

Mobile prices were compared in the second half of 2014 so, as with fixed-line broadband prices, some prices have changed since then. There appear to have been subsequent reductions in New Zealand prices for larger mobile plans. The baskets used for the comparisons below are the official OECD baskets with data included as specified. Generally the plans from the top two mobile operators in each country are used to populate the dataset.

Table 3 shows that for all the OECD baskets, New Zealand's mobile prices were below average, and for the smaller baskets, considerably below average. The stand-out result was the 400 messages basket, where New Zealand was second cheapest in the OECD with a price 62% below average and 55% below Australia. This basket was filled by Spark's Smart Prepaid \$9 Value Pack that gives 1,000 texts and 30 minutes of calling to fill the basket's 400 texts and 15 minutes of calling. This is the only basket in Table 3 with no data in it.

Table 3: Results of mobile phone services benchmarking

Mobile phone services basket	NZ rank in OECD	August 2014 price (NZD PPP)			NZ % price var. from	
		NZ	Australia	OECD Average	Australia	OECD Average
400 messages <i>GST included</i>	2/34	9	20	24	-55%	-62%
30 calls + 100MB <i>GST included</i>	12/34	19	20	28	-3%	-33%
100 calls + 500MB <i>GST included</i>	9/34	29	31	45	-5%	-35%
300 calls + 1G <i>GST excluded</i>	18/34	46	28	52	63%	-12%
900 calls + 2GB <i>GST excluded</i>	22/34	69	37	74	85%	-8%

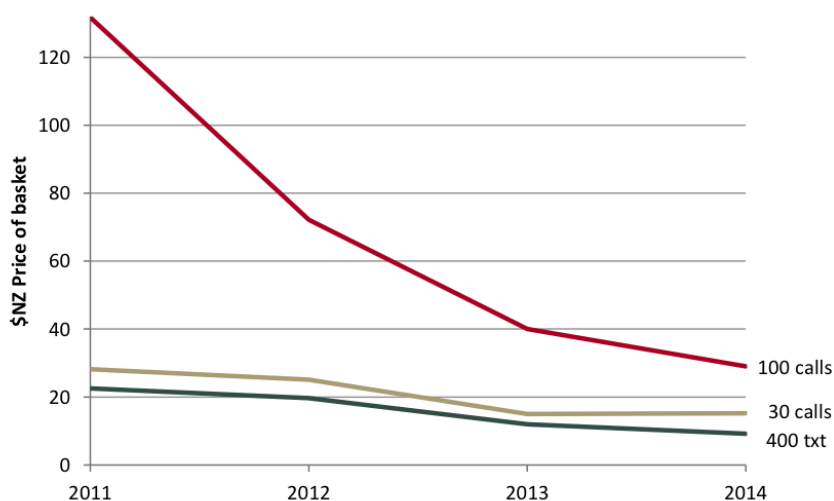
Source: Teligen

Mobile prices have fallen dramatically in recent years

The rapidly changing nature of the mobile market means we have not been able to include mobile data in the baskets used in the time series to observe trends. For consistency with past tracking, prepay plans only were tracked for low to medium use baskets. Prepay used to be overwhelmingly the plan of choice for personal use and is still very popular. Prepay and on-account plans were tracked for medium to high use baskets and GST excluded because these were the plans mostly likely to be purchased by businesses.

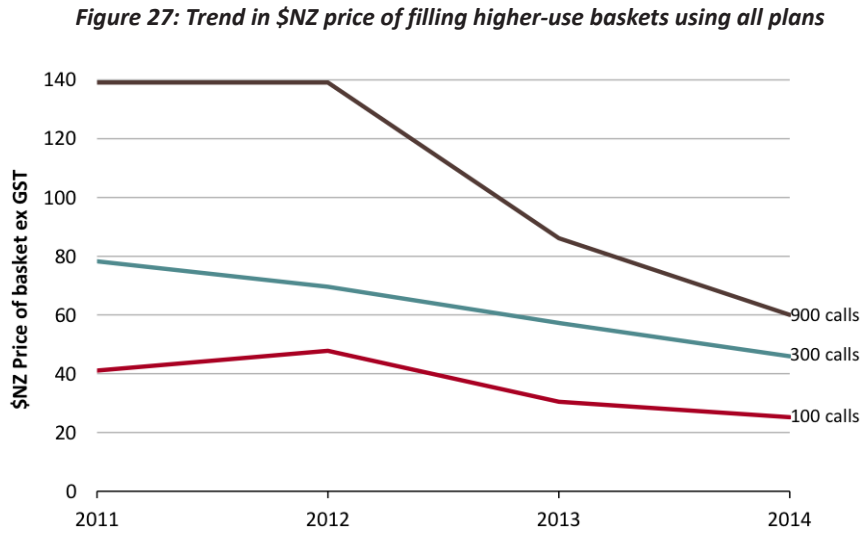
All the mobile baskets tracked in Figure 26 had substantial declines in price over the four years to 2014, and the 100 calls and 400 messages baskets had significant falls in price in the year to 2014. The most spectacular decline over the four years was clearly the prepay price of filling the 100 calls basket, which started at a massive \$132 back in 2011 and had dropped to \$29 by August 2014.

Figure 26: Trend in \$NZ price of filling lower-use baskets using prepay plans



Source: Teligen

All the mobile baskets tracked in *Figure 27* also had substantial declines in price over the four years to 2014, and significant falls in the year to 2014. Similar to the previous figure, the most spectacular fall came from the highest-use basket being tracked. The on-account price of the large 900 calls basket declined from \$139 in 2012 to \$60 by August 2014.



Source: Teligen

Mobile broadband still expensive

We also benchmarked the price of purchasing mobile broadband data by itself, typically for use with a portable device requiring an internet connection such as a laptop or tablet. We used the same baskets as used previously, which were 1.5GB and 6GB. These were assumed to be low to average use and high use for such devices, with the latter usage also being a possible substitute for a fixed-line broadband service. It is worth noting that the plans for all three mobile network operators in New Zealand are included in the benchmark dataset.

Table 4: Results of mobile broadband benchmarking

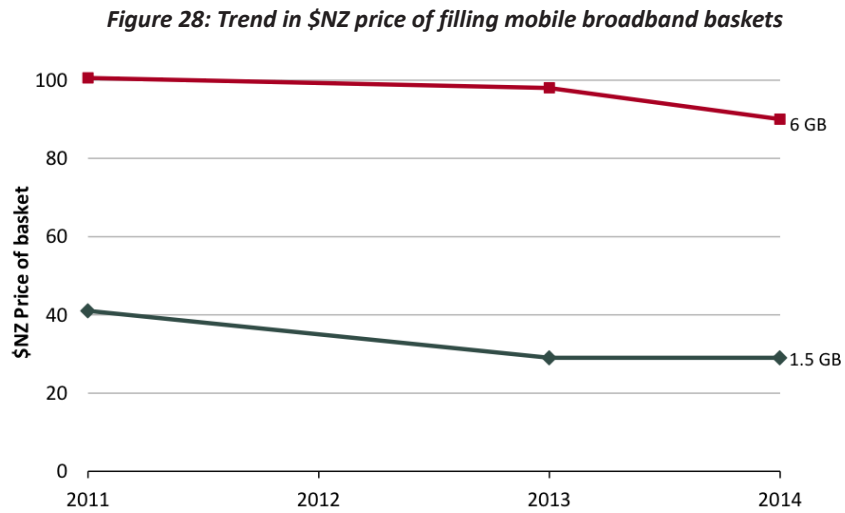
Mobile phone services basket	NZ rank	Sept 2014 price (NZD PPP)			NZ % price var. from	
		NZ	Australia	Average	Australia	Average
1.5GB GST included	26/34	29	20	24	47%	21%
6GB GST included	32/34	90	36	41	148%	121%

Source: Teligen

The New Zealand price was significantly above the average for the benchmarked countries for the 1.5GB basket, and massively above average for the 6GB basket.

The exact same basket was previously benchmarked in 2011 and 2013, and these prices are plotted in *Figure 28* together with the 2014 price.

Figure 28 shows that the price of filling the mobile broadband baskets hardly changed over the four years to 2014. This suggests there is a lack of demand for and/or competition to supply mobile broadband data when it is not part a bundle of mobile phone services, particularly when it is a relatively large amount of data.



In rural areas there are often cheaper alternatives to the standard mobile broadband plans. These include mobile broadband plans offered under the Rural Broadband Initiative (RBI) and fixed wireless services offered by smaller local operators.

The telecommunications consumer

Businesses just starting to get on board with digital

In the previous chapters we presented the trends in the telecommunications markets and highlighted the steady growth in the demand for data. In this chapter we explore the types of plans preferred by end-users, both consumers and businesses, and what the data included in those plans represents in terms of the activities performed online. Finally, we identify the key implications of providing data services when end-users have the expectation to be connected to everything, anywhere and at any time, with minimum delay.

Connectivity is an essential ingredient to facilitate the exchange of information. Digital technologies are transforming not only our lifestyles, but also our jobs and the way we conduct business.

All stakeholders are pieces of the digital engine that will contribute to improved digital skills, higher-skilled jobs, enhanced services and improved efficiency in every business, from small start-ups to global multinationals, which will ultimately lift New Zealand's competitiveness.



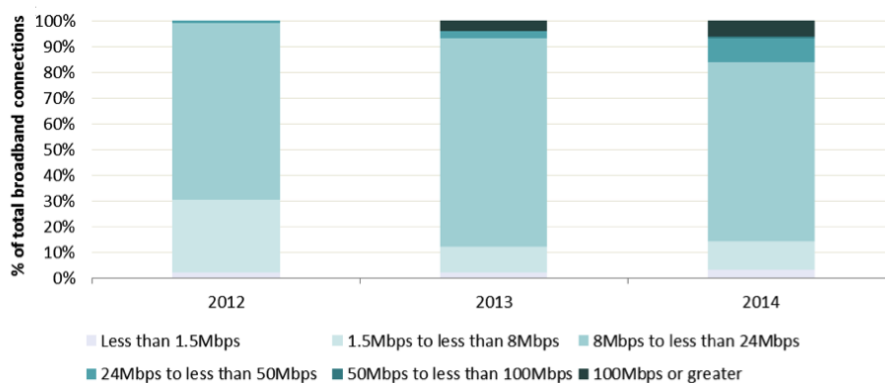
How customers buy

The way customers buy telecommunications services is a result of the perceived value they get from their purchase, in terms of individual benefit or in terms of added value to their businesses. Telecommunications is a fast-moving competitive market, where providers need to constantly innovate and reshape their services and plans to deliver what consumers and businesses see as the best value.

Fixed connections

In 2014 the proportion of internet connections to households and businesses that are broadband was 97%, up from 87% in 2011.¹⁴ We have also been observing an increasing preference for faster internet connections. The percentage of connections with a download speed above 24Mbps increased from 1% in 2012 to 16% in 2014. As a result of the fibre take-up, the percentage of connections with download speed over 100Mbps increased by 2%, reaching 6% in 2014. On the other hand, the number of connections with less than 1.5Mbps dropped from 28% to 11% over the same period *Figure 29*.

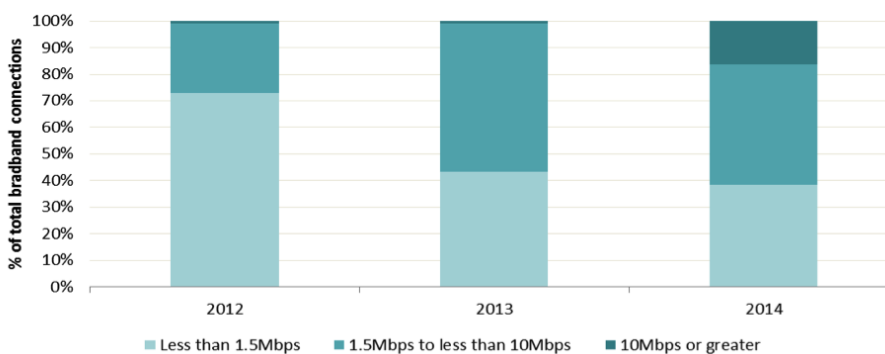
Figure 29: Download speed



Source: Internet Service Provider Survey 2014, Statistics New Zealand

The upload speeds have also been increasing, in part due to the uptake of fibre, with 16% of broadband internet connections capable of an upload speed of 10Mbps, up from just 1% in 2012 *Figure 30*.

Figure 30: Upload speed



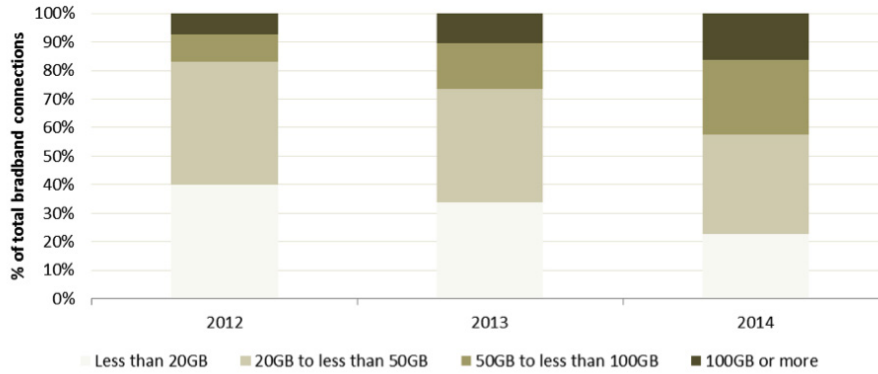
Source: Internet Service Provider Survey 2014, Statistics New Zealand

Most internet plans focus on download speed, but upload speed can be just as critical. Business customers in particular require a stable upload speed to perform online activities, such as uploading large files to the cloud or providing online content.

14. Statistics New Zealand; Internet Service Provider Survey: 2014. Available at www.stats.govt.nz/browse_for_stats/industry_sectors/information_technology_and_communications/ISPSurvey_HOTP2014.aspx

As preference for high internet speed increases, so does preference for higher data allowances. Plans with caps of 50GB or more reached 39% of all connections in 2014, up from just 16% in 2012.

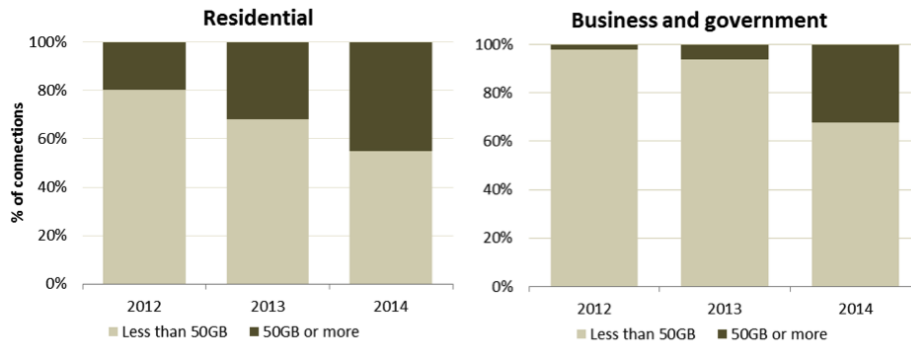
Figure 31: Broadband internet data caps – 2012-2014



Source: Internet Service Provider Survey 2014, Statistics New Zealand

The growing preference for higher data caps has been more accentuated in the business and government customer segments, showing that although traffic consumption has been led by residential users, business and government customers are catching up, as shown in Figure 32.

Figure 32: Broadband internet data caps by customer segment – 2012-2014



Source: Internet Service Provider Survey 2014, Statistics New Zealand

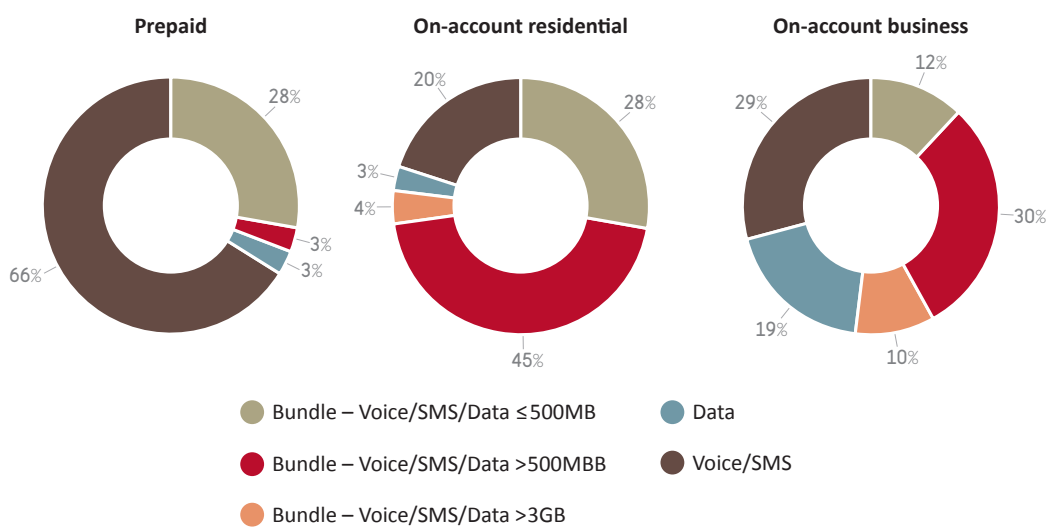
Although the activities that use the most data are typically performed by residential users, such as high-definition streaming, businesses and government agencies are also high users of data, but this typically involves activities that individually consume less data, such as emails and internet browsing.

Mobile connections

On the mobile side of the industry, we observe for the 2013/14 year that 77% of residential on-account customers prefer bundles of services combining mobile broadband with voice and SMS. However, in the prepaid segment, 66% of SIM cards are still associated with voice and SMS services only, although data may be purchased on a casual basis. In the business segment, nearly 30% of subscriptions are also still associated with only voice and SMS plans. Nearly 20% of on-account business SIM cards are data-only plans and just over 50% combine data with voice and SMS *Figure 33*.

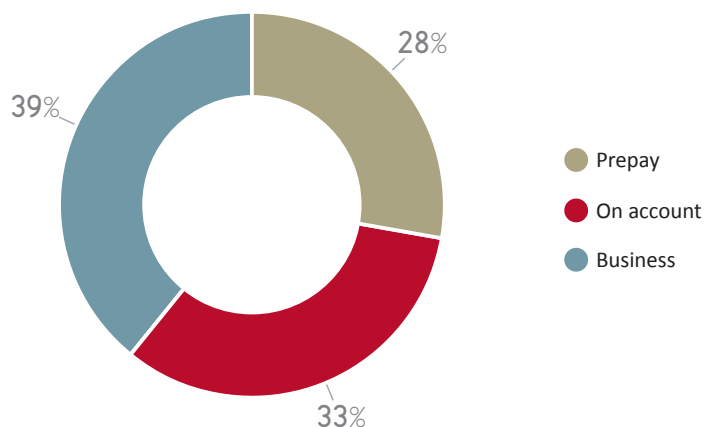
Plans with a data allowance of 500MB or less are most popular in the prepaid segment of the market, while plans including over 500MB to 3GB are the preference of residential on-account and business on-account customers.

Figure 33: Number of subscribers by customer segment and plan – 2013-14



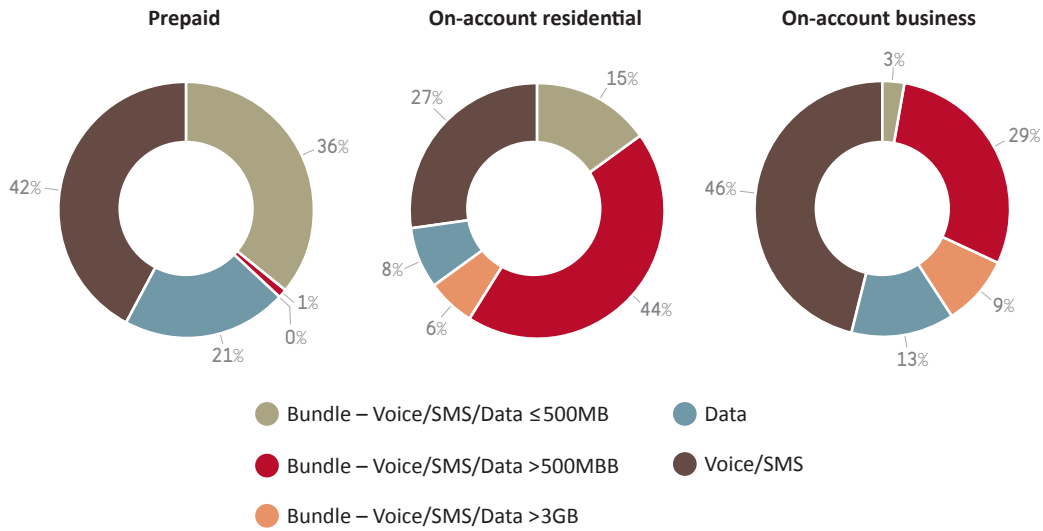
In terms of generated revenue, the communications plans associated with business accounts represent 39% of revenue, while the residential on-account plans represent 33% and prepaid 28% *Figure 34*.

Figure 34: Revenue by customer segment – 2013/14



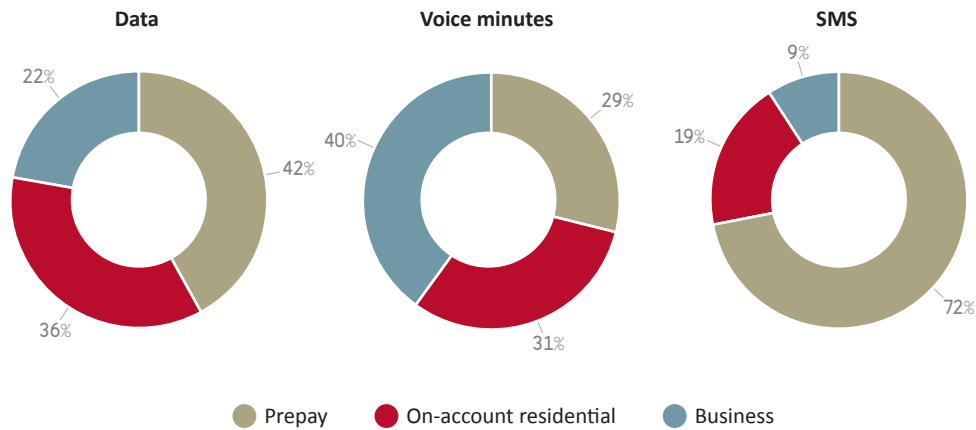
Voice and SMS services still stand for 42% of revenue in the prepaid segment of the market, while plans including data account for over 73% of revenue in the residential on-account segment, and approximately 54% in the business segment *Figure 35*.

Figure 35: Revenue by customer segment and plan – 2013-14



In terms of usage profile, there are significant differences between the customer segments. Prepaid customers consumed 42% of all data and 72% of all SMS. Customers buying business plans use just 22% of all data and 9% of all SMS, but they are high users of mobile voice communication *Figure 36*.

Figure 36: Traffic usage by customer segment – 2013-14



Prepaid customers, on average, seem to get the most value for their money – they contribute to 28% of revenue and get 42% of data, 29% of voice and 72% of SMS services. The reason may be that this type of customers are the ones that shop around more often and consequently stimulate competition and drive prices down.

What do end-users do online

End-users are asking for mobility – they want connectivity that is both location-independent and device-independent. They need the convenience of accessing and sharing information on the go, across a variety of screen sizes and devices, regardless of the type of technology.

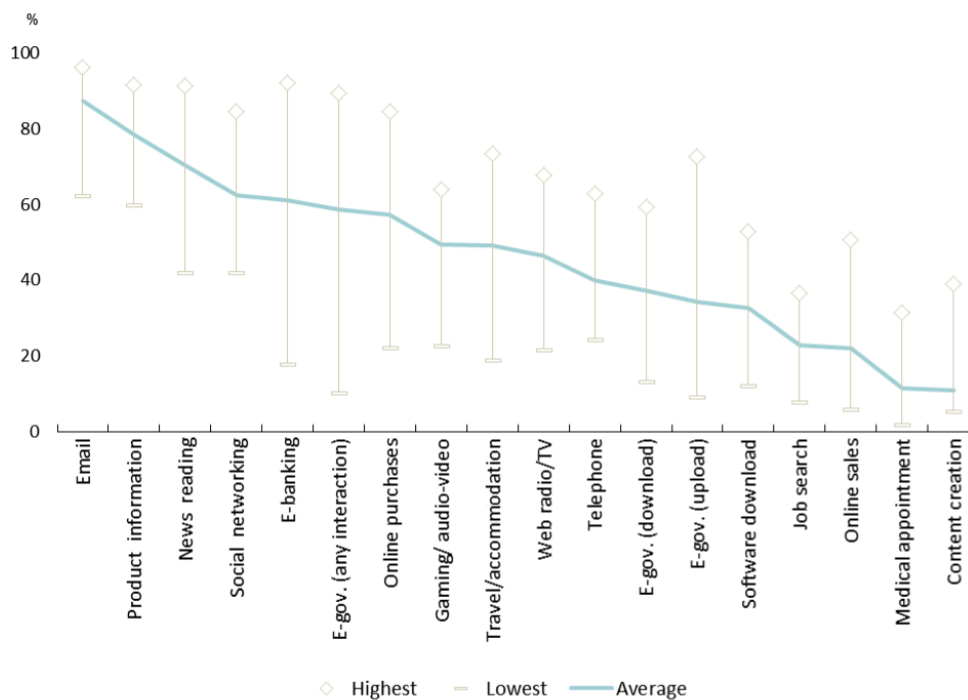
Online services are changing how we live our lives. These services include entertainment, social activities, government, shopping, education, health, cloud computing, farming, and tourism, to name a few. These provide more options to New Zealanders and support the whole economy.

The activities carried out by end-users are a result of their digital skill levels and the characteristics of their broadband internet service. How well and how quickly New Zealanders adopt digital technologies to perform more sophisticated activities will be a key determinant of our development in future years.

Consumers

Figure 37 shows that in the 2012-13 period, in the OECD zone, email, browsing the net, news reading and social networking were among the most frequent activities performed on the web, while content creation was the least common.

Figure 37: The diffusion of selected internet activities among internet users – 2012-13

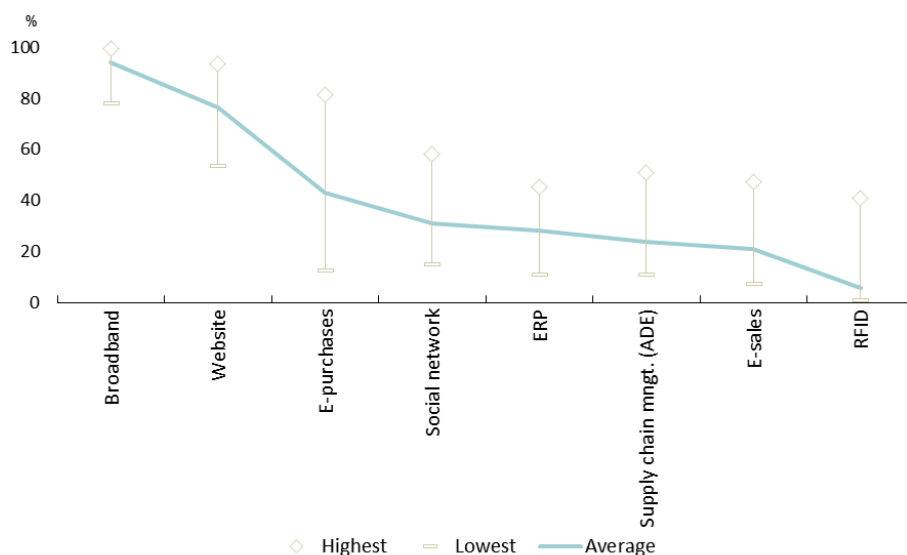


Source: Adapted from OECD (2014), *Measuring the Digital Economy: A New Perspective*, OECD Publishing, Paris. DOI: <http://dx.doi.org/10.1787/9789264221796-en>

Businesses

In terms of Information and Communication Technologies (ICT) usage, in 2013 most companies in OECD countries had a website, but only a very small percentage were integrating RFID¹⁵ in their processes, as *Figure 38* illustrates.

Figure 38: The diffusion of selected ICT tools and activities in businesses – 2013



Source: OECD (2014), *Measuring the Digital Economy: A New Perspective*, OECD Publishing, Paris.
DOI: <http://dx.doi.org/10.1787/9789264221796-en>

Companies are increasingly interested in establishing a social presence and engaging with their customers online. However, moving from online interaction to incorporating new technologies in management and operational processes requires investment and specialised skills.

The usage of Big Data and applications in the cloud such as Enterprise Resource Planning (ERP), which allows for easier access to information and software, is still in preliminary stages. The same applies to the use of the Internet of Things (IoT) systems, such as RFID, which uses sensors to capture meaningful information and communicate it through IP networks¹⁶ to software applications.¹⁷

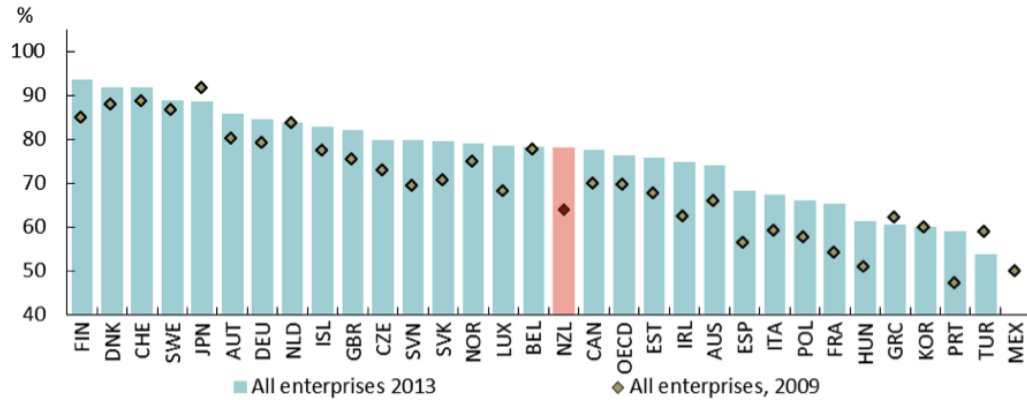
15. Radio-frequency identification (RFID) is the wireless use of electromagnetic fields to transfer data, for the purposes of automatically identifying and tracking tags attached to objects. Definition available at http://en.wikipedia.org/wiki/Radio-frequency_identification

16. IP or Internet Protocol.

17. Examples of the use of RFID range from fleet management and order management to valuable assets optimisation and control or precision agriculture.

New Zealand is relatively well positioned among OECD countries, according to the report *Measuring the Digital Economy*. In the period 2012-13, more than 75% of businesses had a web presence, as can be seen in *Figure 39*.

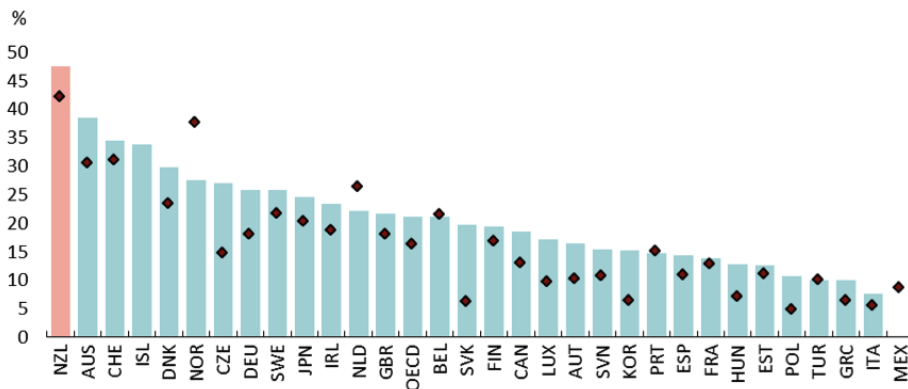
Figure 39: Companies with website or home page – 2009 and 2013



Source: OECD (2014), *Measuring the Digital Economy: A New Perspective*, OECD Publishing, Paris.
DOI: <http://dx.doi.org/10.1787/9789264221796-en>

According to the same OECD report, around 42% of New Zealand businesses conducted e-commerce, the highest percentage in the OECD zone in this period, as can be seen in *Figure 40*.

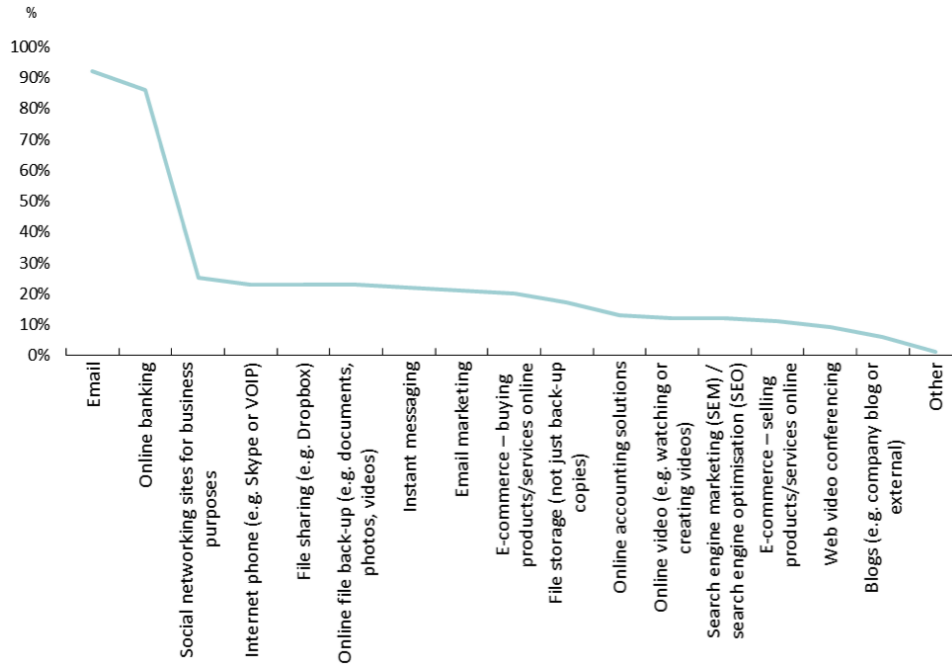
Figure 40: Companies engaged in sales via e-commerce – 2008 and 2012



Source: OECD (2014), *Measuring the Digital Economy: A New Perspective*, OECD Publishing, Paris.
DOI: <http://dx.doi.org/10.1787/9789264221796-en>

However, surveys considering only Small and Medium size Enterprises (SMEs) show a different average profile. According to the MYOB NZ Business Monitor Special Report 2014, New Zealand SMEs are just starting to take advantage of the digital world. The simplest activities like email and online banking have been adopted by most companies, but sales via e-commerce and cloud-based services, such as online accounting solutions (ERP), still have a relatively low uptake, 11% and 13%, respectively *Figure 41*.

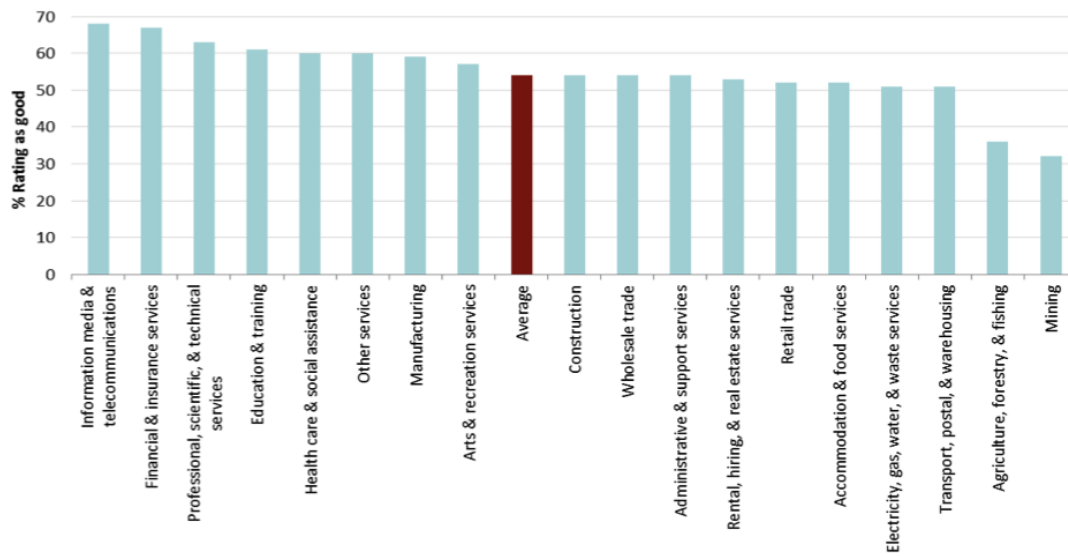
Figure 41: Most commonly used online services by businesses – 2014



Source: MYOB NZ Business Monitor Special Report 2014.
 Available at <http://myob.co.nz/myob/backing-kiwi-business/myob-business-monitor-1257829565839>

Critical to the take-up of online services and the development of the digital economy is the perceived quality of the infrastructure. According to the Business Operations Services survey, conducted by Statistics New Zealand, in 2013 an average of 54% of businesses rated their information and communication infrastructure as good, 12% considered it was bad, and 30% neither good nor bad. The highest scores came from the information media and telecommunications industries as well as from the financial and insurance services, while the worst came from the primary sector, see *Figure 42*.¹⁸

Figure 42: Quality of infrastructure rating, 2013



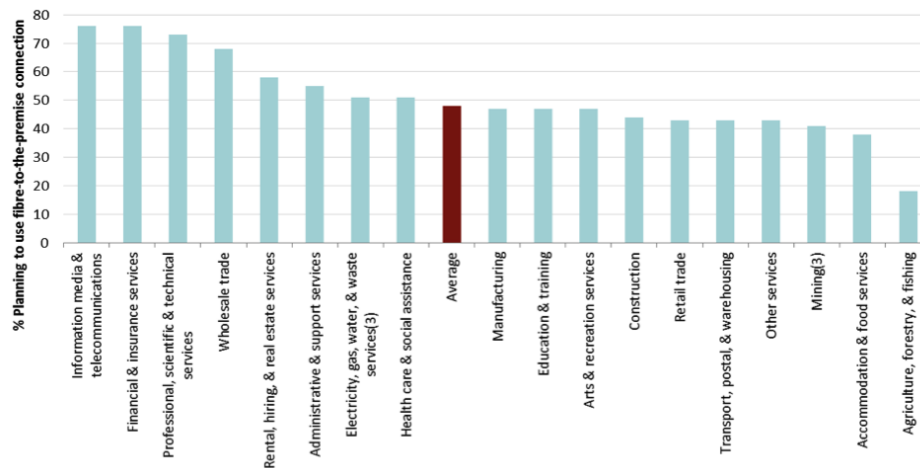
Source: Adapted from Statistics New Zealand, *Business Operations Survey: 2013*, table 18. Available at www.stats.govt.nz/browse_for_stats/businesses/business_growth_and_innovation/business-operations-survey-info-releases.aspx

18. Statistics New Zealand; *Business Operations Survey*: Available at www.stats.govt.nz/browse_for_stats/businesses/business_growth_and_innovation/business-operations-survey-info-releases.aspx

Unsurprisingly, the Business Operations Services survey 2014 shows that the industries that rate the quality of the infrastructure higher are the ones that have better access *Figure 43*.

We expect that the current regulatory regime, together with the government programmes, namely the Ultra-Fast Broadband 2 (UFB 2), the Rural Broadband Initiative 2 (RBI 2) and the Mobile Black Spots Fund (MBSF), will contribute to improved connectivity by upgrading and extending broadband services and the coverage of mobile networks in small towns and rural areas.

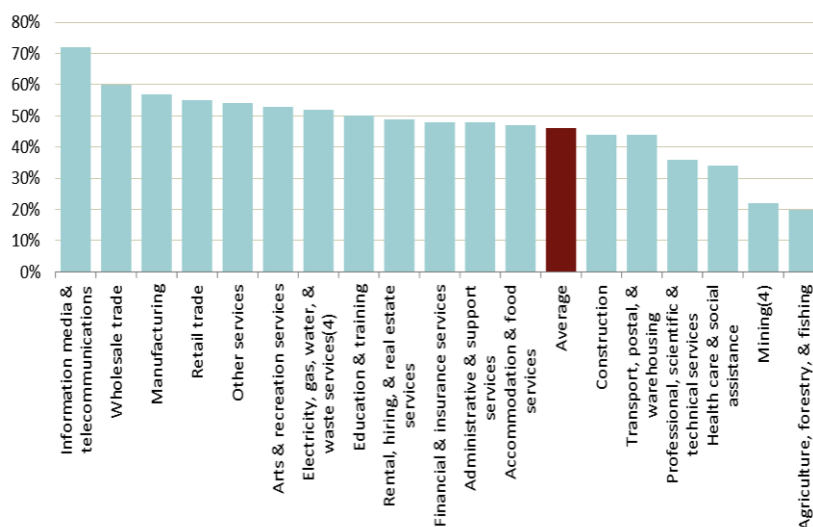
Figure 43: Already using or plans to use fibre-to-the-premise connection



Source: Adapted from Statistics New Zealand, Business Operations Survey: 2014, table 1.04. Available at www.stats.govt.nz/browse_for_stats/businesses/business_growth_and_innovation/business-operations-survey-info-releases.aspx

The Business Operations Services survey 2014 also shows that the industries that most used the internet for the purpose of receiving orders for goods or services were information media and telecommunications, while the industries that used it least were agriculture, forestry, and fishing *Figure 44*.¹⁹

Figure 44: Internet used to receive orders for goods or services – 2014



Source: OECD (2014), *Measuring the Digital Economy: A New Perspective*, OECD Publishing, Paris. DOI: <http://dx.doi.org/10.1787/9789264221796-en>

19. Statistics New Zealand; Internet Service Provider Survey: 2014. Available at www.stats.govt.nz/browse_for_stats/industry_sectors/information_technology_and_communications/ISPSurvey_HOT2014.aspx

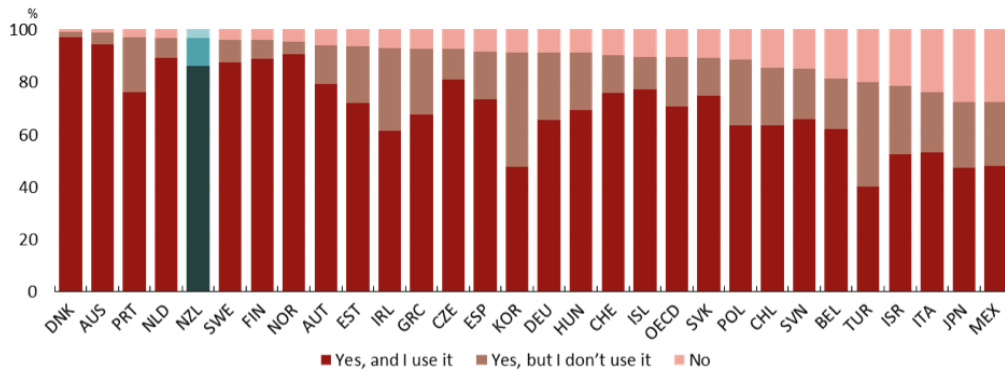
The usage of the internet for online commerce is related to the value of online services to the business, therefore mass market products and services, like newspapers, are more likely to be sold online than products that have just a few regular customers, like forestry products. But the use of online commerce is also related to the quality of the internet connection and to the average level of digital skills in the industry.

The effect of digital skills and digital inclusion

We need to continue to build digital skills²⁰ that will enable us to take full advantage of the digital future. The potential benefits of using the internet go beyond watching videos, browsing information or updating social network profiles. We need to continue the development of digital skills, and we need to ensure that this process is inclusive so that no social groups or regions are left behind.

School programmes that include training on the potential of online, social media and apps are a crucial part of the ICT ecosystem. These programmes impact not only existing students and the wider community around the school, but also the future supply of ICT-qualified professionals. According to OECD's report, in 2012 New Zealand had one of the highest number of internet connections available at schools, well above the OECD average *Figure 45*.

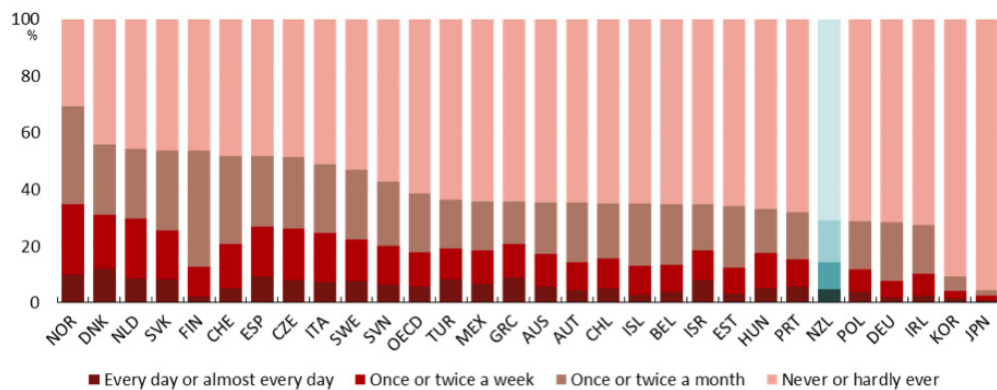
Figure 45: Internet connection availability at school – 2012



Source: OECD (2014), *Measuring the Digital Economy: A New Perspective*, OECD Publishing, Paris.
DOI: <http://dx.doi.org/10.1787/9789264221796-en>

However, according to the same OECD report, the frequency of computer usage for learning remains low *Figure 46*.

Figure 46: Computer use at school for learning – 2012



Source: OECD (2014), *Measuring the Digital Economy: A New Perspective*, OECD Publishing, Paris.
DOI: <http://dx.doi.org/10.1787/9789264221796-en>

20. Digital skills include the ability to search, collect and process information and use it in a critical and systematic way to support critical thinking, creativity, and innovation.

The findings of the OECD study show that in today’s information-driven society and knowledge-based economy, specialised skills in ICT go beyond the use of standard office applications and are key knowledge assets. They are required to sustain innovation and growth across all economic sectors.

In 2012, New Zealand had the highest share of computer science tertiary graduates as a percentage of total graduates (*Figure 47*) but studies show that the total number of ICT graduates is still insufficient to match ICT job demand.

Figure 47: Tertiary graduates in computer science, by gender, as a percentage of total graduates – 2012



Moreover, digital skills are required not only for software development roles, but for nearly all jobs where digital technology complements existing tasks, such as nursing, medicine, engineering, accountancy, graphic design and other services.

The 2014 year in review

The following is a month-by-month snapshot of some of the more important and interesting telecommunications market developments we are aware of that occurred in New Zealand during 2014 and early 2015, before the text of the report was finalised.

January 2014

- Southern Cross announced that it would add an additional 500Gbs of capacity to both its cables by July 2014. The expansion increases total lit capacity across the two Southern Cross cables from 2.6Tb/s to 3.6Tb/s.
- TeleGeography estimated that Skype's on-net (Skype to Skype) international traffic grew 36% in 2013, to 214 billion minutes. International telephone traffic from fixed and mobile phones continued to grow as well, increasing an estimated 7% in 2013, to 547 billion minutes. This is well below the 13% average that carriers posted over many of the past 20 years.
- 2degrees switched on HD Voice capability on its network, a technology that improves the quality of mobile calls for compatible phones. However, the advance was not available to people calling between mobile networks. Vodafone enabled HD Voice on its network in late 2013.
- Wireless Nation launched a new Optus satellite broadband service, with a best efforts speed of 5Mbps downstream and 1Mbps upstream.

February 2014

- Telecom's Digital Ventures unit soft-launched a new consumer ISP brand, Big Pipe. Big Pipe's key features were:
 - > No data caps on any plans
 - > No contracts
 - > Copper broadband only (ADSL and VDSL)
 - > Naked broadband on all plans
 - > Online help rather than phone support.
- Telecom joined forces with music service Spotify to offer Spotify Premium free on selected mobile plans. From 28 February all Telecom customers on the \$29 Ultra Mobile prepaid value pack or the \$59 monthly Ultra Mobile plan or higher received a Spotify Premium subscription (RRP \$12.99 per month) at no additional cost.
- Vodafone raised its broadband data allowances across a range of its business plans. Office Net packages, including UFB, had data allowances boosted to 200GB.

March 2014

- 2degrees started giving carryover data with its \$19 prepay combo in addition to carryover minutes.
- 2degrees announced it was starting a 4G trial in central Auckland using 2degrees' 1800MHz spectrum.
- The Commission confirmed it would conduct a cost-modelling exercise to set final prices for both UBA and UCLL services.

April 2014

- Woosh introduced an uncapped fixed-line broadband bundle priced at \$75 a month.
- Telecom started offering fixed-line residential customers broadband plans with unlimited data. This was not the first time Telecom had offered plans with unlimited data but previous unlimited plans were withdrawn, the last unlimited plan being withdrawn in 2010.
- Vodafone New Zealand passed one million machine-to-machine connections, hitting the landmark thanks to a five-year deal with vehicle management specialist International Telematics.
- Vodafone unveiled new \$19 and \$29 prepay plans, giving customers free weekend calls to other Vodafone mobiles.

May 2014

- Whangarei became the first city in New Zealand to be fully wired for UFB, with Northpower Fibre announcing the completion of its fibre roll-out, having passed over 19,000 premises.
- Northpower, a community-owned electricity company, was the first group to be awarded a UFB contract by Crown Fibre Holdings. It was also the first to finish its roll-out that started in 2010.
- Telecom announced it was partnering with New Zealanders interested in creating 'machine-to-machine' (M2M) solutions by making available a free 'Developer's Pack' with the resource, infrastructure and expert advice needed to develop M2M applications.
- Chorus announced a new set of enhanced broadband services using the 'Boost' name because they were designed to deliver higher minimum speeds for HD video capability. However, they were later put on hold after the Commission started investigating whether they were an attempt to get around regulated pricing.
- Skinny started offering unlimited on-net calls as part of its \$16 prepay combo.
- Vodafone introduced \$5 daily international roaming for 17 countries. For a daily rate of \$5, on-account customers can use texts, calls, data from their local plan without worrying about any extra roaming charges.
- The Commission granted clearance to Telecom to acquire the management rights for the final block of 2x5MHz of radio spectrum in the 700MHz range from the Crown. The proposed placement of the unsold block (if not sold to Telecom), in a position not adjacent to 2degrees' other spectrum holdings, was key to the Commission clearing Telecom's acquisition.

June 2014

- Google launched a video reporting tool that is intended to show which ISPs are best equipped to deliver HD YouTube video across their networks. The tool works by analysing how quickly all YouTube data was loaded. It divides ISPs into three categories: those able to sustain average YouTube HD video playback at 720p resolution, those able to sustain standard-definition playback at 360p, and those unable to sustain even low-definition video playback.
- The 700MHz spectrum auction process was completed with mobile carriers Telecom, Vodafone and 2degrees getting their final allocation of frequencies in this band to enable them to provide 4G mobile services. 2degrees and Vodafone have been allocated adjacent frequencies to facilitate any future 4G roaming agreement between the two. The move was partly in response to Telecom acquiring the largest portion of spectrum in the auction.

Under the conditions of the auction, Vodafone and Telecom are required to build 5 and 10 new towers each year respectively, for five years, in areas where they do not currently provide coverage. In addition, all three carriers are required to upgrade 75% of their existing rural cell towers to 4G within five years.

According to the government, the economic benefits of enabling the spectrum to be used for 4G mobile services have been estimated at up to NZ\$2.4 billion over 10 years.

- The CallPlus Group announced its intention to acquire Orcon, with the sale taking place in July 2014. Speculation around the sale of Orcon had been ongoing, with a number of suitors rumoured to be interested. CallPlus already has retail ISP consumer brands Slingshot and Flip.
- 2degrees started offering 4G mobile services in central Auckland, with expansion to the wider Auckland region and other main centres (Hamilton, Wellington and Christchurch) promised by the end of the 2014 year. The roll-out to provincial areas is to begin in 2015. Customers incur no additional charges to access 4G and the service is compatible with all existing data allocations.

July 2014

- Australian company Vocus bought FX Networks for \$115.8 million. Privately-held FX Networks is one of the largest fibre optic network operators in New Zealand with around 4200km of cable in the ground, providing broadband links to all major centres bar New Plymouth. It sells wholesale capacity to ISPs and other network operators, and also serves some retail customers.
- Slingshot turned on its 'Global Mode' service that allows local customers to access previously blocked sites including Netflix, Hulu, Amazon Prime and BBC iPlayer. The broadband provider, a subsidiary of CallPlus, is making the service available to all customers for free, allowing them to get around geographic restrictions. Slingshot wasn't expecting any legal challenges to the workaround, noting that it was not breaking any New Zealand legislation.
- 2degrees announced that on-account customers roaming in Australia would now pay 10 cents a minute for calls and 10c for texts to Australian or New Zealand. Data costs 10c per megabyte.

Later in the month 2degrees also launched roaming data packs for all its customers, including those on prepay, that lets them use 300Mb of data in Australia over seven days for \$10.

→ The Commission announced it would investigate a complaint about Chorus proposing changes to its UBA service in conjunction with rolling out its proposed 'Boost' commercial broadband services, developed to compete with UBA.

→ Telecom announced the launch of Naked Ultra Fibre plans, allowing customers to choose fast fibre speeds without paying for a home phone package. The plans included both 30Mbps and 100Mbps fibre speeds, with prices starting from \$55 (for 80GB a month at 30Mbps for customers with an Ultra Mobile plan).

A growing proportion of customers were reported to now rarely use their landlines – instead relying on their mobiles and applications like Skype to keep in touch with friends and family.

→ Vodafone started using its new 700MHz 4G spectrum commercially in Papakura, while Telecom stated it would commence in late August but with a wider immediate roll-out. Few devices were immediately able to use the new spectrum.

The 700MHz spectrum is particularly valuable for 4G mobile networks because it covers larger areas and will propagate through the walls of buildings much better than the 1800MHz spectrum already in use.

August 2014

→ After 27 years, Telecom changed its name to Spark New Zealand. The decision reflected industry changes and global shifts in communications technology. The company now does more than provide copper line telephone services, and no longer owns the fixed-line access network. Its business now includes high-speed broadband, business cloud services, data centres, and internet TV.

→ Vodafone activated three separate 4G spectrum bands – 2600MHz, 1800MHz, and 700MHz – on a cell site in Northcote, creating three times the capacity of a single spectrum site. On the same site, Vodafone also launched Carrier Aggregation technology, combining spectrum from 1800MHz and 2600MHz frequency bands.

Tri-Band Carrier Aggregation is seen as an important investment given Vodafone is forecasting 4G mobile data traffic to grow by as much as 1200% in the next three years. Tri-Band 4G gives in excess of 350Mbps throughput capacity, while Carrier Aggregation of 1800MHz and 2600MHz bands delivers in excess of 250Mbps of capacity.

→ Spark New Zealand announced it had begun its roll-out of 4G services in the Waikato using recently acquired 700MHz spectrum, enabling 12 sites with 4G in the region. Spark stated it would continue to widen its 4G footprint in the Waikato region, including the Coromandel, and bring 4G to existing sites by February 2015. This is part of its broader plan to extend 4G to a range of other locations across the country.

→ Spark launched its online subscription TV service, Lightbox. It is available to anyone with broadband, regardless of their internet provider. It offers hundreds of TV shows online. The service can be used across multiple compatible devices, including laptop, desktop, iPad and Airplay on Apple TV. Up to five devices can be registered to each Lightbox account and two shows can be played at once. The price at launch was \$15 a month.

September 2014

- Apple launched the iPhone 6 and Apple Watch, although the Apple Watch was not available for purchase until March 2015. It also quietly dropped its oldest unchanged device, the iPod Classic, which had remained unchanged since September 2007.
- The VideoEzyOnDemand video streaming service launched, with the promise of thousands of movies including the latest releases from all major Hollywood studios. It is not a subscription service so customers pay per view. Access is through an app available on Samsung Smart TVs or by streaming to any internet-connected device.

October 2014

- Fibre broadband ISP MyRepublic entered the New Zealand market. It is offering two consumer plans – one ‘pure’ plan offering 100Mbps/20Mbps download/upload speeds for NZ\$99 per month, and a ‘gamer’ package that boosts upload speeds to 50Mbps with priority for gaming traffic, for NZ\$109 per month. Both plans feature unlimited data and free VoIP and a FibreTV streaming enhancement.
- Skinny cut its casual mobile calling rate from 43¢ a minute to 20¢ a minute and casual data rate from 49¢ a megabyte to 20¢ a megabyte, but at the same time hiked the price of text messages from 8¢ to 20¢. Existing Skinny customers needed to ‘opt in’ to the new pricing.
- Spark partnered with Facebook and Twitter to launch ‘Socialiser’, a mobile add-on that gives qualifying customers 1GB of free data each month to access Facebook and Twitter. It was reported that over 1.8 million New Zealanders use Facebook every day, and 78% of those, or 1.4 million, access Facebook on their mobile devices.
- The Commission’s investigation into Chorus’ proposed changes to UBA was put on hold following Chorus’ announcement that it had put its proposals to constrain the service on hold.
- 2degrees partnered with Google to enable Android customers to pay for apps, movies, music and books via their 2degrees mobile phone account. To celebrate the launch, Google and 2degrees offered Android customers 90 days free access to Google Play Music’s streaming service.

November 2014

- 2degrees started SIM locking some of its handsets. They are locked for a period of nine months after purchase unless a \$30 break fee is paid (matching Spark, Skinny and Vodafone’s locking terms). 2degrees says a locked phone can be sold for \$20 to \$30 cheaper, and that this can be enough to tip the balance in the mass market. 2degrees said it would review its stance in March 2015.
- Spark announced it would raise the price of selected home phone and broadband plans by \$4 a month from 1 February 2015, following the Commission’s draft decision on the amount that Chorus can charge Spark and other RSPs for access to the Chorus copper wholesale network.

December 2014

- The Commission released draft FPP wholesale prices, based on cost modelling, for Chorus’ local copper lines and broadband service. The draft UCLL price was \$28.22, an increase on the \$23.52 that was established by international benchmarking at the end of 2012. The draft UBA price was

\$10.17, a small decrease on the price of \$10.92 that was established by benchmarking at the end of 2013, and which came into force on 1 December 2014. This means the total proposed wholesale price for a broadband service is \$38.39 per month, compared to the price that came into effect on 1 December of \$34.44 per month, and the \$44.98 Chorus has been charging for the past few years.

- Spark's online TV service Lightbox and Coliseum Sports Media announced a joint venture called Lightbox Sport to provide Coliseum Sports Media's New Zealand content. However, Lightbox and the three sports operated by Coliseum will continue to be provided separately until the platforms are eventually integrated.
- The Commission published its emerging view on backdating the final prices that Chorus can charge for its local copper lines and broadband service. The view was that once the final prices for UCLL and UBA are determined, they should be backdated to 1 December 2014, but not earlier.

January 2015

- Wireless Nation increased its satellite download speed to a maximum of 10Mbps at no extra cost. Their services are provided over the Optus satellite network.
- Skinny Mobile introduced a prepay \$9 Starter Monthly Combo giving 30 minutes of calls, unlimited texts and 100MB of data.

February 2015

- The three largest fixed-line retailers, Spark, Vodafone and Slingshot, raised the price of their entry-level and mid-range broadband and bundled broadband services by between \$4 and \$5 a month. The price of unlimited bundled plans was reduced by up to \$10 a month or remained the same.

Despite these price increases, the per MB cost of the data in the bundle was still generally less than when the \$75 entry-level bundle was widely introduced in late 2012.

- Vocus Communications and Spark New Zealand announced they will set up a new fibre construction joint venture to build networks for both companies as well as third-party New Zealand carriers. The new venture will be named Connect 8.

Under the agreement, Vocus will sell its New Zealand construction division to the new company. The division was acquired as part of its A\$108 million buyout of national fibre operator FX Networks. Spark will acquire 50% of Connect 8 for an upfront cash payment and an agreed level of annual construction spend, while Vocus will also commit an agreed level of annual construction spend.

- The rise of paid streaming services in the New Zealand market has seen a corresponding decrease in peer-to-peer file sharing, according to CallPlus' traffic data. Their statistics show that BitTorrent traffic is dropping at the same rate that paid streaming is increasing, which indicates that people are trading piracy for paid streaming.

Other statistics from CallPlus suggest that a quarter of Kiwi internet traffic goes to Google and YouTube, with both websites among the most popular along with Facebook and Trade Me. Rapidly climbing in popularity are sites such as Netflix, BBC's iPlayer, live gaming website twitch.tv-live, and other streaming TV services.

According to CallPlus data, the average unlimited fibre user consumed eight times the bandwidth of the average copper data-cap customer. Last year, average data consumption per household subscriber increased 40%.

Another observation from CallPlus was that more New Zealanders are importing goods direct from China, with aliexpress.com breaking into the top 25 most popular websites list. Sites such as aliexpress, along with dx.com and dhgate.com, have increased in popularity because they offer free international shipping to New Zealand.

CallPlus predicted that the number of streaming video services would increase dramatically after Netflix's NZ launch in March. It also suggested that streaming services would deliver a much higher percentage of traffic served from within New Zealand due to local content delivery networks.

- Sky turned on Neon, its video streaming service, after some delays while it 'fine-tuned' the service and then waited for Apple to put the Neon app in the iTunes store. Neon was initially offering about a thousand films online and dozens of television series, but no sports. The launch price was \$20 a month.
- Vodafone started offering its customers free access to Neon, Sky TV's new subscription video service, for six months if they signed up to its unlimited broadband bundle for 12 months.
- 2degrees revamped its on-account plans, following overseas trends of providing bigger buckets of data and allowing customers to upgrade their smartphones after one year. The new \$49 plan, for example, includes 2.5GB of data with unlimited calls and texts.
- Spark and local startup Putti started offering Spark business mobile customers a Putti 'build your own' mobile-responsive website free for 24 months.
- Skinny Mobile launched its Ultimate \$46 Monthly Prepay Combo, giving 2.5GB of data and unlimited calling and texting to New Zealand and Australia.

March 2015

- Netflix launched in New Zealand with its cheapest plan \$10 a month. It is available on smart televisions as well as PlayStation, Xbox and Nintendo consoles. Like other video streaming services, it can also be used on Apple TV, Google Chromecast, and Apple and Android tablets and smartphones.
- Vodafone started offering mobile on-account customers Netflix free for 6 months if they sign up for 24 months to one of its Red+ mobile plans.
- Spark's online television service Lightbox has responded to the arrival of Netflix in New Zealand by dropping its monthly pricing from \$15 to \$13 for new and existing customers. The move brings its pricing into line with rival Quickflix and well under Sky's Neon pricing at \$20 a month.
- 2degrees announced it had purchased ISP Snap and would launch fixed-mobile services later in 2015. The two companies plan to combine under the 2degrees brand to deliver broadband and mobile services to consumers nationwide. 2degrees is also investigating partnering with content providers.
- Mobile wallet Semble was launched. It lets consumers pay for items by waving their smartphone over an EFTPOS terminal. Spark, Vodafone and 2degrees each have a 16.67% stake in Semble. The balance is owned by payment network operator Paymark, which is in turn owned by the major banks. Initially, only credit cards from ASB and BNZ can be loaded onto the app and used to make payments.

List of defined terms and abbreviations

ADSL	Asymmetric Digital Subscriber Line – is a type of DSL.
App	Application – an app is a standardised piece of software that runs on a computing platform. The term app originally referred only to applications for mobile devices and tablets, but is now also used when referring to a wide range of devices including desktop computers.
CDMA	Code division multiple access is a wireless technology alternative to GSM.
CPI	Consumers Price Index – provides information on the price change of goods and services purchased by private New Zealand households.
DSL	Digital Subscriber Line – method of transmitting high-speed data and voice simultaneously over a copper phone line.
DLC	Digital Literacy and Connection.
GB	Gigabyte. One Gigabyte = 1024 Megabytes
GSM	Global System for Mobile communications – a widely used digital, second-generation mobile phone standard.
GST	Goods and Services Tax
HD	High Definition.
HHI	Herfindahl-Hirschman Index – a commonly accepted measure of market concentration. The maximum possible score is 10,000 which would be one seller with 100% market share. A low market concentration might be a score of 2,000.
ICT	Information and Communication Technology
IDI	ICT Development Index – the IDI ranking is a function of internet household penetration and internet usage penetration among young people
IMEI	International Mobile Station Equipment Identity – is a unique identification code of the mobile device.
IoT	Internet-of-Things – the network of physical and virtual objects accessed through the internet
IP	Internet Protocol – a method that computers use to communicate over the internet.
ISP	Internet Services Provider.
ITU	The leading United Nations agency for information and communication technology.
LFC	Local Fibre Company
LTE	Long Term Evolution – a name given to the fourth generation of mobile technology that can provide high-speed mobile broadband.
M2M	Machine-to-machine – refers to the use of network resources to communicate with remote application infrastructure for the purposes of monitoring and control (provides the connectivity for the IoT)
MB	Megabyte – the megabyte is a multiple of the unit byte for measuring the quantity of digital information
Mbps	Megabits per second – Mbps is used to measure data transfer speeds of high bandwidth connections, such as fibre, ethernet and cable modems.
MTAS	Mobile Termination Access Services – the standard terms determination where the Commission has determined the price and non-price terms for the services that provide for the termination on a cellular mobile telephone network of voice calls and SMS.

MVNO	Mobile virtual network operator – an operator that provides mobile phone services but does not generally have its own licensed frequency allocation of radio spectrum or much of the infrastructure required to provide mobile telephone service. It therefore relies on buying services from an operator with a full mobile network. The amount of control it has over the services it offers will vary according to the nature of its agreement.
NZCER	New Zealand Council for Educational Research.
OECD	Organisation for Economic Co-operation and Development.
OTT	Over-the-top – OTT refers to content and applications provided from a third party and delivered to an end-user device, leaving the ISP responsible only for transporting IP packets.
PB	Petabyte. 1 Petabyte = 1048576 Gigabytes; 1 Gigabyte = 1024 Megabytes
PPP	Purchasing Power Parity – an exchange rate designed to equalise standard-of-living differences between countries, and is therefore generally accepted as an appropriate conversion method for non-tradable goods and services.
PSTN	Public Switched Telephone Network – the publicly available telephone network designed for delivering voice services over dedicated voice channels.
SIM	Subscriber Identity Module – commonly known as a SIM card, it contains a microchip that stores data that identifies the user, for use in GSM and compatible 3G mobile phones.
SLES	Sub-Loop Extension Service
SLUBA	Sub-Loop UBA
SMS	Short Message Service – commonly known as a text messaging, is a service for sending short messages between mobile devices.
TCF	Telecommunications Carriers’ Forum
Telecom	Telecom Corporation of New Zealand Limited and Telecom New Zealand Limited.
UBA	Unbundled Bitstream Access – a regulated wholesale service that gives access to a full-speed DSL broadband service on lines on Chorus’ access network.
UCLL	Unbundled Copper Local Loop – a Chorus copper line that connects a phone user to the local exchange that can be accessed by retail telecommunications providers to provide a voice and broadband service.
UFB	Ultra-Fast Broadband – the name given to the Government’s initiative to roll out a fibre-to-the-home access network to give households access to high-speed broadband.
UMTS	Universal Mobile Telecommunications System (UMTS) – the 3G successor to the 2G GSM standard which allows voice telephony, mobile internet access, fixed wireless internet access, video calls and mobile TV.
VoIP	Voice over Internet Protocol – a way to send voice calls over a data connection such as a broadband connection.
VDSL	Very High Bitrate (high speed) DSL
WiFi	Wireless Fidelity Standard – a series of standards for a popular technology that allows electronic devices to exchange data wirelessly (using radio waves), including allowing mobile devices to connect to high-speed internet connections. The distance over which a WiFi connection will operate can vary from 20 metres indoors to tens of kilometres outdoors.

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Phone: 0800 943 600

Write : Contact Centre, PO Box 2351, Wellington 6140

Email : contact@comcom.govt.nz

www.comcom.govt.nz