

ANNUAL TELECOMMUNICATIONS MONITORING REPORT

2015



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List of defined terms and abbreviations

ACCC	Australian Competition and Consumer Commission
ADSL	Asymmetric Digital Subscriber Line – 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
ARPU	Average revenue per month per user/subscriber
Baseband	A generic term covering the low-frequency copper wholesale services used to carry analogue voice over Chorus’ access network
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, if necessary, voice simultaneously over a copper phone line
FPP	Final Pricing Principle – the process of setting the final price for a regulated service by use of cost modelling
GB	Gigabyte. 1 gigabyte = 1024 megabytes
GSM	Global System for Mobile communications – a widely used digital second-generation mobile phone standard
GST	Goods and Services Tax
HHI	Herfindahl-Hirschman Index – a commonly accepted measure of market concentration. It is calculated by squaring the market share of each firm competing in a market, and then summing the resulting numbers. The index is lower with more participants and higher with more disparate market shares
IPP	Initial Pricing Principle – the process of setting the initial price for a regulated service by using benchmarking
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. Most ISPs have now morphed into retailers of a full suite of telecommunications services
LFC	Local Fibre Company. These are the four companies contracted with government agency Crown Fibre Holdings to deploy Ultra-Fast Broadband to 75% of the population by rolling out fibre optic access networks
LTE	Long Term Evolution – a name given to the fourth generation of mobile technology that can provide high-speed mobile broadband
MB	Megabyte – a multiple of the unit byte for measuring the quantity of digital information
Mbps	Megabits per second – 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 messages
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
Naked broadband	A fixed-line broadband service provided without a traditional analogue voice service also being provided over the same line
OECD	Organisation for Economic Co-operation and Development
OTT	Over-the-top – refers to content and applications provided from a third party and delivered to an end-user device, leaving the retailer responsible only for transporting IP packets
PPP	Purchasing Power Parity – an exchange rate designed to equalise standard-of-living differences between countries, and generally accepted as an appropriate conversion method for non-tradable goods and services
SMS	Short Message Service – commonly known as a text messaging, is a service for sending short messages between mobile devices
TCF	New Zealand Telecommunications Forum (formerly Telecommunications Carriers' Forum)
UBA	Unbundled Bitstream Access – a regulated wholesale service that gives access to a full-speed DSL broadband service on copper 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-premise access network to give households and businesses access to very 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
WIP	World Internet Project New Zealand 2015 survey. This is a biennial survey that contributes to a larger international collaborative project, which compares the social, political and economic impact of the internet and other new technologies in more than 30 countries



EXECUTIVE SUMMARY

This is the Commerce Commission's ninth annual telecommunications market monitoring report. It is produced as part of our on-going monitoring of the evolution of competition in the telecommunications sector in New Zealand.

2015 turned out to be a milestone year for the telecommunications industry in a number of respects. The launch of Netflix and other video-streaming services, as mentioned in last year's report, led to a strong burst of growth in broadband data consumption – which was also responsible for some signs of congestion.

The roll-out of 4G mobile technology allowed retailers to start offering fixed wireless broadband services that were comparable, if not better, in price and performance to some copper fixed-line broadband services.

Calling on a mobile phone is becoming more popular than calling on a fixed-line phone, with mobile voice minutes poised to overtake fixed-line voice minutes. Mobile calling rose strongly to hit a record 6.63 billion minutes, which is an average of 120 minutes per person per month.

Mobile revenue and fixed-line revenue also appear to be crossing over, with mobile revenue hitting \$2.54 billion in 2015 while fixed-line revenues fell to \$2.57 billion, meaning total retail telecommunications revenues fell a little to \$5.11 billion.

The UFB fibre network roll-out continued to underpin a high level of investment by the telecommunications industry, now connecting around 100,000 customers. There was also significant investment in 4G mobile spectrum. As a result, industry investment for 2015 was up on the prior year to reach a new record of \$1.77 billion.

The total number of fixed-line connections remained flat, while fixed broadband connections continued growing to reach 1.45 million as at 30 June 2015, to reach 78% of total lines and hold our OECD ranking.¹ Average download speeds increased, and average data consumed per fixed connection increased significantly, helped by the growth in video streaming, to reach 48GB per month, up from 32GB in the prior year. Mobile data use also continued to grow very strongly, up 70% in 2015 over the prior year to reach 390MB per connection per month, with a very high proportion of mobile phones being used to access the internet.

Mobile pricing continues to be competitive across all bundle sizes, with a significant improvement over last year coming in the pricing of larger bundles. A bundle sufficient for 900 calls and 2GB of data in February 2016 could be purchased for \$59 a month compared to \$69 in August 2014, improving our OECD ranking and 7% less than the average OECD price. On the other hand, our OECD ranking for popular \$20 and \$30 plans has slipped as overseas prices have fallen.

Fixed broadband pricing is more dispersed but a 100GB data and voice bundle can be purchased for \$75 a month, 5% below the OECD average.

1. Following the OECD definition, this includes non-cellular fixed wireless connections.

NZ telecommunications snapshot statistics	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
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	5.11
Total telecommunications investment (\$bn)	0.92	1.07	1.18	1.69	1.55	1.24	1.27	1.58	1.69	1.77
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	1.86
Total fixed broadband connections (mil)	0.48	0.68	0.85	0.98	1.05 ^b	1.14	1.24	1.32	1.39	1.45
Fixed-line broadband connections per 100 pop	11.6	16.3	19.8	22.8	24.5	26	28	29.5	31	32.6
Average broadband speed – Akamai Q4 (Mbps)	–	–	2.7	3	3.4	3.7	4	5.3	7.3	9.3
Number of unbundled lines (000's)	–	–	3	37	67	98	116	129	127	123
Resold Spark phone lines (000's)	–	168	262	326	374	414	440	421	409	382
UFB (government sponsored fibre) lines (000's)	–	–	–	–	–	–	1	10	39	106
Chargeable fixed voice call minutes (bn)	7.29	6.91	6.71	6.67	6.25	6.12	5.71	5.47	5.13	4.66
Non-chargeable fixed voice call minutes (bn)	–	–	5.31	5.06	4.65	4.45	4.29	3.50	3.13	2.70
Total fixed-line retail revenues (\$bn)	2.99	2.93	2.93	2.88	2.89	2.89	2.83	2.77	2.68	2.58
Spark share of fixed-line rental revenues (%)	80	79	78	76	71	68	62	60	58	56
Mobile metrics										
Mobile connections (mil)	3.8	4.25	4.58	4.7	4.7 ^c	4.8	4.9	4.9	5.3	5.6
Active mobile connections per 100 population	92	102	108	109	108	110	111	110	118	121
Share mobile prepaid (%)	68.2	67.8	67.6	66.1	67.2	65.7	64.9	63.3	63.6	62.3
Mobile voice call minutes (bn)	2.76	3.17	3.66	4.24	4.44	4.40	4.42	4.77	5.30	6.63
SMS messages sent (bn)	–	–	–	11.4	12.8	13.6	13.9	13	12	12.1
Total mobile retail revenues (\$bn)	1.93	1.97	2.00	2.05	2.07	2.14	2.38	2.44	2.49	2.54

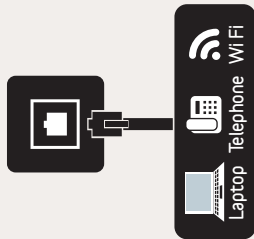
a. Data published every three years.

b. This measure includes non-cellular fixed wireless subscribers. The measure and the one below are as reported by the OECD.

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

Telecommunications Monitoring Report 2015

Fixed (monthly)

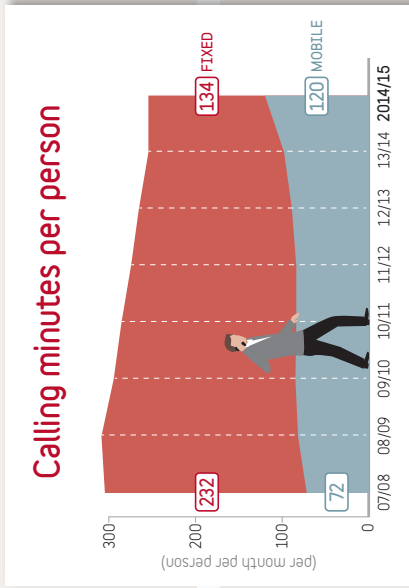
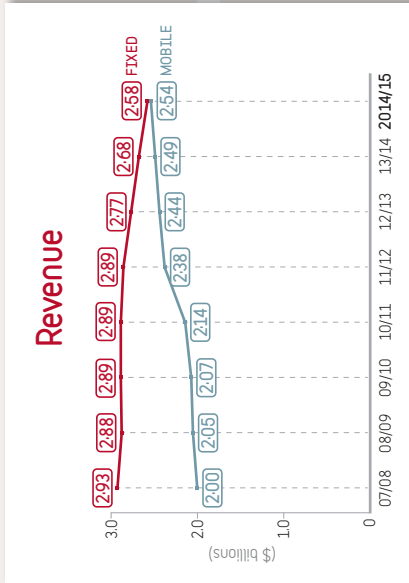
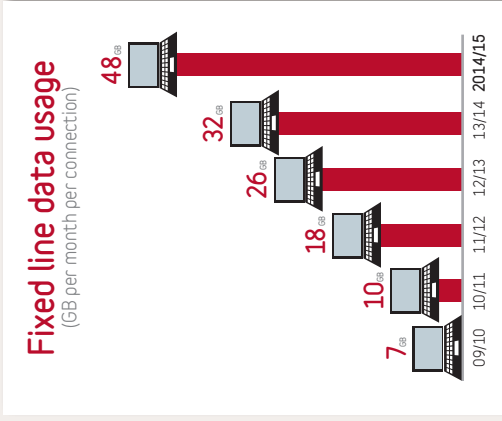


\$100
100Mbps
500GB
+phone

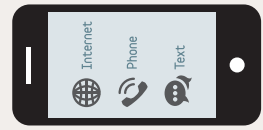
\$75
60GB
+phone

7% over
OECD average

5% under
OECD average



Mobile (monthly)

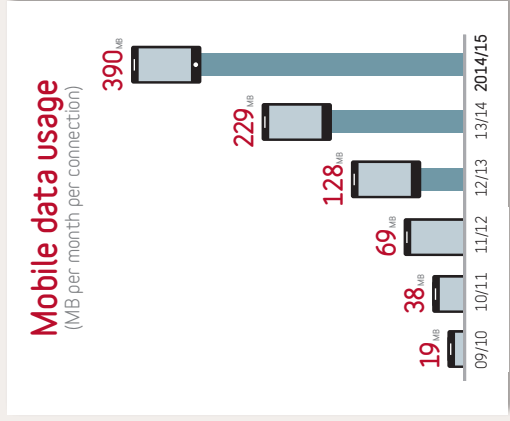


\$59
2GB
900 calls

\$30
500MB
100 calls

7% under
OECD average

24% under
OECD average



INTRODUCTION

Purpose of this report

This is the Commerce Commission's ninth annual telecommunications market monitoring report. It looks at the state of telecommunications markets in New Zealand and developments that occurred largely during the 2015 year. The report also examines trends in telecommunications markets.

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This report is released under section 9A of the Telecommunications Act 2001, which requires us to monitor competition in, and the performance and development of telecommunications markets. This monitoring is in addition to that associated with specific determinations and information disclosure.

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

- data transport (also called backhaul),² and
- broadband performance.

2. Regulated backhaul is not included in the review.

Data sources

Since 2007, the Commission has collected data from telecommunications operators to understand trends in the New Zealand telecommunications markets, and to inform the industry and the public.

The data in this report originates from various sources, but mainly from the Commission's 2015 Telecommunications Industry Questionnaire and prior year questionnaires. The data from the industry questionnaire is for the 12 months to 30 June 2015 when it is a measure of volume like revenues and minutes. The data is as at 30 June 2015 where it is a snapshot in time such as subscriber numbers. We refer to both types of data in this report as 2015 results. More recent industry data is also used where it is available and the different time period noted.³

Revenues and prices are expressed as nominal figures unless otherwise indicated.

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. We also note that not all respondents were able to answer all the questions.

We thank all the operators who submitted data for this report and look forward to their continued cooperation.

We welcome any comments or feedback on any aspect of this report. This year we are conducting an online survey of users of the report. The link to the survey is <https://www.surveymonkey.com/r/82K8MFN> and responses will close on 10 June 2016.



3. Where publicly available data has been used, for example from annual financial reports, its sources are indicated accordingly.

MARKET OVERVIEW

This section gives an overview of telecommunications markets by making some observations about key developments as well as observing levels of investment, changes in subscribers, call volumes, and industry revenues.

Video-streaming popularity boosts data use but impacts broadband performance

New video-streaming services took off in popularity from March 2015, with various retailers and Chorus reporting significant increases in data traffic. However, it also became clear from monitoring by TrueNet and disclosure from retailers that the extra traffic noticeably slowed some broadband services at peak times. Extra investment in capacity by retailers helped to largely resolve the issue by the last quarter of the year.

Fixed wireless technology starts to offer real substitute for copper

Mobile operators continued their roll-out of 4G mobile technology, with newly acquired 700MHz spectrum giving them more options to improve the performance of mobile broadband. By the end of 2015, retailers were able to start offering 4G fixed wireless broadband services that were comparable, if not better, in price and performance to ADSL copper broadband services.⁴

Wholesale copper pricing finalised

On 15 December 2015, the Commission released the Final Pricing Principle (FPP) determinations for the main two regulated copper services retailers purchase from Chorus. These determinations replaced benchmarked prices with cost model prices. The UCLL price increased from \$23.52⁵ to \$29.75 per month and the effective UBA price from \$34.44 to \$41.19, up by \$6.75 from the 1 December 2014 Initial Pricing Principle (IPP) price but down \$3.79 on the \$44.98 applying prior to that date.

Fibre take-up accelerates

The number of fibre connections continued to increase rapidly. As at 31 March 2016, the number of UFB fibre connections was 197,000 and UFB fibre passed 922,000 premises. The retail price of a 30Mbps broadband service delivered over fibre is often cheaper than broadband delivered over copper. A 100Mbps fibre broadband service is usually priced at just \$5 per month more than an ADSL service providing the same amount of data, and fibre is often the same price or even cheaper than a VDSL service.

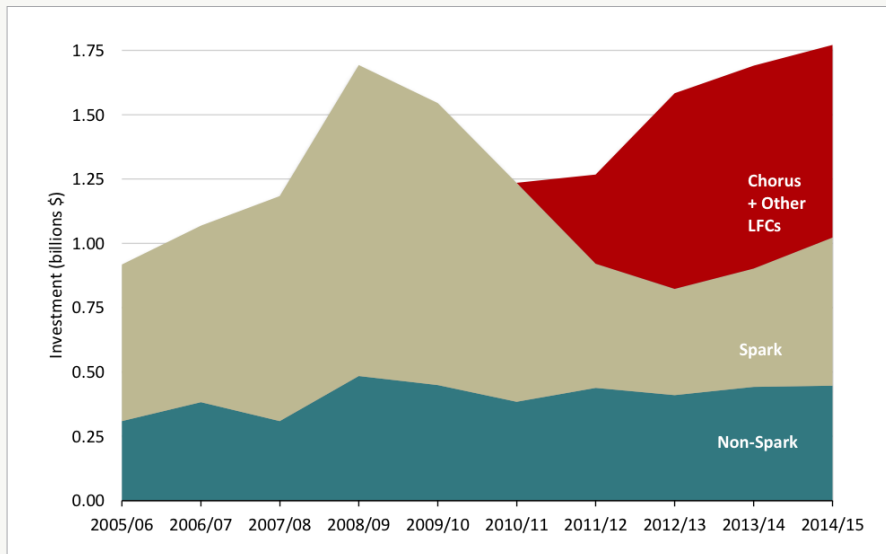
CallPlus, FX Networks and M2 are now Vocus

Australian-owned telco M2 completed its acquisition of CallPlus in July 2015 with all the CallPlus brands continuing to operate. M2 then merged with fellow Australian-owned telecommunications operator Vocus in February 2016, but only the M2 brand disappeared in New Zealand.

-
4. We consider a fixed wireless broadband service to be a broadband service provided wirelessly to a modem in a premise. The modem is usually fixed because it is required to be plugged into a mains power supply. The modem may or may not have a fixed external aerial.
 5. This was the averaged price for an unbundled local loop applying from 1 December 2014; prior to that the price was \$19.08 for urban areas and \$35.20 for non-urban areas.

Telecommunications investment reaches new high

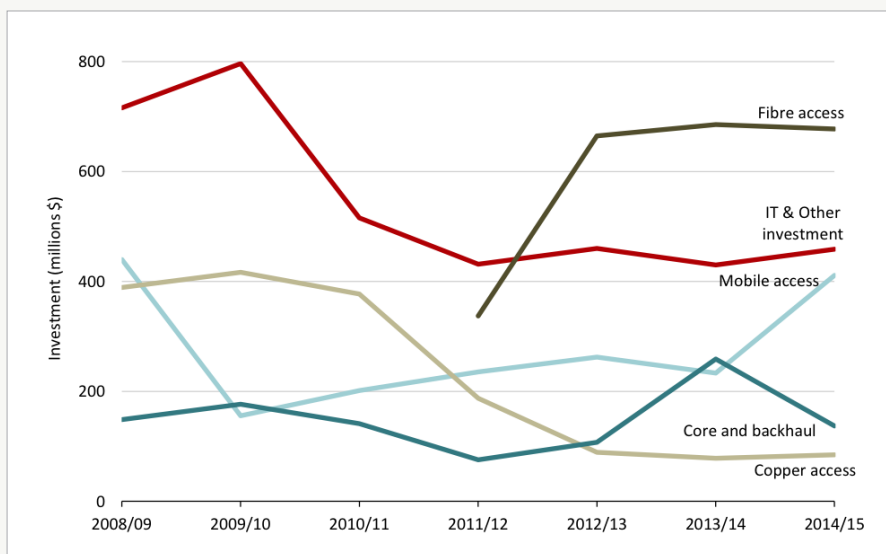
Figure 1: Telecommunications investment



Telecommunications industry investment surpassed the high level of 2014 to hit a record high of \$1.77 billion in 2015. Again, this was underpinned by the continued UFB fibre roll-out being undertaken by Local Fibre Companies (LFCs), as shown in *Figure 1*, but was also helped along by investment in 4G mobile spectrum that was classed as mobile access investment in *Figure 2* below.

It can be seen from *Figure 2* that the increase in mobile access investment was largely offset by a decrease in core and backhaul investment. However, IT and other investment rose somewhat to reach \$459 million, with IT investment making up nearly two-thirds of that total. We understand IT investment mostly consists of new customer management systems.

Figure 2: Investment by component



Fixed and mobile broadband connections rise again

The telecommunications services delivered over fixed-line and mobile connections are now very similar, with both types of connection usually able to deliver both a good broadband service and a voice service. Modern smartphones also have considerable processing power, approaching that of a low-end PC.

Figure 3: Fixed-line telephone and broadband connections

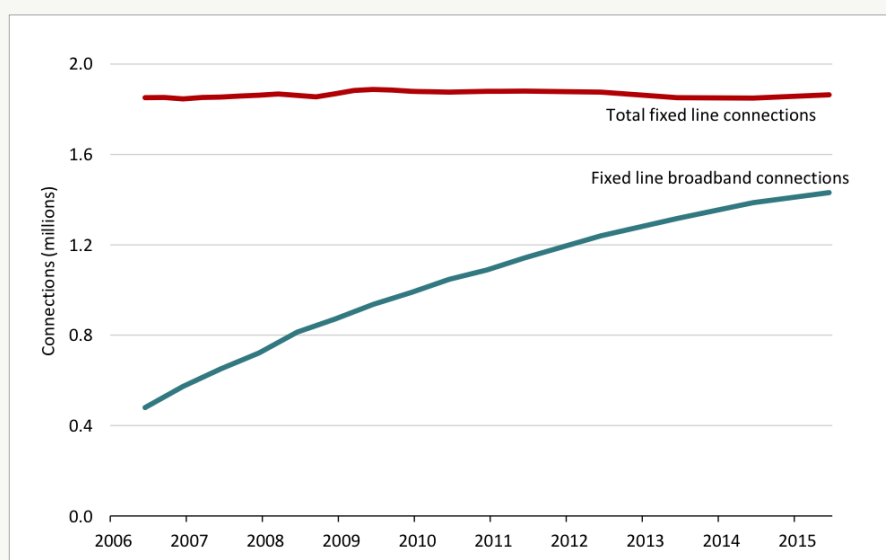


Figure 3 shows that the number of fixed-line connections continued to remain flat while fixed-line broadband connections continued to grow, although at a steadily decreasing rate, to reach 1.43 million in mid-2014.⁶

The total number of fixed-line connections has likely held steady because the ever-larger amounts of data being used by households has, until recently, only been able to be delivered cost-effectively by a fixed-line connection. However, the recent appearance of competitive and widely available fixed wireless services may cause some decline in fixed-line connections in the years ahead.

The OECD compares the rate of broadband penetration between countries by measuring connections per 100 of population. As at 30 June 2015, New Zealand had 32.6 fixed broadband subscriptions per 100 of population, compared with the OECD average of 28.8. This gave New Zealand a continued ranking of 14 out of 34 OECD countries, ahead of the US at 16 and Australia at 24.

The World Internet Project New Zealand 2015 survey (WIP) found 91% of respondents were active internet users, with 75% connecting to the internet via a laptop, 74% via a mobile phone and 70% via desktop PC.⁷

6. Excluding around 20,000 non-cellular fixed wireless and satellite connections.

7. Crothers, C., Smith, P., Urale, P. W. B., & Bell, A. (2016). *The Internet in New Zealand 2015*. Auckland, New Zealand: Institute of Culture, Discourse & Communication, Auckland University of Technology.

Figure 4: Total mobile and mobile broadband connections

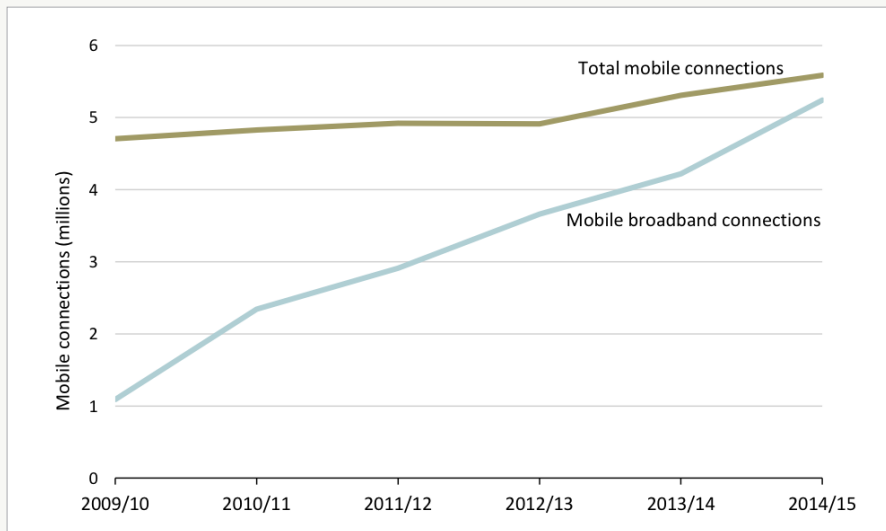
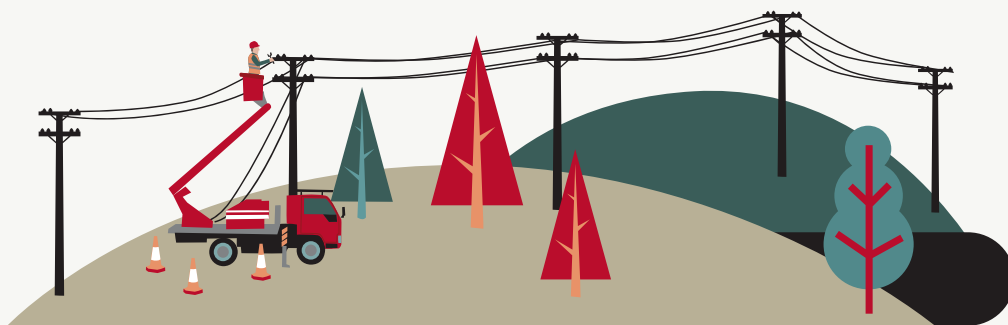


Figure 4 shows that the number of mobile connections continued to grow in 2015 to reach 5.58 million, while the number of mobile broadband subscriptions continued increasing at a faster rate to reach 5.24 million.

As at 30 June 2015 New Zealand had 117.7 mobile broadband subscriptions per 100 of population,⁸ compared with the OECD average of 85.5. This gave New Zealand a ranking of 4 out of 34 OECD countries, ahead of the US at 7 and Australia at 5. Mobile broadband subscriptions are, however, difficult to count accurately,⁹ particularly with prepay users who may be buying multiple data add-ons over the measurement period.



8. This includes 425,000 data-only connections for dongles and data-only devices like tablets.
9. 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.

Mobile calling poised to overtake fixed calling

Figure 5: Fixed, mobile, and total calling minutes

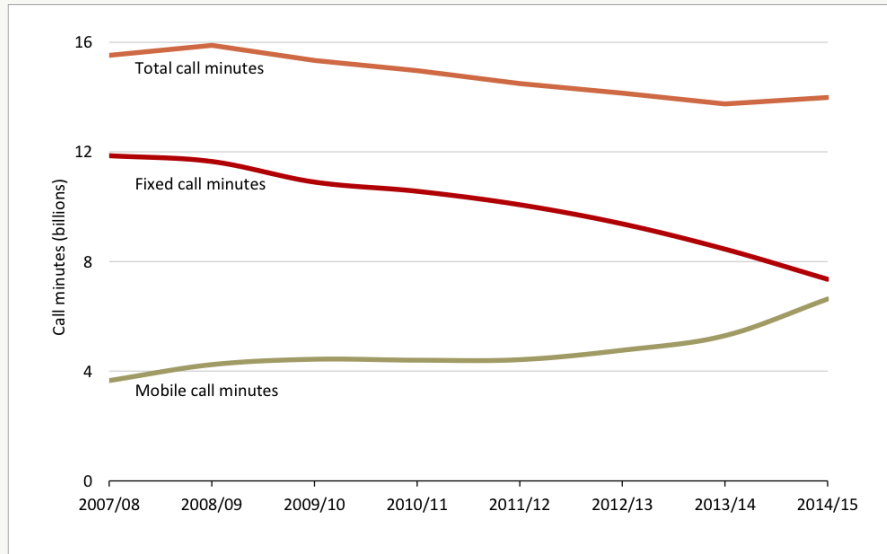
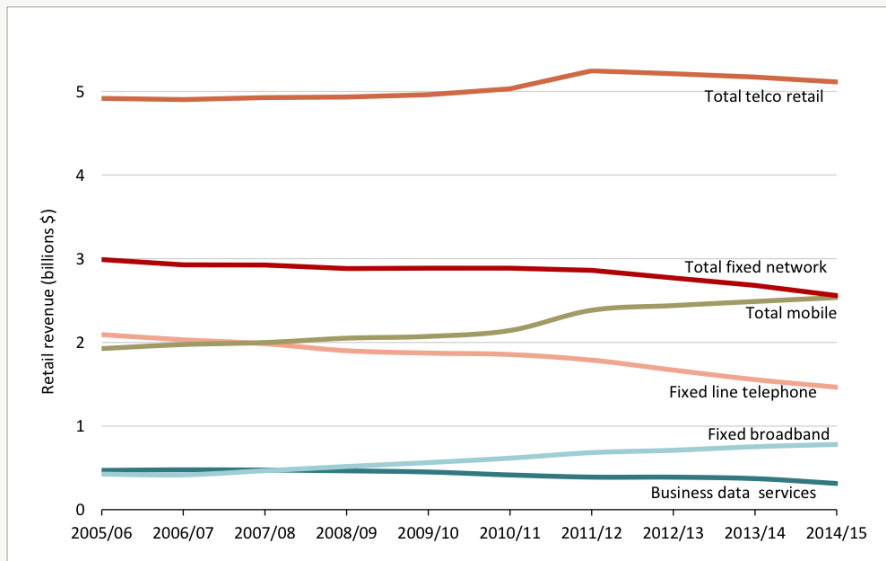


Figure 5 shows that the growth in mobile calling minutes accelerated in 2015, with mobile calling poised to overtake fixed calling in 2016. While fixed calling has continued to decline, the higher growth of mobile calling caused a rise in total calling on phones and mobiles, for the first time since 2009.

In contrast, mobile data consumption is well behind that consumed on fixed lines. However, mobile data usage grew very strongly in 2015, up 70% on the prior year to 390MB per connection per month, with a very high proportion of mobile phones now being used to connect to the internet.

Fixed and mobile revenues also show convergence

Figure 6: Telecommunications retail revenues by service



Mobile revenue continued its recent trend of modest rises in 2015 to hit \$2.54 billion, and the continued fall in fixed network revenues to \$2.58 billion meant mobile and fixed revenues almost converged, as can be seen from *Figure 6*. Mobile revenues will likely overtake fixed revenues in 2016.

Total telecommunications industry retail revenues again fell a little, by 1%, in 2015, to \$5.11 billion. *Figure 6* shows fixed broadband revenue was the only component of fixed network revenues to show a rise in 2015.



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, 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 nationwide voice, broadband and data services for its own customers and also voice services for many customers served by its competitors. It has to purchase UBA, baseband and other wholesale inputs off Chorus to provide these services.

Vodafone is the second-biggest fixed-line retailer. It owns the cable network that covers much of Wellington and Christchurch. The cable network consists of co-axial cable used to provide a cable TV and broadband service, and also conventional copper lines used to provide a phone service. Vodafone also makes extensive use of UCLL, UBA 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 Vocus NZ, which sells most of its retail services under the brands of Slingshot, Flip, CallPlus, 2Talk and Orcon. It makes use of UCLL, UBA, baseband and resale services.

UCLL requires retailers to install their own infrastructure in exchanges to provide voice and broadband services, which gives them more control over the quality of service.

The alternative to unbundling on the copper network is for retailers to buy a wholesale UBA service from Chorus to provide broadband. This requires less investment in infrastructure but gives less control over the service. To provide voice in this situation the retailer can buy a resale voice service from Spark or, where practical, buy a baseband service from Chorus and provide its own voice service. The other option is to deliver voice as data using VoIP via the UBA service, as Orcon can with its Genius service. Delivering voice using VoIP means the retailer can avoid the costs associated with supplying a conventional dedicated analogue voice service, but means supplying more expensive consumer premise equipment.

A total of 214 exchanges serving around three-quarters of all lines have been unbundled. However, about half of the lines originating from these exchanges have been cabinetised. Where a line has been cabinetised, broadband is supplied from a fibre-fed cabinet closer to end-user premises to give better broadband performance. Unbundling the line from the cabinet is generally not economic for retailers. Instead, they purchase UBA from the cabinet, but may provide voice from the exchange using their own equipment.

Some retailers use only UBA services to provide broadband over copper. These retailers include 2degrees, TrustPower, and Compass.

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

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 LFCs under the UFB programme. Fibre now passes more than 922,000 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. Generally broadband retailers who use the copper network also sell broadband over fibre. There are some specialist fibre-only retailers, such as MyRepublic.

Figure 7: UFB Connections

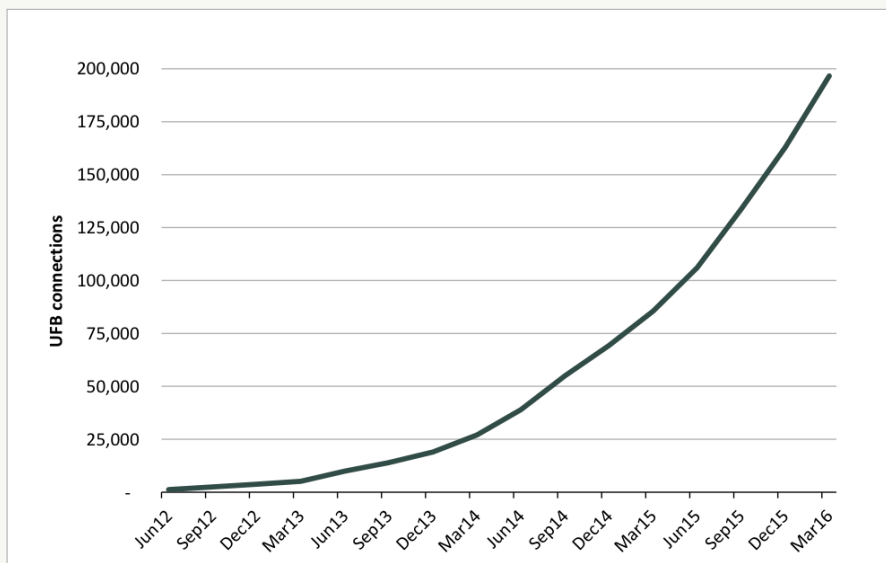


Figure 7 shows that the number of consumers, including businesses, getting connected to the UFB network to purchase fibre services has continued to increase rapidly, reaching 197,000 by the end of March 2016.



Fall in calling largely continues

Fixed-line calling continues to decline. The severity of the decline depends on the type of calling.

Figure 8: Fixed-line retail call minutes by call type

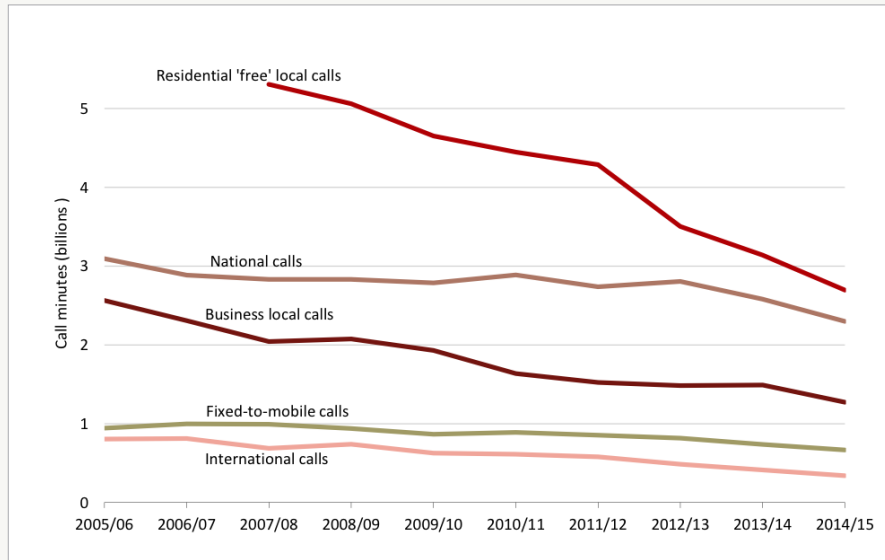


Figure 8 shows that while all forms of fixed-line calling declined in 2015, free residential local calling declined the most significantly.

Many retailers now deliver VoIP voice services to consumer and businesses premises, rather than traditional analogue voice services that require a dedicated low-frequency service on the access line. Where VoIP calls are switched through a telephone exchange and the VoIP operator charges for the service, the minutes and revenues should be included in the data captured for this report. However, we are not able to easily count the increasing number of VoIP-to-VoIP calls that are not switched through a telephone exchange.

11. The correction of an overstatement of fixed-to-mobile minutes in 2014 led to the average price for that year being revised upwards.

Figure 9: Average fixed-line calling prices by type

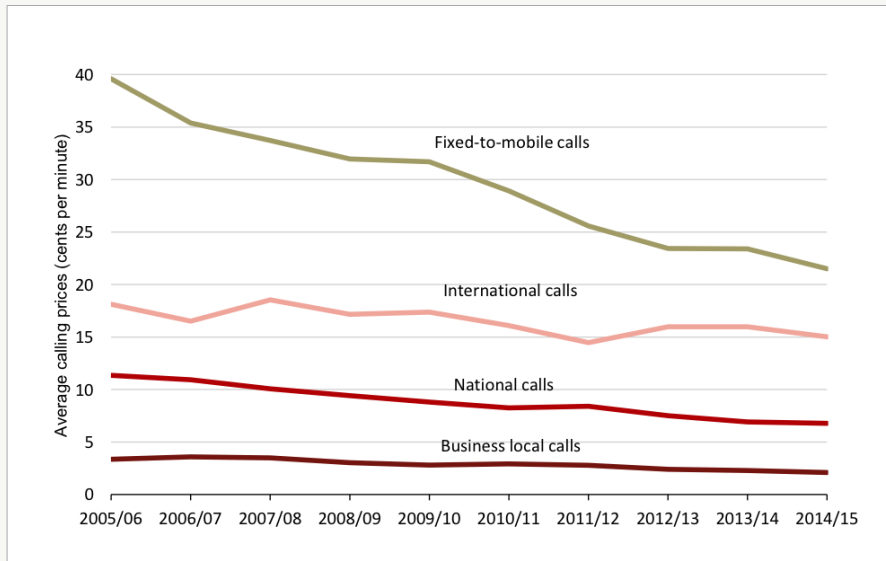


Figure 9 shows there was generally a much less pronounced downward trend in recent years for the average price of the various call types. The biggest fall in 2015 was for fixed-to-mobile calling, although the average price remains high relative to the main cost of providing such calls: the mobile termination rate of 3.56cpm.

There is a large variation in the retail charges for fixed-to-mobile calls, made even more significant for longer calls because some retailers apply caps and others do not. For example, Slingshot charges 26cpm for fixed-to-mobile calls with a cap of \$2.50 for calls up to 2 hours whereas Orcon, another Vocus brand, charges 43cpm and has no cap, although it sells buckets of fixed-to-mobile minutes starting at \$10 for 100 minutes. Most other retailers have prices falling somewhere between these two extremes. This suggests that consumers are relatively indifferent to the price of fixed-to-mobile calls included in a broadband and voice bundle. Paying a high fixed-to-mobile rate can often easily be avoided by ringing the mobile number from a mobile phone that has a lower effective price per minute.



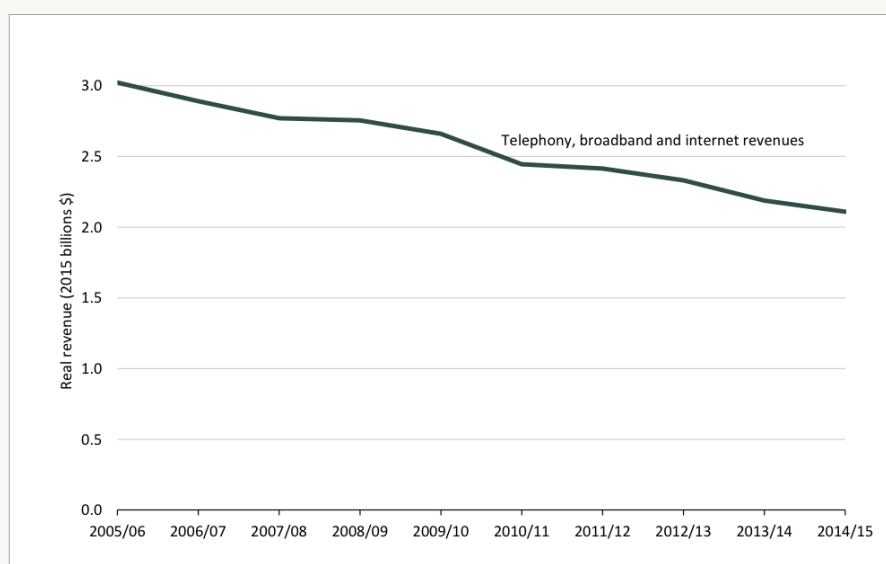
Total revenue from telephony and broadband services continues falling trend

Falling call prices and volumes mean revenue from calling continued to fall in 2015 along with other revenue from telephony services.

While broadband revenues have been rising, this has not been enough to offset the fall in telephony revenues. It is difficult to fairly quantify what portion of total revenue earned from selling services over telephone lines should be attributed to broadband, and what portion should be attributed to telephony services like voice line rental.

Telephony and broadband services are now typically sold in a bundle. Out of 1.42 million reported residential lines as at 30 June 2015, around 225,000 were used to provide just a traditional analogue voice service. Taking out those lines used to provide a naked broadband service, we estimate around one million residential lines were being used to provide a bundle of broadband and traditional analogue voice services. Most business lines were also likely to have been used to provide a bundle of voice and broadband or data services.

Figure 10: Fixed-line telephony, broadband and internet revenues



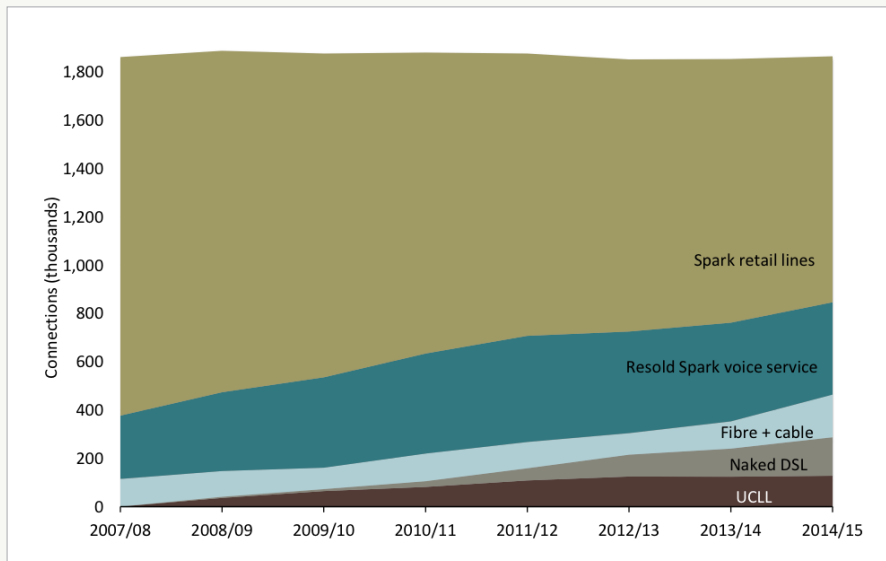
Looking at total real revenues from telephony, broadband and internet (the latter to include dial-up revenues in earlier years), it can be seen from *Figure 10* that in real terms these have been falling at least since we started to collect data in 2006. Recent price increases for broadband services made little impression on this falling trend.

In terms of the use that consumers get from their fixed line, fixed-line voice calling averaged around 4.5 minutes per day per person in 2015. In contrast, the WIP 2015 study indicated that those using the internet at home had an average usage of at least 2 hours a day.¹²

12. Crothers, C., Smith, P., Urale, P. W. B., & Bell, A. (2016). *The Internet in New Zealand 2015*. Auckland, New Zealand: Institute of Culture, Discourse & Communication, Auckland University of Technology.

Spark's retail and wholesale share continues to decline

Figure 11: Spark and alternative fixed-line services



As Spark lost market share in the number of fixed lines it retailed from the mid-2000s, it increased the number of voice lines that it wholesaled to its competitors. This meant Spark continued to derive some revenue from a large proportion of lines, as can be seen in *Figure 11*. Spark's lines generally provide a voice and broadband service, and sometimes just a traditional analogue voice service, using baseband and UBA from Chorus as applicable.

Only in more recent years has the number of lines with a Spark resold voice service started to drop. The decline has been slow, but is starting to pick up as its competitors are selling more naked DSL broadband services that don't include a traditional analogue voice service, as can also be seen from *Figure 11*.

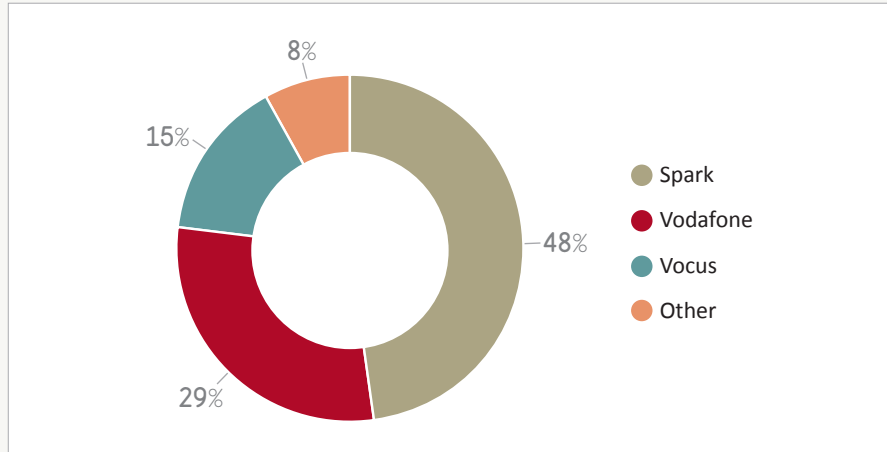
Some competitors are also starting to buy baseband services direct from Chorus (Baseband IP Extended and UCLFS) to allow them to provide their own analogue voice service. The availability of baseband services, able to be used by Spark's competitors, had been limited geographically, but Chorus launched 'Baseband IP Extended' on 31 July 2015 to increase coverage. The total number of baseband services used by non-Spark retailers as at 30 June 2015 was insignificant so we haven't shown it in *Figure 11*.

The number of unbundled lines where Spark's competitors provide their own broadband and voice service has peaked with there now being little incentive to unbundle further exchanges. The other fixed-line technologies by which customers can be served are cable and fibre. Cable is available only in Wellington and Christchurch. Fibre is not yet available everywhere but coverage is increasing rapidly as the UFB roll-out proceeds, as detailed earlier.

Little change in broadband market shares

The Commission has again estimated from public sources the main retailers' fixed-line broadband market shares by number of connections.¹³

Figure 12: Estimated broadband retailer market share



The two biggest players continue to have around four-fifths of the broadband market and Vocus about two-thirds of the remainder. The percentages shown above use some different public sources to those used in the 2014 estimate, so should not be used for a year-on-year comparison.

Step-change in broadband data use

Figure 13: Fixed-line broadband data consumption

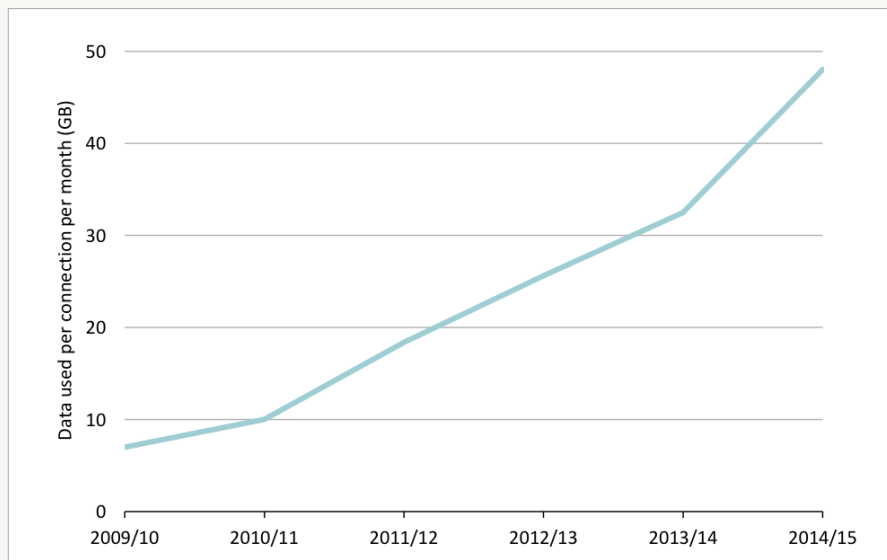


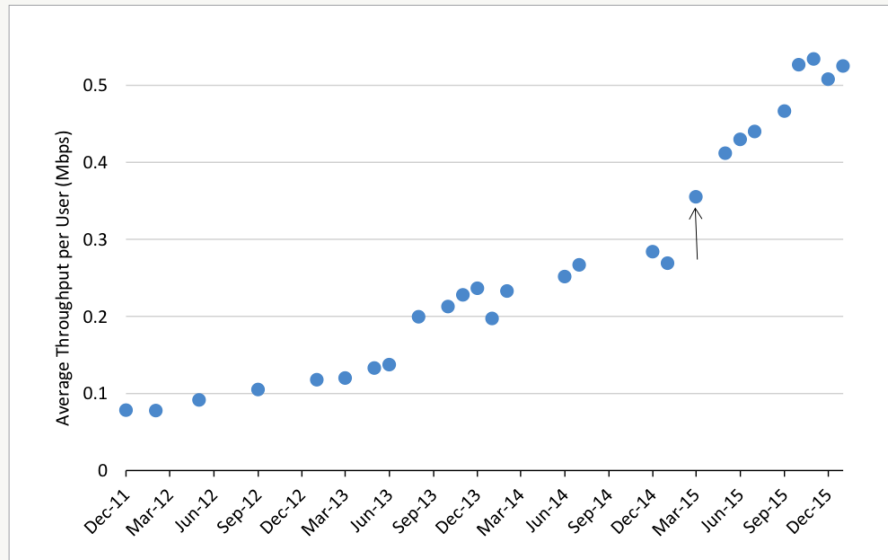
Figure 13 shows that the increase in the amount of data used by fixed-line broadband subscribers accelerated in 2015. The Commission's survey responses indicated that the average amount of data used by each fixed-line broadband subscriber hit 48GB per month in 2015, well up from the 32GB recorded for 2014.

13. Spark and Vodafone both make their broadband numbers available in reports for investors. Vocus, in its prior incarnation of M2, said in a public announcement soon after the end of the 2014/15 year that it had 220,000 customers.

More detailed information from Chorus and retailers indicates the increase in data consumption was more dramatic, spiking markedly from March 2015 after the arrival of the Netflix video-streaming service.

Chorus can see how much data is flowing through its access network to supply broadband services, and has calculated the average throughput per user to illustrate the upsurge in this measure.

Figure 14: Average broadband data throughput



Source: Chorus

Chorus' observations of average peak hour data throughput per user are plotted over time in *Figure 14*. These show a distinct upsurge from March 2015 onwards.

Broadband with voice does better in price benchmarking

The vast majority of consumers now buy their fixed-line telecommunications services in a bundle that includes a voice service and a broadband service.

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 price for broadband and voice bundles for various levels of usage and speed.¹⁴ 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 similar baskets as were described in our report, 'International Price Comparison for Retail Fixed-line Telecommunications Services 2013'.¹⁵ Given the entry level broadband plan offered by most retailers is now 80GB to 100GB and many consumers are on unlimited plans, we have moved to looking at baskets of 60GB,

14. 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.

15. <http://www.comcom.govt.nz/regulated-industries/telecommunications/monitoring-reports-and-studies/monitoring-reports/>

150GB and 500GB. The 500GB basket is used as a proxy for unlimited plans. Given that cable now tends to offer similar speeds to fibre, we have grouped fibre and cable together and benchmarked DSL plans separately.

To ensure that the price benchmarking was up to date after all surveyed retailers recently increased prices, we have taken the prices applying as at March 2016.

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

Broadband + voice basket	NZ rank	Mar 2016 price (NZD PPP)			NZ % price var. from	
		NZ	Australia	Average	Australia	Average
60GB 10Mbps (DSL)	15/27	75	61	79	22%	-5%
150GB 10Mbps (DSL)	17/26	85	72	79	18%	8%
500GB 10Mbps (DSL)	17/26	95	97	83	-2%	15%
60GB 30Mbps fibre & cable	16/26	75	77	73	-2%	3%
500GB 100Mbps fibre & cable	17/28	100	118	93	-15%	7%

Source: Teligen

Table 1 shows that New Zealand prices for broadband plus voice bundles were nearly always somewhat above the average of the benchmarked set of countries, with the exception that New Zealand was 5% below average for the 60GB DSL basket. New Zealand is closer to the international average for fibre and cable plans, and lower priced than Australia.

Table 2: Results of fixed-line naked broadband benchmarking

Naked broadband basket	NZ rank	Mar 2016 price (NZD PPP)			NZ % price var. from	
		NZ	Australia	Average	Australia	Average
60GB 10Mbps (DSL)	21/34	70	72	65	-3%	7%
150GB 10Mbps (DSL)	26/34	80	72	66	11%	21%
500GB 10Mbps (DSL)	29/34	90	72	68	25%	31%
60GB 30Mbps fibre & cable	24/36	70	87	59	-20%	18%
150GB 100Mbps fibre	23/36	90	97	78	-17%	16%

Source: Teligen

Table 2 shows that New Zealand's prices for naked broadband plans were further above average than broadband bundled with voice. Naked broadband prices tended to increase more in the recent rounds of price increases.

There is also a familiar pattern: the more data included in the basket, the more the New Zealand price is above the international average. In most of the rest of the world, fixed-line broadband services are differentiated only by speed, and data is usually unlimited. This means that at a fixed speed the international average price increases very little when extra data is added to the basket.

Broadband prices have become more dispersed

To track broadband prices over time, we have looked at the plans available from the three largest retailers that would serve a consumer with average fixed-line data usage who was buying a broadband and voice bundle. Entry-level plans have grown in size over time too, so the price didn't always increase as we increased the data requirement each year.

Figure 15: Wholesale and retail prices for average voice and broadband bundle

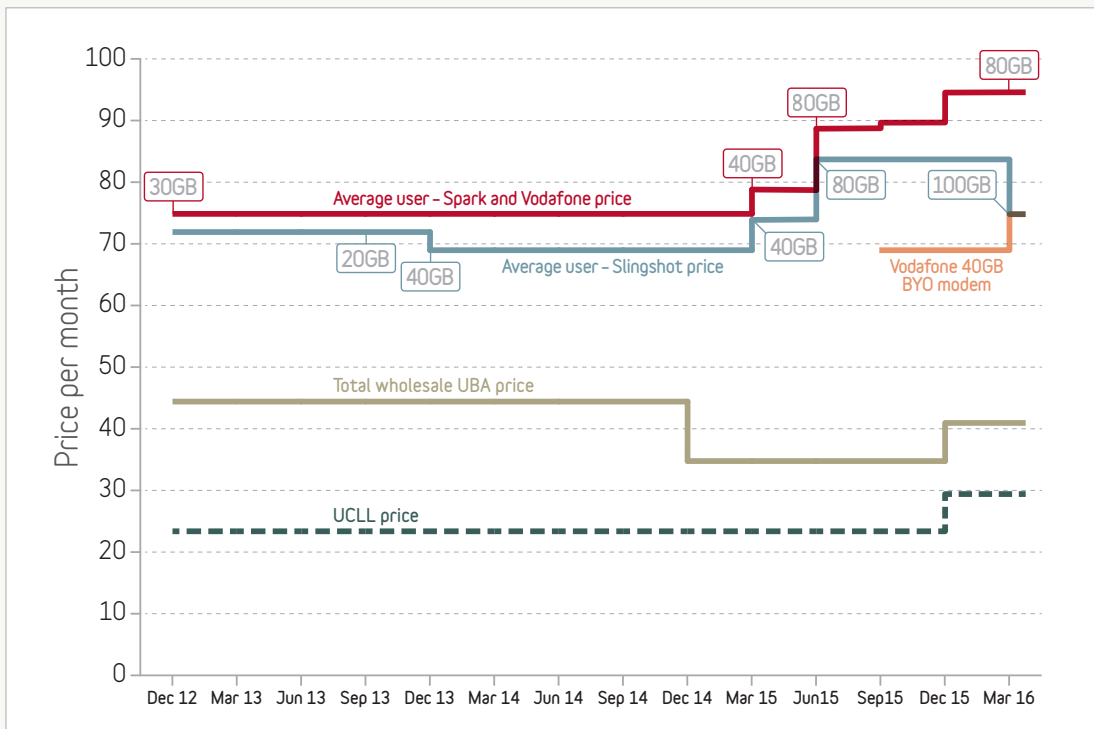


Figure 15 shows that by March 2016 an average user of a fixed-line broadband and voice bundle needed an 80GB plan from Spark or Vodafone priced at \$95 a month, or a 100GB plan from Slingshot priced at \$75. Vodafone also offer a \$75 bundle but with 40GB of data and no free modem.

Looking at the bigger picture, wholesale broadband prices are \$4 lower than 18 months ago, but the most popular voice and broadband retail bundles are generally a little more expensive, albeit with higher data caps. However, with the wide dispersion in prices it pays to shop around.

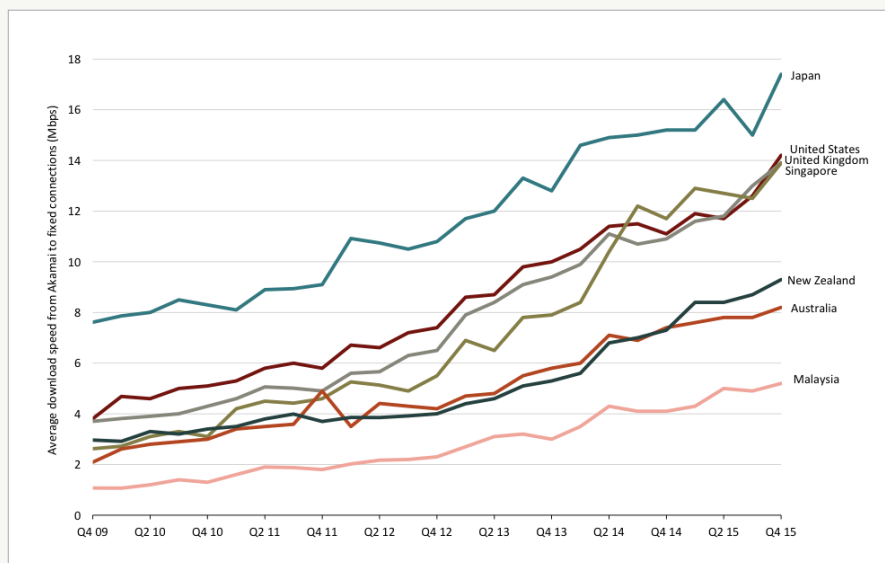
Average broadband speed continues to rise

One 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 Akamai¹⁶ provides data about average and peak 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) in most countries around the world.¹⁷ We note that the average speed measured by Akamai is less than the average speed test results from speed-test websites. Real-world broadband speeds are generally lower than those given by speed-test applications because such applications generally give the maximum possible speed achievable when downloading a large file. Networks also tend to be configured to maximise the results of speed-test applications.

The migration of consumers to higher-speed copper VDSL plans, higher-speed cable plans and high-speed fibre plans, where available, could be expected to push up average download speeds. Networks do have to be appropriately provisioned for higher speeds and the greater data consumption they allow, so they are not 'costless' improvements for retailers.

Figure 16: Average download speeds by country



New Zealand's average broadband download speed, as measured by Akamai¹⁸ and shown in *Figure 16*, had another significant improvement to reach 9.3Mbps in the fourth quarter of 2015, up from 7.3Mbps in Q4 2014. New Zealand has moved ahead of Australia on this measure, but is only holding its relative position against the other countries shown in *Figure 16*.

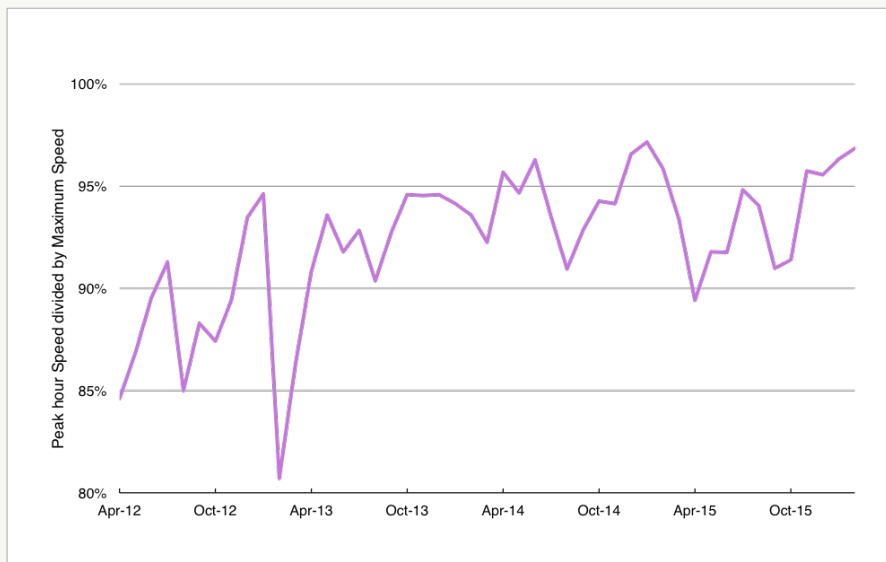
16. Akamai website: www.akamai.com

17. 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 internet connection in the country.

18. Akamai calls the measure it reports a 'connection speed', but it calculates that from the size of the files delivered and the amount of time it took to download those files.

Another measure of broadband quality is how much lower the peak hour speed is than the maximum speed for a sample of customers measured on a consistent basis. In heavily congested networks the peak hour speed can drop to under half the maximum speed. The testing done by TrueNet for the Commission has showed a general trend towards less slowing in the peak hour since 2012, but the rapid increase in data consumption after March 2015 appeared to contribute to a reversal of that trend for several months.

Figure 17: ADSL peak hour speed variability



Source: TrueNet

Figure 18 plots a weighted average of ADSL peak hour speed variability measured by TrueNet from its consumer probes. The measure for each ISP was weighted by its market share.



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 a closer look at what is happening in each of the prepay, on-account, and business market segments.

Market overview

New Zealand has three mobile network operators: Spark, 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 continue to operate 2G GSM networks, although these are likely to now be limited to providing machine-to-machine connections rather than consumer connections, with few 2G-only phones likely to be left in operation. All three mobile providers operate 3G and 4G networks that allow mobile broadband services to be provided in addition to voice and text messages.

4G can provide much higher data speeds to consumers, sometimes even better than can be achieved with fixed-line ADSL copper services, although not necessarily with the same reliability and consistency.

Vodafone and Spark's mobile networks are both nationwide, reaching around 98% of the population. Their 4G coverage is around 90% of the population, being widespread in urban and many rural areas. 2degrees now has its own infrastructure in nearly all major towns and cities, reaching over 95% of the population. It has around 70% coverage for 4G. 2degrees relies on a national roaming agreement with Vodafone to provide coverage where it doesn't have its own infrastructure.

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 remained under 20,000 as at 30 June 2015. The Warehouse started its own MVNO in November 2015 that uses the 2degrees network. This has low casual use rates of 2 cents per text, 4 cents per minute for calling, and 6 cents per MB for data.

Skinny is a separate brand of Spark's rather than an MVNO, so is counted in Spark mobile subscriptions. 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.

New Zealand continues to have a high proportion (by international standards) of mobile subscribers using prepay plans at 62%, although this is slowly declining.

Spark continues to claw back market share from Vodafone

Figure 18: Mobile market share trends

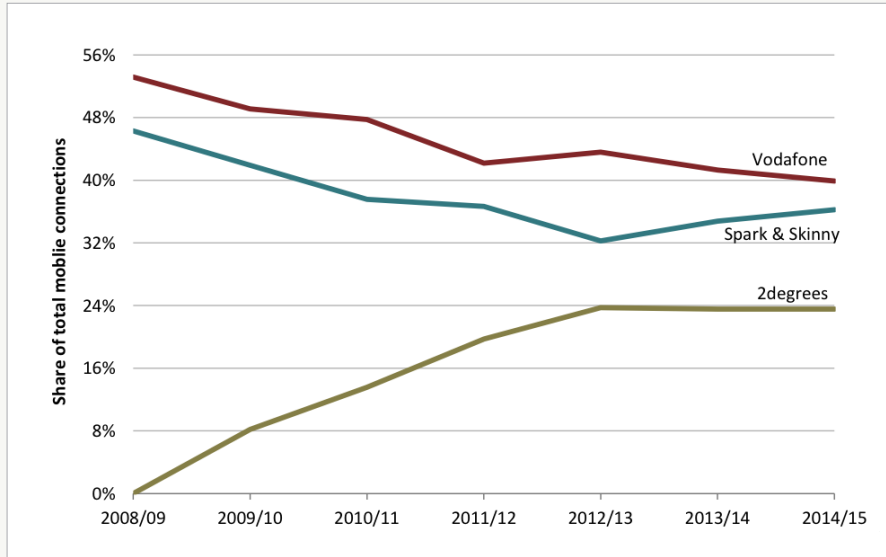
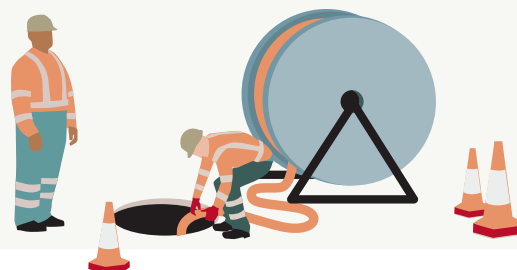


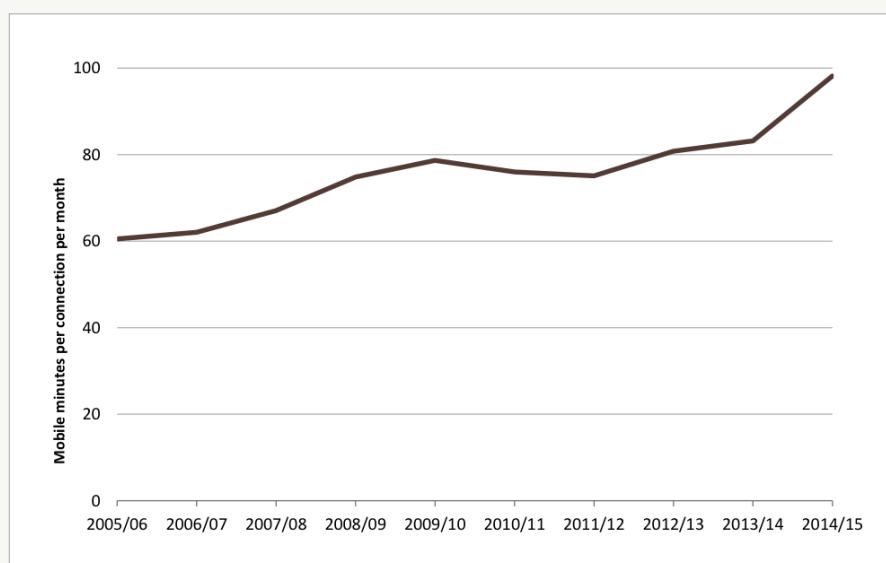
Figure 18 shows that in 2015 Spark, together with sub-brand Skinny, continued to claw back market share, as measured by connections, from Vodafone. For the third year in a row, 2degrees gained just enough new connections to allow it to maintain its share of connections at around 24%.

As we have mentioned in previous reports, 2degrees' share of mobile revenues is less than its share of connections given its smaller share of higher-value customers, but it is making some progress in gaining more higher-value customers.



Mobile voice minutes per connection continue to climb

Figure 19: Retail mobile voice minutes per connection

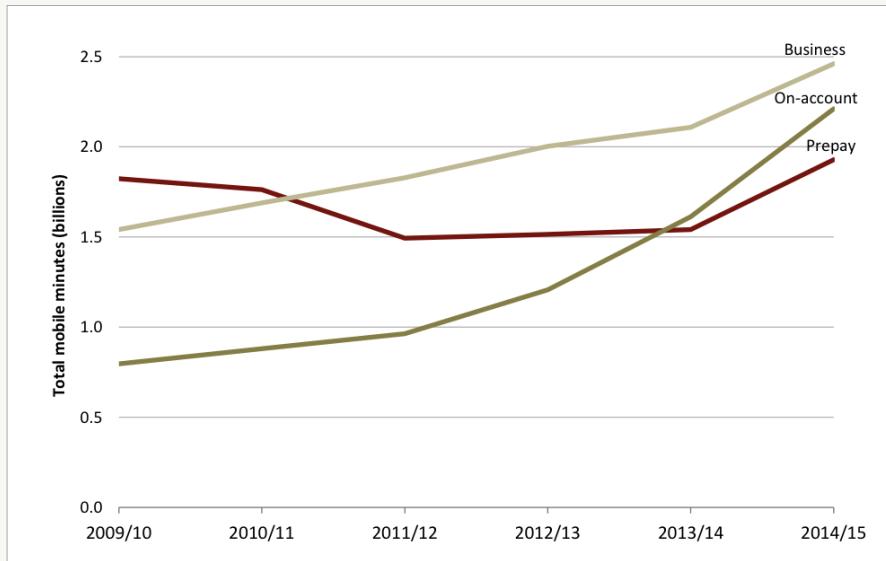


People continue to make more mobile calls as more minutes are included in mobile bundles, and are substituting mobile calls for those they would previously have made on a fixed line. Consequently, the growth in mobile minutes per connection accelerated in 2015, as shown in *Figure 19*. Average calling reached 98 minutes per connection per month. This compares with an average of 147 minutes per month per subscriber in the UK in 2014 reported by Ofcom. The US has had very high levels of mobile calling. The most recent figure we could find was a 2012 PwC study that found that average minutes of use per postpaid subscriber had decreased to 673 minutes per month in 2012 from 720 in the prior survey.¹⁹

The wholesale cost of terminating a phone call on a mobile network is called the mobile termination rate and is regulated in nearly all countries. We last reviewed the mobile termination rate on 5 May 2011, and the last regulated reduction prescribed in that determination was to 3.56cpm (excluding GST) on 1 April 2014. The ACCC last year set the mobile termination rate for Australia at A1.7cpm, and as at July 2015 the weighted average for Europe was 1.22 eurocents per minute.

19. <http://www.pwc.com/us/en/industry/communications/publications/north-american-wireless-industry-survey-2012.html>

Figure 20: Mobile minutes by market segment

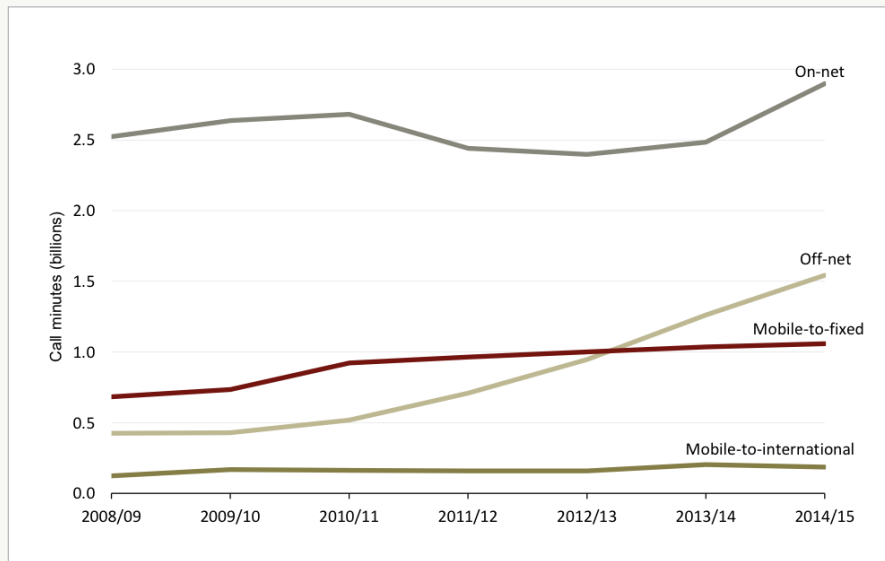


The strong growth in average mobile minutes used per connection was spread across all three mobile segments in 2015, as shown by *Figure 20*. Prepay minutes are finally showing strong growth after being static for several years. For about the five prior years there has been a dampening effect on prepay minutes from the gradual unwinding of the huge popularity of Vodafone’s Bestmate add-on. Bestmate originally allowed unlimited calling (later reduced to 1,000 minutes per month) and texting to one other Vodafone number for \$6 per month. The Bestmate add-on was a huge driver of minutes for Vodafone, making up one-third of all its mobile minutes in January 2011.²⁰

20. Vodafone MTAS cross-submission, February 2011.

Mobile-to-mobile calling driving growth

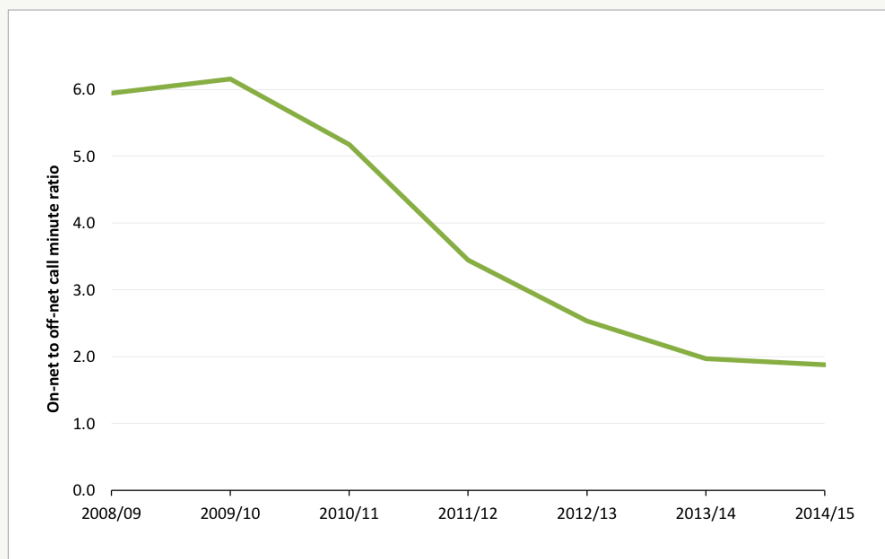
Figure 21: Mobile call volumes by call type



The growth in mobile calling is largely coming from increased calling between mobiles. This is growth in both off-net calling (calling between users on different mobile networks) and on-net calling (calling between users on the same mobile network), as can be seen in *Figure 21*.

The increase in on-net calling could be due to the addition of ‘free’ on-net calling to some prepay bundles towards the end of the 2014 year. All the operators are offering prepay customers ‘free’ on-net calling to some degree (Spark via sub-brand Skinny).

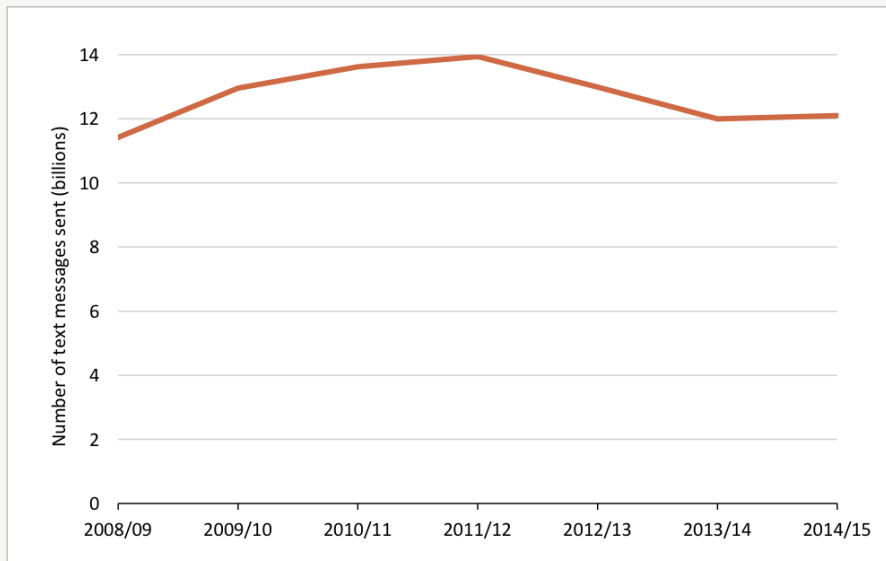
Figure 22: On-net to off-net call minute ratio



It can be seen from *Figure 22* that the ratio of on-net to off-net calling traffic has decreased markedly from 6.2 in 2010 to 1.9 in 2015. We are therefore not concerned at this stage about the renewed growth in on-net minutes.

Texting holding up for now

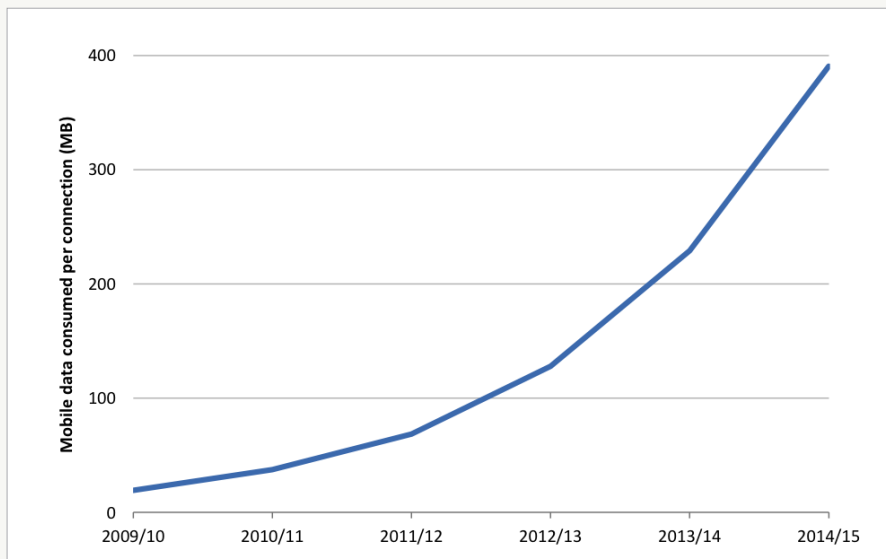
Figure 23: Text volumes



The use of text messaging appears to have stabilised in 2015. *Figure 23* shows annual text message volumes stayed at around 12 billion.

Mobile data consumption nearly doubles yet again

Figure 24: Mobile data retail consumption

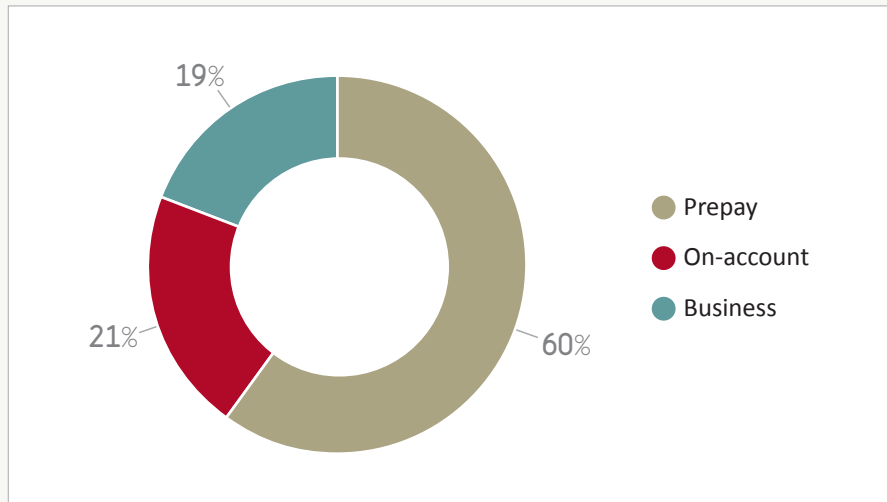


The amount of mobile data consumed by retail customers again nearly doubled from the prior year to reach 390MB per connection in 2015, as shown in *Figure 24*. This is still small compared to the 49GB consumed per fixed-line connection, even accounting for the fact that most fixed lines have multiple users and are often used for mobile data offloading via WiFi. This continues to suggest that strong growth in mobile data consumption is likely for the foreseeable future.

Business and on-account residential market segments highest value

The mobile market has three main segments – prepay, on-account residential, and business. The prepay segment includes all those customers on prepay plans who are not committed to making any regular monthly payments.

Figure 25: Number of subscribers by segment



Prepay is the dominant segment in subscriber terms, with prepay customers making up 60% of all subscribers as at 30 June 2015, as can be seen from *Figure 25*.



Figure 26: Revenue by segment

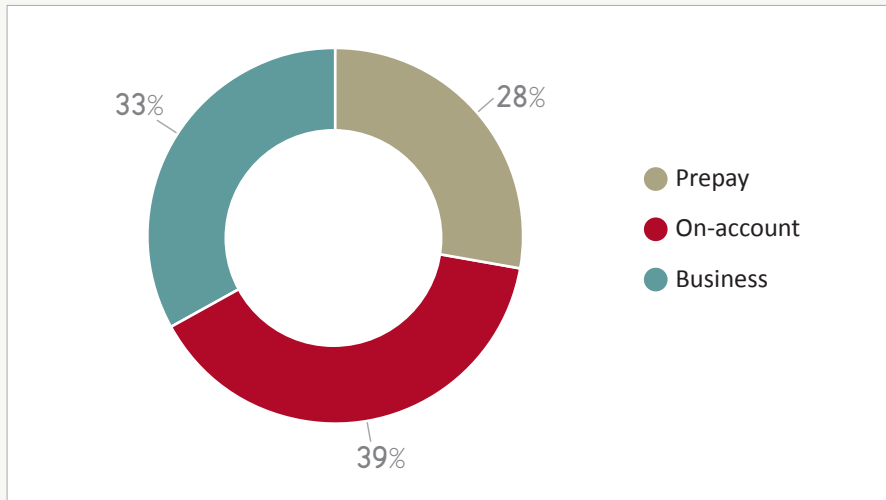


Figure 26 shows the proportion of total segmental revenue provided by each customer segment in the 2015 year. Prepay customers were clearly lower value, providing only 28% of revenues despite making up 60% of subscribers. On-account residential and business customers were both much higher value, which can be seen from the average revenue per month per user/customer (ARPU) from each segment.

Figure 27: ARPU by segment

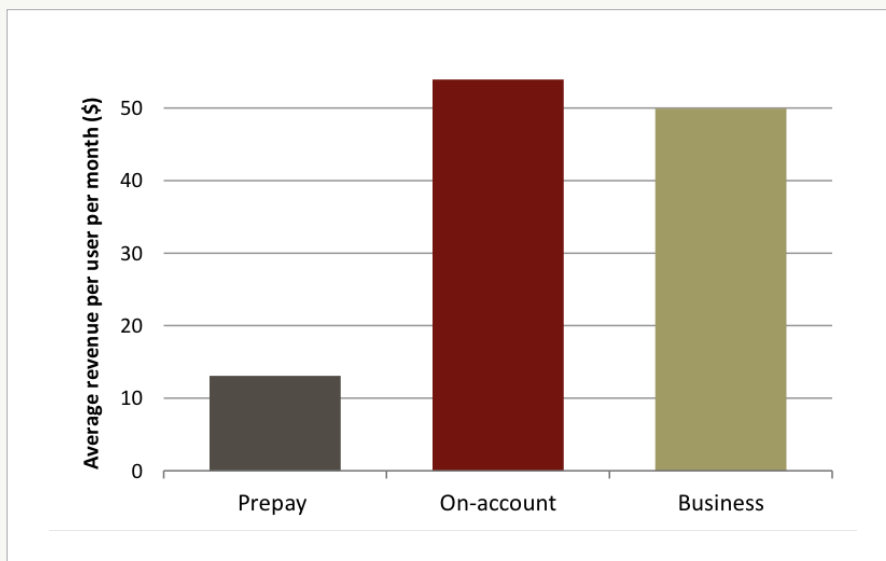


Figure 27 shows that for the 2015 year, prepay customers generated an average of only \$13 per month, compared to \$54 for on-account customers and \$50 for business customers.

Business market segment most concentrated

The most informative way of looking at market segment concentration without disclosing each competitor's share of revenue is to calculate the HHI²¹ of that market segment using these revenue figures. This is preferable to using connections to calculate market concentration because, even within a market segment, some connections can return significantly more revenue than others.

Figure 28: Revenue share HHI by mobile market segment

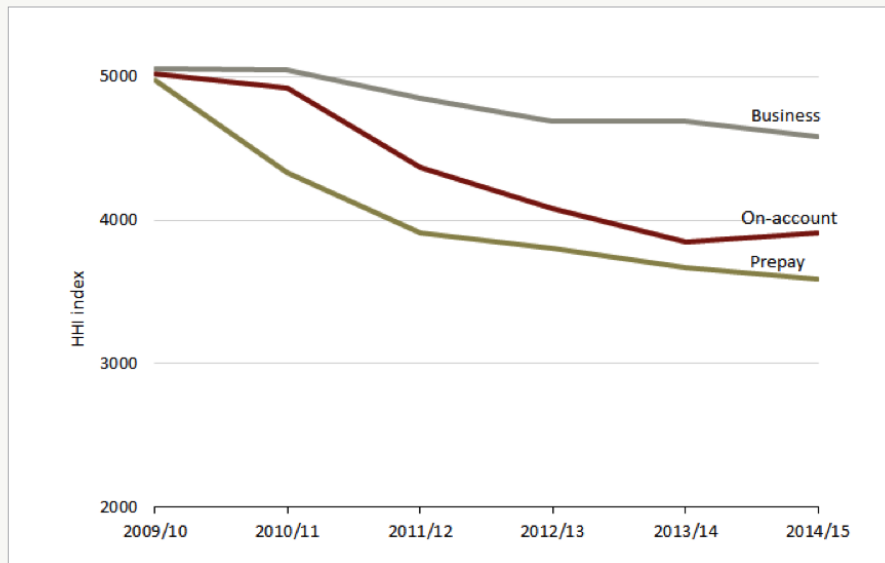


Figure 28 shows the trend in HHIs for each of the prepay, on-account residential, and business mobile market segments over the last few years, calculated from each operator's share of revenue in those markets. It indicates that market concentration has largely been falling in all mobile segments but more in the prepay market, which is where 2degrees first concentrated its efforts. The on-account segment is not far behind, and the business segment is lagging although showing more of an improvement in the 2015 year.²²

We have noted 2degrees' very small share of business market revenues in prior reports. We commissioned UMR to undertake a survey of the business mobile market in the latter half of 2015 to gain a better understanding of the market and check if there were any barriers to expansion. Overall, the survey revealed no evidence of anti-competitive behaviour.

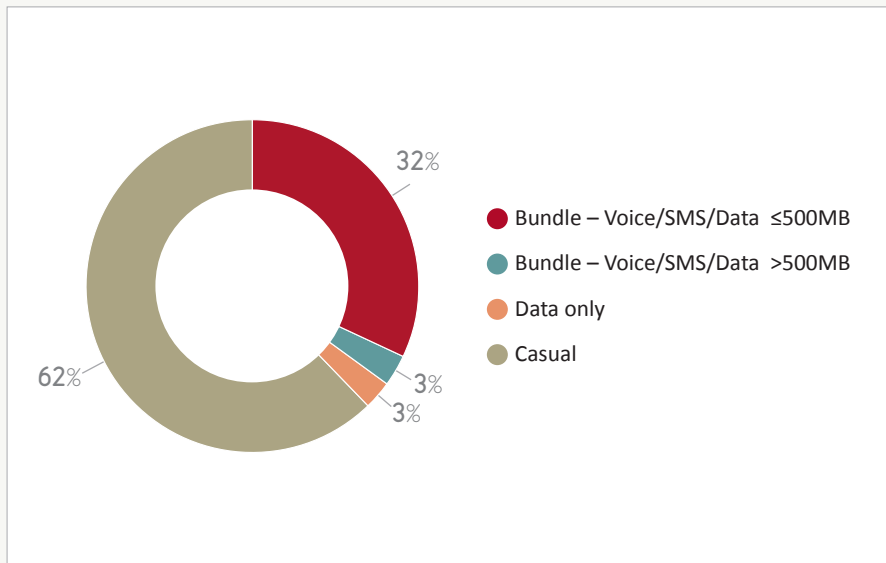
Furthermore, business customers are now no more valuable on average than on-account residential customers.

21. Herfindahl-Hirschman Index – a commonly accepted measure of market concentration calculated by squaring and then summing the market share of each competing firm.

22. The allocation of customers between the on-account and the business market segment can be a matter of judgement, so we don't read too much into the fluctuation in the on-account concentration.

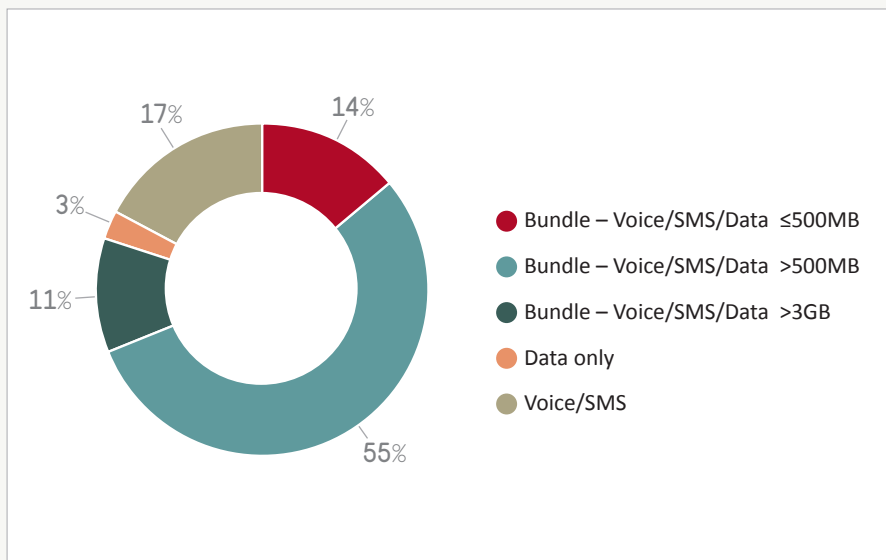
Mobile bundles popular

Figure 29: Number of prepay subscribers by type of bundle



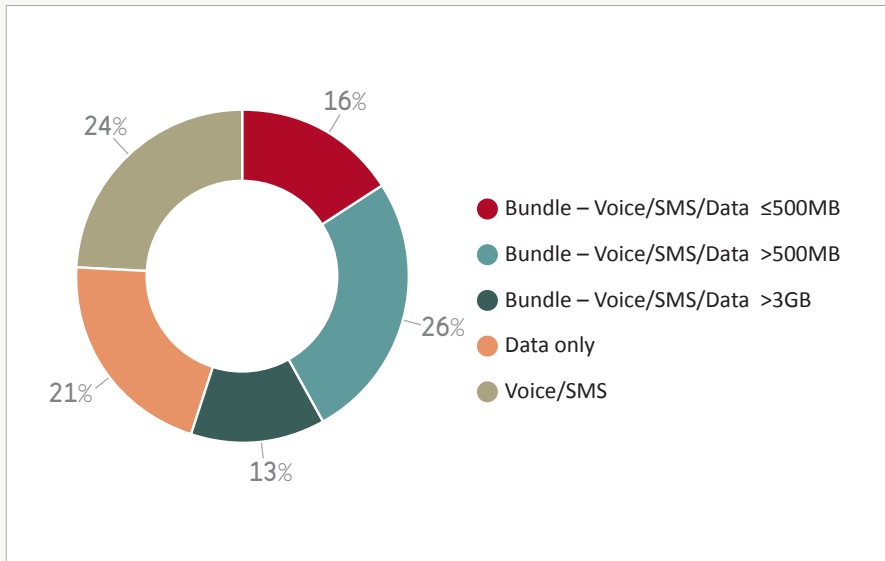
Prepay customers continue to consume mobile services mostly on a casual basis, paying as they go or buying separate add-ons for voice, data or texts, but as at 30 June 2015 a substantial minority of 35% were buying a bundle of voice, texts and data (mostly less than 500MB of data), and a further 3% were buying data only plans.

Figure 30: Number of on-account residential subscribers by type of bundle



On-account residential customers mostly buy a bundle of at least voice, texts and data. Some customers also have a music service bundled in. All plans offered currently by mobile retailers appear to provide such bundles (apart from data-only plans for non-phone mobile devices), but some customers appear to be on older plans that don't include any data. As at 30 June 2015, over half of all on-account residential customers (55%) were buying a bundle of voice, texts and data greater than 500MB and up to 3GB, with 11% buying a bundle with more than 3GB of data.

Figure 31: Number of business subscribers by type of bundle



Business subscribers also mostly buy a bundle of voice, texts and data. Compared to on-account residential customers, as at 30 June 2015 a higher proportion (24%) were buying bundles including only voice and texts, and a much higher proportion (21%) were buying data-only services.

New Zealand mostly below average OECD prices for mobile phone usage

Mobile phone users tend to buy a bundle with ‘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. To benchmark New Zealand mobile pricing we look at the cost of filling variously sized bundle ‘baskets’ compared to the cost overseas. Generally both prepay and on-account mobile plans are included. This benchmarking approach is described in more detail in our report, ‘International Price Comparison for Retail Mobile Telecommunications services 2013’. For each basket described in *Table 3* below, a mobile call is generally assumed to be a little under two minutes.

As with the fixed-line benchmarking, we have tried to use the most recent data available, which was February 2016 data for mobile phone services. The baskets used for the comparisons below are the official OECD baskets with data added as specified. Generally the plans from the top two mobile operators in each country are used to populate the dataset.

23. <http://www.comcom.govt.nz/regulated-industries/telecommunications/monitoring-reports-and-studies/monitoring-reports/>

Table 3: Results of mobile phone services benchmarking

Mobile phone services basket	NZ rank in OECD	February 2016 price (NZD PPP)			NZ % price var. from	
		NZ	Australia	OECD Average	Australia	OECD Average
400 messages GST included	1/34	8	20	25	-63%	-69%
30 calls + 100MB GST included	14/34	19	20	26	-6%	-25%
100 calls + 500MB GST included	14/34	30	31	39	-4%	-24%
300 calls + 1GB GST included	21/34	52	31	52	69%	0%
900 calls + 2GB GST included	19/34	59	36	63	65%	-7%

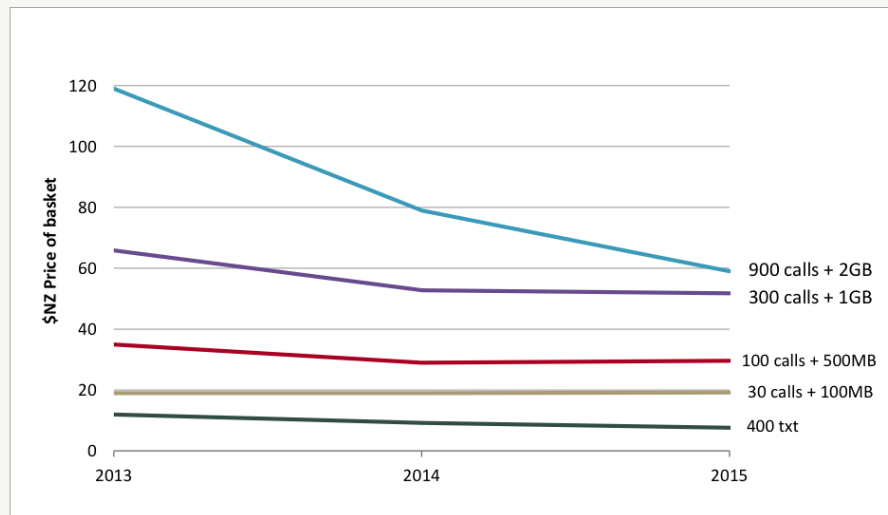
Source: Teligen

Table 3 shows that New Zealand’s mobile prices were below average for all but one of the OECD baskets, with the medium to smaller baskets being further below average. The stand-out result, like last year, was the 400 messages basket, where New Zealand was the cheapest in the OECD with a price 69% below average and 63% below Australia. This basket was filled by Vodafone’s Pay & Go prepay plan that prices texts at 1 cent each and calls at 20cpm, costing less than \$8 to fill the basket’s 400 texts and 15 minutes of calling. We note this ‘texter’ basket, which is the only one in Table 3 that doesn’t include data, probably represents few consumers nowadays.

Mobile prices continue to fall at top end

We now have three years of benchmarking mobile baskets that include data in addition to calls and texts. All types of plan are included.

Figure 32: Trend in \$NZ price of filling OECD mobile baskets including data



Source: Teligen

Apart from the 30-call basket, all the mobile baskets tracked in Figure 32 had declines in price over the three years to 2015, and the 900 calls + 2GB basket had a significant fall in price in the year to 2015.²⁴ This basket is usually filled with a plan that has unlimited calling. In 2015 it was filled by Spark’s Prepaid plan, with the unlimited calling add-on costing only \$20 a month.

24. Actually early 2016, but for simplicity we have classified it as a 2015 result.

Mobile broadband for data-only devices still expensive

We 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. We note that users are likely to mostly use WiFi to connect to the internet when using these devices. The plans for all three mobile network operators in New Zealand are included in the benchmark dataset.

We used to consider the 6GB mobile broadband basket to be a possible substitute for a fixed-line broadband service. However, 6GB is now a small amount of data compared to average fixed-line usage. The new fixed-wireless services not yet considered in this benchmarking use modems with WiFi, so are a much better substitute for a fixed-line service, as well as being significantly less expensive per GB of data.

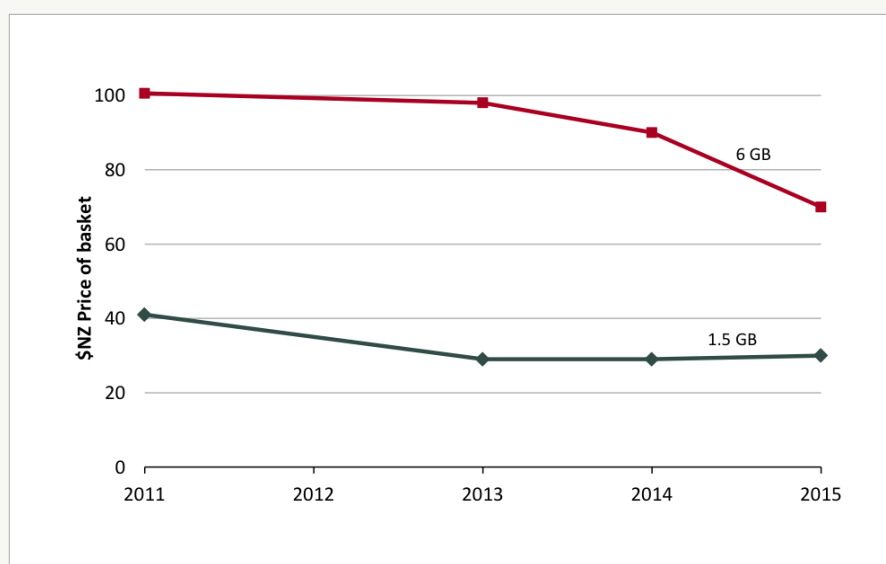
Table 4: Results of mobile broadband benchmarking

Mobile phone services basket	NZ rank	Dec 2015 price (NZD PPP)			NZ % price var. from	
		NZ	Australia	Average	Australia	Average
1.5GB GST included	28/34	30	10	20	191%	46%
6GB GST included	33/34	70	40	36	74%	95%

Source: Teligen

The New Zealand price was significantly above the average for the benchmarked countries for the 1.5GB basket, and even more so for the 6GB basket. This occurred despite the price of the 6GB basket dropping substantially since 2014, as can be seen below.

Figure 33: Trend in \$NZ price of filling mobile broadband baskets (eg, connected tablets)



Source: Teligen

Figure 33 shows that the price of filling the 1.5GB mobile broadband basket hasn't changed over the last three years, while the price of the 6GB basket has fallen substantially, mostly in the last year.

THE 2015 YEAR IN REVIEW

The following is a month-by-month snapshot of some New Zealand, and occasional Australian, telecommunications market developments we are aware of that occurred from January 2015 to early April 2016.

January 2015

- Wireless Nation increased its satellite download speed to a maximum of 10Mbps at no extra cost. Its 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.
- Vocus Communications and Spark New Zealand announced they would 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.
- The rise of paid streaming services in the New Zealand market saw a corresponding decrease in peer-to-peer file-sharing, according to CallPlus' traffic data. Its statistics showed that BitTorrent traffic was dropping at the same rate that paid streaming was increasing, which, to them, indicated that people were trading piracy for paid streaming.
- Other statistics from CallPlus suggested that a quarter of Kiwi internet traffic went to Google and YouTube, with both websites very popular along with Facebook and Trade Me. Rapidly climbing in popularity were 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. Over the prior year, average data consumption per household subscriber increased 40%.
- 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 6 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, included 2.5GB of data with unlimited calls and texts.
- Spark and local start-up 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 costing \$10 a month. It was available on smart televisions as well as PlayStation, Xbox and Nintendo consoles. Like other video-streaming services, it could 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 signed up for 24 months to one of its Red+ mobile plans.
- Spark's online television service Lightbox 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 brought its pricing into line with rival Quickflix and well under Sky's NEON pricing of \$20 a month.
- 2degrees announced it had purchased ISP Snap and would launch fixed-mobile services later in 2015. The two companies planned to combine under the 2degrees brand to deliver broadband and mobile services to consumers nationwide.
- Mobile wallet Semble was launched. It lets consumers pay for things 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 could be loaded onto the app and used to make payments.

April 2015

- Sky, Spark, TVNZ and MediaWorks took action against CallPlus and other 'global mode' ISPs to try to get them to cease operation of services that enabled access to international geo-blocked TV and movie services.
- A new method of data compression developed by V-Nova was announced. It could see ultra-high-definition video (also known as 4K) being streamed to TVs and other devices for around 50% of the bandwidth previously needed. Movie-streaming firm Netflix required users of its 4K Ultra High Def service to have a steady 25Mbps broadband connection, with analysis of their video stream showing between 12 and 16Mbps was actually needed. V-Nova said it could deliver the same quality picture using 7 to 8Mbps.

- Australian-based telco M2 announced it was purchasing New Zealand's third-largest telco retailer, CallPlus, for NZ\$250 million.
- Wireless Nation announced it had reached agreement with ASB to provide the Bank's rural customers and staff with zero-rated data on its satellite broadband network.
- Vodafone started offering a 'limited time' \$69 per month 40GB fixed-line broadband and phone bundle for customers supplying their own modem. The deal was soon matched by Spark and continued for most of the year.
- Vodafone and pay-TV provider Sky announced Sky was going to sell a range of Vodafone broadband packages to its customers. Sky customers would receive a \$10 monthly discount on their pay-TV subscriptions when they took one of the eligible Vodafone broadband plans.

May 2015

- Spark launched new Fibre 200 plans (up to 200Mbps download and 20Mbps upload), available with a Fibre Landline service or as a standalone Naked Broadband service, and also revamped its other UFB fibre offerings. Previously, Spark residential fibre customers who wanted a landline needed two separate connections – one for their fibre broadband service, and the other for their copper landline service. The introduction of Fibre Landline means Spark can now provide broadband and landline services over a single fibre connection.
- Chorus announced a full launch for Baseband IP Extended for 31 July 2015 with an increased uplift of \$5.50 over the Baseband price. Baseband IP Extended was being made available in an additional 1,430 cabinets and exchanges over 12 months as demand was confirmed. This will increase Baseband IP coverage to approximately 68% of all copper lines.
- Spark announced that average monthly data use per household for Spark broadband customers had grown by 29% in just three months, from 42.5GB in February 2015 to 55GB in April 2015. This meant the average New Zealand house was using approximately as much data in a year as the whole of New Zealand used in a month back in the late 1990s.

Growth rates over the prior two years had been reasonably steady at around 50% per annum, with the prior three months showing a real acceleration. This was put down to a big behavioural shift going on, with customers shifting to higher data or unlimited broadband plans to enable them to use video streaming and other online entertainment services.

Spark also observed that, across New Zealand's internet, signs of congestion were starting to emerge. It stated that significant work was under way to fast-track planned Spark Network capacity upgrades, to improve the ability to manage traffic loads and to improve overall network performance.

June 2015

- Freeview launched FreeviewPlus, a new digital TV platform designed to give easy access to on-demand video services. FreeviewPlus uses Hybrid Broadcast Broadband TV (HbbTV) to enable seamless integration and switching between broadcast TV and on-demand services. The service is free to view via a new FreeviewPlus set-top box (from around \$150), and is built into most new smart TVs.
- Apple announced it would be launching its own subscription-based music-streaming service.
- Vodafone announced new Rural Broadband services with faster 4G speeds and larger data bundles delivered over its mobile network. These started with 80GB of broadband data and unlimited national calling to landlines for \$105 a month.
- Vodafone acquired WorldxChange, a well-known New Zealand telecommunications business that specialised in delivering IP-based voice and converged services. The acquisition promised that WorldxChange would become a Unified Communications Centre of Excellence within Vodafone, with the aim of delivering enhanced solutions to Enterprise customers.
- Noel Leeming announced that MyRepublic and Spark broadband bundles would be available through Noel Leeming stores, allowing customers to get connected when they purchased hardware or decided to switch from their current provider. Noel Leeming expected broadband to be increasingly bundled with smart TVs, home security systems and other WiFi-enabled devices like WeMo, which allows remote control of lighting, stereos and air-conditioning, among other things.
- 2degrees completed the second stage of its 4G network roll-out, taking 4G network coverage to almost 60% of the NZ population. The roll-out complemented 2degrees' national 3G coverage, including a network of more than 900 cell sites.

July 2015

- Melbourne-based M2 Group completed its NZ\$250 million acquisition of the CallPlus group. M2 told CommsDay it planned to keep key CallPlus management and to maintain the various CallPlus brands, unless management sees value in rationalisation in future.
- Vodafone announced a suite of services to help Kiwi families navigate the rapidly changing digital world. The four services included practical digital parenting advice, simple product sets for families, a team dedicated to helping families set up their digital services at home, and tools to keep families safe online.
- Vodafone told its Wellington customers the huge success of Netflix and NEON had led to a 'massive spike' in demand for data, slowing the network. It recorded a 30% increase in data usage a month since video-streaming services started.

Vodafone New Zealand technology director Tony Baird said demand for data had put the entire industry under pressure. Video streaming accounted for about 60% of Vodafone's home broadband traffic and the rate of adoption of its UFB plans had tripled during the last year, he said. 'This school holidays, we've seen Netflix traffic on our network grow by 83%.'

Some Wellington and Christchurch customers on Vodafone's HFC network had been experiencing slower broadband speeds as the network tried to cope with demand. The sudden surge in demand meant Vodafone had moved planned network upgrades forward to resolve this issue.

- Slingshot purchased 9,000 Woosh customer contracts. All of Woosh's fixed line, and fixed-line-capable wireless customers (outside of Southland) became Slingshot customers. M2 New Zealand (owner of Slingshot) CEO Mark Callander told NBR the purchase price was \$1.3 million. Most of Woosh's customers were on DSL already. The deal did not include Woosh's spectrum assets.
- Following nationwide trials, Spark launched its Rural Wireless Broadband service. The service initially used Spark's 4G mobile network and its 700MHz spectrum. Two Rural Wireless Broadband plans were available on launch for customers eligible for the service. These were Naked Rural Wireless Broadband (\$95 for 80GB of data) and Rural Wireless Broadband with a copper landline (\$105 for 80GB of data with included national calling). Customers were offered the choice of a free modem on a 24-month contract or purchasing a modem for \$249 on an open-term contract. No external antenna was required for the modem.
- 2degrees entered the broadband market with the launch of its first consumer plans. There were two residential broadband plans – 80GB for \$69 and an unlimited plan for \$89. New and existing 2degrees Pay Monthly mobile customers were eligible for a \$10 discount on a bundled package (a voice line was \$15 extra but came with free NZ and Australian national calls unless an analogue voice service was chosen).

2degrees partnered with Sky NEON to give customers unlimited access to content for the first six months.

2degrees CEO Stewart Sherriff said 2degrees' purchase of Snap earlier in the year allowed it to accelerate entry into the broadband market using Snap's national network infrastructure.

August 2015

- Spark began offering its new smart home-security product, Morepork, allowing people to keep an eye on their homes remotely from their smartphones.
- Spark launched two new Roaming Data Packs for 16 countries in response to a large increase in the amount of mobile data used by customers travelling overseas. The Roaming Data Packs gave customers 1GB of mobile data for one week. The Australia Roaming Data Pack was priced at \$39 and the Roaming Data Pack for 'Zone 2' countries (which includes China and 14 other countries) was priced at \$49. Spark had seen a more than 460% increase in the total amount of mobile data used by customers travelling to China, over the three prior years, and large increases in data usage throughout Australia.
- Vodafone completed a \$14 million 4G mobile upgrade programme that included 121 cell site upgrades and 22 new cell site builds since January 2015. The programme saw 4G coverage increase to over 85% of customers. More than 1 million devices on Vodafone's network were accessing 4G.

- Two-year-old video-streaming provider EzyFlix announced its closure. The company was operating only in Australia and New Zealand.
- The Australian Competition and Consumer Commission reduced the price of terminating mobile calls as well as introducing a regulated wholesale price for SMS messages. The final price set for mobile terminating access services was 1.7 cents (Australian) and the regulated price for receiving an SMS is set at 0.03 cents per SMS.
- Video Ezy announced the end of its on-demand video-streaming service. The service had only been launched in September 2014.

September 2015

- M2 brand Slingshot started bundling mobile plans with its unlimited data broadband plans, giving an effective discount of \$10 per month on the bundle. For example, for \$89 Slingshot offered unlimited ADSL broadband data and a mobile plan (500MB data, 100 minutes calling to NZ and Australia, and unlimited texts, or a 1GB data-only plan).
- Vocus and M2 announced that they would merge to form a full-service vertically integrated telco in Australia and New Zealand.
- Spark increased the price of fixed-line broadband plans and mobile on-account plans by 99 cents per month from 1 September 2015. The price increase was explained as including a contribution towards the Telecommunications Development Levy.
- The Warehouse, New Zealand's largest retailer, opened its smallest-ever store in Customs Street, Auckland to cater for customers collecting online purchases. It was noted that online sales at The Warehouse Group had grown from \$18.8m in 2011 to \$149.2m in 2015.

October 2015

- Mobile provider Skinny entered into a partnership with Kiwi start-up company Postr to launch a new app allowing Skinny customers to earn free data and minutes in exchange for hosting ads and content on their mobile lock screens.
- Vodafone started using Carrier Aggregation (CA) – allowing different bands of radio spectrum to be paired – at mobile cell sites across the country. Early testing showed the technology delivered a significant increase in download speeds for 4G users, with average speed increases of up to 56% in some locations. Carrier Aggregation is well-suited to Vodafone's (and Spark's) 4G spectrum bands of 700MHz, 1800MHz and 2600MHz.
- More than one in ten New Zealanders over the age of 14 had access to Netflix three months after launch, according to Roy Morgan Research. The research firm estimated the streaming service was reaching 398,000 users, or 10.9% of the population. Research undertaken from April to June 2015 also estimated that 164,000 New Zealand homes (9.4%) had a Netflix subscription. Roy Morgan said this mirrored the situation in Australia, although Netflix grew in New Zealand at a faster rate.

November 2015

- Vodafone announced Christchurch and Wellington were set to receive gigabit speeds after a \$22 million upgrade to its cable network to DOCSIS 3.1, in partnership with Huawei. Enhanced capacity and 1Gbps plans will become progressively available on its cable network from mid-2016.
- Start-up KotahiNet, founded by Vikram Kumar, started rolling out a wireless network in Wellington for connecting sensors and other smart objects to the internet. Wellington is intended to be the initial launch site, with plans for the network to expand to a national network. The network is based on the IoT LoRaWAN global open specifications model, and allows for battery-operated sensors with a battery life of 5 to 10 years. The network will use unlicensed radio spectrum in the 864MHz to 868MHz band.
- The Warehouse launched its own prepay mobile brand. For a minimum \$10 top-up every 31 days, customers got 2c texts, 4c per minute voice calls and 6c per MB for data. Prepay packs of larger amounts of texts, minutes and data were introduced later.
- Vodafone launched its Pay & Go prepay plan that had charges of 1c per text, 20c per minute for calling and 20c per MB for data, but no bundles.
- Spark introduced a Prepaid Extra that allowed unlimited calling to mobiles and landlines for \$20 a month.
- Spark reported that since launching its rural fixed wireless 4G broadband service in July, more than 2,000 customers had joined up.

December 2015

- Vodafone informed its on-account mobile and broadband customers that from December bills would be increased by 99 cents per month (including GST) as a telecommunications levy contribution.
- In a soft launch, Skinny started offering an urban fixed wireless broadband service in selected areas. The offer was 60GB for \$55.
- Spark announced it had agreed to buy some 2300MHz mobile spectrum from Craig Wireless, and its related company Woosh Wireless, for \$9 million.
- The Commission gave clearance for Vocus to acquire M2. While both Vocus and M2 provide calling, broadband and data services to residential and commercial customers, they are not close competitors for any of the services that they provide. We also considered that strong competition will continue to be provided by Vodafone, Spark and Chorus. The Commission also considered whether merging Vocus's national fibre optic backhaul network with M2's retail calling and broadband services would give it the ability to foreclose downstream competitors. Given the presence of Spark, Vodafone and Chorus, which all have large backhaul networks, we did not consider that foreclosure would be likely.

- Spark announced it was investing \$14 million in an accelerated programme that within 12 months would see Spark's 4G services reaching 96% of rural Cantabrians. Previously, this roll-out was expected to take at least three years. The announcement was the culmination of several months' work between Spark and the Canterbury Mayoral Forum on how Spark could best help deliver better digital connectivity. For their part, all the Canterbury councils agreed to work with Spark on design and consenting issues associated with the 4G roll-out to ensure mobile cell tower site acquisition and consenting processes were as fast and efficient as possible.
- The Commission released the FPP determinations for the main two regulated input products that retailers purchase from Chorus, setting the price to apply from 15 December 2015. The UCLL wholesale price increased from \$23.52 to \$29.75 per month and the UBA wholesale price from \$10.92 to \$11.44 per month. If UBA is not purchased in conjunction with another service, a line access charge (priced at the UCLL price) is added, so retailers face a total cost of at least \$41.19, up by \$6.75 from the \$34.44 IPP price applying since 1 December 2014, but down \$3.79 on the \$44.98 applying prior to that date.
- On 21 December, with no public announcement, the M2 consumer retail brands – Slingshot, Orcon and Flip – increased the price of their fixed broadband services by \$4.95 a month for new customers. Existing customers were to see a price rise on their bills in January and February 2016.

January 2016

- The Facebook Messenger OTT service posted some impressive statistics on worldwide use, including:
 - > People sent more than 9.5 billion photos to friends through Messenger every month
 - > Messenger was the second most popular iOS app of all time, behind Facebook (according to App Annie)
 - > Messenger had more than 800 million monthly active users
 - > Messenger had been downloaded more than 1 billion times on Android
 - > Two days after launching video calling in Messenger, one million calls had been made
 - > Messenger accounted for more than 10% of all mobile VoIP calls globally.
- Spark's budget mobile brand Skinny formally launched its wireless broadband service that uses the parent company's 4G network. On offer was the 60GB prepaid plan for NZ\$55 per month that was soft launched in December 2015. The service was aimed at providing a low-cost and easy-to-set-up internet connection. Customers paid a one-off cost of \$199 for the wireless modem (although as at March 2016 this had been lowered to \$99). The service was available in selected 4G areas nationally. The speed should be higher than ADSL broadband but generally slower than fibre, according to the Skinny website.

February 2016

- The price of most of Spark's fixed-line broadband plans increased by \$5 a month from 1 February 2016. Spark also increased the price of a residential phone line in Auckland, Wellington and Christchurch by \$3.50 a month to \$53.50, bringing it to the same price applying in the rest of the country and eliminating a differential that had applied for many years. This was also about the level of the CPI-adjusted local residential telephone service price-cap.
- Vodafone Hutchison Australia announced it would be providing free roaming to New Zealand for 12 months. In an effort to attract more customers, the free roaming option sees Vodafone waive the usual AU\$5 a day fee for customers to use their normal monthly data, calls, and messages in New Zealand as part of a 'pilot' until 1 February 2017.
- 2degrees announced an exclusive partnership with new music platform TIDAL to offer students a monthly music-streaming service in conjunction with its \$19 Carryover Combo.
- M2 NZ completed its merger with Vocus NZ. Former M2 NZ head Mark Callander became Vocus Communications NZ Chief Executive, and former Vocus NZ head Maxine Elliott took charge of the Vocus NZ corporate, government and wholesale business.
- As part of its website refresh, Chorus launched its broadband checker tool, which enables consumers to check the likely maximum speed available at an address.

March 2016

- The price of Vodafone's fixed-line consumer broadband plans increased by \$5 a month from 1 March 2016.
- Spark kicked off a process to give a credit or upgrade to some customers for the net savings it made by the increase in wholesale copper prices not being backdated back to the date when the UBA price initially decreased to a benchmarked price. Spark had raised prices in February 2015 on the expectation the UBA price would be later increased and backdated. The credit being given was \$33, and the alternative data upgrade applied for six months and was worth at least \$60.
- Vocus consumer retail brands Slingshot and Orcon had a major restructuring of plans and prices offered to new customers. Plans with data caps had these increased significantly, bringing the entry-level data cap to 100GB. The entry-level broadband and voice bundle price was dropped back by \$5 a month, while fibre and naked broadband prices were increased by \$5 a month.
- The first section of the Tasman Global Access (TGA) undersea cable between New Zealand and Australia started to be laid from the New Zealand landing point at Raglan. Telecommunications companies Spark, Vodafone and Telstra are investing approximately US\$70 million to build the TGA cable. Benefits of the new cable include improved redundancy and resiliency, and better connection with the five main international cable systems currently serving Australia. Alcatel-Lucent Submarine Networks (ASN), now part of Nokia, had been contracted to lay the first cable between Ngarunui Beach at Raglan and Narrabeen Beach in Australia.

- Global music-streaming provider Spotify extended its partnership with Spark for a further two years. Spotify indicated that New Zealand music fans had some of the highest engagement they had seen worldwide. Spark stated that in the prior 12 months, the number of customers using Spotify on their mobile devices had increased by around 125%. On an average day, over 90,000 customers were using Spotify on their mobile devices, with the highest number of customers using the service on a Monday and Friday.
- It was reported that in 2015, US market revenues from music-streaming services were, for the first time, the largest component of music industry revenues at 34.3%. This was just higher than revenues from digital downloads, which made up 34% of revenues. Streaming revenues were US\$2.4 billion, out of the total market for digital and physical music of US\$7.0 billion per annum.
- The Commission gave clearance for Spark to acquire the management rights to 70MHz of radio spectrum in the 2300MHz band from Woosh and Craig Wireless. Spark intended to use the spectrum to extend its fixed wireless product offerings. The Commission was satisfied that the acquisition would not have the effect or likely effect of substantially lessening competition in affected markets. Although it lessens the opportunity for Woosh to expand its wireless services, access to the spectrum enables Spark to provide a wireless alternative for rural customers and those urban customers unable to access fibre. As a result, the acquisition may have pro-competitive effects and improve the quality of service to customers on poor-quality copper lines.
- The Commission released research from UMR on factors affecting competition in the business segment of the mobile market. UMR found that respondents believed the business mobile market was competitive compared to other industries. When selecting a mobile provider, respondents said reliable coverage, good customer service and price were the most important factors. The majority of respondents didn't consider mobile costs to be significant and said switching was not overly difficult. Overall, there was no evidence of anti-competitive behaviour, structural, legal or systemic factors existing in the market to inhibit competition.

April 2016

- Spark announced it would extend to towns and city fringes the network used to deliver its rural wireless broadband service. The Home Wireless Broadband service is designed to replace people's landline voice connection as well as their broadband connection. The price was \$80 a month for a phone and broadband bundle with a 40GB cap, or \$90 with an 80GB cap. There was also a naked 80GB service for \$85.



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