Annual Telecommunications Monitoring Report 2011

Telecommunications monitoring report

Date: May 2012

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Executive Summary

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

Total retail telecommunications revenues have barely changed over the last six years (figure 7) while total investment increased from $0.92 billion in 2005/06 to $1.24 billion in 2010/11 (figure 1). Investment peaked at $1.69 billion in 2008/09, pushed up by Telecom's contribution of $1.21 billion. Telecom's investment in that year and the following year included considerable expenditure on operational separation and its fibre to the node (FTTN) commitment to build or upgrade 3,600 roadside cabinets.

While Telecom's share of total industry revenues has continued to drift downwards (figure 10), it has faced a more pronounced drop in its share of retail subscribers. The falling market concentration in all sectors (figures 15, 18 and 27) indicates that competition is becoming more intense.

While the number of fixed line telephone connections has remained stable in recent years, broadband connections have grown steadily from 0.48 million in 2005/06 to 1.14 million in 2010/11 (figure 3). It is expected that this trend will continue.

The fixed line retail market is characterised by falling revenue from most services, along with modest decreases in volume and price (figures 11 & 12). Only internet revenue is increasing. New VoIP services are starting to provide increased competition to traditional voice services, a trend that is likely to accelerate with the rollout of ultrafast broadband (UFB).

Mobile connections have shown little growth since 2008 (figure 4). While New Zealand may be nearing or at saturation point for mobile phone connections, there has been strong growth in the use of mobile devices for internet access and this is likely to continue. Third entrant 2degrees has established a presence in the market, acquiring 14% of connections by the end of 2010/11 (figure 26). According to 2degrees its share of total mobile revenues early in 2012 was, however, only 8%.[1] The Commission has found consumers are happy with the mobile switching experience.

Mobile retail revenues continue to grow. In a similar manner to the fixed line market, revenue from voice is now in slow decline while revenue from mobile data is increasing (figure 24). Revenue from mobile broadband in particular is showing strong growth (figure 30). In the 2010/11, year total mobile data consumed almost doubled (figure 33) and the average price of data decreased substantially.

There has been an increasing trend towards consumers purchasing telecommunications services in bundles. Bundling allows telecommunications providers to differentiate themselves by providing a range of services for one price.

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[1] http://www.stuff.co.nz/business/industries/6549251/No-sell-down-in-2degrees-Trilogy

Increased broadband penetration and data use mean consumers are tending to spend more on telecommunications services. Businesses appear to be spending less by getting better value for money.

The Commission has recommenced its monitoring of broadband quality, initially by purchasing centralised testing data from Epitiro. Consumers are particularly interested in the quality of their broadband service for the price, reporting that this was a key reason for switching.

NZ telecommunications snapshot statistics	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
Total industry metrics						
Total telecommunications retail revenue ($bn) [a]	4.92	4.9	4.92	4.93	4.88	4.91
Total Telecommunications Investment (bn)	0.92	1.07	1.18	1.69	1.55	1.24
Average monthly household telecommunications spend ($) [c]		126	-	-	145	-
Fixed line metrics						
Fixed lines (mil)	1.85	1.85	1.88	1.87	1.88	1.88
Total fixed broadband connections (mil)	0.48	0.68	0.85	0.98	1.05[d]	1.14
Fixed line broadband connections per 100 pop	11.6	16.3	19.8	22.8	24.5	26
Number of unbundled lines (000's)	-	-	3	37	67	98
Resold Telecom phone lines (000's)	-	168	262	326	374	414
Wholesale broadband lines (excl UCLL) (000's)	100	165	251	285	312	362
Chargeable fixed voice call minutes (bn)	7.29	6.91	6.71	6.67	6.33	6.36
Non-chargeable fixed voice call minutes (bn)	-	-	5.31	5.06	4.65	4.44
Total fixed line retail revenues ($bn)	2.99	2.93	2.93	2.88	2.81	2.77
Telecom share of fixed line retail revenues (%)	80	79	78	76	73	67
Mobile metrics						
Mobile connections (mil)	3.8	4.25	4.58	4.7	4.7[e]	4.8
Active mobile connections per 100 population	92	102	108	109	108	110
Share mobile pre-paid (%)	68.2	67.8	67.6	66.1	67.2	65.7
Mobile voice call minutes (bn)	2.76	3.17	3.66	4.24	4.44	4.40
SMS messages sent (bn)				11.4	12.7	13.5
Total mobile retail revenues ($bn)	1.93	1.97	2.00	2.05	2.07	2.14

[a] Other telecommunications revenue has been omitted from 1st 3 years and from fixed line revenue in subsequent 2 years

[c] Data published every 3 years; includes expenditure on pay TV only when packaged with telecommunication services

[d] This measure no longer includes fixed wireless subscribers

[e] This is now connections active in the last 90 days rather than six months as was previously used

Introduction

Purpose of this report

This report is the Commerce Commission's fifth annual telecommunications market monitoring report, and looks at the state of telecommunications markets in New Zealand and developments that occurred largely during the 2011 calendar year. The report also looks at trends in telecommunications markets for the period since the Commission started its monitoring in 2006.

The Commission monitors the state of competition because it regulates telecommunications markets for the long term-term benefit of end-users of telecommunications services within New Zealand. Telecommunications markets are complex, and a range of indicators have to be analysed to provide an indication of the overall state of competition.

This report is released under section 9A of the Telecommunications Act 2001, which requires the Commission to monitor telecommunications markets and make available reports, summaries, and information resulting from carrying out these functions. The Commission's sector monitoring functions include monitoring competition in, and the performance and development of telecommunications markets, as well as conducting inquiries, reviews, and studies relating to the telecommunications industry for the long-term benefit of end-users of telecommunications services in New Zealand.

Data sources

Since the publication of its first annual telecommunications market report in March 2008, the Commerce Commission has continued to collect data from telecommunications operators in order to understand current trends in the New Zealand telecommunications markets and to inform the industry and the wider public.[2]

The data contained in this report originates from various sources,[3] but mainly from the Commission's 2010/11 Telecommunications Industry Questionnaire and prior year versions of the questionnaire. The data from the industry questionnaire is for the year ending 30 June 2011, but more recent industry data, including data as at 31 December 2011, is also used where available.

The data collected is sometimes later revised by the respondents, and sometimes revised by the Commission when it appears to be inaccurate. Also, it sometimes becomes apparent that there are minor errors in how the data has been compiled. Consequently, some of the prior year figures used previously have been revised.

The Commission would like to thank operators who have submitted data for this report and looks forward to their continued co-operation in the future. The Commission also consulted with the main operators on some of the figures to be used in the report and we are grateful for their constructive feedback.

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[2] http://comcom.govt.nz/IndustryRegulation/Telecommunications/MonitoringandReporting/DecisionsList.aspx
[3] Where publicly available data has been used, for example from annual financial reports, its sources are indicated accordingly.

It is the Commission's intention to make ongoing improvements to enhance its processes for both data collection and analysis in future reports. The Commission welcomes any comments or feedback on any aspect of this report.

Market overview

This section gives an overview of telecommunications markets by looking at overall levels of investment, subscribers, call volumes and associated revenues.

Telecommunications investment variable

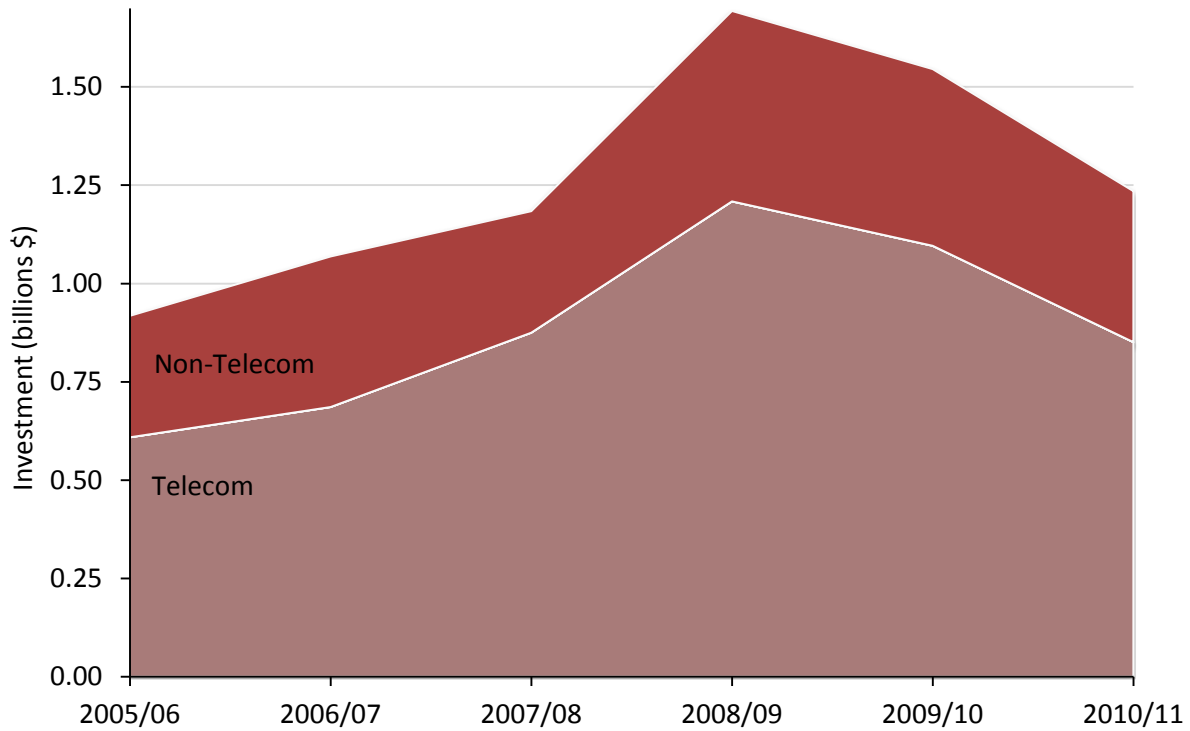**Figure 1: Telecommunications investment**

Figure 1 shows that industry investment is variable and has largely been driven by Telecom. Total surveyed investment by the telecommunications industry hit a peak of $1.69 billion in 2008/09 and has dropped back in subsequent years to $1.24 billion in 2010/11.

Non-Telecom investment has ranged from $309 million to $484 million over the last six years while Telecom's investment has ranged from $609 million to $1,209 million. Telecom's investment in the peak years of 2008/09 and 2009/10 year included considerable expenditure on operational separation and its FTTN commitment to build or upgrade 3,600 roadside cabinets.

Adjusting for Telecom's extraordinary investment in the two peak years, total investment has tended to increase over the last six years.

Figure 2: Investment by component
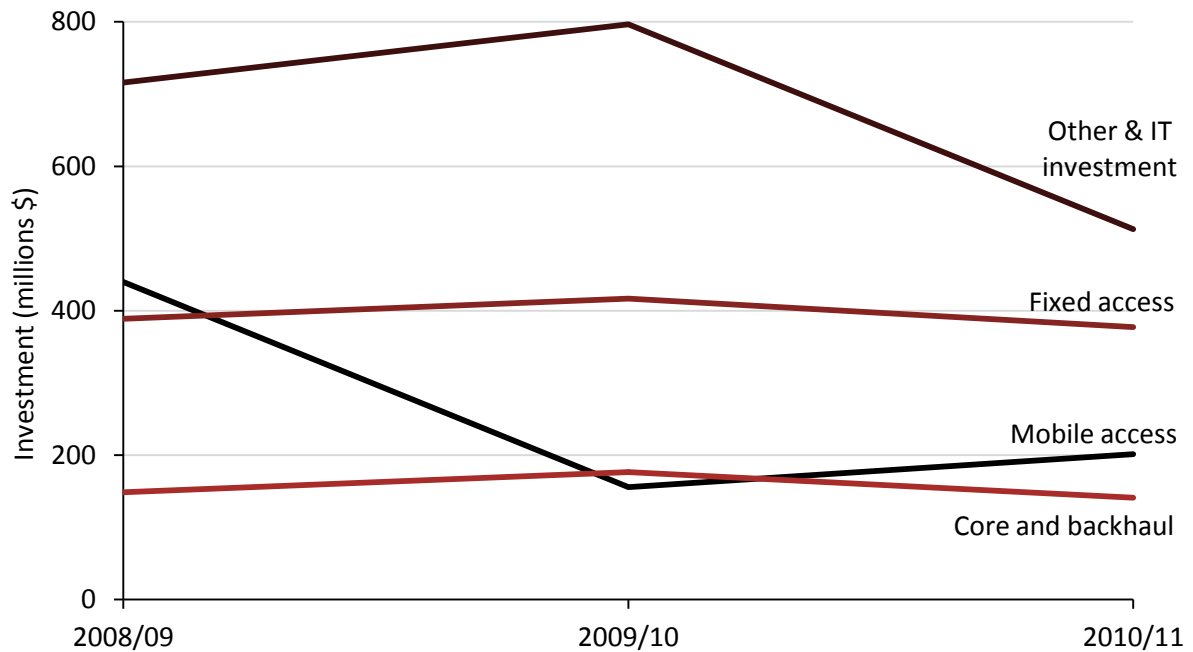
Disaggregating investment for the last three years shows that investment in tangible infrastructure has, apart from mobile access investment which had a cyclical peak in 2008/09, remained relatively steady. This is encouraging against a global backdrop of weakened economies, especially in the EU and North America.

Figure 2 shows that the fall in total investment in 2010/11 was driven by the large decline in "Other and IT investment" which includes intangible investment in product development and systems.

Voice connections static while broadband grows

One way of measuring the size of telecommunications markets is to look at the number of connections or subscribers. Telecommunications users subscribe to services delivered over fixed line connections and wireless connections.

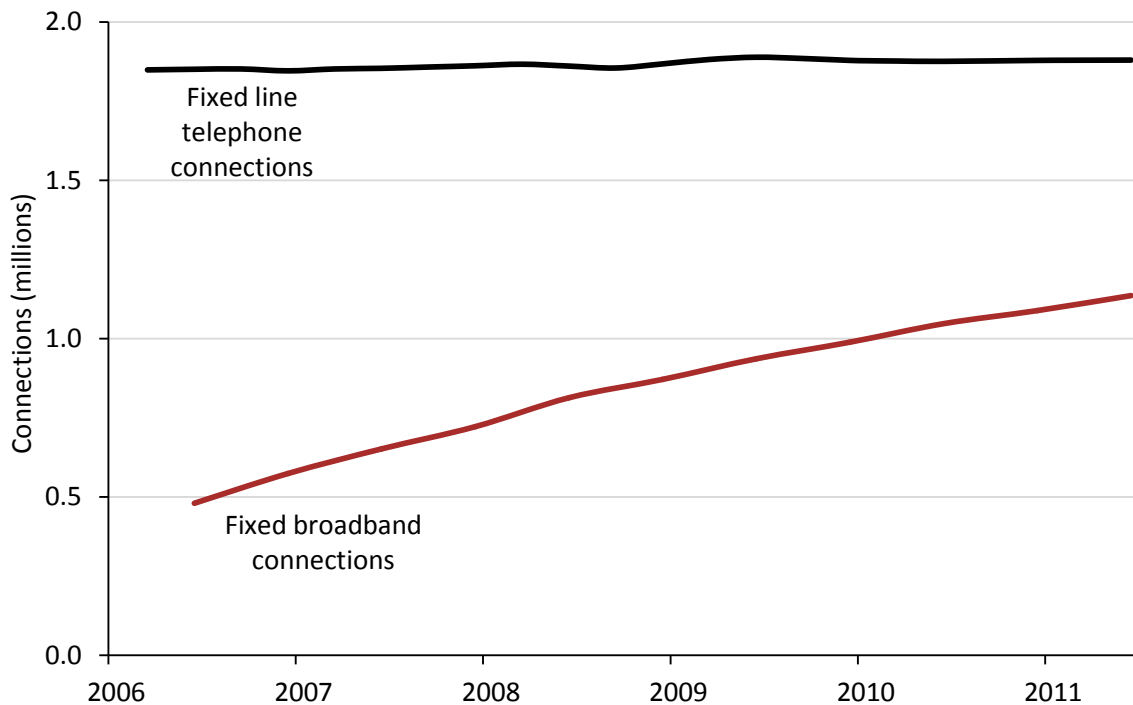**Figure 3: Fixed line telephone lines and broadband connections**

Figure 3 shows the number of fixed line telephone connections has been stable in recent years while fixed broadband connections have grown steadily, more than doubling since 2006 to reach 1.14 million. In most cases, telephone and broadband services are delivered over the same line.

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

Figure 4: Mobile connections

Until March 2010, connections were counted if they had been active during a 180-day period.

From June 2010, connections were only counted if they had been active during a 90-day period.
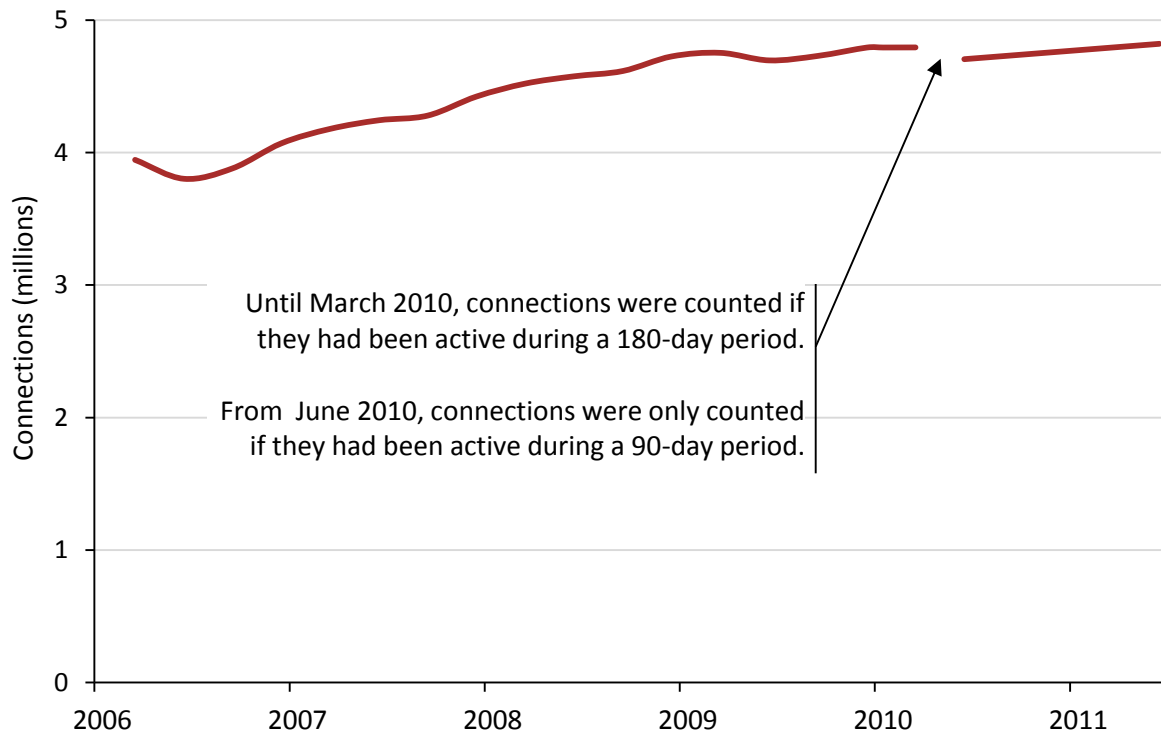
Since users of mobile services tend to have one or more connection each there are comparatively more mobile connections than fixed line connections.

Figure 4 shows mobile connections have grown little since around the end of 2008. The mobile handset market is probably nearing saturation with a penetration rate of 110%. This is about the same as Australia while the UK has reached 130%[4]. Further growth in mobile connections is likely to come from the use of SIM cards for data only mobile devices like tablets and e-books.

The use of mobile devices to access the internet has become increasingly popular with the use of smart phones to access the internet showing impressive growth. Active mobile internet users accessing the internet by way of datacards/dongles and smartphones reached 2.34 million by the end of 2010/11. New Zealand ranked of 12 out of 34 OECD countries in wireless broadband users with 54.3 per 100 of population.

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[4] Figure for 2010 reported by Ofcom in Communications Market Report.

Calling volumes in gradual decline
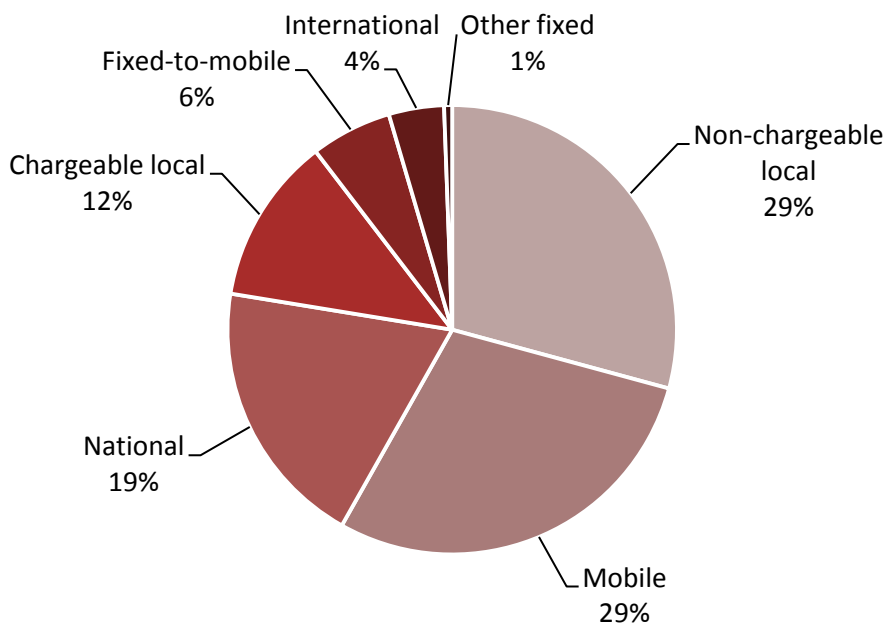
While voice calling remains a popular telecommunications service, its importance is declining.

Figure 5: Fixed and mobile calling minutes
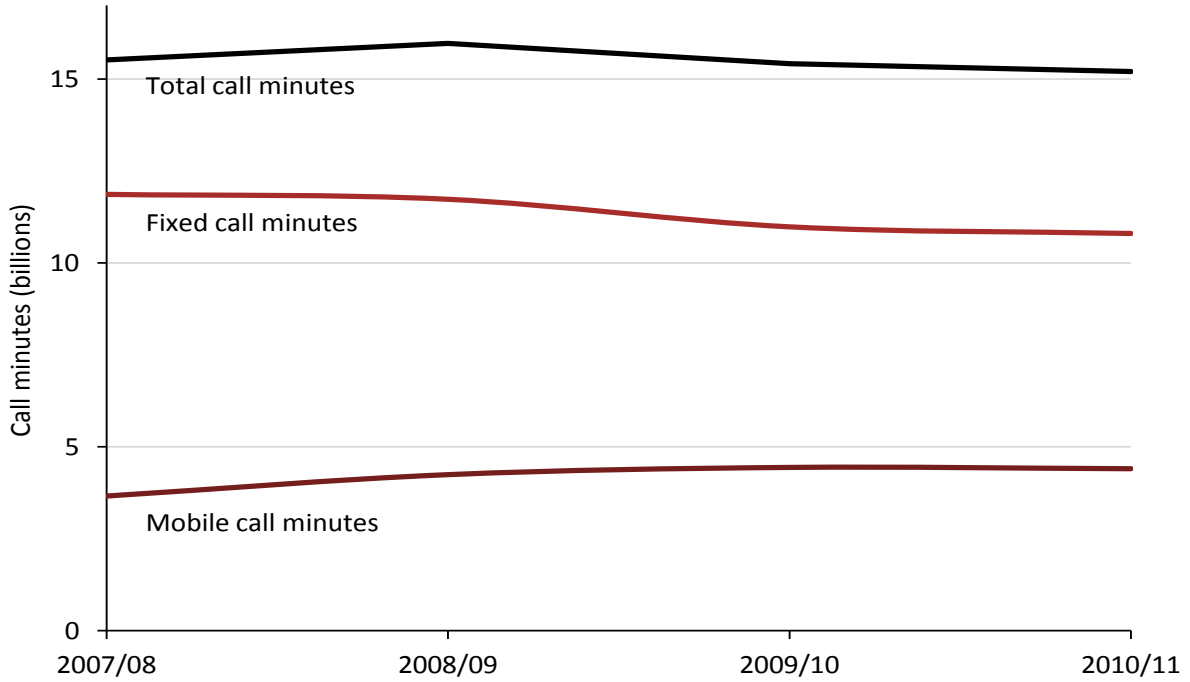
Total voice calling volumes are gradually declining, driven by the decline in fixed voice calling and even mobile calling has ceased growing, as shown in Figure 5.

Figure 6: 2010/11 calling volume by call type

Non-chargeable local calling continues to generate the most call minutes, making up 29% of the total and about the same as total mobile calling as shown in Figure 6. The proportions are almost identical to the prior year.

Total industry revenue flat with rising broadband compensating for falling voice

The telecommunications industry generates substantial revenues from the sale of its services. Surveyed industry retail revenues have shown no significant change since 2006, hovering just under $5 billion.

Figure 7: Telecommunications retail revenues by service
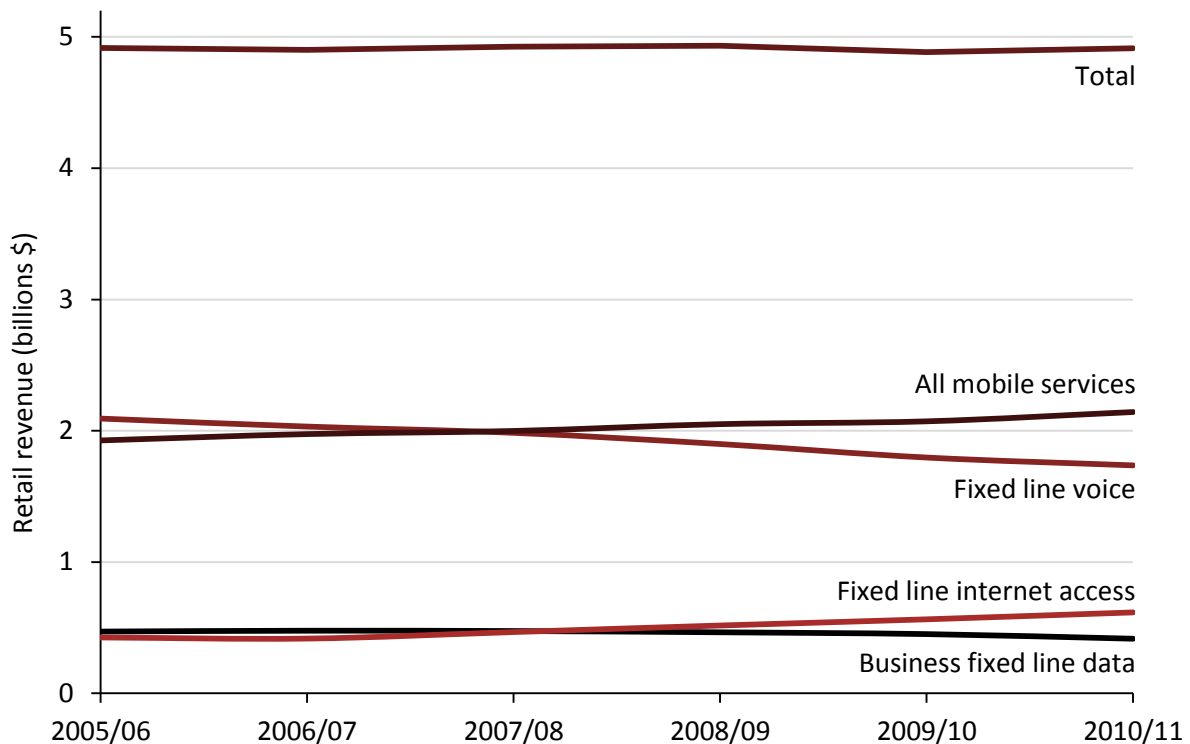
Figure 7 shows that falling revenue from fixed line voice services has largely been offset from increasing fixed line broadband and mobile revenues.

Although telecommunications retail revenues are flat or dropping, consumers continue to spend more on telecommunications services while businesses take advantage of better offers to save cost. This trend for reduced spending by businesses is also seen with business fixed line data services revenues decreasing in recent years.

Figure 8: Retail voice and data revenues (fixed + mobile)
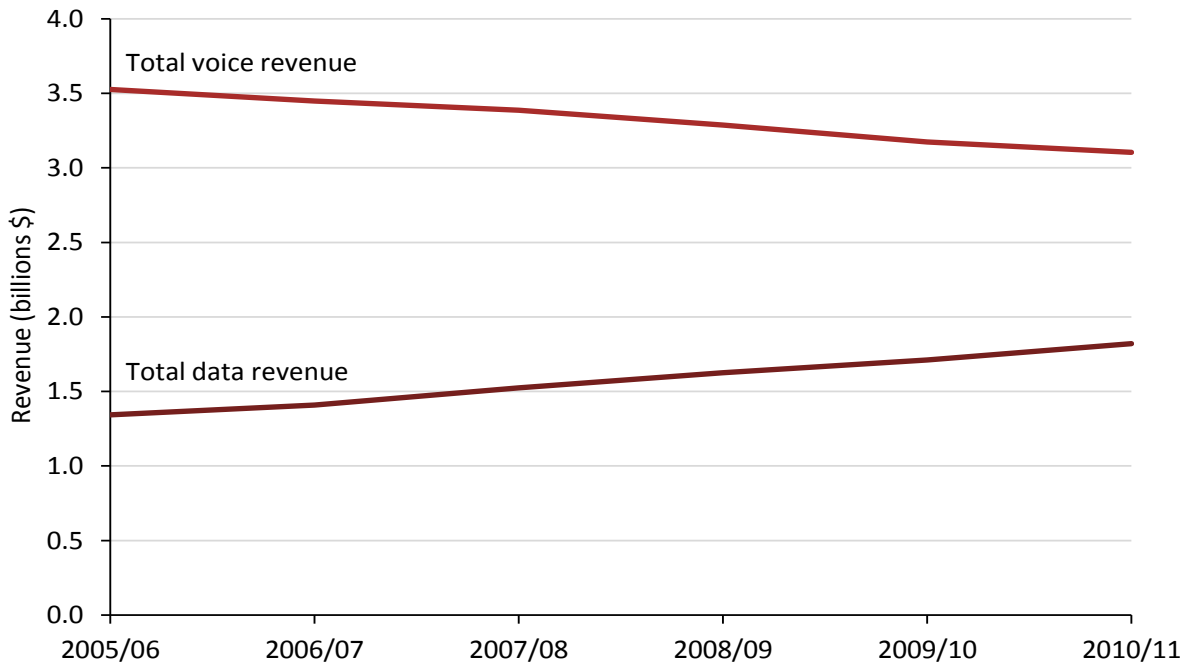
The other revenue trend of note is that voice revenues have been falling while data revenues have been rising, as shown by Figure 8. The pattern shown in Figure 8 may well be more pronounced than the figures show because of the large amount of revenue attributed to voice coming from the fixed monthly line rental. Phone line use in most households is likely to be dominated by internet use, with only a relatively small amount of time spent making voice calls.

Figure 9: Fixed line wholesale revenues
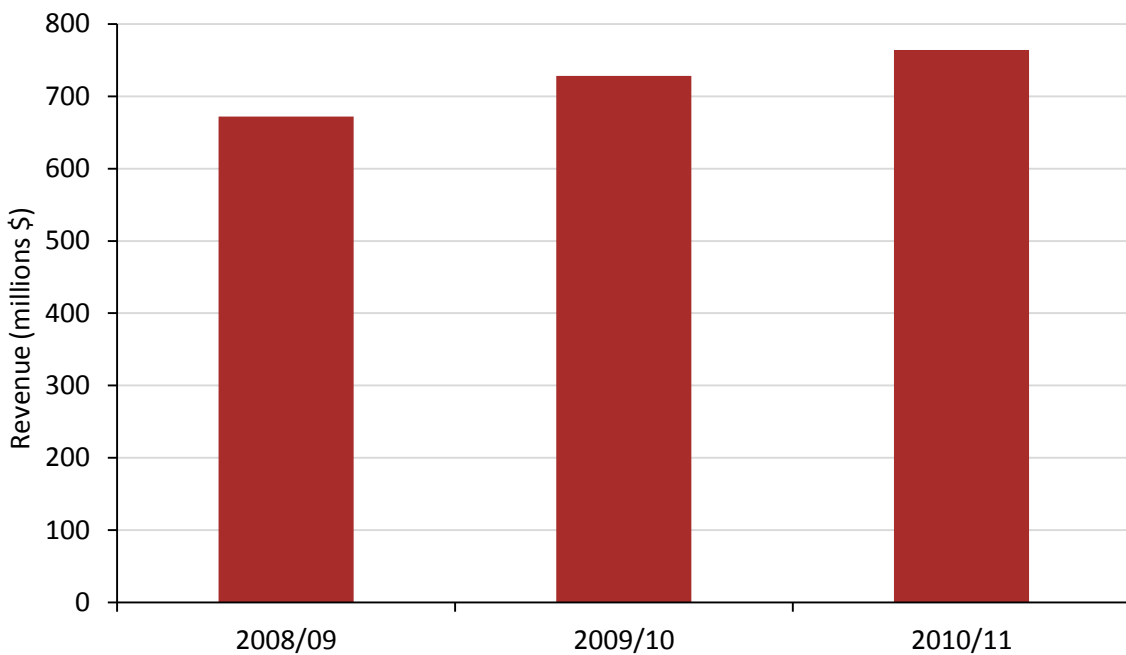
Fixed line wholesale revenues have continued to increase as indicated in Figure 9, as non-integrated retailers increase their share of the retail market. The 2011/12 year will herald a large increase in wholesale revenue as a consequence of the de-integration of Telecom and the subsequent necessity for it to purchase substantial wholesale services from Chorus.

Figure 10: Telecom share of total industry revenues
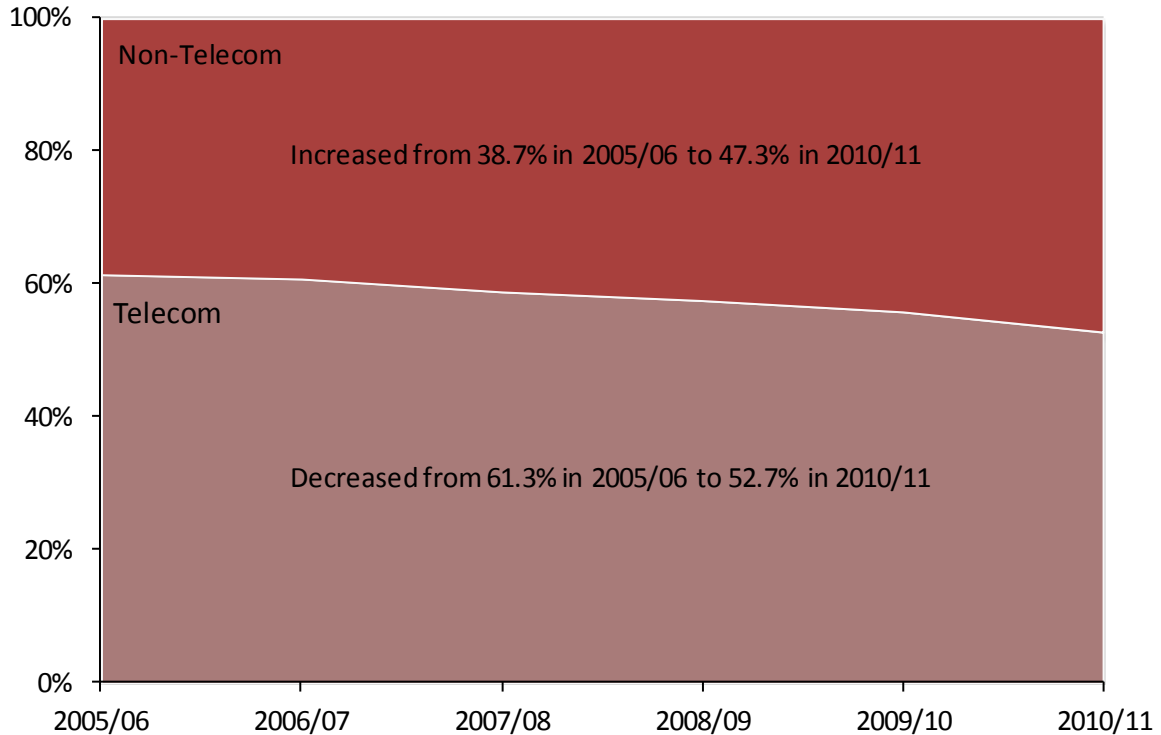
Because Telecom has been the incumbent fixed line operator in New Zealand, owning most of the access network, its share of total industry revenues has fallen slowly as can be seen in Figure 10. This was much less than its fall in retail market share because retail competitors needed to acquire wholesale inputs from Telecom (such as UBA or UCLL).

Again, the de-integration of Telecom will have a large impact in 2011/12. The full effect will not be seen until 2012/13, the first year in which Chorus will be a separate entity for the whole period. Chorus will generate a substantial portion of total industry (retail + wholesale) revenues, which will increase because of the increase in wholesale revenues as Chorus reports revenue from what were previously Telecom internal transactions. It is estimated Chorus will have around a quarter of the relevant Telecom + Chorus revenues.

Retail fixed line market

This section examines the fixed line market. It starts with an overview of who is involved in the market and the revenues earned, then looks at the voice market, followed by the fixed line data market, the development of unbundling and concludes with an examination of broadband quality.

Market overview

Telecom had a ubiquitous fixed line network in New Zealand supplying the majority of retail and wholesale fixed line services until its demerger in November 2011. Chorus now owns the access part of the network and Telecom much of the core network which is used to provide backhaul between exchanges and other points of interconnection.

TelstraClear has a competing access network in much of Wellington and Christchurch, and uses local loop unbundling and resale to provide fixed line retail services in many other locations around New Zealand including Auckland, Hamilton, Tauranga and Dunedin.

Other retailers using local loop unbundling to provide voice and broadband services include Vodafone, Orcon, Slingshot/CallPlus and Compass. In addition to the main centres, unbundled local loops are now also being used to provide services in smaller cities and towns like Invercargill, Masterton and Feilding.

These competing retailers also resell Telecom services, and have been increasingly bundling their voice and broadband offerings to increase the number of consumers who purchase all their fixed line services from them. Other fixed line retailers reselling Telecom services include WorldxChange and TrustPower Kinect.[5]

Fibre access networks are starting to be rolled out by the winners of the UFB tender. This is Chorus in most of the country, NorthPower in Whangarei, Ultra Fast Fibre led by WEL Networks in Hamilton, Tauranga, Tokoroa, New Plymouth, Hawera and Wanganui, and Enable Networks in Christchurch.

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[5] There are also a number of other very small telecommunications retailers operating in New Zealand.

Figure 11: Fixed line retail revenues by type
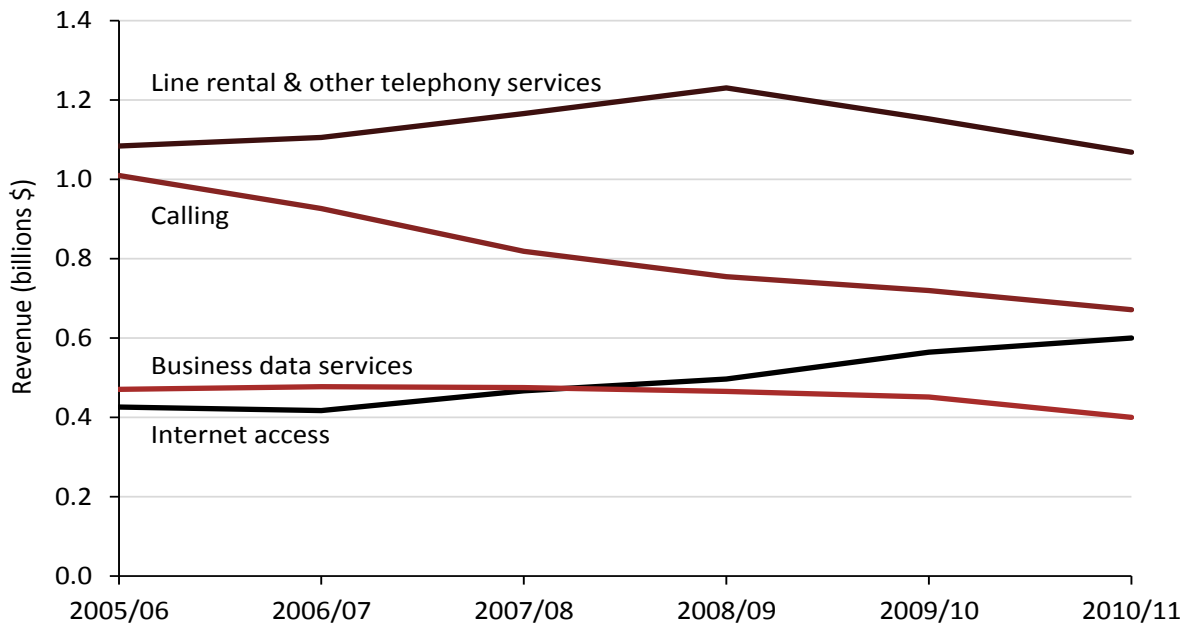
Most forms of fixed line revenue are falling, with only revenue from internet access rising, as can be seen in Figure 11. Line rental charges generally don't fall, so it is surprising to see total revenue from this source continue to fall given static fixed line numbers. However, line rental is now often incorporated into a combined charge for bundle of services including broadband, and the way that revenue is apportioned affects the reported line rental and makes it less reliable.

Fixed line voice largely characterised by modest falls in volumes and prices

Figure 12: Fixed line retail call minutes by call type
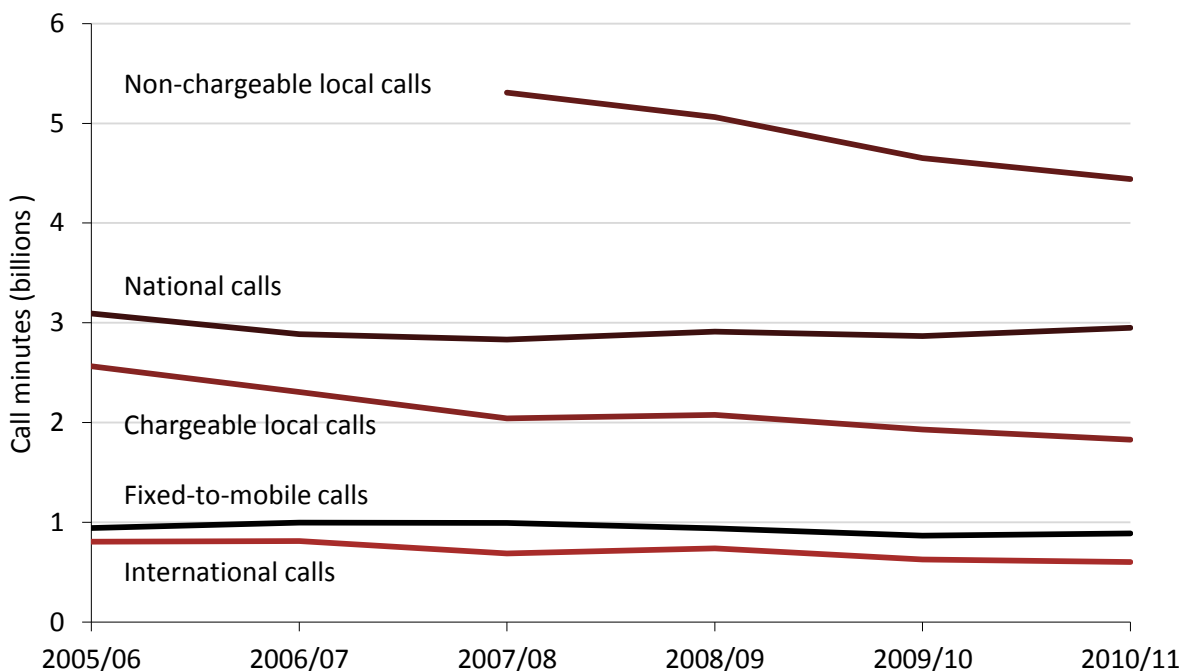
The trend in voice calling varies according to the type of call. The last few years have seen a significant decline in non-chargeable local calls with chargeable local calls also declining, as shown in Figure 12. The reported data indicates a slight increase in national and fixed-to-mobile calls from the prior year.

International calls have declined only very slightly, even though Skype continues to be an increasingly popular substitute for international calls. TeleGeography estimated that total international minutes grew by 4% in 2011 and Skye-to-Skype traffic (including video Skype) grew by 48% to equal one third of traditional international calling minutes.[6]

Figure 13: Average fixed line calling prices by type
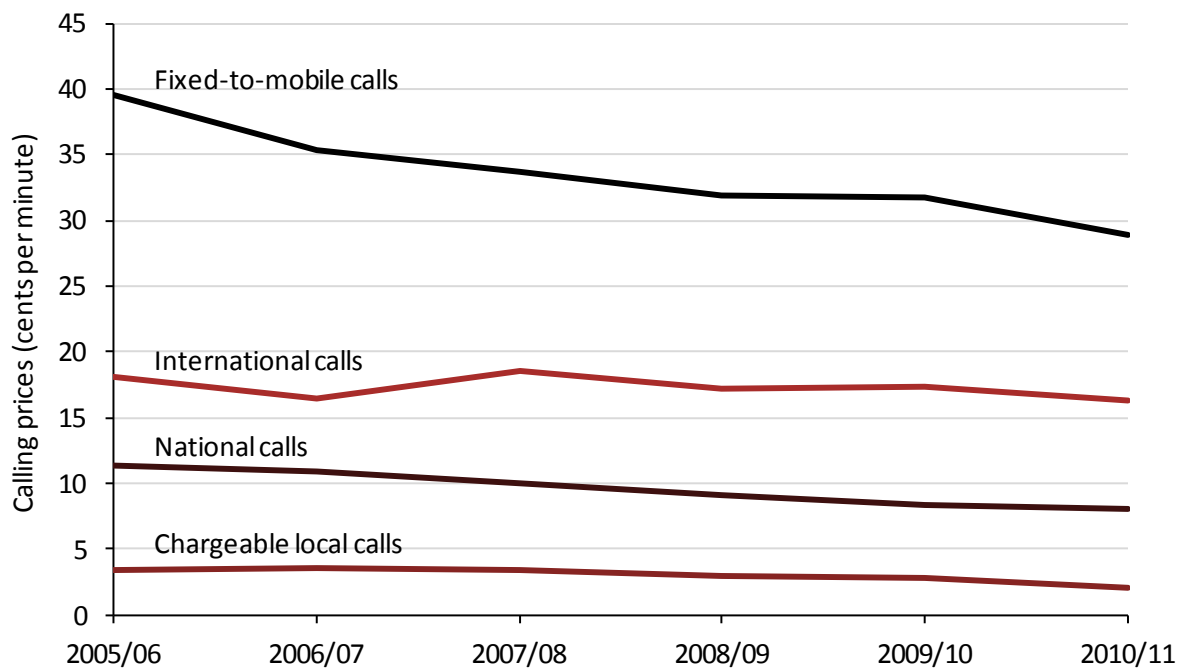
Average calling prices have continued to fall as shown in Figure 13, with the largest declines coming in fixed-to-mobile calling and chargeable local calls. The significant fall in the fixed-to-mobile calling price was expected after the Commission regulated mobile termination rates and made a large cut in May 2011.

The significant fall in the chargeable local call price is likely to have been due to competition from new VoIP services that are being pushed in the business sector, and more recently in the residential sector.

Increasingly, consumers and businesses are using VoIP services rather than conventional PSTN services that use dedicated voice lines. However, where VoIP calls connect to the PSTN and the operator charges for the service, the minutes and revenues would be included in the data shown in this report. The Commission has attempted to collect data on the volume of end-to-end VoIP calls within New Zealand. Little data was available but it appears such

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[6] http://www.telegeography.com/press/marketing-emails/2012/01/09/international-call-traffic-growth-slows-as-skypes-volumes-soar/index.html

calls do not yet make up a significant volume of total voice calls, although do make up a material volume of the calls made by customers of some providers.

Figure 14: Voice services sold by non-Telecom retailers over Telecom network
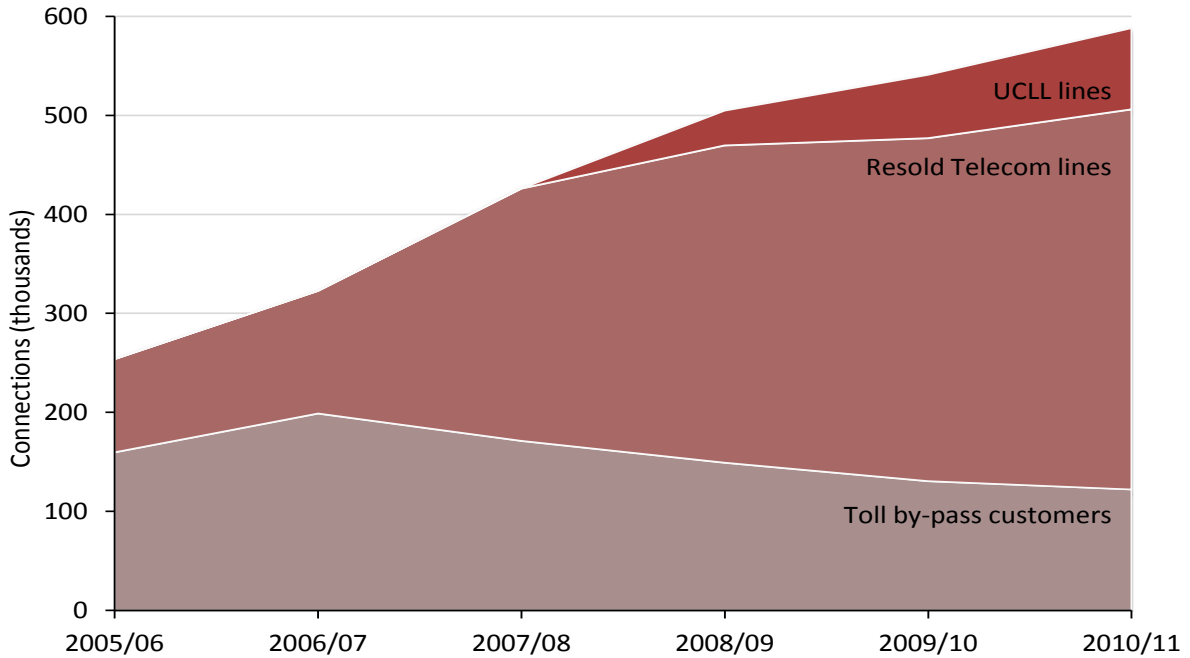
The number of retail voice services sold by retailers other than Telecom continues to increase, as can be seen in Figure 14. Tolls only services provided over Telecom's network (toll by-pass) continue to decrease, but this is more than offset by increasing resale and UCLL lines (which are usually used to offer voice in addition to broadband).

Figure 15: Retail voice market HHI index
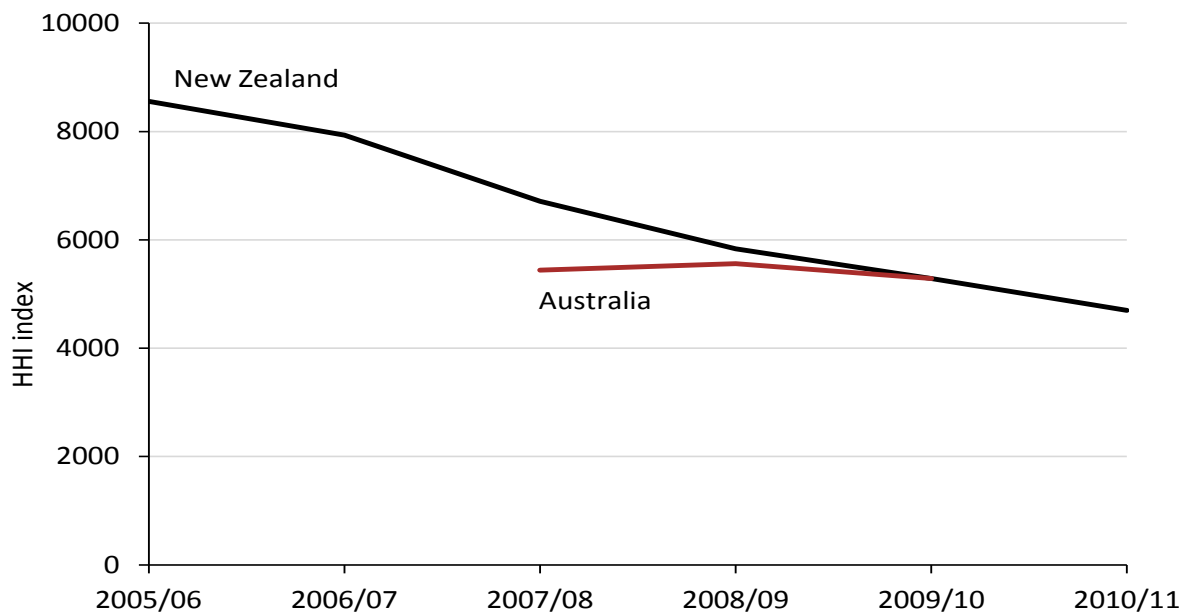
Increasing competition in the retail fixed line voice market is also indicated by the falling market concentration, as measured by HHI index[7] and shown in Figure 15.

Fixed line broadband subscribers continue to grow while market concentration falls

Data services delivered over fixed lines include broadband services, business data services, and there is still some dial-up internet.

Broadband services can be delivered by an infrastructure based competitor to Telecom (prior to its demerger) such as TelstraClear using its cable network or other retailers using unbundled lines. Otherwise, retail competitors to Telecom have had to rely on purchasing wholesale services f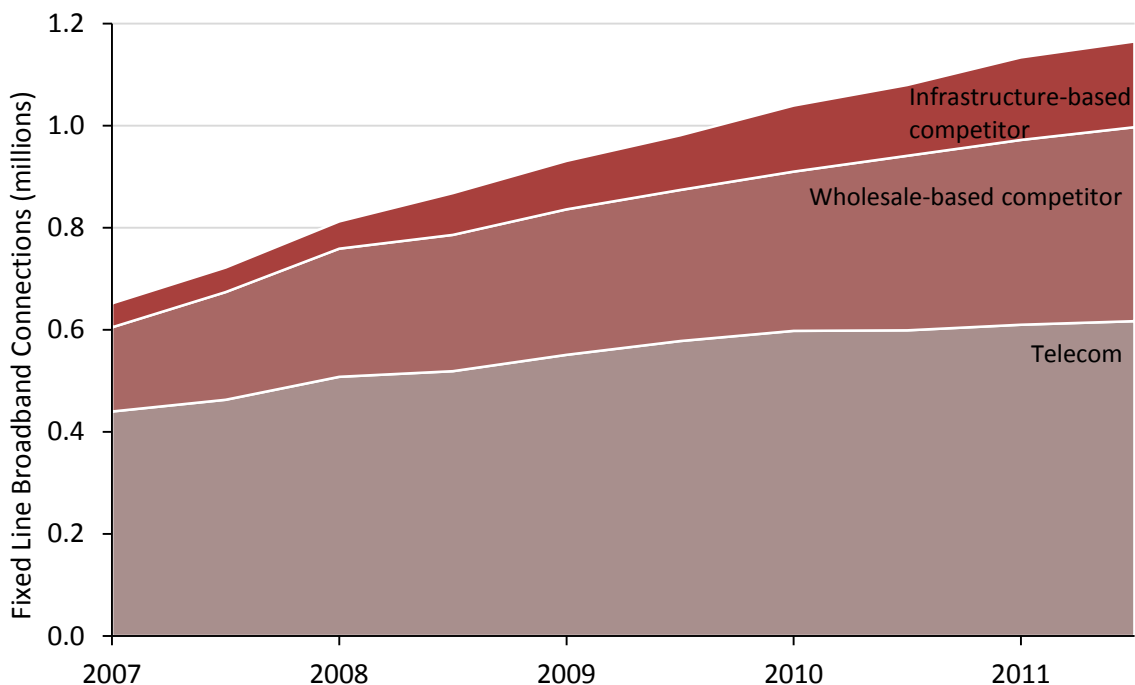rom Telecom. Currently, these services are usually purchased at a price which is set at a discount to the Telecom retail price. This gives retail competitors little scope to differentiate their service by quality or price.

Figure 16: Broadband subscribers by type of provider

As the number of broadband subscribers continues to grow, as shown in Figure 16, Telecom's share of the retail subscribers continues to fall. In recent years, the number of broadband subscribers served by infrastructure based competitors has grown faster than those served by wholesale based competitors.

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[7] The Herfindahl-Hirschman Index (HHI) is a commonly accepted measure of market concentration and is calculated by squaring the market share of each market participant that has a material number of subscribers and adding these together. The maximum possible score is 10,000. The analysis of the HHI indicator in this report does not necessarily indicate that the Commission will use it for measuring competition in any other area.

Figure 17: Home internet connection market share from World Internet Report survey
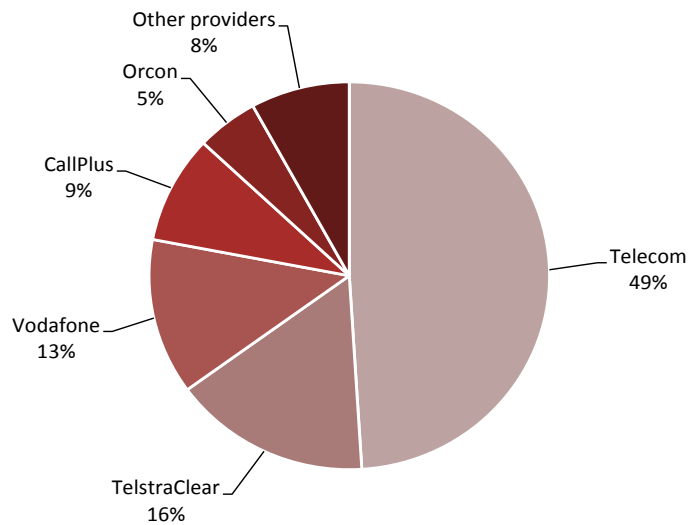
The retail broadband market is one of the least concentrated telecommunications markets. Publicly available survey data shown in Figure 17 gives an indication of the relevant market shares of ISPs providing internet connections to the home.[8] In the DSL broadband market Telecom retails 57% of connections so the Telecom share shown in Figure 17 is likely to be understated, but in any event is not much more than half the market.

Figure 18: Retail broadband market HHI index
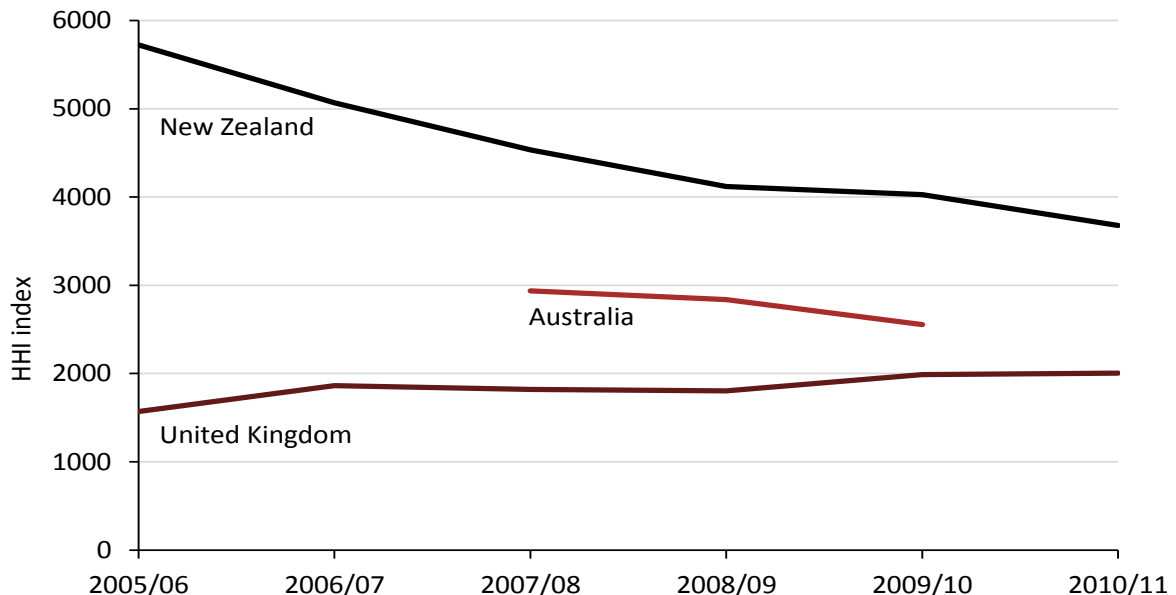
The retail broadband market concentration measured by HHI index calculated from the figures supplied to the Commission is shown in Figure 18. Although the broadband retail market concentration continues to fall, it is still well above that of Australia and the UK.

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[8] Smith, P., Gibson, A., Crothers, C., Billot, J., Bell, A. (2011). *The Internet in New Zealand 2011*. Auckland, New Zealand: Institute of Culture, Discourse & Communication, AUT University.

Unbundled line growth volatile

Unbundlers put their own infrastructure in exchanges to service the copper lines they lease from Chorus. This allows them to offer broadband and voice services with substantial control over how the service is delivered.

Figure 19: Number of unbundled lines
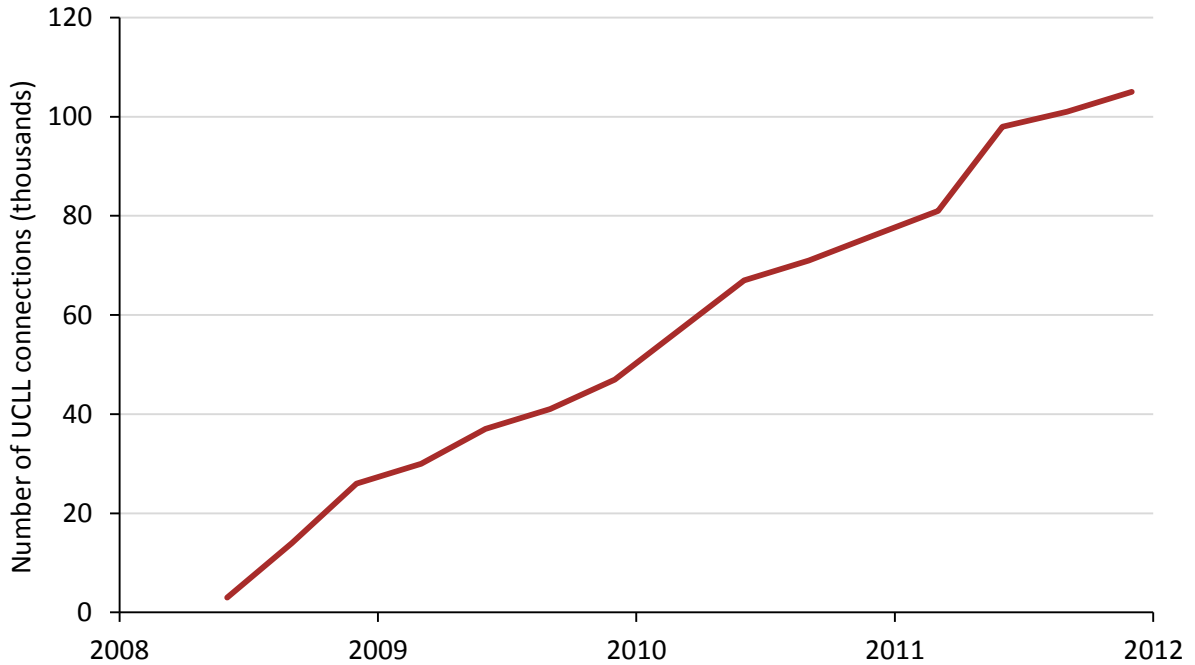
The number of unbundled lines has continued to grow and reached 105,000 by the end of 2011, as shown in Figure 19.

Figure 20: Increase in unbundled lines each quarter
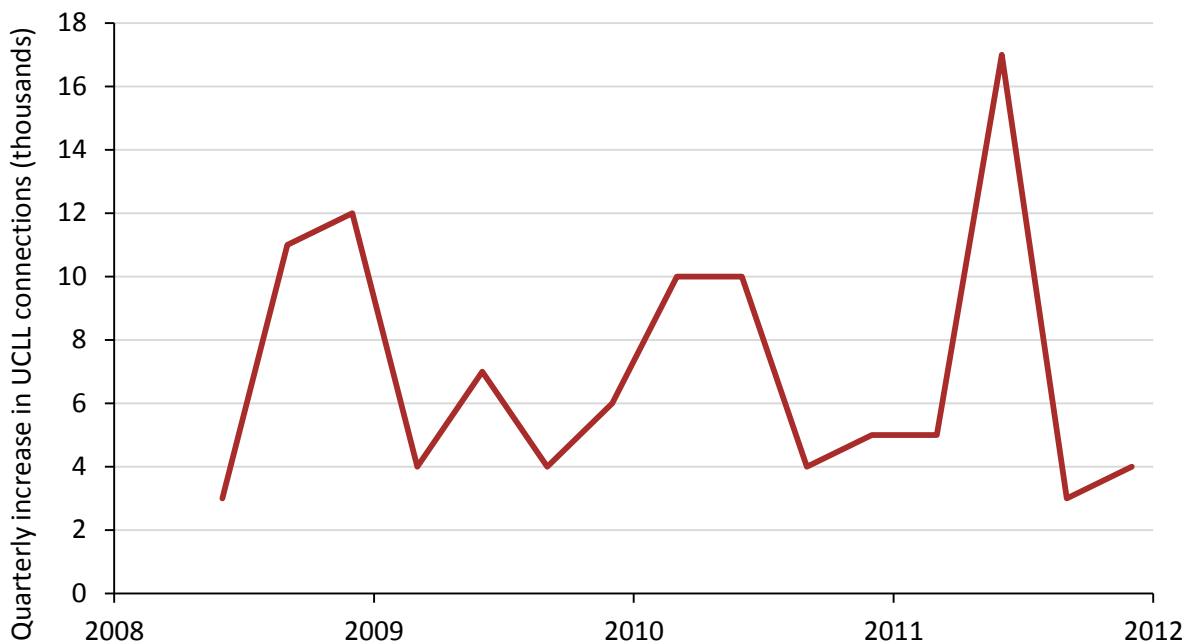
The growth in unbundled lines each quarter has continued to be volatile, as shown in Figure 20.[9] There was an initial burst of unbundling by Orcon and Vodafone in Auckland until around the end of 2008 when Telecom's 'loyalty' offers, which ran from December 2008 until September 2009, may have slowed demand.[10] From September 2009, TelstraClear started its nationwide unbundling programme. In 2011, Slingshot undertook a similar nationwide unbundling programme.

While unbundling proceeded, Telecom's FTTN investment programme cabinetised a substantial number of lines that either were or could have been unbundled. Telecom continued to use existing copper lines from the exchange to provide voice services to users of cabinetised lines (the sub-loop extension service) while using UBA from the cabinet to provide broadband services. Telecom failed to provide the same combination of services in a timely manner to its competitors, which may also have slowed demand for unbundling.[11]

Naked broadband growing in popularity from low base

Naked broadband services (where broadband is provided without a conventional voice service) have been growing in popularity from a low base. As at 30 June 2011, naked broadband connections totalled only around 31,000 or 3% of fixed line broadband connections. This metric was not collected in the prior year, but wholesale naked broadband numbers indicate very strong growth over the 2010/11 year and continuing into the 2011/12 year. Demand in 2011/12 may have been stimulated by *Genius*, a new competitively priced broadband and VoIP service that uses a naked DSL connection, which was introduced by Orcon on 20 July 2011. Orcon's Chief Executive indicated customer numbers have shown strong growth since *Genius* was launched.[12]

Broadband quality holds up

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

Data distribution company Akamai[13] provides data on average through-put speeds achieved by internet users (from its delivery of large content files such as operating system updates from a distributed system of servers typically located at ISPs).[14]

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[9] The June 2011 figure has been revised from that reported by Telecom.

[10] The settlement deed is available at: http://www.comcom.govt.nz/assets/Telecommunications/Telecom-Separation/Loyalty-Offer-Settlement-between-Commerce-Commission-and-Telecom-July-2010.pdf

[11] See details at: http://www.comcom.govt.nz/telecom-compliance-with-the-undertakings-uba-with-sles/

[12] http://www.orcon.net.nz/about/article/new_call_centre

[13] http://www.akamai.com

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

Figure 21: Distribution of download speeds in New Zealand
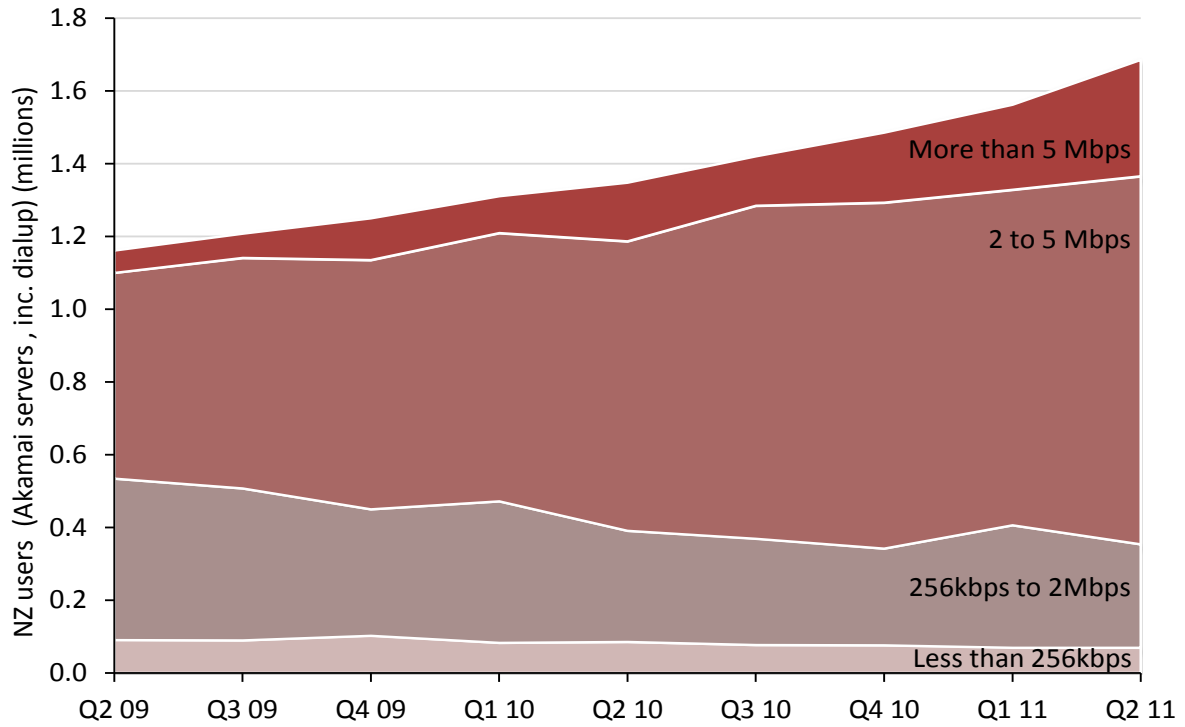
Source: Akamai

The distribution of the speed of downloads delivered to internet users by Akamai in New Zealand is shown in Figure 21. The proportion of deliveries achieving higher speeds is rising steadily while the proportion achieving low speeds is falling.

Figure 22: Average download speeds by country
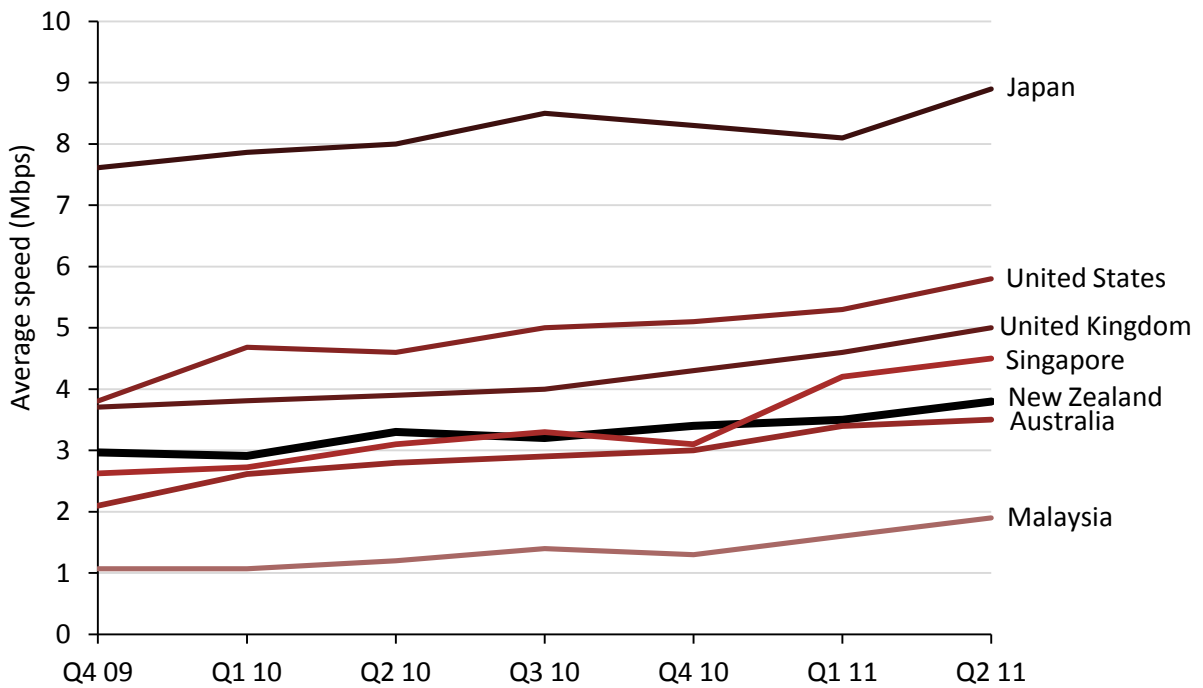
Source: Akamai

Figure 22 shows average broadband speeds measured by Akamai for a selection of Asia Pacific countries as well as the UK. New Zealand's performance is improving over time and is slightly better than Australia's with an average broadband speed of 3.8Mbps, but below the UK and the US. Singapore was performing similarly to New Zealand until the last few quarters, when it started to move ahead. The improvement could be due to its increasing use of fibre.

Actual broadband speeds are always going to be lower than potential DSL speeds due to factors such as building wiring, user equipment, congestion and variations in file size.

Retail mobile market

This section examines the mobile market. It starts with an overview of who is involved in the market, the revenues earned and market shares, and then looks at the mobile voice market followed by the data market, which includes SMS and mobile broadband.

Market overview

There are three mobile network operators in the New Zealand market. Vodafone operates a nationwide 2G GSM and 3G UMTS[15] network. Telecom operates a nationwide 3G UMTS network (the XT network), as well as its soon-to-be-closed legacy CDMA network.

The third operator, 2degrees, began service with a 2G GSM network in August 2009 and a year later commenced operating its 3G UMTS network. 2degrees provides coverage using its own cell sites which now cover most cities including Auckland, Wellington, Christchurch, Hamilton, Tauranga, Dunedin, Palmerston North, Queenstown, and Invercargill. It relies on roaming via Vodafone's GSM network to provide coverage where it does not have its own network.

MVNOs growing but insignificant

New Zealand also has a number of mobile virtual network operators (MVNOs) who resell mobile services from mobile operators who have their own network. [16] MVNOs usually have some scope to offer different bundles of services than the supplying wholesale mobile network operator. Some MVNOs are standalone operations while others are adjuncts to a retail fixed line business.

MVNOs have not yet gained a significant share of the New Zealand mobile market, although their share is growing. TelstraClear continues to operate the largest MVNO. Other, smaller MVNOs include Black + White, Digital Island, CallPlus/Slingshot, Compass and Orcon. Reported total subscribers from surveyed MVNOs as at 30 June 2011 were 54,000 (37,000 in prior year) with total revenues of $37 million ($25 million) and 49 million call minutes (28 million).

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[15] Universal Mobile Telecommunications System (UMTS) is the 3G successor to the 2G GSM standard. The most common form of UMTS uses W-CDMA as the underlying air interface.

[16] An MVNO is an operator that provides mobile phone service but does not have its own licensed frequency allocation of radio spectrum, nor does it have the entire infrastructure required to provide mobile telephone service.

Total mobile retail revenues still growing

Figure 23: Total mobile retail revenues
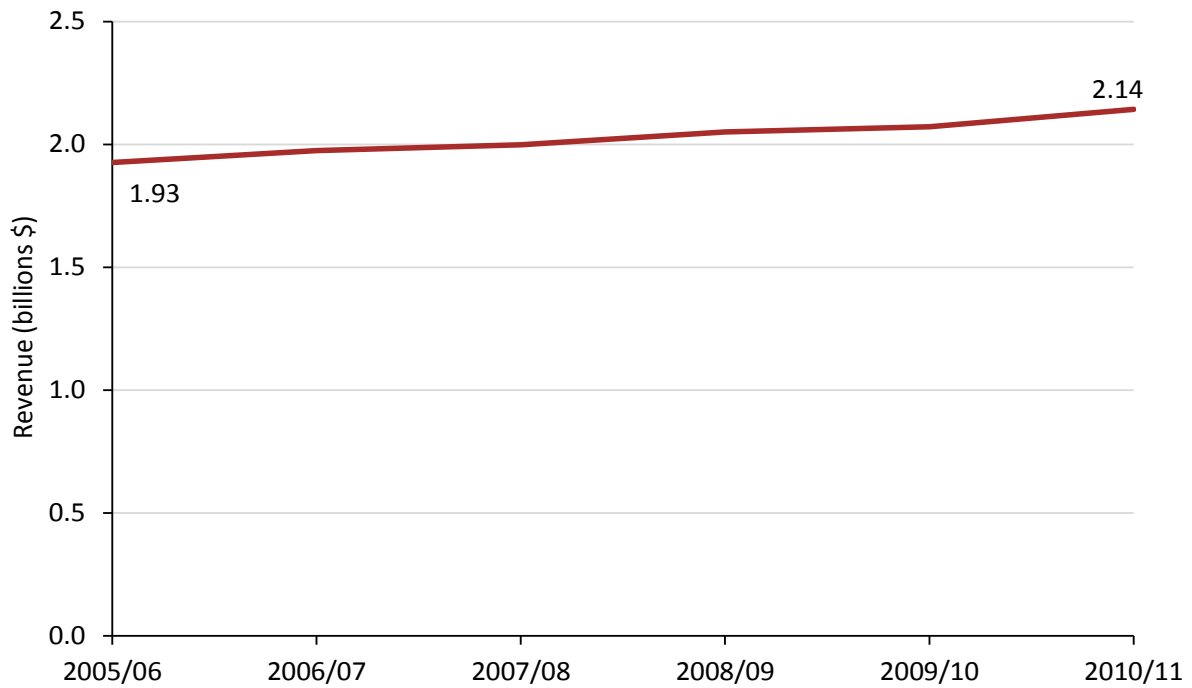
Mobile retail revenues have continued to grow although at a relatively slow pace, reaching $2.14 billion in 2010/11 as can be seen in Figure 23.

Figure 24: Mobile retail revenues by type
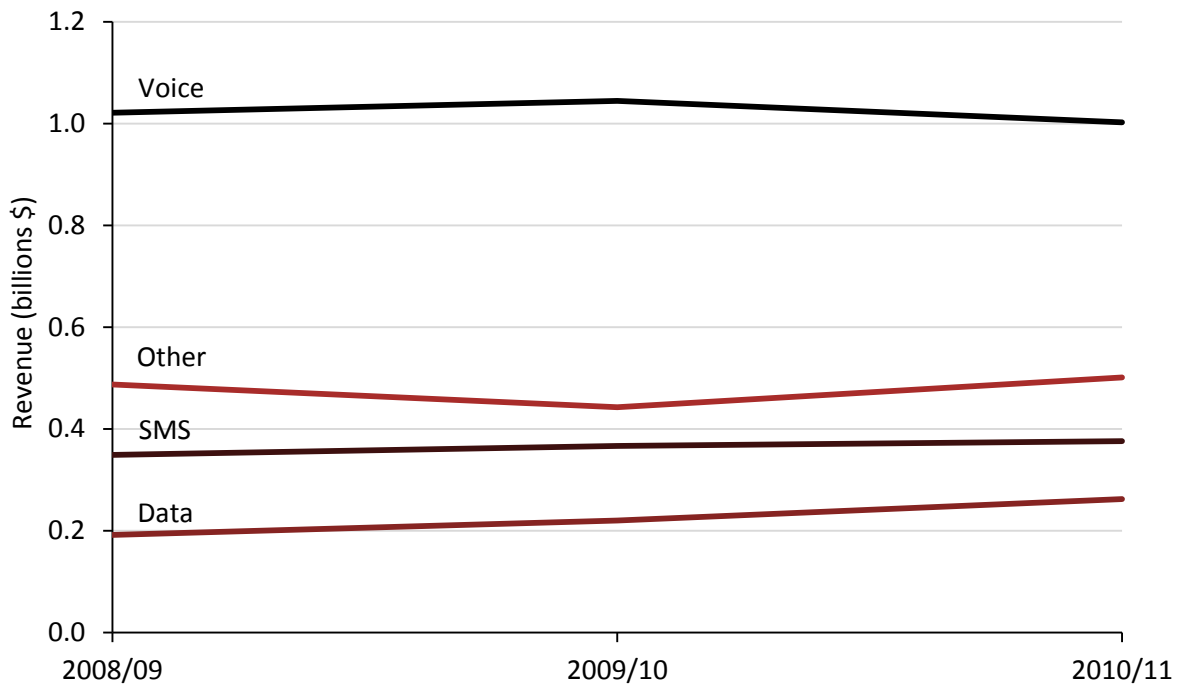
Mobile voice revenues are now starting to fall, with a reduction in 2010/11, as shown in Figure 24. SMS revenues rose slightly with larger increases coming from mobile broadband data and other retail mobile revenue which includes handset sales.

Mobile market shares continue to shift

Figure 25: Mobile connections by provider
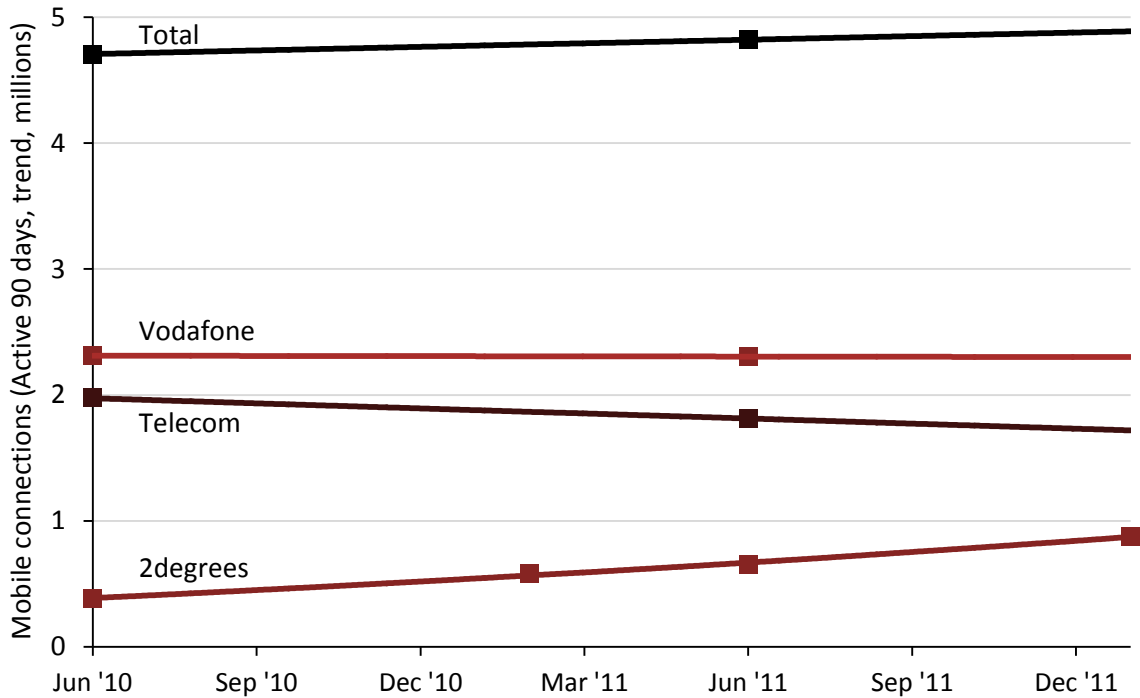
Over the 2010/11 year mobile connections for Vodafone were largely static while they fell for Telecom and rose strongly for 2degrees, as can be seen in Figure 25.

Figure 26: Mobile market share by subscriber as at 30 June 2011
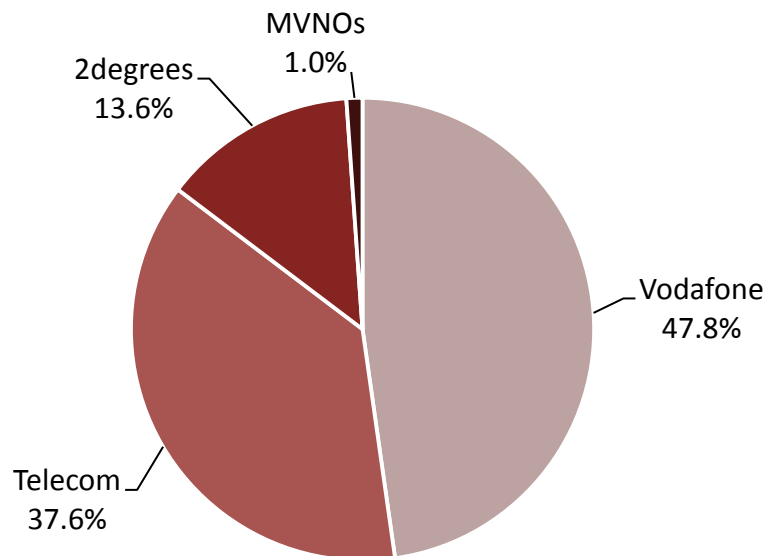
On a connections basis Vodafone had a little under half the market with 47.8% of connections, leaving Telecom with 37.6%, 2degrees with 13.6% and MVNOs with the remaining 1%, as can be seen in Figure 26. This led a further fall in the retail mobile market concentration as measured by the HHI index.

Figure 27: Retail mobile market HHI index
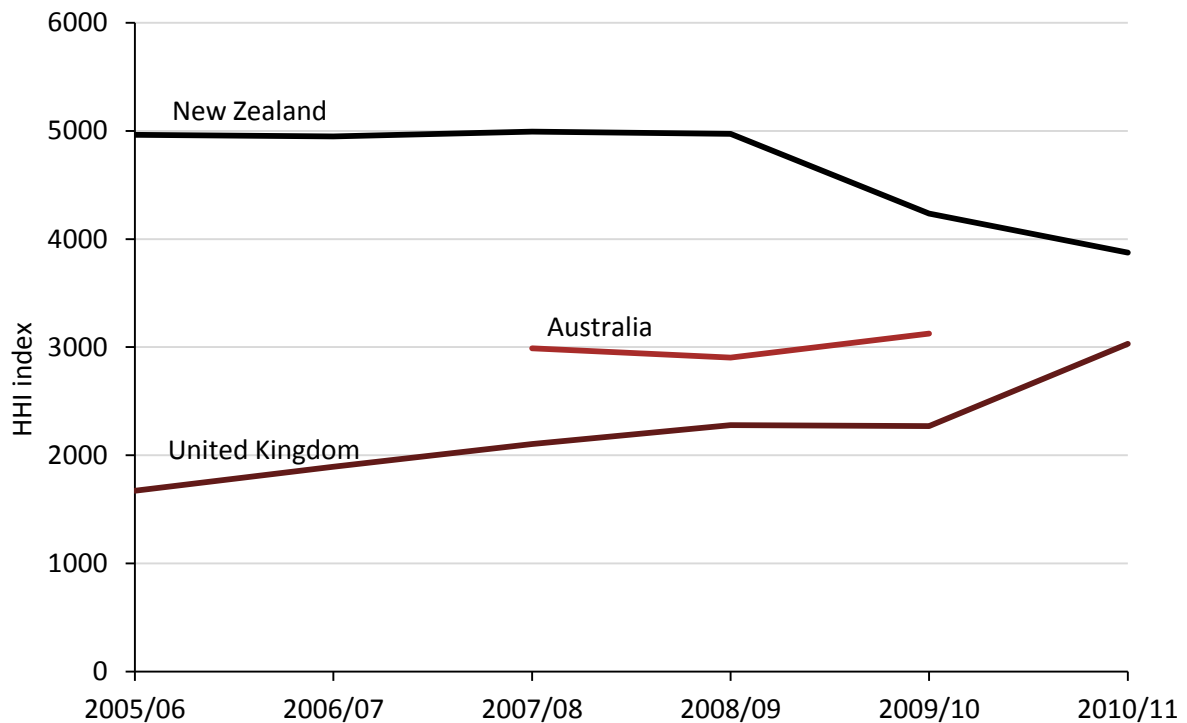
As can be seen in Figure 27, market concentration in New Zealand is now a lot closer to Australia and the UK. The UK had a large increase in mobile market concentration in 2010/11 with the merger of third and fourth ranked operators T-Mobile and Orange to form Everything Everywhere.

Subscriber numbers can be a misleading way of showing market share because they don't show how valuable the customers are. This is driven by factors such as whether the customer is prepay or post-pay, consumer or businesses, already has a mobile phone with another provider, etc. John Stanton, the chairman of 2degrees' majority-owner Trilogy International Partners, was reported to have said in March 2012 that 2degrees had captured 16 per cent of the New Zealand mobile market by customers and 8 per cent by revenues.[17]

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[17] http://www.stuff.co.nz/business/industries/6549251/No-sell-down-in-2degrees-Trilogy

Growth in mobile voice minutes has stalled

Figure 28: Retail mobile voice minutes
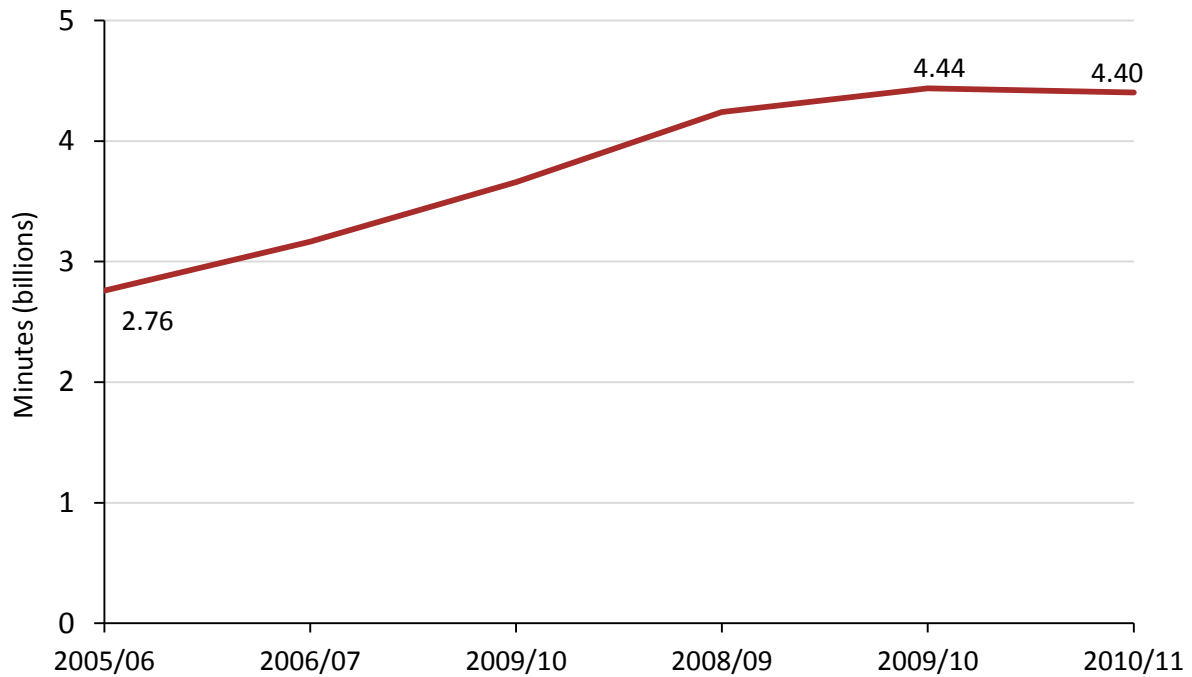
Mobile voice minutes grew strongly in the 2009/10 year but since then growth has slowed and now appears to have stopped altogether, as shown in Figure 28, even though mobile voice use in New Zealand is still low compared to other countries. One recent study of mobile use in developed countries put the median use at 200 minutes per subscriber per month.[18] New Zealand users averaged only 76 minutes of mobile use per month in 2010/11.

The mobile operators are trying to encourage more voice use by providing larger buckets of minutes and making special offers like the 2degrees on-account 100 bonus minutes per month for life. However, it's likely that instant messaging and VoIP calling are replacing the mobile calls of some customers, and offsetting any growth in consumption of voice minutes by other customers.

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[18] http://www.mobilefuture.org/page/-/entner-pricing-comparison-082411.pdf?/globalspending

Figure 29: mobile call average price by call type
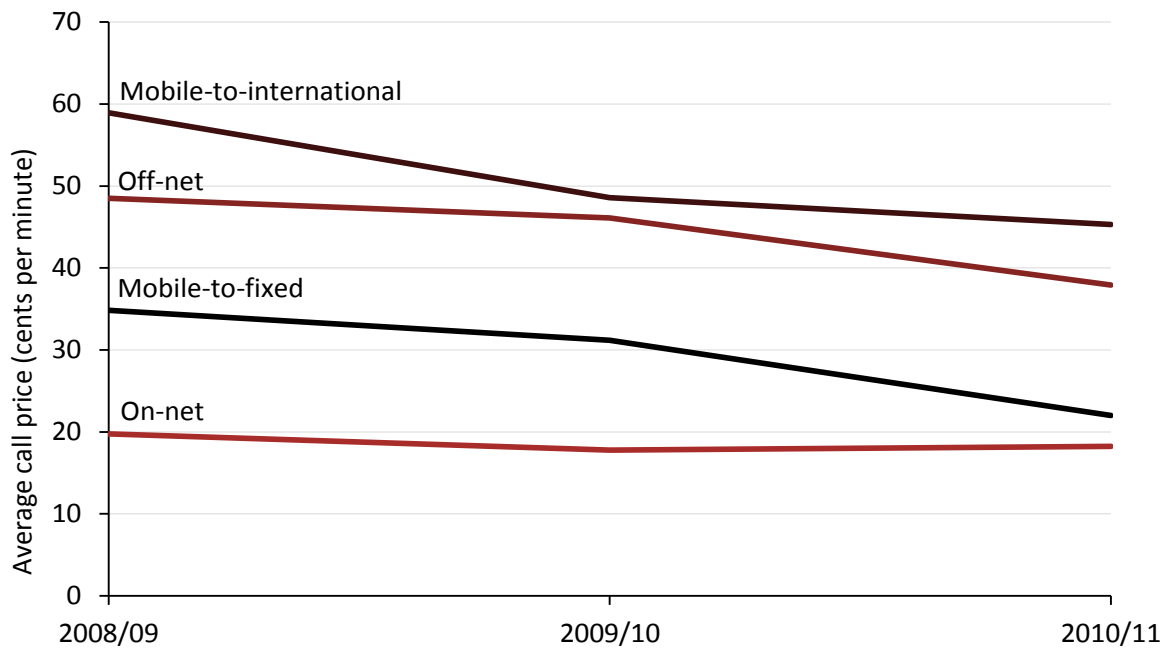
Mobile calling prices have continued to fall as can be seen in Figure 29. The biggest price falls have been for off-net calls, which are calls to a mobile phone on a different mobile network, and calls to a fixed line. This has brought the price of these calls closer to the average price for on-net calls, which were already relatively cheap.

SMS continues to grow but mobile broadband the big mover

Both SMS and mobile broadband have been classified as mobile data services by the industry, although technically SMS is a feature associated with the voice service.

Figure 30: Split of mobile retail data revenue
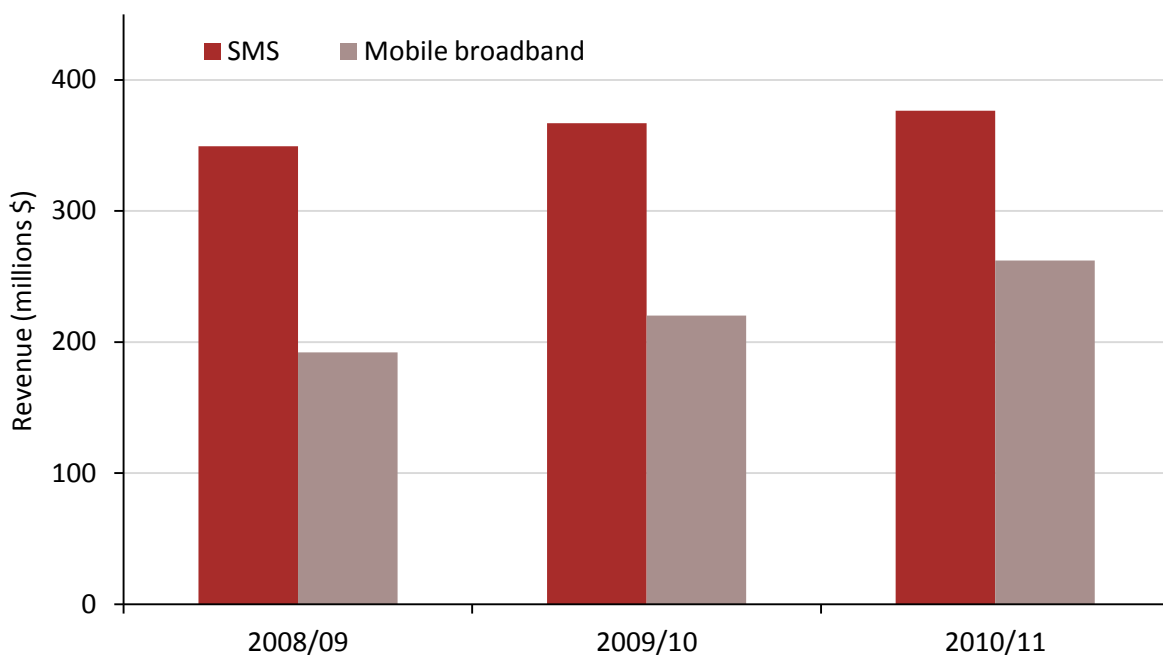
SMS or texting is a service which has been very popular in New Zealand and has earned significant revenue for mobile operators, as can be seen in Figure 30. Revenue from SMS messaging has continued to rise although may have reached its peak, with increasingly large numbers of texts now being bundled with most mobile plans and packages, and the use of mobile instant messaging as a substitute for texting becoming more prevalent.

Mobile broadband revenue is a newer service that is showing strong growth, as can also be seen in Figure 30, with consumers increasingly using mobile devices to access the internet.

Figure 31: SMS volumes by type
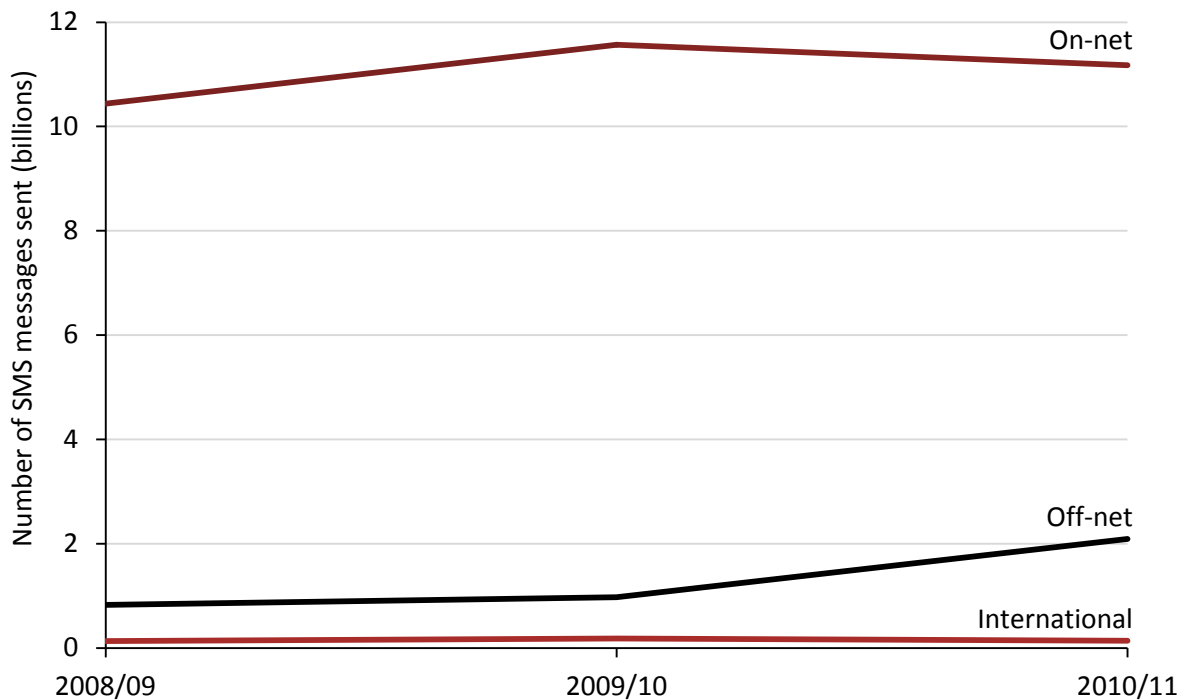
The growth in SMS volumes has been coming from off-net texting as can be seen from Figure 31. This is not surprising given that the large buckets of texts now usually being bundled with mobile plans, and these buckets are generally full of any-net texts able to be sent to any other New Zealand mobile network.

Vodafone still offers a significant on-net discount for Supa Prepay customers, with a very large bucket of 5,000 on-net texts available as an add-on for $10 a month compared to its any-net add-on of 2,500 texts that costs $12 a month. Vodafone's Best Mate mobile plan add-on also gives very cheap on-net texting (and calling) with up to 1,000 texts and 1,000 minutes of calling to one other Vodafone number per month for $6, with up to 3 Best Mates allowed.

Figure 32: SMS average price by type
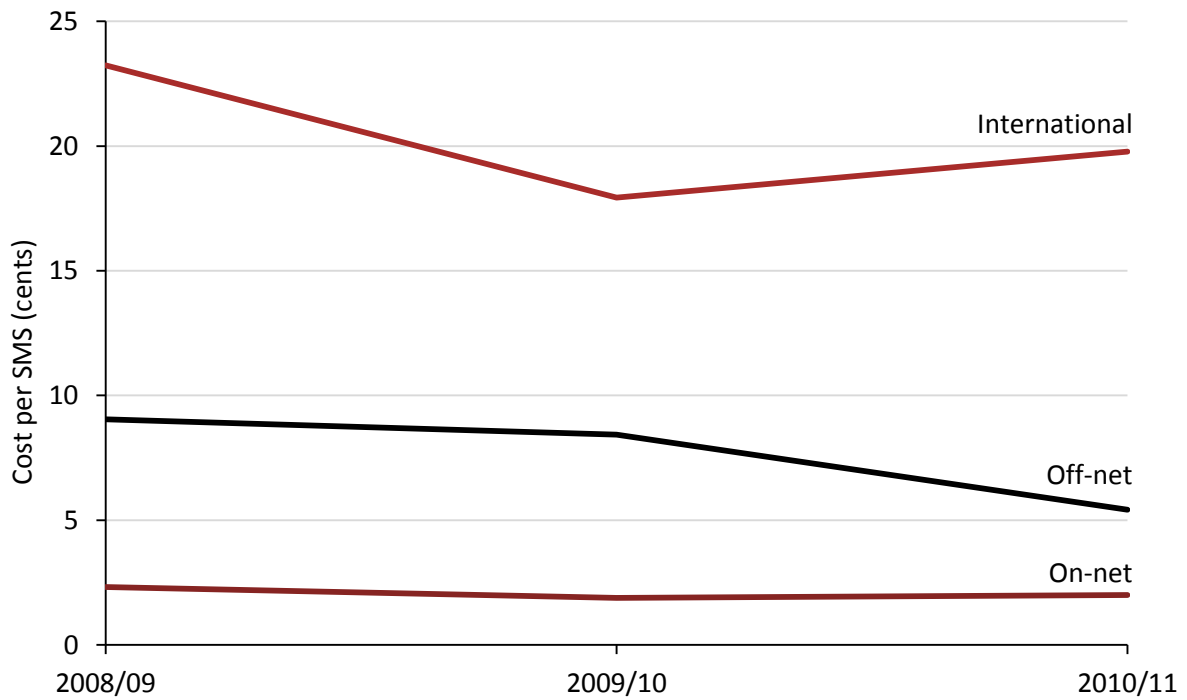
The trend in average text prices is similar to the trend in average mobile calling prices. The price of off-net texts has decreased substantially while the price of on-net texts hasn't fallen at all, as can be seen in Figure 32. The fall in the average off-net price has been driven by the large buckets of off-net texts being offered, as mentioned above.

Figure 33: Total mobile data consumed

The amount of mobile data consumed has grown substantially, nearly doubling from the prior year as shown in Figure 33.

The average retail mobile data charge for 2010/11 was 12 cents per megabyte. This was substantial decrease on the average of around 20 cents in the prior year. The falling data price and changing consumer habits of increasingly using mobile devices to access the internet drove up mobile data volume sufficiently to ensure that mobile data revenues also rose significantly. These are features that indicate a dynamic and relatively competitive market.

The average data charge for data use via a datacard/dongle was less than the average charge for data use via a smart phone.

The telecommunications consumer

This section looks at the telecommunications industry from the perspective of the consumer of telecommunications services. There is not as much up-to-date data related to this topic but the Commission has made the best use of the data it has.

The section covers consumption trends, expenditure trends, the switching experience, broadband quality from more of a consumer perspective.

Consumers increasingly purchasing services in bundles and using more data

There has been an increasing trend for consumers to purchase telecommunications services in bundles. The most common bundle is broadband and voice, but other bundles that include mobile services and pay TV are also offered.

Telecom reported in its 2012 first half year result briefing that 92% of its retail broadband customers were purchasing broadband as part of a bundle. That is, customers were purchasing one product like Total Home that was providing both a voice and broadband service for one monthly price.

Consumers are using more data. Information provided to the Commission indicates the average fixed line broadband subscriber is using around 10GB of data per month. The estimate for the prior year was around 7.5GB per month. Although growing, this is substantially below the average achieved in other comparable countries such as Australia, where for the June 2011 quarter it was reported that 25GB of data was downloaded per subscriber.[19]

Users of mobile devices who had been active in using mobile broadband consumed an average of 76 MB per month in the 2010/11 year.

Consumers spend more on telecommunications services while businesses spend less

Consumers are tending to increase spending on telecommunications services, with broadband penetration continuing to increase along with data use. However, total industry revenues are not increasing because businesses appear to be spending less on telecommunications services, by getting more for their money.

Earlier sections of this report show the main telecommunications markets are continuing to become less concentrated, indicating competition is becoming more intense. This is evidenced by better deals for businesses such as the unlimited mobile calling plan offered by 2degrees for $149 a month.

New technologies have also made it easier for smaller operators to provide businesses with a suite of telecommunications services. An example of this is SIP Trunking, which allows business phone lines to be cheaply delivered over a broadband service to replace expensive PABX services. It also allows free VoIP calls, which replace conventional toll calls.

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[19] Australian Communications and Media Authority, *Communications report 2010-11*, December 2011, p4.

Consumers happy with the switching experience

The ability of a consumer to switch telecommunications providers enhances competition in telecommunications markets.

The Commission contracted Roy Morgan Research in 2011 to help identify the reasons why consumers switched telecommunications providers, the barriers to switching, and the consumer experience of switching.

The main findings (contained in Roy Morgan Research's report *Consumer Switching Behaviour in the Telecommunications Market*) were:

- Respondents who had switched mobile service providers overwhelmingly indicated a positive customer experience of mobile switching.

- The main reason given by consumers in all age groups for switching mobile service providers was to obtain cheaper services.

- The main reason for fixed-line switching in New Zealand was broadband service improvement.

- Inertia and customer satisfaction with their existing service provider were the main reasons for not switching mobile service providers. Early termination charges were a considered a barrier by only 14% of those mobile post-pay respondents who had thought about switching but did not switch.

- Just over 37% of respondents had switched mobile telecommunications service providers at some stage, and approaching 14% had switched in the previous 12 months. Approaching 11% indicated that they were likely or very likely to switch in the next 12 months.

- More Australian mobile users have switched than New Zealand mobile users (43% of Australian users compared to 37% of New Zealand users).

- Fixed-line switching was around 10% and significantly higher than in Australia (around 7%) in early 2011. A downward trend was observed in both countries in the period July 2009 to May 2011.

Contract lengths and early termination charges scrutinised

The ability to switch mobile providers is affected by the length of contracts and the level of early termination charges. The Commission surveyed 2degrees, Orcon, Slingshot, Telecom, TelstraClear, and Vodafone in late 2011 on these topics. The main findings were:

Mobile (other than mobile broadband) services

- Very few (0.5%) personal mobile customers were on 36-month contracts in New Zealand. Around 40% of post-pay personal customers were on 24 month contracts, just under 10% on 12 month contracts, and the remainder on 'no term' contracts. The number of standard business customers on 36 month contracts was under 10%, while 62% were on 24 month and just fewer than 5% were on 12 month contracts. Of those 'bespoke' or customised business customers on term contracts, 4.5% were on 36 month contracts, 13% were on 24 month and 0.3% were on 12 month contracts.

Mobile broadband services

- Only 0.1% of personal mobile broadband customers were on 36 month contracts (43% were on 24 month, 18% on 12 month and 3% on 6 month contracts). Around 1% of standard mobile broadband business customers were on 36 month contracts (43% were on 24 month, and just under 9% on 12 month contracts). Of bespoke mobile broadband business customers (all Telecom), just over 3% were on 36 month contracts (55% on 24 month and less than 0.1% on 12 month contracts).

Fixed line broadband services

- Barely any residential fixed-line broadband customers were reported to be on 36 month fixed-line broadband contracts (0.0005% or 5 of 956,194 customers); only 0.32% of standard business customers were on 36 month contracts, and just over 2% of bespoke business customers. In all three categories the majority (at 66%, 60% and 89% respectively) were on 'no term' contracts.

The Commission notes that there has been concern internationally regarding long mobile phone contract lengths, in particular contracts of over 24 months. Evidence available to the Commission from the survey indicates that relatively few New Zealand consumers are on such contracts. The Commission intends to continue to monitor both mobile and fixed-line contract lengths and early termination charges to ensure that they do not harm competition in New Zealand telecommunications markets.

Early termination charges

Approaches to early termination of the contact by the customer vary considerably by the providers surveyed. In some cases they are complex. In approach they can be characterised as:

- graduated (having some relationship with the monthly plan charge and number of unexpired months)

- stepped (with the same charge being applied across a number of months, then falling in a step to a lower charge for a number of subsequent months)

- fixed charge (irrespective of the length of unexpired term).

The Commission notes that a number of approaches are taken by telecommunications service providers to charges for early termination of contracts. The Commission will in future monitor such charges to ensure that they are not harming competition in the mobile and fixed-line broadband markets.

Broadband quality monitoring recommenced

The Commission in late 2011 recommenced its monitoring of broadband quality, by purchasing centralised testing data from Epitiro. Epitiro tests the performance of consumer broadband plans from a selection of ISPs in fixed locations within 2kms of an exchange (11 sites spread between Auckland, Hamilton, Wellington, Christchurch and Dunedin).

Improvements to the testing made since the Commission's previous reporting of results include:

- The introduction of a New Zealand and an international reference website. The reference website removes any performance variation resulting from improvements made to individual websites, such as Trademe.

- The addition of Transmission Control Protocol (TCP) download measures which provide information on throughput performance. This protocol is primarily used when downloading files.

Web browsing slows with distance from Auckland

Web browsing speed is the speed of downloading a web page, and is calculated by measuring the time taken to download a reference website. The New Zealand average web browsing speed[20] was 2.5Mbps and the maximum average speed was just over 5Mbps.

It appears that a key factor affecting web browsing speeds is the routing of traffic from the consumer's premises to the website being accessed. This is influenced by peering arrangements among ISPs. The Commission needs to investigate this issue further before coming to any firm conclusions.

Another key factor causing variability in web browsing speeds is the distance between the consumer, key internet servers and key infrastructure.

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[20] Using the New Zealand reference website for cached traffic averaged from October 2011 to February 2012.

Figure 34: Average web browsing download speed by geographic location (NZ Reference website, cached)
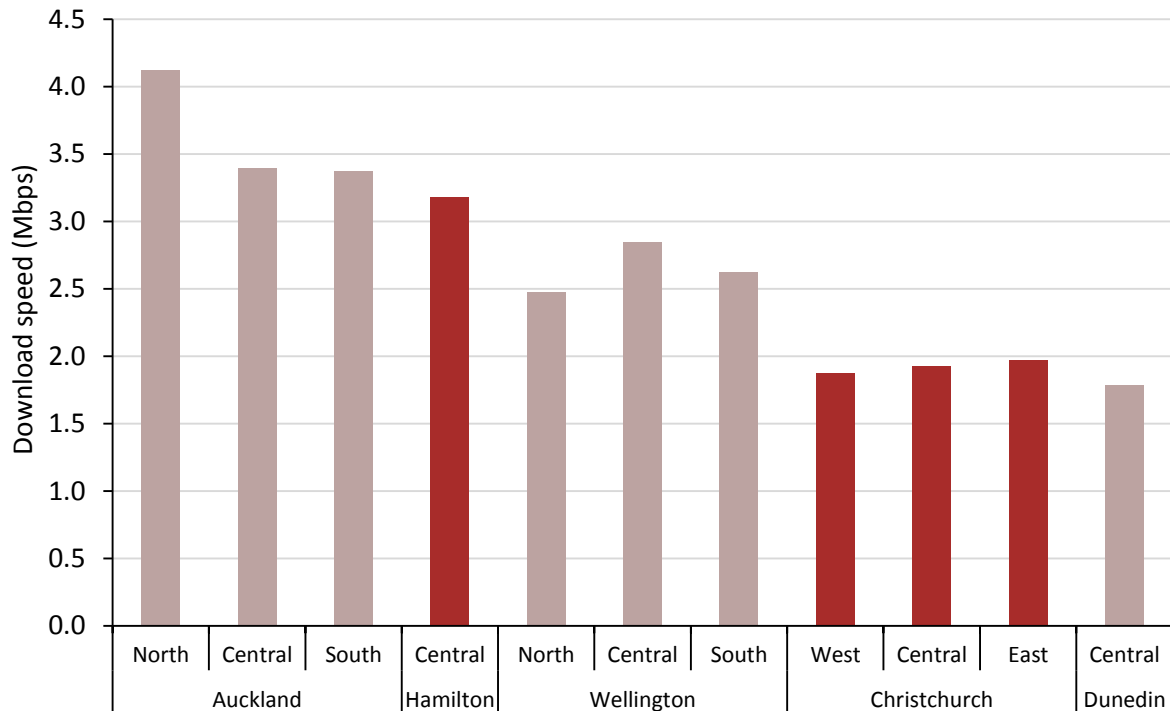
Figure 34 shows that geographic location affects web browsing speeds, with locations further from Auckland having lower speeds. The speed difference is primarily due to delays caused by network equipment and long transmission routes between users and key internet infrastructure, which is typically situated in Auckland, close to the main international cable.

Caching improves international speeds

Web caching involves the temporary storage of web pages, for later retrieval, in servers located near network gateways. Web caching decreases transit costs and increases internet performance.

Figure 35: Impact of caching on web browsing (national and international reference sites)
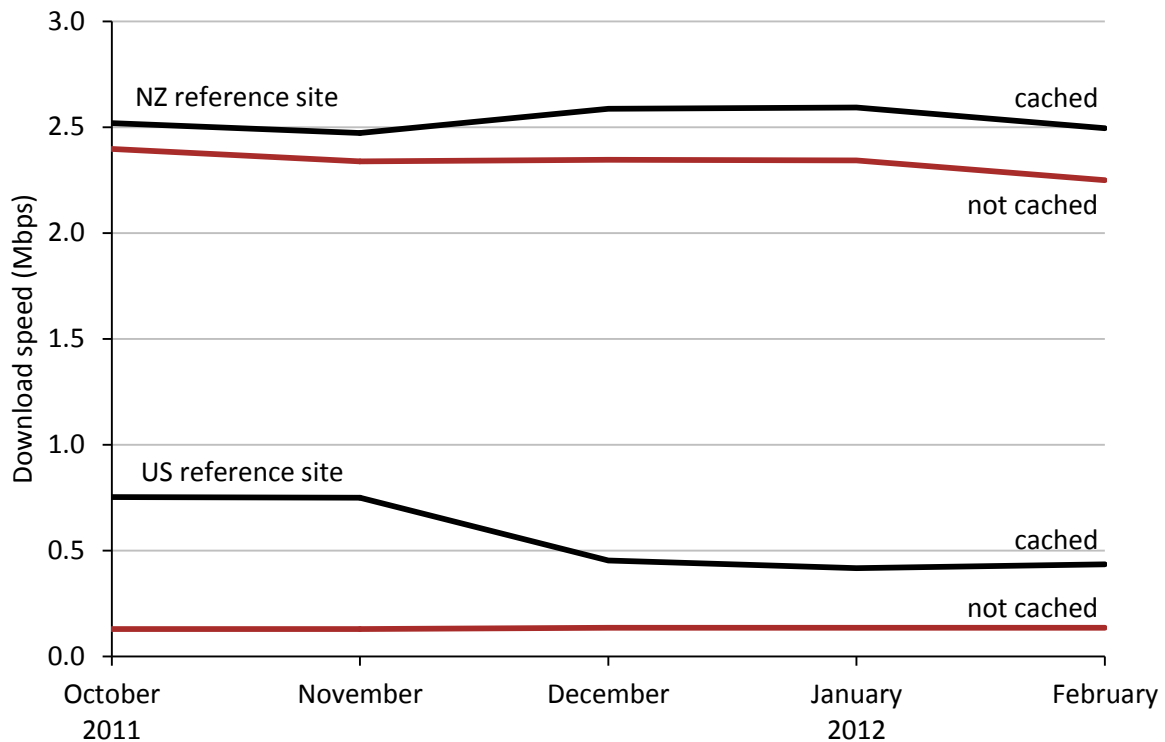
Figure 35 shows the impact caching can have on web browsing speed for both national and international content.

Cable may give fastest download speed

Internet access in New Zealand, including web browsing, is provided over fixed lines using three main delivery mechanisms, all of which are tested by Epitiro:

- wholesale bitstream, which is a DSL broadband service purchased by retailers from Chorus (was Telecom prior to the demerger) and operates primarily over Chorus's infrastructure. This service is available nationwide.

- unbundled copper local loop (UCLL), which is a DSL broadband service provided using a mixture of the ISP's infrastructure and unbundled copper lines leased from Chorus by retailers. As at December 2011 UCLL services were available from 140 exchange locations covering most major cities and towns.

- hybrid fibre-coaxial (HFC) cable, which is a cable broadband service owned and retailed by TelstraClear, and is available in Wellington and Christchurch only.

The speed of downloading files over a broadband connection is measured by looking at the Transmission Control Protocol (TCP) download speed. TCP is a set of rules used along with the Internet Protocol (IP) to send data packets between computers over the Internet.

The TCP peak speed is typically used to indicate the maximum speed capable on a broadband line.

Figure 36: TCP download (peak) by service type
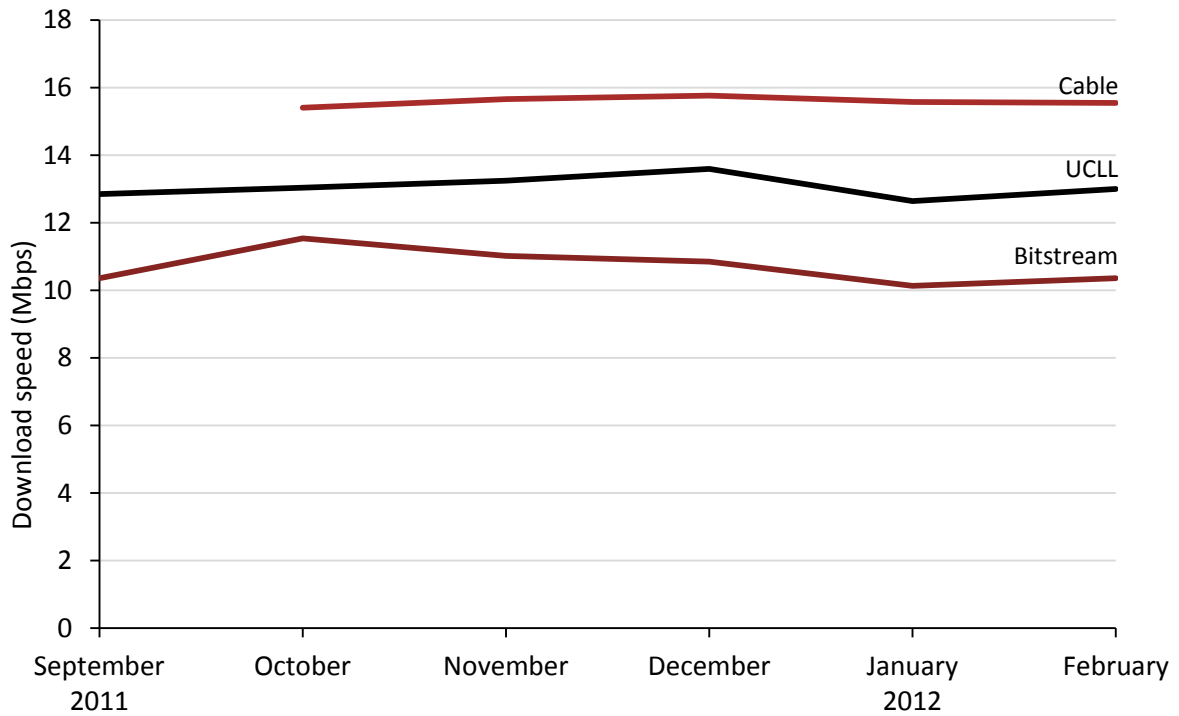
The TCP peak download speeds illustrated in Figure 36 show cable consistently had the highest peak speed, close to the 15Mbps TelstraClear advertises as the top speed for its standard cable service.

UCLL was next fastest, managing to be consistently faster than bitstream. The UCLL service allows ISPs to install their own equipment in exchanges and it appears they have used the greater control to provide better service for their customers.

The year in review

There were a number of developments during 2011 that had an impact on the telecommunications markets in New Zealand. Some of the more important developments are noted below.

January 2011

- TeleGeography data shows growth in international call traffic slumps while traffic routed via Skype accelerates.

- Orcon announced plans to launch a symmetrical broadband service (SHDSL) in central Auckland exchanges where the company has installed its own infrastructure. SHDSL offers download and upload speeds of between 10 Mbps and 20 Mbps and is more flexible than VDSL because it uses multiple phone lines that are bonded together. This means the footprint for SHDSL is potentially larger – up to two kilometres from the exchange, as opposed to 700 metres which is the case with VDSL2. Retail plans for the business service have yet to be finalised.

- Orcon announced it had unbundled exchanges in central Christchurch and Dunedin (allowing it to serve broadband and voice customers using UCLL lines) in addition to exchanges in Hamilton and Tauranga. Orcon is aiming for a 10 percent market share in each exchange.

February 2011

- A Supplementary Order Paper (SOP) outlining additional changes to the Telecommunications Act 2001 largely to deal with the possible structural separation of Telecom was tabled with the Finance and Expenditure Select Committee on 16 February 2011.

- It was announced that Telecom and Vodafone were successful with their joint bid to build NZ$300m Rural Broadband Initiative. Final negotiations were still to be completed.

- 2degrees announced its plans to invest more than $100m over next 2 years to extend its network beyond the main cities following an agreement with Huawei.

March 2011

- 2degrees announced it had 580,112 customers (active within the prior 90 days) as at the end of February 2011.

- The Commission launched a review of UBA broadband pricing. This review considered UBA pricing components that were not included in a review of UBA data transmission costs then being undertaken by the Commission.

- The Commerce Commission announced that no competitive services had developed for UBA backhaul links. This means all UBA links will remain subject to the terms of the UBA backhaul Standard Terms Determination (STD).

- The Commission announced that 88 UCLL backhaul links were considered competitive. The decision was a result of a review by the Commission into whether Telecom faced competition in providing this service.

April 2011

- 2degrees started offering a prepay combo giving customers 30 minutes of voice calls, 2000 texts and 50MB of data for $19 a month.

- Telecom dropped the standard calling rate for prepaid customers on its XT network to 69 cents per minute but started charging per minute after the first minute rather than per second.

- Pacific Fibre sought tenders to build an international fibre optic cable linking New Zealand, Australia and the US, which would be New Zealand's second international cable.

- The Commission released draft terms of reference for a demand side study to identify any issues that may impede the uptake of ultra-fast broadband (UFB) in New Zealand.

- The High Court in Auckland imposed a $12 million penalty against Telecom for breaching section 36 of the Commerce Act in the so-called 'data tails' case. The penalty is the highest ever imposed under the Commerce Act, which was amended in 2001 to increase the fines available for anti-competitive conduct.

- The government announced it had successfully completed contract negotiations with Telecom and Vodafone for the Rural Broadband Initiative to deliver improved and affordable broadband services to rural New Zealand

May 2011

- The Commission published its summary and analysis of Telecom's regulatory financial statements for the year ended 30 June 2010. The Commission concluded that the regulatory financial statements were unreliable for regulatory purposes.

- The Commission released its decision on mobile termination rates, with reductions in the wholesale termination rates for mobile calls and text messages. Termination rates for calls dropped to less than 4 cents on 1 April 2012, with further reductions until 2014. Termination rates for text messages dropped to 0.06 cents on 6 May 2011.

- TelstraClear announced it was dropping its residential mobile national calling rate by more than a third to 19c per minute.

- Telecom dropped its standard homeline calling rate to Telecom mobiles to 49c per minute, while calls to other New Zealand mobiles dropped to 55c per minute.

- 2degrees announced it was halving the cost of using mobile data in Australia, with prepay and pay monthly customers now paying the reduced casual user rate of $2.50 per MB. 2degrees also dropped its trans-Tasman calling rates to 44c per minute. 2degrees also reduced data roaming rates to $2.50 per MB for the UK and USA.

- The Commission released the final terms of reference for a study into what drives demand for high speed broadband services. The study was launched to identify any factors that may impede the uptake of those services in New Zealand.

- Vodafone dropped the price of data roaming in Australia for prepay and on account customers to $1 per MB.

- Chorus was announced as the Crown's UFB partner in 24 regions, representing around 70% of the UFB coverage area. Under the terms of the agreement Chorus was required to structurally separate from Telecom. The Government also reached agreement with Enable Networks to rollout UFB in Christchurch, Rangiora and surrounding areas.

- The Commission announced it would issue proceedings against Telecom for discriminating against other telecommunications providers. The Commission alleged that Telecom failed to provide other service providers with UBA in conjunction with the sub-loop extension service when it provided an equivalent service to its own retail business.

- Telecom and Sky Television announced a new commercial agreement that will enable Telecom to sell all of Sky's television services to its customers alongside their home line, mobile and broadband products.

June 2011

- Telecom increased the price of most of its monthly landline rental plans and wiring maintenance. The standard residential landline rental was increased by the CPI, the maximum allowed by regulation.

- 2degrees announced a further cut in the cost of using mobile data in Australia. Prepaid customers now pay a casual rate of 95c per MB. Customers on monthly plans of $29 or $39 pay the same while those on plans of $59 and above pay 50c per MB.

- Vodafone reduced the cost of trans-Tasman data roaming to 50c per MB for all prepay and on account customers.

- The first three schools to be connected to the government's rural broadband initiative were connected in ceremonies held by Communications Minister Steven Joyce, Education Minister Anne Tolley, and MP Chris Auchinvole.

- Telecom launched its new Prepaid Value Packs designed to let prepaid customers build their own plans based around how they use their mobile. The Value Packs offer customers a combination of bundled text, minutes and/or data for $20, over and above their prepaid plan.

July 2011

- 2degrees launched a series of plans for business users. The plans range from $39 to $149 for an all-you-can-use option. Each plan comes with a bundle of voice minutes, texts and data.

- The Commission released its broadband quality report for July-December 2010 showing that broadband performance in New Zealand is continuing to improve.

- Orcon launched its Genius and Genius Lite landline replacement devices which combine a VoIP phone with a wireless router.

- Orcon has added five exchanges to its unbundled local loop network in Hamilton. The company has installed equipment at exchanges in Hamilton East, Te Rapa, Melville, Frankton and Claudelands offering unbundled telephone and ADSL2+ services to more than 21,000 homes and businesses.

- The Commission released its final determination of unbundled bitstream access (UBA) pricing following a review of UBA pricing components (including overage, ISP services, bundle discounts and data transmission). Overall the determination resulted in a small decrease in the UBA wholesale price.

August 2011

- Vodafone announced that it has seen mobile data use increase by more than 100% over the past year. In June 2010 the company saw 60TB of data move across its mobile network. By June 2011 the amount of data traffic had grown to 135TB while the figure for July was more than 140TB.

- Telecom introduced its Total Home Mobile plan allowing customers to nominate a mobile number and use it to call any phone in New Zealand for 29c per minute. The plan combines broadband, fixed line and mobile rental for $99 per month in Auckland, Wellington and Christchurch and $109 in the rest of the country.

- Vodafone signed an international bandwidth agreement with Pacific Fibre. Vodafone signed up for ten years starting in 2014 when a cable linking Australia, New Zealand and the West Coast of the USA is scheduled to begin operation.

- Vodafone announced a revamp of its on-account plans in their biggest changes to prices since the Commerce Commission set the regulated wholesale price for terminating voice calls and SMS messages in May. The plans include increased calling to any NZ mobile or landline number.

- Figures from researcher IDC show mobile virtual network operators (MVNOs) accounted for just 1%, or 60,000, of the 5.42 million mobile connections in New Zealand as of March 2011. This had grown from 0.3% in 2009.

September 2011

- Vodafone launched a VoIP-based product, Easy Office, aimed at small businesses.

- The Commission published its review of access to competitive broadband services and concluded that Telecom faces limited competition in this market. As a result, wholesale broadband access will remain subject to the terms of the UBA standard terms determination.

- Market Clarity released a report analysing close to 200 broadband plans offered by leading ISPs in Australia and New Zealand. It found that the median price per MB of data allowance is falling in both countries – albeit quicker in Australia. From 2010-11, the median price in Australia dropped from $1.12 to $0.37 per GB, while in New Zealand it went from $4.60 to $2.17 per GB.

- The Commission released its first mobile monitoring report showing a small increase in calls and text messages between mobile networks. Between May and July 2011, cross network traffic increased 1.2% for mobile calls and 2.9% for text messages. At the same time, the price difference between on-net and off-net services decreased by 4.4% for mobile calls and by 3.4% for text messages.

- Chorus announced that it had completed its fibre to the cabinet build in Tauranga. The nationwide roll-out was almost complete with just 220 cabinets left to deploy from the total of 3,600.

- Orcon announced that its market share had increased 2% in the two months since it had introduced the Genius device which combines a router with a VoIP phone.

- CallPlus announced it was moving its mobile virtual network operator business from Vodafone to Telecom.

October 2011

- The Commission issued a consultation paper on Information Disclosure requirements for companies who will be building fibre networks as part of the Government's Ultra-Fast broadband initiative.

- MediaWorks and TelstraClear announced a deal giving TelstraClear customer's unmetered access to all to MediaWorks' TV and Radio websites. This meant that TV3's on-demand service and all MediaWorks streaming radio stations would not count towards a customer's monthly data.

- The Commission reached a $31.6 million settlement with Telecom over alleged discrimination under the Telecom separation undertakings. The settlement followed a decision by the Commission in May to issue legal proceedings alleging that Telecom

had discriminated against other telecommunications companies by failing to provide them with UBA in conjunction with sub-loop extension services when Telecom was proving an equivalent service to its own retail business. The Commission considered that Telecom's failure to provide this service to other telecommunications companies, while providing it to its own retail business, caused serious harm to competition in telecommunications markets, reduced the extent of local-loop unbundling, and resulted in significant commercial gain to Telecom.

- Telecom shareholders approved the company's demerger plan at the company's annual general meeting. Telecom chose to separate the Chorus business so that it could take part in the government's ultrafast broadband rollout. New Chorus will be made up of the existing Chorus network infrastructure business along with parts of Telecom Wholesale.

November 2011

- Enable Networks started its UFB build in Christchurch. Enable will eventually connect a population of more than 380,000 along with 7,000 businesses, some 1,000 medical centres and 170 schools. The rollout will be completed over an eight year period and is supported by more than $200 million of government money.

- Vodafone extended its on-net Best Mate programme, allowing customers to bulk buy voice calls and texts to a limited number of phones on other carriers' networks. Vodafone said it is the third plan the company has introduced this year that lowers the cost of off-net calls.

- The Commission released three decisions which followed recent amendments to the Telecommunications Act. The amendments required the Commission to review some of the standard terms determinations ahead of the structural separation of Telecom.

- Telecom and Chorus completed its structural separation, following earlier approval by shareholders and the High Court.

December 2011

- The Commission released its second report that benchmarks New Zealand prices for fixed line and mobile telecommunications services against international prices. The report showed that, for standalone broadband, New Zealand's pricing is not significantly higher than the international benchmark average for low and medium users.

- The Commission released the first of three issues papers relating to the uptake of high speed broadband ahead of a public conference in February 2012. The paper examined the technical issues, along with potential barriers, relating to uptake of high speed broadband in New Zealand.

- Chorus announced that it had finished building its FTTN network. The network was established as part of the operational separation undertakings agreed between Telecom and the government in 2008. At the time of the separation undertakings

agreement, Telecom agreed to build a network which would deliver a minimum of 10Mbps to 80% of New Zealand by December 2011. As agreed, Chorus built or upgraded a total of 3,600 roadside cabinets which take fibre within a few hundred metres of most urban homes.

List of defined terms and abbreviations

CDMA   Code Division Multiple Access – a US developed mobile phone standard. Originally second generation but upgraded to deliver third generation services to compatible handsets.

CPI   Consumer Price Index – and index used to measure inflation in consumer prices.

DSL   Digital Subscriber Line – method of transmitting high speed data and voice simultaneously over a copper phone line.

FTTN   Fibre to the node – usually refers to putting fibre in an access network as far as cabinets which then connect to end-user premises using copper lines. The motivation is to shorten the length of the copper local loops to improve DSL performance.

GSM   Global System for Mobile communications – a widely used digital, second generation mobile phone standard.

HFC   Hybrid fibre coaxial cable – used for delivering pay TV and cable broadband services.

HHI   Herfindahl-Hirschman Index – a commonly accepted measure of market concentration. The maximum possible score is 10,000 which would be one seller with 100% market share.

IP   Internet Protocol – a method that computers use to communicate over the Internet.

ISP   Internet Services Provider.

ITU   International Telecommunication Union.

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 that does have a full mobile network. The amount of control it has over the services it offers will vary according to the nature of its agreement.

OECD   Organisation for Economic Co-operation and Development.

PABX   Private automatic branch exchange – an automatic system for managing calls between different phone numbers in a particular business or office, as well as calls to and from numbers outside the business. Generally, this refers to old, relatively expensive PSTN technology.

PPP	Purchasing Power Parity – exchange rate designed to equalise standard of living differences between countries, and is therefore generally accepted as an appropriate conversion method for non-tradable goods and services.
PSTN	Public Switched Telephone Network – the publicly available telephone network designed for delivering voice services over dedicated voice channels.
TCF	Telecommunications Carriers' Forum
SHDSL	Single pair high speed DSL – allows symmetric high speed data to be transmitted over a copper line but unlike ADSL does not also allow the line to be also used for PSTN voice services. There is an option to allow extra copper pairs can be bonded together to give higher speeds.
SIM	Subscriber Identity Module – commonly known as a SIM card that contains a microchip that stores data that identifies the user, for use in GSM and compatible 3G mobile phones.
SIP	Session Initiation Protocol – a network communications protocol commonly employed for VoIP signalling, allowing voice services to be delivered over broadband lines.
SMS	Short Message Service – commonly known as a text messaging, is a service for sending short messages between mobile devices.
STD	Standard Terms Determination – the terms on which a designated access or specified service must be supplied by access providers to all access seekers requesting the service.
Telecom	Telecom Corporation of New Zealand Limited and Telecom New Zealand Limited.
UBA	Unbundled Bitstream Access – a regulated service giving wholesale access to Telecom's DSL full speed broadband service although a commercial variant with a slower speed is also available.
UCLL	Unbundled Copper Local Loop – a copper line connecting a phone user to the local exchange that is able to be accessed by retail telecommunications providers not owning the line in order to provide a voice and broadband service.
UFB	Ultra fast broadband – the name given to the Government's initiative to roll-out out a fibre-to-the-home access network to give households access to high speed broadband.
UMTS	Universal Mobile Telecommunications System (UMTS) – the 3G successor to the 2G GSM standard. The most common form of UMTS uses WCDMA

as the underlying air interface.

VDSL   Very high speed DSL.

VoIP   Voice over Internet Protocol – a way of sending voice calls over a data connection like a broadband connection.

WCDMA   Wideband Code Division Multiple Access – a third generation mobile phone standard often provided as a progression from the GSM standard.