



2023 Telecommunications Monitoring Report

Pūrongo Aroturuki
Torotoro Waea 2023



LIST OF DEFINED TERMS

RĀRANGI KUPU

Act	Telecommunications Act 2001
ADSL	Asymmetric Digital Subscriber Line – a copper-based technology that can provide basic fixed line broadband services
CIP	Crown Infrastructure Partners Limited – Crown-owned company formerly known as Crown Fibre Holdings Limited
Commission	Commerce Commission
CPI	Consumers Price Index
DSLAM	The network end of an ADSL or VDSL connection. The DSLAM takes the traffic from individual connections and aggregates it onto a single backhaul route (usually an optical fibre)
Fixed wireless	Wireless broadband technology providing connectivity to fixed locations over various types of cellular and non-cellular networks
GB	Gigabyte. 1 gigabyte = 1,024 megabytes
Gbps	Gigabits per second. 1 gigabit = 1,000 megabits
GEO	Geostationary orbit – satellites positioned so that they remain above the same place above the Earth, found around 35,000km above the Earth’s surface
HFC	Hybrid Fibre-Coaxial cable – broadband network in parts of Wellington, Kāpiti and Christchurch which uses fibre-optic and copper cabling
HHI	Herfindahl-Hirschman Index – measure of market concentration
LAP	Local aggregation path, the ‘backhaul’ route that connects DSLAMs to their central office. A central office is a telecommunications facility where all local residential and business phone lines converge
Latency	The amount of time it takes for a data packet to go from one place to another, which is the delay your internet connection experiences. Low latency is better than high latency
LEO	Low Earth Orbit – LEO satellites are deployed in constellations at lower levels (generally 500–1,500km above the Earth’s surface) than GEO satellites. They do not appear to be stationary to users, but when a full constellation has been deployed there will always be at least one satellite in view
LFC	Local fibre company – the four companies (Northpower Fibre, Chorus, Tuatahi First Fibre, and Enable) that partnered with Crown Infrastructure Partners Limited to build and provide wholesale access to the UFB fibre network
M-Lab	Measurement Lab – an open-source project dedicated to providing an open, verifiable measurement platform for global network performance
MB	Megabyte – a multiple of the unit byte for measuring the quantity of digital information
MBNZ	Measuring Broadband New Zealand – a programme run by the Commission to measure the broadband performance of New Zealand households
Mbps	Megabits per second – used to measure data transfer speeds
MBSF	Mobile Black Spot Fund
MNO	Mobile network operator
MTAS	Mobile Termination Access Service

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 services. 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
OECD	Organisation for Economic Co-operation and Development
ONT	Optical Network Terminal – a device that connects an end-user modem to a fibre network
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
PSTN	Public Switched Telephone Network
RBI	Rural Broadband Initiative – government programme to improve and enhance broadband coverage in rural areas
RCG	Rural Connectivity Group – joint venture between 2degrees, Spark, and One New Zealand
RCU	Rural Capacity Upgrade – government programme to upgrade rural broadband built as part of the RBI
RSP	Retail Service Provider
RUS	Remote Users Scheme: government programme to improve the availability of broadband connectivity in rural and remote New Zealand
SFA	Specified fibre area. These are geographic areas where specified fibre services are available to end-users. The Commission is required to conduct an annual assessment of these areas as they are an essential prerequisite to enabling Chorus to withdraw supply of copper services to end-users
STD	Standard terms determinations, which set out the terms on which wholesale telecommunications service providers must deliver their services to other telecommunications providers
TCF	New Zealand Telecommunications Forum – telecommunications industry body
Tuatahi	Tuatahi First Fibre – UFB partner operating in Waikato, Bay of Plenty, Taranaki and Whanganui
The Act	The Telecommunications Act 2001
UBA	Unbundled bitstream access – a regulated copper-based bitstream service offered by Chorus
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 premises access network to give households and businesses access to very high speed broadband
UFB2	The extension of the UFB1 initiative
VDSL	Very High-Speed Digital Subscriber Line – a copper-based technology that provides a better broadband connection than ADSL
WISP	Wireless Internet Service Providers. Smaller providers operating mostly in regional or rural areas, using non-cellular wireless, but increasingly also selling satellite and fibre services

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FOREWORD

WĀHINGA KŌRERO



Tēnā koutou

Welcome to our 17th Annual Telecommunications Monitoring Report.

To keep pace with the changing telecommunications landscape, last year we revised our approach to this report by separating out the experience of urban, rural, and mobile consumers, which can be very different for both broadband and mobile services. We also shaped each chapter to follow the links between market structure and outcomes as well as the infrastructure, wholesale, and retail levels of the market.

This approach led to a longer and more detailed report than previous editions but provided deeper insights into performance and how this flows through to customer experience and satisfaction. We received positive feedback about the new format and have therefore maintained it for this report.

This year's report also includes the results of our Rural Connectivity Study which has given us, for the first time, a detailed understanding of broadband connectivity options and performance for rural customers. The study involved the collection of data from a wider range of providers (50 more than usual for the preparation of this report) at a more granular level.

This has given us a detailed view of:

- Coverage – where providers sell fixed broadband and mobile services.
- Connections – what services consumers actually choose, and where they choose them.
- Plan information – details about the price and performance of all fixed plans.
- Equipment – information about the location and resilience of network equipment.

The Rural Connectivity Study was a significant undertaking for the Commission and the Industry. I'd like to thank everyone involved in this process for taking the time to provide us with the information we needed to get the job done.

Alongside this report, we have also, for the first time, published an interactive geospatial map. The map allows users to look at the coverage of all broadband technologies in New Zealand, as well as actual connections for different technologies in different areas. As you will see through this report, the data has yielded some interesting insights, which will flow through to our current work on questions of fibre and copper deregulation.

There are still areas where we would like to tell a more detailed story but have been limited by the quality of the data we received. Therefore, we will need to make further refinements to improve our future data requests, balancing the information needed for us to monitor the industry and the time and effort required by providers.

As always, we welcome your feedback on the structure and style of the report, and the interactive map – what might be missing and where improvements could be made for the future.

Ngā mihi nui

A handwritten signature in black ink, appearing to read 'Tristan Gilbertson'. The signature is written in a cursive, flowing style.

Tristan Gilbertson

Telecommunications Commissioner

EXECUTIVE SUMMARY

WHAKAPOTONGA MATUA

Overall

In the year to June 2023, the telecommunications market in New Zealand reached a major milestone with the completion of the UFB roll-out. The focus now is on migrating remaining consumers off the copper network to other technologies, as well as addressing the challenges associated with delivering high quality, affordable, broadband to rural communities. Wholesalers are focused on fibre uptake, which has reached 73%, and transistioning from building to operating their networks as long term infrastructure investors. In retail, 2degrees has consolidated its merger with Vocus and acquired MyRepublic's broadband customer base. Vodafone rebranded as One NZ, and we are seeing an ongoing increase in penetration of electricity and telecommunications bundlers.

The retail broadband market is increasingly competitive, offering a wide range of plans across fibre, HFC, wireless, copper, and satellite technologies. Urban broadband prices for fibre and cellular fixed wireless services are in line with, or lower than, OECD averages. We continue to observe higher pricing and lower affordability on some technologies in rural areas compared with urban areas. We also observe a large variance in the national copper prices offered by major RSPs, with the most expensive service costing \$32 per month more than the cheapest, indicating that consumers may benefit by shopping around. National copper broadband pricing is \$28 more expensive per month than the OECD average, an increase of \$8 on last year. While only 4% of urban consumers have a copper connection, 37% of rural consumers pay for a copper connection, and many of these consumers could be on a lower-priced or better performing technology.

The MNOs note strong revenue performance in the mobile market. The price an average prepaid consumer needs to pay to meet their usage sits at the OECD average. However, the price an average postpaid consumer needs to pay to meet their usage is \$15 per month higher than the OECD average.

The MNOs have shifted their wholesale strategies resulting in the arrival of four new MVNOs to the market, providing consumers with more choice. We will monitor how the growing number of MVNOs impacts the mobile market.

Despite the completion of the UFB programme, providers continue to invest approximately \$1.5 billion annually, as investment in wireless technologies ramps up, particularly 5G deployment. Funding for these investments is partially sourced from the proceeds of the MNOs' passive network infrastructure sales, which all three MNOs have completed.

The 2023 Auckland Floods and Cyclone Gabrielle underscored the importance of resilient communications infrastructure. The providers worked well together to bring communications back online. There is ongoing work underway to improve resilience and this needs to be a continued focus for industry, particularly in more isolated rural and remote areas.

Urban

Urban broadband is a significant success story in New Zealand, with fibre deployment providing high-quality access for urban households. 78% of urban customers have a fibre connection. While most fibre customers opt for Fibre 300, Fibre Max connections are growing, and Fibre 50 is an option for lower data users.

The urban fixed-line broadband market is moderately concentrated (HHI of ~2,194) and the market share held by the top 3 retailers has decreased 4% to 74%. The retail market offers pricing in line with or better than OECD averages

In urban areas, cellular fixed wireless broadband services are a credible alternative for households with lower data needs; 15% of urban homes and businesses connect via a cellular fixed wireless service. The MNOs each offer a range of competitive plans over 4G and 5G, aimed at price conscious customers. This prompted the launch of entry level Fibre 50 services from Chorus and the LFCs and we note an increase in uptake of lower-priced fibre services in the year as a result of competition.

With these choices available, Chorus continues to decommission legacy urban copper and during the year 53,000 urban Kiwi households shifted off copper to a better broadband alternative.

The focus for urban broadband is shifting from infrastructure to retail service quality and in-home experience. There is significant room for improvement across most dimensions of retail service quality. In the home, our testing indicates consumers experience drops in speed between the router and device, hampering their ability to make the most of their connection. Both retailers and consumers can take steps to improve their broadband service.

As households increase consumption of data intensive content such as videos, online meetings, and gaming, urban New Zealanders are well provisioned, with a broad selection of choice, now and into the future.

Rural

Rural areas, defined as locations outside of specified fibre areas, house 13% of New Zealand's population. Without fibre, consumers' broadband options may include copper, cellular fixed wireless, non-cellular fixed wireless, and satellite broadband.

We estimate that the rural fixed broadband market is moderately concentrated (HHI ~1,802). With no fibre to retail, and reducing demand for copper services, the top 3 providers are more reliant on their cellular fixed wireless networks in rural areas to compete with non-cellular fixed wireless and satellite providers.

18% of rural households on copper services moved to an alternative in the last year. Many selected Low Earth Orbit (LEO) broadband, which accounts for 14% of rural connections, giving New Zealand the highest number of satellite connections per capita in the OECD. Starlink's LEO satellite broadband is significantly faster than other rural options but comes at a higher cost. This makes it less affordable than similarly performing options in urban areas.

Regional telecommunications providers (WISPs) play a valued role in rural communities, providing 15% of rural connections. These providers have responded to LEO satellite competition in recent times with price

cuts, increasing data caps, or boosting speeds. Some rural providers are deploying fibre pockets within rural communities, improving consumers' broadband options.

4G fixed wireless broadband is available in parts of rural New Zealand, but retail pricing remains higher than in urban areas. It is not entirely clear whether this is mostly due to higher inputs costs in rural areas, or the lack of fibre-based competition.

Improvements in rural broadband services can be seen in the expansion of the Rural Broadband Initiative (RBI), the emergence of pockets of rural fibre, the entry of LEO satellite broadband and the regional providers' responses, including price drops and increased data caps. However, gaps in performance and pricing between urban and rural services persist, compounded by lower affordability in rural areas. To ensure all New Zealanders have access to high-quality, good value broadband services, we would like to see providers close these gaps.

Mobile

In the retail mobile market, two thirds of postpaid consumers have migrated to endless data plans. However, as noted above, the price an average postpaid consumer needs to pay to meet their usage is \$15 per month higher than the OECD average. The price an average prepaid consumer needs to pay to meet their usage sits at the OECD average.

All three MNOs have divested their passive network infrastructure to TowerCos, providing a cash injection for investment spend, including 5G deployment. 5G coverage continues to grow, reaching 27% of the population in June 2023, compared with 18% the year before.

Our surveys show that 60% of mobile consumer have been with the same provider for more than 5 years, and that there is room to improve aspects of service, particularly customer service. The arrival of four new MVNOs into the market, bringing the total to nine MVNOs, creates further retail competition and differentiation of services. For example, two MVNOs are offering plans based on speed-tier, rather than on a data cap.

NEW ZEALAND TELECOMMUNICATIONS SNAPSHOT

Ā AOTEAROA WHITIMAMAŌ - HE HOPUĀHUA



53,000 urban households

shifted off copper to fibre or wireless alternatives



Satellite connections

are growing fast, reaching 37,000, making up 14% of rural connections



Fewer rural consumers are satisfied

with their broadband service (68%) than urban consumers (78%)



Peak time download speeds

for Starlink (184Mbps) are more than four times faster than the next best rural alternative that we measure



Telecommunications investment increased

to \$1.61 billion, up 8% from 2022



There are four new MVNOs

bringing the total to nine MVNOs in the market



Two-thirds of residential

fibre connections are on Fibre 300 (67%)



Average 5G mobile coverage

has increased to 23% of the population – up from 18% in 2022



Copper broadband pricing

is \$28 more expensive per month than the OECD average



“Endless” postpaid connections

now make up 66% of all postpaid plans, up from 59% in 2022



Nearly 300,000 households

bundle broadband with electricity

NEW ZEALAND TELECOMMUNICATIONS SNAPSHOT STATISTICS

Ā AOTEAROA WHITIMAMAŌ - TAUANGA HOPUĀHUA

Total industry metrics	2012 /13	2013 /14	2014 /15	2015 /16	2016 /17	2017 /18	2018 /19	2019 /20	2020 /21	2021 /22	2022 /23
Total telecommunications retail revenue (\$bn)	5.21	5.17	5.11	5.28	5.37	5.42	5.32	5.22	5.17	5.40	5.54
Total telecommunications investment (\$bn)	1.58	1.69	1.77	1.59	1.58	1.66	1.71	1.61	1.62	1.49	1.61
Fixed line metrics											
Fixed lines (mil)	1.85	1.85	1.86	1.87	1.79	1.76	1.85	1.91	1.95	2.10	2.17
Total fixed broadband connections (mil)	1.34	1.41	1.45	1.50	1.58	1.65	1.70	1.76	1.80	1.86	1.96
Fixed line broadband connections per 100 population	30.4	31.6	32.0	32.5	32.9	33.7	34.4	34.6	35.2	36.4	37.5
Fixed monthly data use per broadband connection (GB)	26	32	48	69	117	172	207	284	332	414	430
Fixed wireless connections (000s)	26	24	20	27	122	165	191	221	276	315	378
Copper broadband lines (000s) ^a	1,237	1,273	1,270	1,171	976	806	620	487	330	241	167
UFB (government-sponsored fibre) lines (000s) ^b	10	39	106	241	413	605	821	1,004	1,151	1,259	1,345
Chargeable fixed voice call minutes (bn)	5.47	5.13	4.66	4.34	3.44	3.10	2.72	2.44	2.09	1.91	1.55
Total fixed line retail revenues (\$bn)	2.77	2.68	2.58	2.60	2.62	2.58	2.49	2.39	2.36	2.41	2.39
Mobile metrics											
Mobile connections (mil) ^c	5.3	5.6	5.8	6.1	6.4	6.4	6.0	6.2	5.8	6.0	6.6
Active mobile connections per 100 population	119	124	127	129	134	131	122	122	114	116	126
Share mobile prepaid (%)	63.3	63.6	62.3	60.7	60.3	58.1	52.7	51.8	45.4	43.4	45.3
Average monthly mobile data usage (GB)	0.21	0.32	0.47	0.72	1.25	2.04	2.75	3.29	4.21	4.84	6.23
Mobile voice call minutes (bn)	4.8	5.3	6.6	7.8	8.8	9.3	9.4	10.1	10.5	11.2	10.9
Text messages sent (bn)	13.0	12.0	12.1	11.3	9.2	8.8	8.1	7.3	7.3	6.7	6.2
Total mobile retail revenues (\$bn)	2.44	2.49	2.54	2.68	2.75	2.83	2.83	2.83	2.93	2.99	3.15

^a Data from Chorus.

^b Data from Crown Infrastructure Partners Limited (CIP).

^c Prepaid connections for all years are counted as those active in the prior six months.

SUMMARY OF KEY STATISTICS

NGĀ TINO TATAURANGA: HE WHAKAPOTONGA

Urban connectivity at home

Honotanga ā-tāone i rō kāinga

- With the completion of the ultra-fast broadband (UFB) initiative in December 2022, bringing fibre within reach of 87% of Kiwi homes and businesses, Chorus and the Local Fibre Companies (LFCs) have shifted from a 'build' to 'operate' focus on their fibre networks.
- Consumers continue to move away from copper. Copper broadband connections in urban areas fell 41% to 77,000, meaning that a total of 53,000 urban broadband connections left the copper network over the year (the 12 months to 30 June 2023). This was driven by Chorus' copper withdrawal programme.
- The 300Mbps fibre plan, often referred to as Fibre 300, continues to be the most popular wholesale fibre plan, increasing from 48% to 57% of all wholesale fibre connections.
- Our Realspeed testing shows drops in speeds between the router and the device across all technologies on home Wi-Fi networks – with the greatest drops observed for high-speed plans such as Fibre Max and Hybrid Fibre-Coaxial cable (HFC).
- Residential electricity-broadband bundles by the larger electricity bundlers increased by around 11% in 2023. Around 290,000 Kiwi households are bundling their electricity and broadband.
- Larger Retail Service Providers (RSPs) have passed through wholesale price increases of around \$5 to \$7 per month for fibre and copper-based broadband services. However, some of the smaller brands have reduced pricing on these services by a similar amount.
- New Zealand's average broadband download speed is 97Mbps – the 13th fastest in the OECD – ahead of Australia, the United Kingdom, Ireland, and Germany.
- Our Measuring Broadband New Zealand (MBNZ) reports show stable download and upload speeds across all urban broadband technologies in the last 12 months, which is important to help ensure consumers have a consistent online experience for everyday activities such as web browsing and using social media.
- Our indicative data on connection faults demonstrates that urban households experience fewer and shorter faults than rural households. Urban customers on copper services are more likely to experience service interruptions than those on fibre.
- Urban broadband prices are in line with, or lower than, OECD averages.
- The percentage of household average net income required to purchase broadband in urban areas continues to vary across New Zealand. Fibre 50 generally requires a lower percentage of average household income than other broadband options, with a range of 0.79% to 1.31%.
- Our survey results show that 40% of urban broadband consumers have been with their current provider for more than five years, down from 41% the previous year.
- Our survey results show that urban broadband customers are most satisfied with coverage and availability and least satisfied with pricing.



Rural connectivity at home

Honotanga ā-tuawhenua i rō kāinga

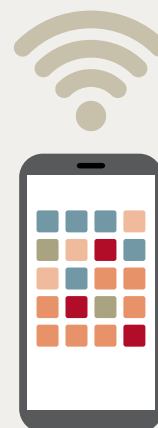
- Copper connections in rural areas decreased by 18% over the past year and now make up just over a third of rural broadband connections.
- Wireless technologies serve the rest of rural New Zealand – divided between non-cellular fixed wireless provided by specialist rural operators, 4G cellular fixed wireless provided by mobile operators, and satellite services provided by local and international operators.
- Satellite continues to be the fastest growing technology, following the entry of Starlink, with connections increasing nationally from 12,000 to 37,000 over the past year – the highest number of satellite connections per capita in the OECD.
- Testing of ADSL and 4G cellular fixed wireless broadband speeds shows almost no difference between urban and rural areas for each technology.
- VDSL testing in rural areas shows download speeds are around 10% slower than VDSL services in urban areas (presumably due to longer copper loops).
- Download speeds for Starlink (184Mbps) are more than four times faster than the next best alternative that we measure (rural 4G cellular fixed wireless at 45Mbps).
- While Spark continues to be the largest provider in the rural retail broadband market, the market is less concentrated than in urban, reflecting the growth of non-cellular fixed wireless and LEO satellite services.
- National copper broadband pricing is \$28 more expensive per month than the OECD average, an increase of \$8 on last year.
- Copper pricing has the greatest variability across all the retail pricing we monitor – with the highest price being \$32 per month more expensive than the lowest price.
- Rural cellular 4G wireless pricing ranges from \$96 to \$200 per month. Similar plans are more expensive in rural areas than in urban, and more likely to have a data cap.
- Non-cellular fixed wireless pricing ranges from \$70 – \$200 per month, with set-up costs ranging from \$0 – \$899+ for equipment.
- Starlink’s Standard residential plan pricing is \$159 per month – with set-up costs of up to \$1,040 for equipment.
- Satellite requires the highest percentage of average household income in rural areas, with a range of 1.68% to 2.81%.
- 68% of rural broadband customers are satisfied with their broadband service, compared with 78% of urban consumers.



Connectivity on the move

Honotanga hāereere

- The mobile market is highly concentrated with the three largest providers – Spark, One NZ and 2degrees – holding 98.4% of the retail market.
- Four MVNOs are new to the market: Contact Energy Mobile, Nova Energy Mobile, Mighty Mobile, and Rocket Mobile (previously MyRepublic). This means a total of nine MVNOs currently serve the market.
- MVNO market share increased from 1.3% to 1.6%, following the entry of the four new players mentioned above.
- All three mobile operators are providing 5G services and continue to build out their 5G networks.
- Average 5G mobile coverage has increased to 27% of the population – up from 18% in 2022.
- Average 3G and 4G coverage has remained steady at 98% of the population.
- An additional 29 tourism sites and 214km of state highway gained mobile coverage under the Government’s Mobile Blackspot Fund to June 2023. Targeted improvements to state highway coverage are now complete and tourism sites are 79% complete.
- All three mobile operators have divested their mobile towers, consistent with global trends towards the sale of passive infrastructure by mobile providers.
- Average 5G download speeds are 251.6Mbps – placing New Zealand in the Top 15 global markets in Opensignal’s testing.
- Prepaid connections have increased by 2% – bucking the trend away from prepaid and toward postpaid plans over the prior eight years. A variable factor influencing the trend will be the post-COVID return of travellers to New Zealand connecting to short term prepaid plans.
- Prepaid consumers use an average of 3.0GB of mobile data per month, compared to postpaid consumers, who use an average of 8.6GB per month.
- The price an average prepaid consumer needs to pay to meet their usage sits at the OECD average.
- “Endless” postpaid connections now make up 66% of all postpaid plans – up from 59% in 2022 – continuing a trend towards these plans over the past five years.
- The price an average postpaid consumer needs to pay to meet their usage is \$15/month higher than the OECD average.
- 60% of mobile consumers have been with the same provider for more than five years.
- Competitive pressure to provide better usage and spend information to consumers continues to increase, with Spark’s Artificial Intelligence (AI) – powered right plan initiative – “Made For You Review” – being the most recent development in this area.
- Our Customer Satisfaction Monitoring Survey shows that there is room for improvement in different aspects of service. Consumers are most satisfied with coverage and availability and least satisfied with customer service, consistent with the previous year.
- All three mobile operators have announced dates for their 3G shutdowns in the next two years.



Purpose of this report

This is the Commerce Commission’s (the **Commission**) 17th Annual Telecommunications Monitoring Report. The purpose of this report is to inform stakeholders on the state of Aotearoa New Zealand’s telecommunications sector. In particular, this report provides an overview of competition and key developments in New Zealand’s telecommunications markets in 2023.

This report is released under section 9A of the Telecommunications Act 2001 (the **Act**). Section 9A requires us to monitor competition in, and the performance and development of, telecommunications markets and to monitor retail service quality in relation to telecommunications services.

Layout of this report

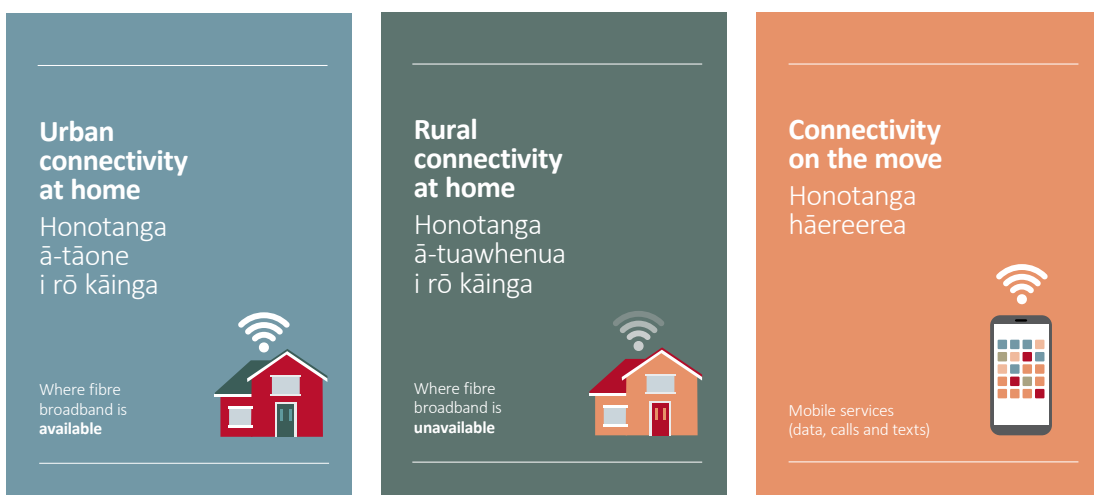
This report is structured around the three ways in which consumers experience telecommunications services – *urban connectivity at home*, *rural connectivity at home*, and *connectivity on the move*.

- **Urban connectivity at home** focuses on the fixed location broadband experience within UFB areas, where fibre is available.

- **Rural connectivity at home** focuses on the fixed location broadband experience outside UFB areas, where fibre is unavailable.¹
- **Connectivity on the move** focuses on location-independent mobile service (texting, calling, data) experience.

We have continued to split broadband across two chapters to reflect that the experience of consumers (such as in choice of providers and plans) differs between areas that have access to fibre and those that do not. In addition, with the completion of the UFB fibre network, there is now an increased focus on the experience of the 13% of New Zealanders outside the fibre footprint.

We have a separate chapter for mobile services as, for the most part, text, call, and mobile data services are consumed independently of fixed broadband services. As mobile networks are provided on a nationwide basis (with no rural-specific plans) we have covered mobile networks within one chapter.



Three key chapters structured around the ways in which consumers experience telecommunications services

1. We have continued to split urban and rural based on fibre availability solely for the purpose of this report. This split may not align with other definitions of ‘urban’ and ‘rural’.

Each chapter is then split into two sections – market structure and market outcomes.

- **Market structure** covers structural elements of telecommunications markets from infrastructure availability, the type and share of wholesale and retail offerings using that infrastructure, through to the transparency and understanding of these offers by consumers.
- **Market outcomes** covers the performance of telecommunications infrastructure, the levels of wholesale and retail pricing, through to consumer affordability and satisfaction.

Within each section an end-to-end view of the telecommunications sector is provided. As such, in each section you will come across sub-headings for – *infrastructure, wholesale, retail, and consumer*.

- **Infrastructure** covers the physical components of telecommunications networks. For example, where do networks provide coverage and what quality of service do networks provide?
- **Wholesale** covers the regulated and commercial wholesale market. For example, what wholesale services are made available by infrastructure owners to RSPs and at what prices?
- **Retail** covers the retail market to end consumers. For example, what are the characteristics of services made available to end consumers and at what prices?
- **Consumer** covers aspects of retail service quality. For example, can consumers understand offers in the telecommunication market and how satisfied are consumers with telecommunications services?

There is also a separate special topics section which covers topics which do not fit within the main structure. This year, for example, landlines and complaints are special topics in this report.

Interactive map

Alongside this report, we have also released an interactive map showing the coverage and connections of each broadband technology in New Zealand.

The purpose of the map is to enable geospatial economic analysis, which is included in this report, as well as to provide a useful visual tool for policy makers interested in rural connectivity.

The map allows users to investigate the connectivity options in different areas of the country, and we encourage people to use it for that, but it is not intended to be used as a consumer switching tool.

The map, as with this report, uses data provided to us by telecommunications providers as of June 2023. While we intend to update the map alongside future Annual Monitoring Reports, coverage and connections will change between reporting periods and it therefore does not present a “live” view of connectivity.

Our views

The primary purpose of this report is to inform. Accordingly, throughout this report, we provide observations and commentary on changes in telecommunications markets in 2023. These are our high level, current views, based on the information available at the time of writing this report. Our views may shift following further analysis and/or obtaining further information.

While this report will inform our wider regulatory activities, no direct regulatory intervention will arise based solely on the analysis contained in this report.

Data sources

This report draws on data from a range of data sources.

The relevant sources for each figure and statistic are noted in the footnotes throughout the report. Unless otherwise noted, the figures and statistics are as of 30 June 2023 or for the 12 months to 30 June 2023.

We have also indicated, by way of footnotes and the addition of confidence intervals on charts, how we have treated the data and our analytical approach.

Rural Connectivity Study

Last year's Annual Monitoring Report included a rural chapter for the first time, which helped to tell an important story about rural connectivity in New Zealand. However, we identified data gaps that did not allow us to paint a complete picture.

Therefore, in May 2023, we launched our Rural Connectivity Study with the aim of collecting more granular data so that we could build a comprehensive picture of the connectivity options for rural end-users of telecommunication services and, over time, strengthen and improve the detail of our routine monitoring of rural connectivity and end-user experience.

Rather than publish a separate report on rural connectivity, we have used the data we collected from the Rural Connectivity Study to produce this Annual Monitoring Report and the corresponding interactive map. Our analysis of rural connectivity can be found in the rural chapter of this report, but many of our findings regarding urban connectivity also come from the data we collected for the Rural Connectivity Study.

Industry questionnaire

Each year we send a questionnaire to the industry requesting information for the financial year ending in June. This year we issued the industry questionnaire alongside our Rural Connectivity Study information requests. We thank all the respondents who submitted data as part of this information-gathering exercise.

Please note that results from every question contained in the industry questionnaire are not presented in this report.

Instead, aggregate results from our annual industry questionnaire are published alongside this report on our website.²

2. <https://comcom.govt.nz/regulated-industries/telecommunications/monitoring-the-telecommunications-market/annual-telecommunications-market-monitoring-report>

Urban connectivity at home

Honotanga
ā-tāone
i rō kāinga

Where fibre
broadband is
available



MARKET STRUCTURE HANGANGA MĀKETE

Market structure covers structural elements of telecommunications markets from infrastructure availability, the type and share of wholesale and retail offerings using that infrastructure, through to the transparency and understanding of these offers by consumers.

INFRASTRUCTURE HANGANGA

Telecommunications infrastructure – the physical components that connect homes and businesses to voice and broadband services – provides the foundation for how the rest of the market operates in New Zealand.

The starting point for connecting Kiwi homes with high-speed internet is the infrastructure that has been deployed across New Zealand. In urban areas, there are often multiple sets of overlapping infrastructure operated by competing network operators.

2023 Highlights

- Chorus' copper withdrawal has continued to progress in urban areas with around 20,000 initial notices being issued and 15,000 copper connections being withdrawn between June 2022 and June 2023. New Zealanders continue to migrate at pace from the old copper network to modern alternatives.
- The Mobile Network Operators (MNOs) continue to increase their 5G cellular fixed wireless broadband coverage. Network choice has also increased with the launch of 2degrees' 5G network.

Fibre

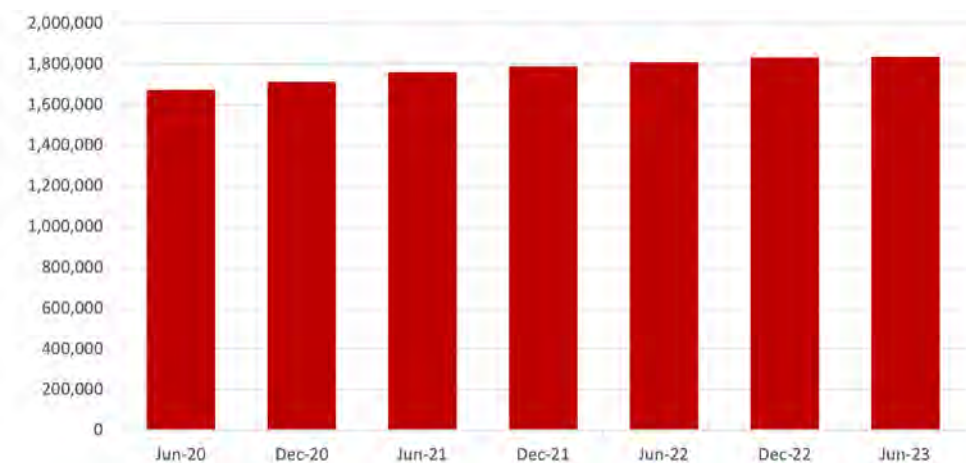
As of June 2023, 1,836,000 premises now have access to the UFB network, with an additional 28,000 premises gaining access this year.³ This increase in coverage for 2023 is lower than previous years. In 2022, 48,000 premises gained access and in 2021, 87,000 premises gained access.⁴ This reflects the completion of the UFB programme in December 2022.

The national fibre to the premises network in New Zealand has been built through a public-private partnership known as UFB. There are four fibre network operators (often referred to collectively as the LFCs) who were contracted to build and operate the network in different geographic areas:

1. Northpower operates in Kaipara and Whangārei. It is the smallest of the four UFB partners.
2. Enable operates in the wider Christchurch area.
3. Tuatahi First Fibre (**Tuatahi**) operates in Waikato, Bay of Plenty, Taranaki, and Whanganui.
4. Chorus operates in the remaining UFB areas, which cover 1.3 million homes and businesses across 350 communities. It is the largest of the four UFB partners.

The UFB roll-out programme was completed in December 2022. Over 1.8 million homes and businesses (or 87% of New Zealanders) can now access fibre.

Figure 1: Premises with fibre available



Source: CIP⁵

3. Commerce Commission analysis of Crown Infrastructure Partners Quarterly Connectivity Updates, available at <https://www.crowninfrastructure.govt.nz/about/publications/>

4. *ibid*

5. *ibid*

4G and 5G cellular fixed wireless broadband

As of June 2023, around 97% of urban households were within coverage of a cellular fixed wireless service from at least one of the MNOs. Cellular 5G fixed wireless coverage is continuing to grow but is still substantially less than cellular 4G fixed wireless, with 24% of urban households being within coverage of at least one of the MNOs. We expect that the coverage of 5G cellular fixed wireless broadband will continue to expand over the next few years following the long-term allocation of 3.5GHz spectrum. Spectrum allocation is discussed in the mobile section of this report.

Structurally, the New Zealand market allows for greater levels of fixed wireless broadband than many other countries, due to lower population densities, which result in a higher MHz to subscriber ratio.

Fixed wireless broadband can be provided over cellular and non-cellular networks.

Cellular fixed wireless broadband uses much of the same infrastructure and spectrum as mobile calling, text, and data services. In most cases, cellular fixed wireless broadband is restricted to a set location and is delivered via a router. The cellular fixed wireless broadband coverage offered by mobile networks is based on the type and amount of spectrum the network operator has acquired, as well as the number and position of sites (towers and masts) hosting equipment.

Topographical features, such as trees, buildings, and other structures, can result in localised coverage gaps and the number of people potentially using a site at any one time is also an important consideration for these operators.

In New Zealand, there are three national mobile networks operated by 2degrees, Spark, and One NZ. All three of these MNOs offer cellular fixed wireless broadband using their 4G and 5G networks. Cellular fixed wireless coverage differs from other 4G and 5G services. The primary reason for the coverage difference is that cellular fixed wireless broadband requires and uses significantly more network capacity than other mobile services (such as voice and text).

Copper

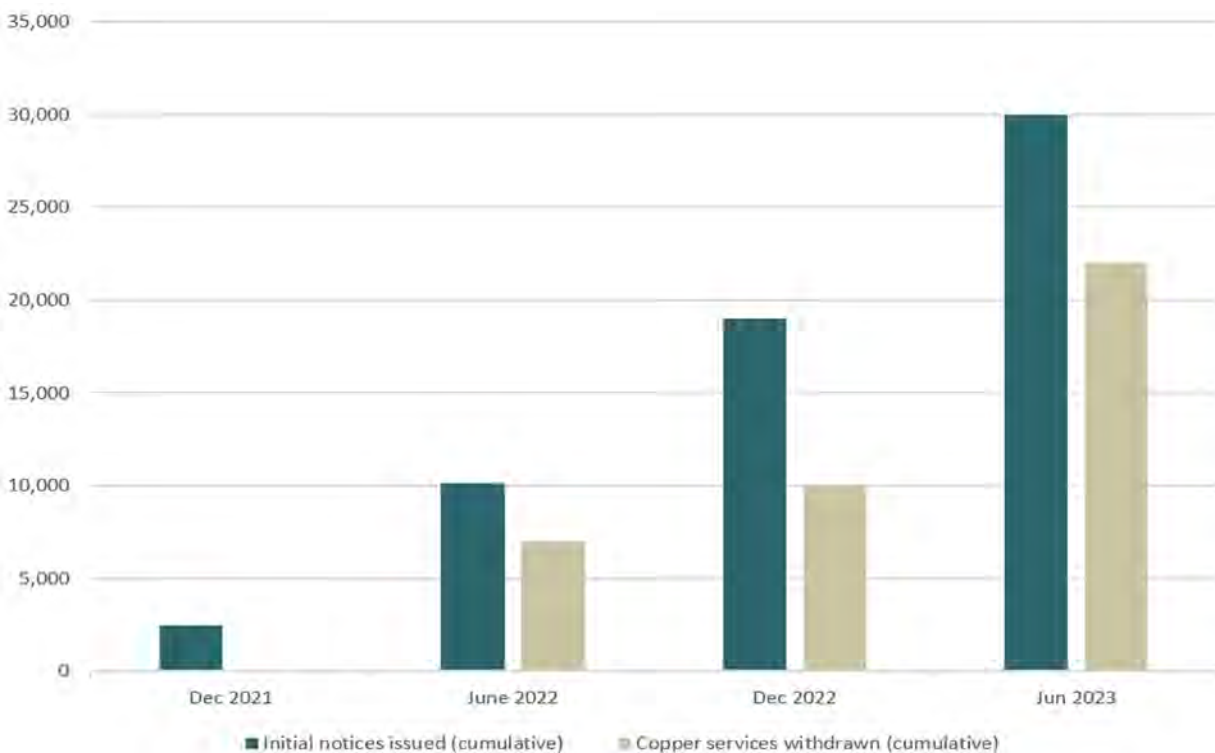
Under the CWC, Chorus is required to follow a prescribed notification process with affected consumers prior to ceasing copper services.⁶ Figure 2 shows the cumulative number of initial notices issued by Chorus and the number of copper services withdrawn in the period to 30 June 2023.

Chorus operates the copper network across New Zealand. At its peak, this covered 98% of the population. In the last year, Chorus also implemented a ‘stop sell’ on new copper connections in fibre areas.

The copper network supports voice and broadband (ADSL and VDSL) services.

Chorus is able to withdraw copper in areas where the Commission has declared that fibre services are available – subject to the minimum requirements set out in the Copper Withdrawal Code (CWC).

Figure 2: Initial notices issued and copper services withdrawn under the Copper Withdrawal Code (cumulative)



Source: Chorus⁷

6. In 2023, we completed a review of the CWC to assess whether it met its minimum requirements and intended purpose and if it could be improved to better deliver on the requirements. We published the updated Code in February 2024.

7. Chorus “Q4 FY23 Connections Update” (11 July 2023), slide 7. Accessible at <https://www.nzx.com/announcements/414536>

In its annual results, reporting up to 30 June 2023, Chorus reported that around 20,000 initial notices had been issued and 15,000 copper services had been withdrawn within the year.

Overall, Chorus reported that of the approximately 30,000 notices issued to date, approximately 22,000 copper services (or 544 cabinets) for notified connections had been withdrawn. This leaves 773 cabinets that have had notices issued, and 1,641 cabinets yet to be notified.⁸

Chorus has prioritised copper withdrawal in Chorus fibre areas. However, Chorus began a trial in Enable's fibre area in Christchurch, with the first notices being issued in early 2023.⁹ Chorus is currently reviewing this trial and plans to run further trials including in Tuatahi and Northpower fibre areas in 2024.¹⁰

On 6 March 2023, Chorus began a 'stop sell' on new copper services in Chorus and LFC areas where fibre is available to consumers. As of 30 June 2023, while 77,000 households remain on copper services in urban areas, copper services are not available to new customers.

HFC

We are not aware of any changes to HFC network coverage in the last year.

Hybrid Fibre-Coaxial (**HFC**) is a broadband network that combines fibre and coaxial cable (copper). HFC networks were commonly employed by cable television operators from the early 1990s.

The HFC network in New Zealand is owned by One NZ and was built in parts of Wellington, Kāpiti Coast, and Christchurch (see coverage section below).

8. Ibid

9. <https://sp.chorus.co.nz/product-update/copper-withdrawal-programme-update-0>

10. <https://sp.chorus.co.nz/product-update/copper-withdrawal-programme-update-2>

Coverage

The following set of maps are taken from our geospatial coverage map and show the urban network of different technologies across New Zealand's largest urban centres. In the vast majority of cases, mobile coverage overlaps fibre coverage, but this is not always the case.

Alongside this report we have also, for the first time, published an interactive geospatial map. This map allows users to look at the coverage area of all broadband technologies in New Zealand as well as actual broadband connections on different technologies in different areas.

Cellular fixed wireless broadband coverage provided by MNOs and WISPs is based on technical models, which means actual service availability may differ from what is displayed on the coverage maps.

For illustrative purposes, this report shows national coverage and some specific areas as examples, but readers can use the map to look at any area they want.

Fibre

The coverage map below shows the geographic extent of the urban fibre network across New Zealand. The fibre network was built under the UFB programme and completed in December 2022. In total, 412 towns and cities and 87% of New Zealanders have access to a fibre connection.¹¹



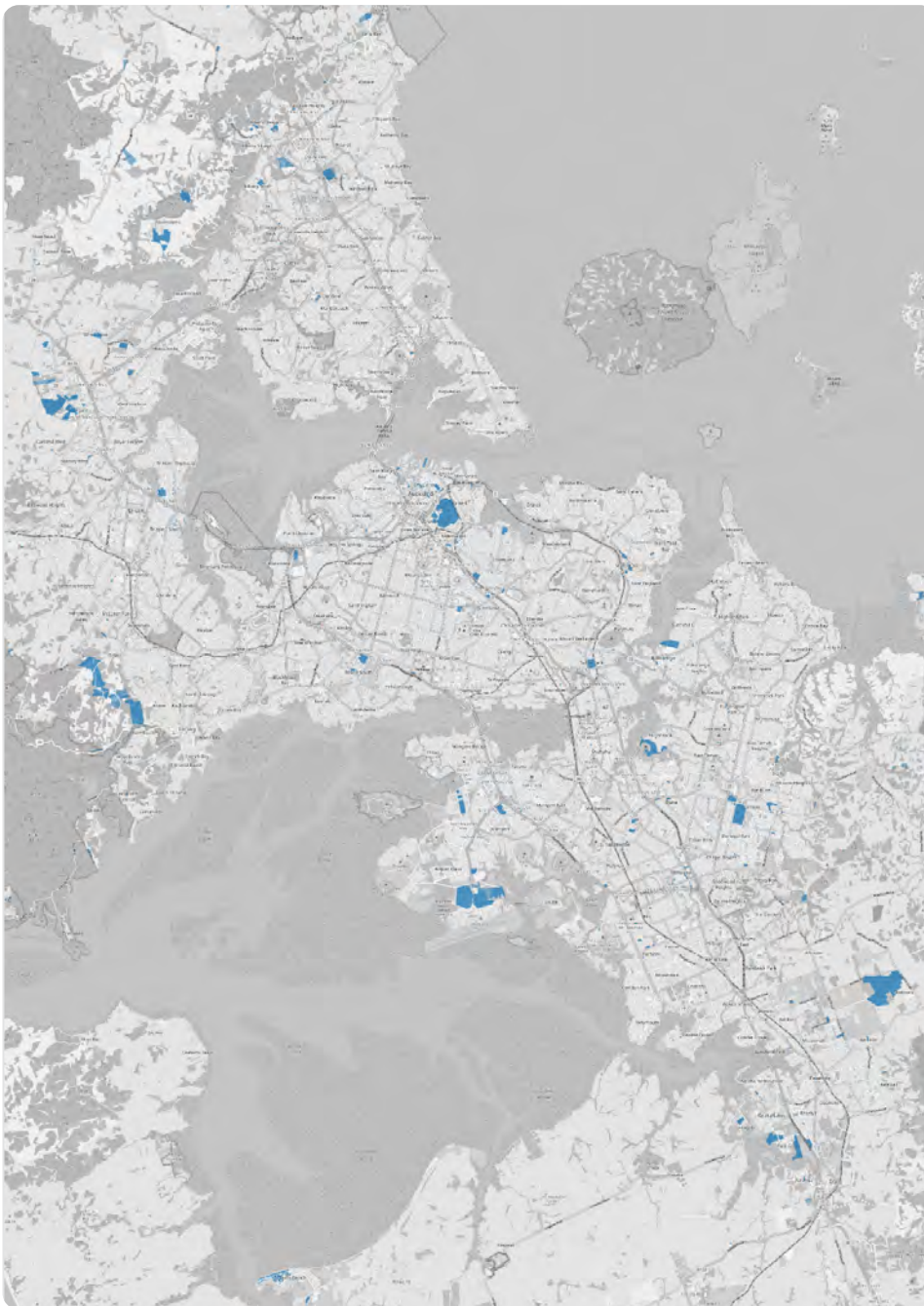
Source: Commission data

11. See <https://www.crowninfrastructure.govt.nz/fibre/ufb-programme/>

Copper

The coverage map for Auckland below shows the coverage of copper services (shaded blue) within the fibre area. Chorus is withdrawing the copper network within the fibre boundary.

The map below is relevant to Chorus' 'stop sell' (introduced in March 2023) on new copper services in Chorus and LFC areas where fibre is available to consumers.

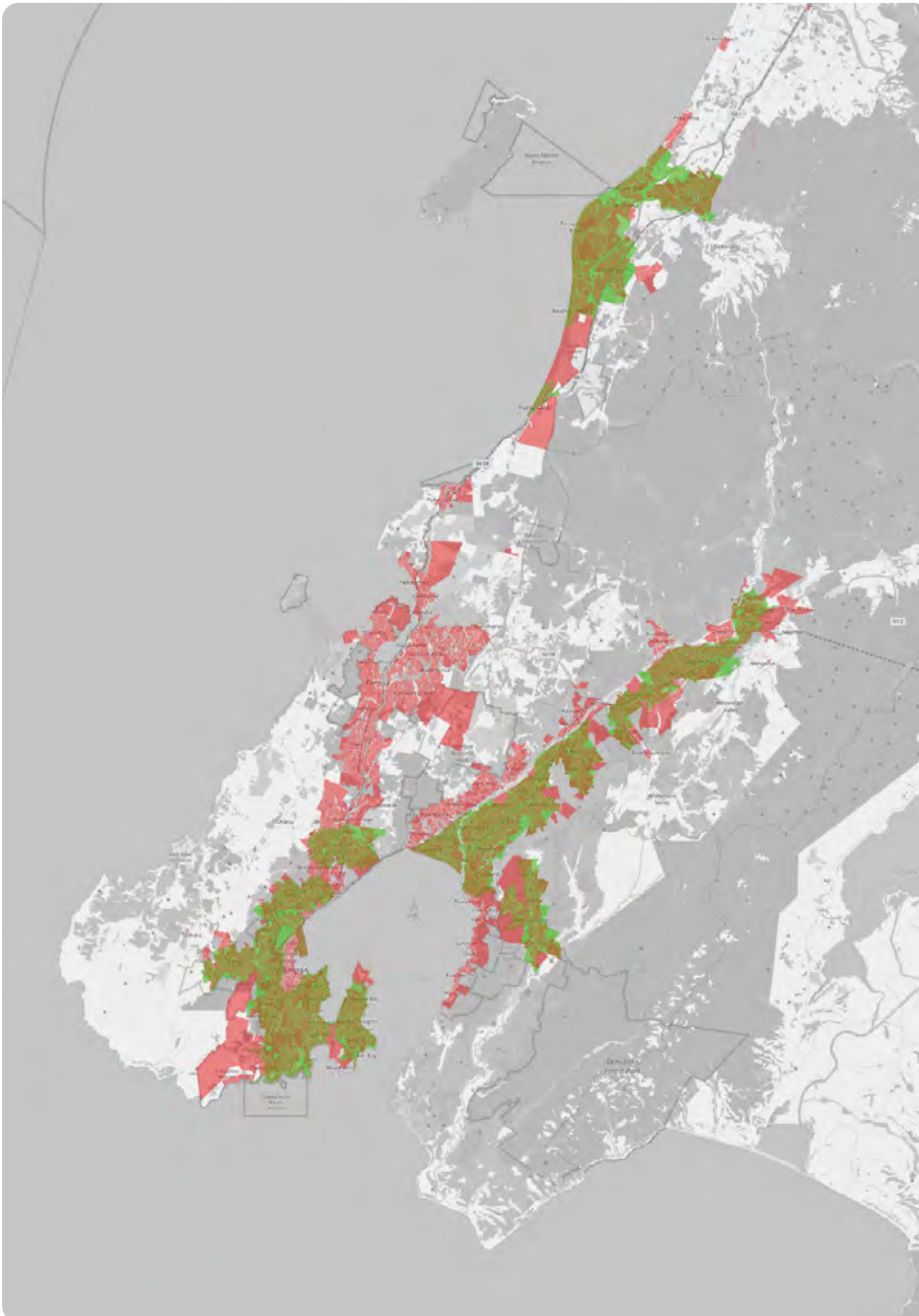


Source: Commission data

HFC

The coverage map for Wellington below shows the availability of HFC. One NZ's HFC network (shown in green) is available in limited areas in Wellington,

Kāpiti Coast and Christchurch. The HFC network largely overlaps with the fibre footprint (shown in red), with only a few exceptions where HFC is available, but fibre is not.

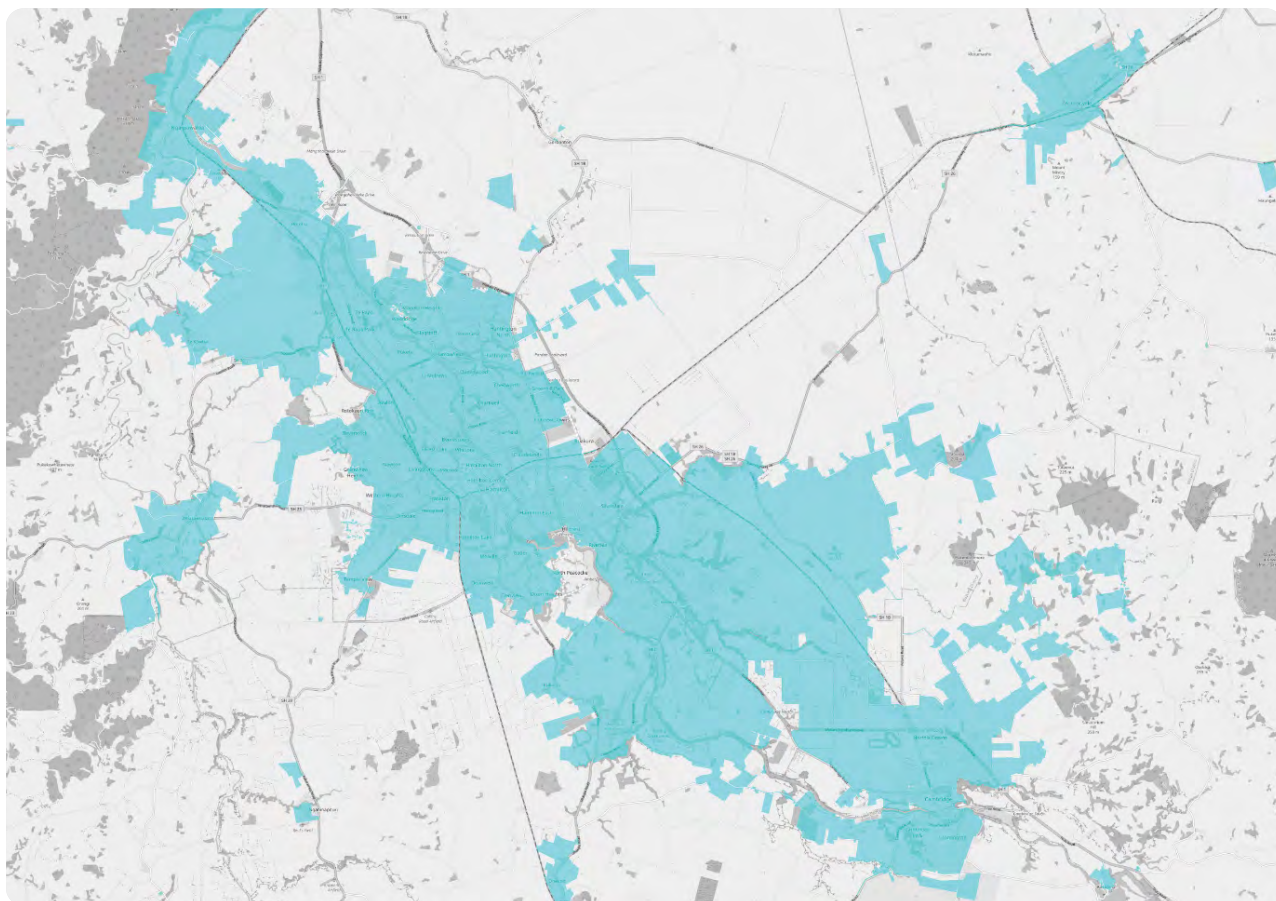


Source: Commission data

The coverage maps for Hamilton below show urban cellular fixed wireless availability for 4G and 5G.

4G cellular fixed wireless is available across nearly all of the Hamilton urban area. 5G cellular fixed wireless is still being rolled out by the MNOs, with around 24% of urban households being able to access 5G from at least one provider. 5G fixed wireless is currently only available in certain areas within the Hamilton urban area.

4G



Source: Commission data

5G



Source: Commission data

The wholesale market plays an important role in shaping outcomes at the retail-level for consumers. Regulation usually applies in markets with natural monopoly characteristics to ensure that access is available on reasonable terms.

The wholesale market continues to play an important part in the overall market structure of telecommunications in New Zealand. Regulatory obligations to provide key inputs for connectivity in Kiwi homes and businesses have transformed the retail market.

2023 Highlights

- The proportion of fibre connections on speeds of 300Mbps or above increased from 72% in 2022 to 84% in 2023.
 - > The 300Mbps fibre plan, often referred to as Fibre 300, continues to be the most popular wholesale fibre plan, increasing from 48% to 57% of all fibre connections. Chorus' Fibre 300 made up 67% of its residential fibre connections as of June 2023.
 - > Nearly one in four fibre connections is a 1Gbps fibre plan, with 1Gbps and hyperfibre connections making up 39% of residential connections growth for Chorus in FY23.
- Copper broadband connections in urban areas fell 41% to 77,000, meaning that a total of 53,000 urban broadband connections left the copper network over the year.
- Chorus and Tuatahi offer discounted Fibre 50 products with Chorus applying a retail price cap. Connections on these discounted plans are growing fast, with Chorus noting 58% growth in its plan to 16,000 connections in the year to June 2023.

The fibre and copper access networks in New Zealand both have natural monopoly characteristics, meaning there are high fixed and sunk costs relative to the size of the market, raising barriers to entry for rivals. Accordingly, there is regulated wholesale access for both networks.

Typically, the highest volume wholesale services are those used to serve the mass-market broadband market (residential connections and small business connections) and comprise the connectivity (physical cabling) from the home back to a point in the network that houses electronics. These services are referred to as 'bitstream' – and they are offered on both fibre and copper networks in New Zealand.

A small wholesale market exists within the mobile sector, which supports cellular fixed wireless broadband access. This part of the market operates on commercial terms. (Wholesaling of mobile call, text, and data services is covered in the mobile chapter.)

Wholesale fibre bitstream connections

Fibre networks in New Zealand were built under the UFB initiative on a 'wholesale only' basis. This means Chorus, Northpower, Tuatahi, and Enable must sell their fibre services through Retail Service Providers (RSPs).

Chorus is the largest fibre wholesaler and provides approximately three quarters of UFB fibre connections. Northpower is the smallest fibre wholesaler and holds around 2% of UFB connections. The remaining UFB connections are provided by Enable and Tuatahi.

The Telecommunications Act requires Chorus to provide an anchor fibre service if one has been declared. The purpose of the anchor service is twofold:

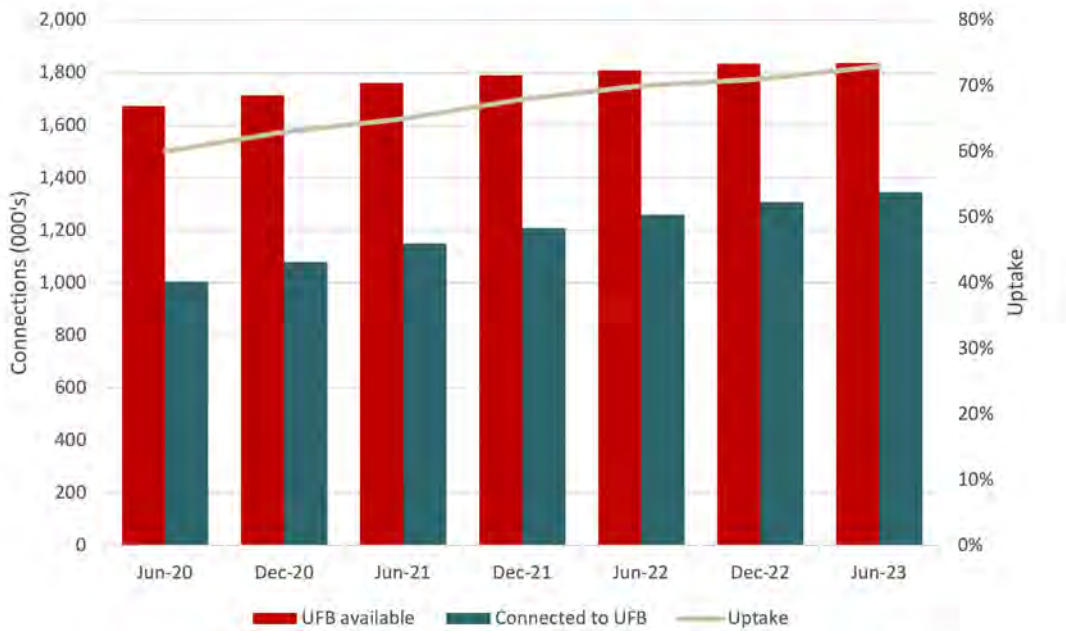
- to ensure that voice and basic broadband services are available to end-users at reasonable prices; and
- to act as an appropriate anchor on the price and quality of other fibre services.

In September 2021, anchor services were declared. The anchor broadband service is specified to provide a minimum download speed of 100Mbps and a minimum upload speed of 20Mbps. At the time, the commercial 100Mbps product was the most common speed tier sold.

The Voice Anchor Service can be delivered on a 'voice only' basis, supports New Zealand PSTN tones and cadences, and supports PSTN-compatible analogue telephony devices connected directly to the Optical Network Terminal (ONT).

Figure 3 below shows that the uptake of fibre connections has steadily increased over time. As of June 2023, around 73% of homes and businesses that had UFB available were now connected to UFB, equal to around 1.35 million homes and businesses. This is up from around 60% of homes and businesses in June 2020.¹²

Figure 3: UFB availability compared to actual connections



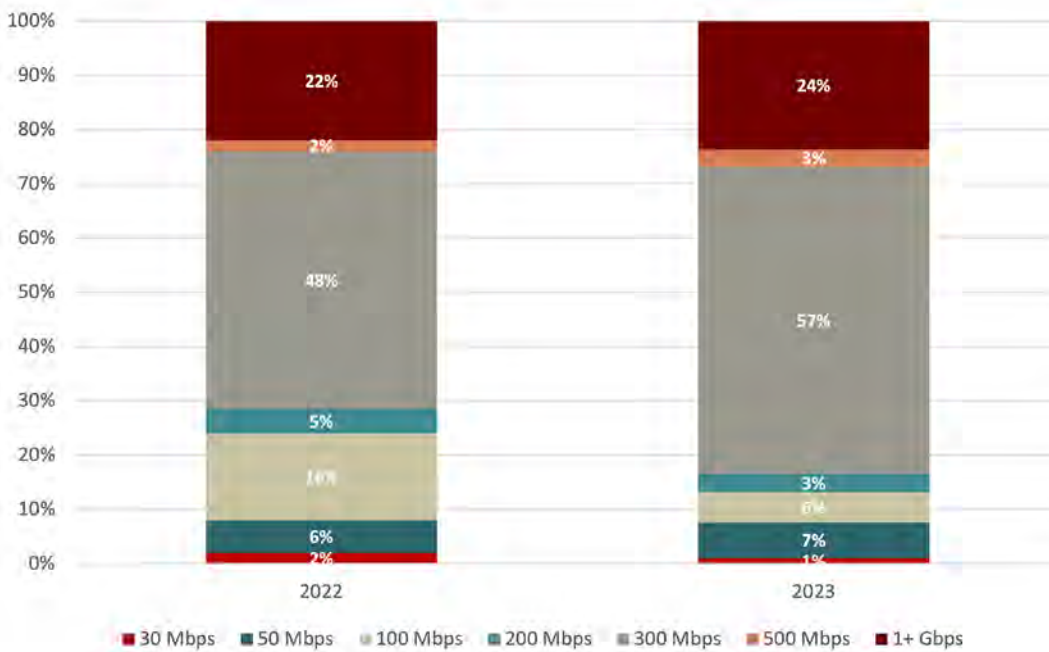
Source: CIP¹³

12. Commission analysis of Crown Infrastructure Partners' Connectivity Quarterly Reports from June 2020 to June 2023. Reports available at: <https://www.crowninfrastructure.govt.nz/about/publications/>

13. ibid

Figure 4 below shows the speed composition of UFB connections across all four LFCs and includes both residential and business connections. The percentage of connections on different speed tiers depends on a range of factors, including wholesale offerings, RSP take-up of these offers, and consumer preferences.

Figure 4: Speed composition of UFB connections



Source: Commerce Commission analysis of CIP data¹⁴

14. Commerce Commission analysis of June 2022 and June 2023 Crown Infrastructure Partners’ Connectivity Quarterly Reports. Reports available at: <https://www.crowninfrastructure.govt.nz/about/publications/>

50Mbps

The 50Mbps plan has become one of the fastest growing wholesale fibre plans with both Chorus and Tuatahi offering discounted 50Mbps products targeted at more price-sensitive consumers in 2022. Neither Chorus nor Tuatahi have increased the price of their plans since they were introduced. This has led to a greater gap in wholesale pricing between the discounted 50Mbps and 300Mbps products.

Chorus reported 58% growth (to 16,000 connections) in its Home Fibre Starter product from June 2022 to June 2023.¹⁵

100Mbps (the broadband anchor service)

In December 2021, Chorus, Tuatahi, and Enable upgraded consumers on fibre 100Mbps plans to 300Mbps free of charge. Northpower subsequently reduced the cost of its 300Mbps plan to match its 100Mbps service in July 2022. As a result, subscribers of the 100Mbps plans have dropped from 67% in June 2021, before the speed upgrade, to 6% in June 2023.

Chorus continues to offer a 100Mbps wholesale product to the market consistent with its anchor service obligations.¹⁶

300Mbps

The 300Mbps plan is the most popular speed tier in New Zealand after the LFCs upgraded customers from the 100Mbps plan. As of 30 June 2023, 300Mbps plans made up 57% of all UFB fibre plans, up from 48% in June 2022 as consumers continued to move from the 100Mbps wholesale products. Chorus reported the 300Mbps plans were 50% of residential connections growth.

1Gbps

The 1Gbps plan continues to grow strongly, with Chorus reporting that approximately 39% of new residential connections added to its network are either 1Gbps or hyperfibre connections.¹⁷ As noted in the hyperfibre section below, nearly all of these connections will be 1Gbps connections, because hyperfibre makes up less than 1% of all UFB fibre connections.

In June 2022, 22% of UFB fibre connections were 1Gbps or higher. This has grown to approximately 24% of UFB connections in June 2023.¹⁸

15. Chorus Q4 FY23 update slide 4. Accessible at <https://company.chorus.co.nz/reports>

16. Chorus "Anchor Services and LUDFAS" – see <https://sp.chorus.co.nz/product/anchor-services-and-ludfas/overview>

17. Chorus FY23 Full Year Results "Investor presentation" slide 8. Accessible at <https://company.chorus.co.nz/reports>

18. Crown Infrastructure Partners combines 1Gbps and hyperfibre connections in its latest reporting so we are unable to confirm the percentage of the market held by 1Gbps plans.

Hyperfibre

Hyperfibre is a more recent fibre product which is delivered over XGS-PON technology which can support speeds of up to 10Gbps. Chorus, Enable and Tuatahi all now offer hyperfibre plans. Northpower began a trial of hyperfibre services in April 2022 for premises in the Whangārei CBD, but hyperfibre is still not available to retail customers.¹⁹

2Gbps and 4Gbps hyperfibre services are available to more than 75% of urban New Zealanders.²⁰ However, 8Gbps hyperfibre services are only available in parts of Auckland and Wellington.²¹

Hyperfibre connections make up less than 1% of all UFB fibre connections.²²

Other fibre plans

In June 2023, other fibre plans made up the remaining 7% of connections (Fibre 30, 200, and 500). This is down from 9% of connections last year.

Wholesale fibre voice connections

Chorus provides a wholesale fibre voice anchor service which was declared in September 2021. Take-up of this service is low with Chorus having around 4,000 connections in June 2023. This number of connections does not include voice VoIP services provided separately by the RSPs.

Wholesale unbundled fibre connections

Since 1 January 2020, LFCs have been obligated under their Fibre Deeds to offer a point-to-multipoint layer 1 fibre access service on their UFB1 networks, also referred to as an unbundled fibre service.²³

Unbundled fibre is not yet used commercially by RSPs in the provision of retail broadband services or any other retail offerings.

19. See <https://www.2degrees.nz/broadband/hyperfibre>

20. *ibid*

21. 8Gbps hyperfibre is available at 60 Chorus exchanges. See <https://sp.chorus.co.nz/product/hyperfibre-home/guides>

22. Based on Commission data.

23. Part 4AA of the Telecommunications Act 2001 required the LFCs to give Deeds of Open Access Undertakings (known as the 'Fibre Deeds') in relation to the supply of wholesale telecommunications services using fibre networks constructed with Crown investment funding as part of the UFB initiative.

Wholesale copper bitstream connections

In the year to 30 June 2023, copper broadband connections in urban areas fell 41% to 77,000, meaning that a total of 53,000 urban broadband connections left the copper network over the year.²⁴ Of the 77,000 copper broadband connections remaining in urban areas, 58,000 remain in Chorus areas and 19,000 remain in other LFC areas.²⁵

The rate of decline was higher in Chorus fibre areas with Chorus reporting copper broadband connections falling by around 20,000 in the two quarters preceding June 2023.²⁶ This is because Chorus began its copper withdrawal programme in Chorus areas and only started withdrawing copper services in other LFC areas in May 2023.²⁷

Over the relevant period, the decline in copper broadband has outstripped the number of copper lines withdrawn by Chorus, suggesting that copper withdrawal is currently only playing a partial role in this decrease.

Larger factors seem to have been commercial decisions made by some RSPs to stop selling copper services ahead of withdrawal, Chorus implementing a 'stop sell' on new urban copper broadband connections in March 2023, and consumer preferences for faster speeds or cheaper prices on other technologies.

The copper broadband offered to consumers in urban areas uses a wholesale input service provided by Chorus, which continues to operate the copper network nationwide.

Wholesale cellular fixed wireless broadband connections provided by MNOs

In urban areas of New Zealand, cellular fixed wireless broadband plans are wholesaled by MNOs on commercial terms through MVNO agreements. However, not all MVNO agreements include cellular fixed wireless broadband services (discussed further in our mobile chapter). Cellular fixed wireless broadband is wholesaled in rural areas under different arrangements to MVNOs (discussed further in our rural chapter).

In 2023, 22,000 cellular fixed wireless broadband connections were wholesaled in urban and rural areas.²⁸ This is a 31% increase on 2022.

RSPs who resell cellular 4G wireless broadband include Mercury, which has an MVNO agreement with Spark, and Contact Energy, which launched a 4G cellular fixed wireless broadband service in 2022.²⁹ As well as the two major RSPs, a number of smaller operators, including many WISPs, resell 4G cellular fixed wireless in urban areas.

24. Commerce Commission analysis of Chorus annual reports and information provided by Chorus. Reports are accessible at <https://company.chorus.co.nz/reports>

25. Chorus "Q1 FY24 Connections Update" Accessible at: <https://company.chorus.co.nz/reports>

26. Commerce Commission analysis of Chorus annual reports. Reports are accessible at <https://company.chorus.co.nz/reports>

27. See <https://www.enable.net.nz/blog/the-copper-network-is-on-the-way-out>

28. Annual industry questionnaire.

29. Contact Energy "2022 Full Year Results – Integrated Report" (15 August 2022). Accessible at: <https://contact.co.nz/aboutus/investor-centre/report>

Retail telecommunications markets are the markets through which consumers can purchase access to products that use the infrastructure described above. These products are packaged up by competing firms/brands and marketed to consumers.

Retail market structure has been significantly shaped by wholesale access regulation, the Government's UFB initiative, and the three vertically integrated MNOs enhancing their networks to offer connectivity to Kiwi homes and businesses.

2023 Highlights

- The market share held by the largest three retail telecommunication companies has decreased to 74% this year, down from 78% in 2022.
- Residential electricity-broadband bundles by the larger electricity bundlers increased by around 11% in 2023. Around 290,000 Kiwi households are now bundling their electricity and broadband.
- Around 96% of all electricity bundles are in urban areas and around 95% of these urban bundles are with fibre.
- No RSP offers copper to new consumers in urban areas after Chorus implemented a 'stop sell' in March 2023.
- 78% of urban retail connections are fibre, with all major RSPs offering fibre.
- 15% of urban homes and businesses (or around 262,000 connections) are connected using a cellular fixed wireless connection.

The retail telecommunications market in New Zealand has over 100 RSPs – characterised by a few large operators and a long tail of RSPs with smaller customer bases. This market structure for retail telecommunications is common across the world. Larger providers in this setting are either legacy incumbents or entrants that have been able to invest, compete and grow.

At a high level, there are two distinct types of RSPs operating in the urban broadband market:

1. Vertically integrated telcos who can offer cellular fixed wireless services using their own mobile networks as well as retailing wholesale offerings from Chorus/LFCs.
2. Players without networks who build retail products based on wholesale inputs from Chorus/LFCs. An increasing number of players in this category are electricity retailers.

Retail market share

Nationally, Spark, One NZ, and 2degrees (post-Vocus merger) serve 74% of the broadband market and 98% of the mobile market. The competition analysis throughout this report groups these three nationally significant RSPs collectively as the 'top 3'.

This serves two purposes. Firstly, it allows us to look at the competitive dynamics between the top 3 and other RSPs. Secondly, we can better understand the level of rivalry or competition that exists within the top 3.

Market concentration

Market concentration, or the extent to which the distribution of the market across firms is limited to relatively few firms, is an important structural characteristic of a market.

We estimate that the fixed line broadband market in urban areas is moderately concentrated with an HHI of approximately 2,194.³⁰

There are several ways to look at market concentration. We have chosen to use both a Herfindal & Hirschman Index (**HHI**) and a simpler market concentration ratio.

HHI analyses market shares of each firm in a market to determine a value of market concentration – an HHI between 1,500 and 2,500 indicates moderate concentration, whereas values above this indicate high concentration.

The market concentration ratio looks at the market shares of the top four providers, relative to the total market share.

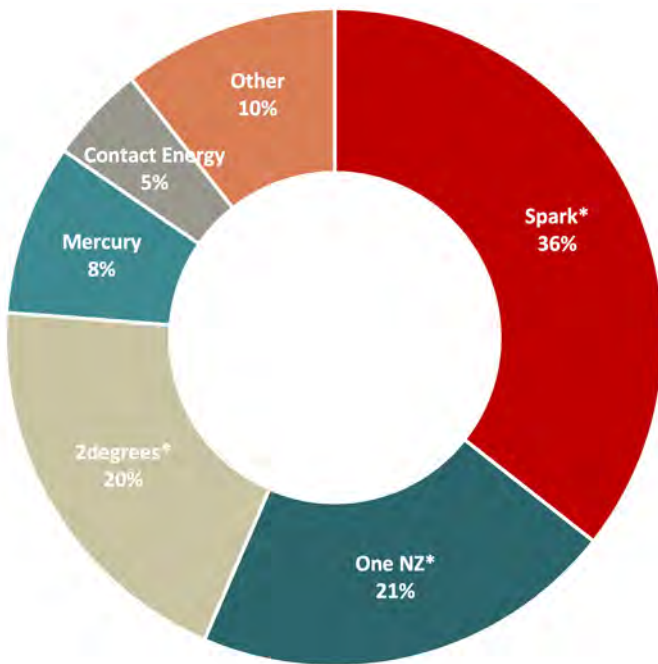
30. Based on Commission data.

Urban market share

Figure 5 shows that the urban market is slightly more concentrated than the national market with the top three providers making up 74% of connections nationally, but 76% of connections in urban areas.^{31,32}

Fibre and cellular fixed wireless are the main technologies used in urban areas with urban RSPs operating nationally. The rural market is made up of a wider variety of technologies (including copper, non-cellular fixed wireless, and satellite) and providers, including WISPs, which mainly operate regionally.

Figure 5: Retail broadband market share in urban areas³³



Source: Commission analysis of CIP, Chorus and Commission data

31. Top 3 providers' market shares add up to 77% in figure 5 due to rounding.
 32. With this being the first year collecting market share information for urban and rural, we do not have a historic time-series to analyse market share movements.
 33. RSPs with an asterisk are one of the 'top 3' national providers.

Size of urban RSPs

Table 1 below shows the customer base for the urban providers covered in our reporting.³⁴ The urban retail broadband market is dominated by a number of large providers with over 50,000 customers. However, there are also many smaller providers with under 1,000 customers that also participate in the market, targeted toward more niche customers.

Table 1: Size of urban RSPs

Number of urban retail customers	Number of providers
>50,000	5
10,001-50,000	5
5,001-10,000	3
1,000-5,000	10
<1,000	29

Source: Commission data (as of June 2023)

Retail offers

RSP offers in the retail telecommunications market are made up of several key aspects:

- Available network infrastructure (either through ownership or wholesale regulated/commercial access terms). In urban areas, this covers fibre, copper, 4G and 5G cellular fixed wireless broadband, and HFC.
- Service performance characteristics that are offered (such as download speeds, upload speeds, latency, and data caps).
- Service add-ons, if any, that will be included in the offer (such as subscription services, or electricity).

The highest retail speeds achievable by a 1Gbps wholesale product is around 940Mbps. As such, these plans are typically marketed under other names such as Fibre Max, Gigantic Fibre, and Fibre Pro.

In the retail section of this report, we will refer to the product as Fibre Max.

34. Overall, 63 providers provided data. A table can be found on our website which contains who the providers are and where they operate.

Network

As shown in Table 2 below, all major RSPs offer fibre plans. The three MNOs, Mercury and Contact Energy offer urban 4G cellular fixed wireless services. RSPs no longer offer copper services to new consumers in urban areas as the wholesaler, Chorus, began a ‘stop sell’ in March 2023. One NZ is the only RSP offering HFC cable services.

Table 3 shows the number of providers offering services over different technologies in urban areas. Consumers have a larger choice of providers for Fibre Max and Fibre 300 products. 5G Fixed wireless and HFC had the lowest choice of providers for consumers as only the network operators (One NZ, Spark, and 2degrees for 5G fixed wireless and One NZ for HFC) currently retail these plans.

Table 3: Technology offerings by RSPs in the urban areas

Medium	Technology/Plan	Number of providers
Fibre	Fibre 50	16
Fibre	Fibre 300	26
Fibre	Fibre Max	26
Fibre	Hyperfibre	11
Cellular	4G	15
Cellular	5G	3
Copper	ADSL/VDSL	0
HFC	HFC	1

Source: Commission data (as of June 2023)

Table 2: Technology offerings by major RSPs in urban areas

RSP	Fibre				Cellular fixed wireless broadband	Cellular fixed wireless broadband	Copper	HFC cable
	50Mbps	300Mbps	FibreMax	Hyperfibre	4G	5G		
Spark	✓	✓	✓		✓	✓		
One NZ	✓	✓	✓		✓	✓		✓
2degrees	✓	✓	✓	✓	✓	✓		
Mercury		✓	✓		✓			
Contact Energy	✓	✓	✓		✓			
MyRepublic		✓	✓	✓				
Nova Energy		✓	✓					
Sky Broadband	✓	✓	✓					

Source: Commission data (as of June 2023)

Service characteristics – speed

As shown in Tables 2 and 3, the 300Mbps and 1Gbps plans are the core residential fibre plans retailed by RSPs.

2degrees (under its Flip brand) is the only major RSP advertising a 30Mbps service as of June 2023. No major RSPs retail the 100Mbps plans (the anchor service). Spark, One NZ and 2degrees currently prefer to serve the lower cost, lower speed segment of the market using the 50Mbps fibre plan alongside their own cellular fixed wireless broadband offers.

2degrees (and its sub-brand Orcon) is the only major RSP offering hyperfibre plans after MyRepublic sold its customer base to 2degrees in July 2023. However, Table 3 shows that a number of smaller providers retail hyperfibre services, including Ashnet, Vetta, and Purelink.

Service characteristics – plan

Table 4 below shows the range of download speeds, retail prices, and data caps for retail plans offered in urban areas over each technology.

Fibre plans have the largest range of speeds across broadband technologies. Fibre 30 starter products have download speeds of 30Mbps. At the top end, 8,000Mbps hyperfibre products are targeted at consumers with specific use cases such as gaming and content creation or with a larger number of users (such as large households or SMEs).

Table 4: Urban plan characteristics

Technology	Maximum download speeds ³⁵	Prices	Data caps
Fibre	30Mbps to 8,000Mbps	\$60 to \$300	100GB to unlimited
Cellular fixed wireless ³⁶	60 Mbps to over 300Mbps	\$40 to \$130	40GB to unlimited
Copper	9Mbps to 40Mbps	\$70 to \$120	100GB to unlimited
HFC	Around 900Mbps	\$63	Unlimited

Source: Commission data (as of June 2023)

35. Maximum download speeds are taken from the Rural Connectivity Study data request of MBNZ testing results. Consumers may be able to get higher or lower speeds.

36. Includes 4G and 5G cellular fixed wireless broadband.

Service characteristics – data caps

As shown in Table 5 below, urban wireless broadband data caps from major RSPs range from 40GB up to 1,000GB. Most RSPs offer an unlimited usage plan, apart from Mercury.

Data caps are used to manage user behaviour in locations where network capacity is scarce.

Table 5: Current residential urban wireless broadband offers

RSP	Data caps options	Unlimited plan available?
Spark	40GB 120GB	✓
Spark (Skinny)	60GB 120GB	✓
One NZ	60GB 300GB	✓
2degrees	300GB	✓
2degrees (Slingshot)	300GB	✓
Mercury	120GB 300GB 1,000GB	
Contact Energy	300GB	✓

Source: Commission data (as of June 2023)

Service add-ons

In the past year, take-up of broadband/electricity bundles by residential consumers has continued to increase, up to 290,000.³⁷ Mercury, Contact Energy, Nova Energy and 2degrees are the major RSPs that offer electricity bundles, and these have increased by around 11% over the past year.³⁸

In addition, bundling appears to be more prevalent in urban areas as fibre focused RSPs often have a large proportion of their consumers on bundled plans. We estimate that around 96% of all electricity bundles are in urban areas and around 95% of these urban bundles are with fibre.

Bundling of telecommunications services together (fixed and mobile services) or bundling of telecommunications services with non-telecommunications services (video streaming subscription, electricity) is promoted by providers as offering single billing convenience and cheaper prices.

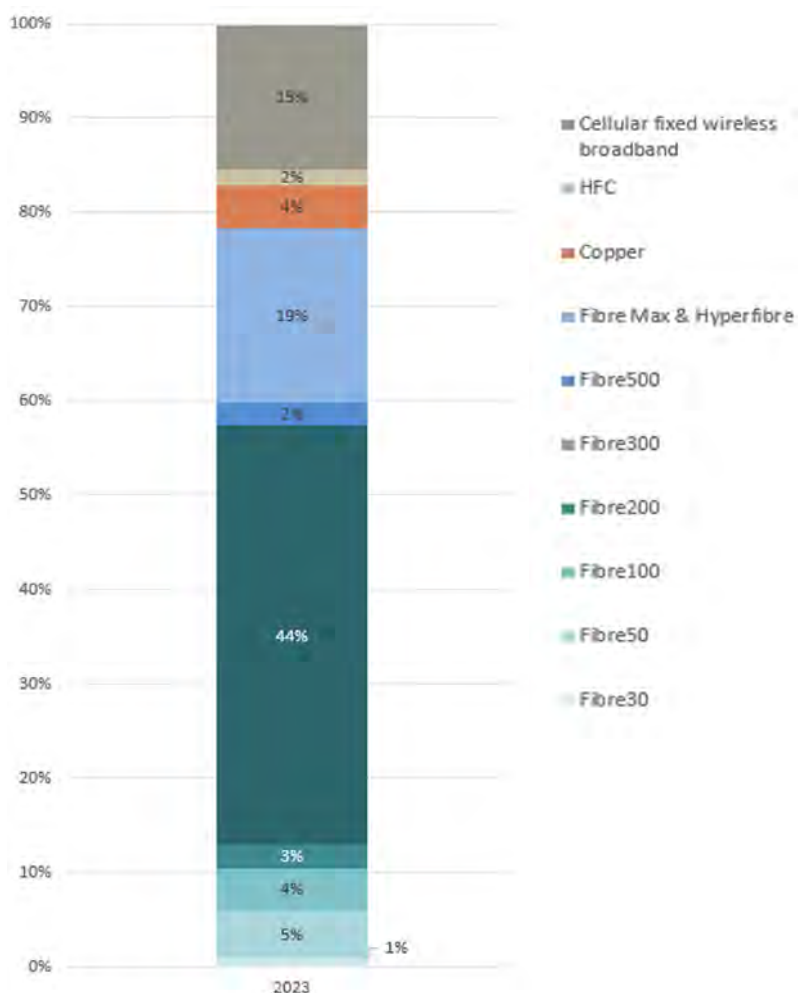
37. Additional electricity bundlers have been included in the 2023 numbers as part of the RCS data request.

38. The large electricity bundlers are 2degrees, Contact Energy, Mercury and Nova.

Retail share by technology

As of 30 June 2023, 78% of urban connections (or 73% of urban homes and businesses) were connected using fibre, with the most popular plan, Fibre 300, making up 44% of all urban connections.

Figure 6: Estimated urban broadband connection technology



Source: Commission analysis of CIP, Chorus and Commission data³⁹

39. Fibre connections are based on CIP reports, copper connections are based on Chorus public reporting, HFC connections are based on One NZ's industry questionnaire response. Cellular fixed wireless connections are estimated based on the responses to the RCS data request. Other connections, such as urban satellite connections, were not included given their small number.

2% of urban connections were using HFC.⁴⁰ In the past year, HFC connections have fallen 11% to 32,000.

15% of urban connections (or around 262,000 connections) were using a cellular fixed wireless connection. We estimate around 7,000 of these connections are cellular 5G fixed wireless. This is the first time we have been able to provide an estimated percentage of cellular fixed wireless connections in urban areas.⁴¹

Some homes and businesses will not have a fixed broadband connection but will instead use their phone's mobile data allowance to access the internet. While there has been an increase in unlimited mobile plans in recent years, the speed caps/fair usage restrictions on these plans mean that they are only a viable alternative for people with low usage needs. We are currently unaware of any data on the number of homes and businesses that are mobile-only in New Zealand.

Uptake of fibre connections

This analysis looks at the location of households who are connected to different fibre plans – indicated by local market shares in the following maps of New Zealand.

The maps below show the uptake of Fibre 50, Fibre 300, and Fibre Max plans across New Zealand. Areas coloured yellow have a low uptake of the plan, whereas areas coloured dark red show areas of higher uptake. Grey areas are where no connections exist for the plan.

40. Industry questionnaire.

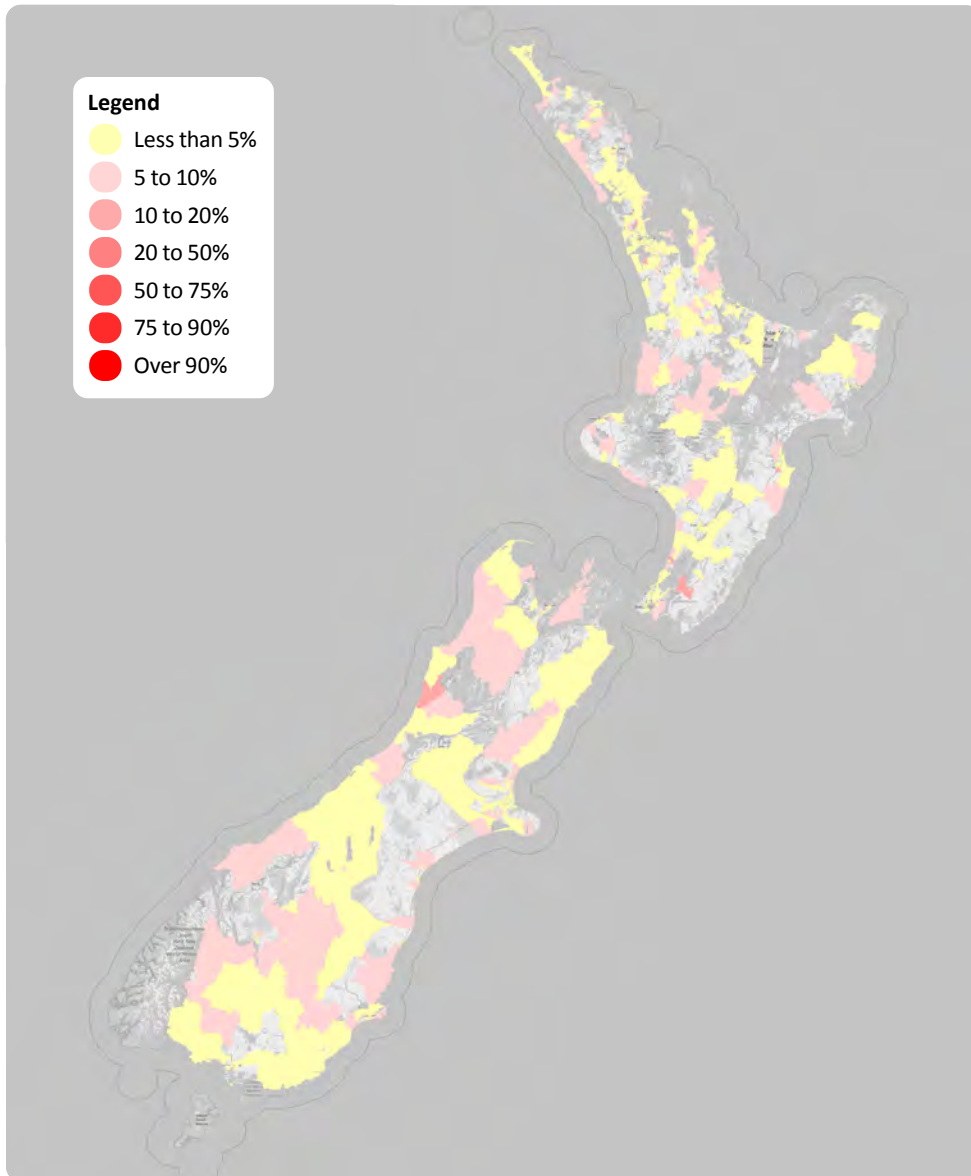
41. The estimated percentage of cellular fixed wireless connections is based on data from the Annual Industry Questionnaire and the RCS data request.

Fibre 50 plans

Fibre 50 is the entry-level fibre plan in New Zealand, making it a lower cost choice for consumers compared with other fibre plans such as Fibre 300 or Fibre Max. Some geographic areas in New Zealand have a higher than average uptake of Fibre 50 plans.

Areas where Fibre 50 uptake is higher than 10% include Longlands-Pukahu in Hastings, Forest Lakes in the Kāpiti coast, and Tauherenikau in South Wairarapa. Most of

these are small townships and these areas tend to have lower-than-average incomes.⁴² However, there are other areas in New Zealand with below-average incomes where the uptake of entry-level Fibre 50 is not higher than average.

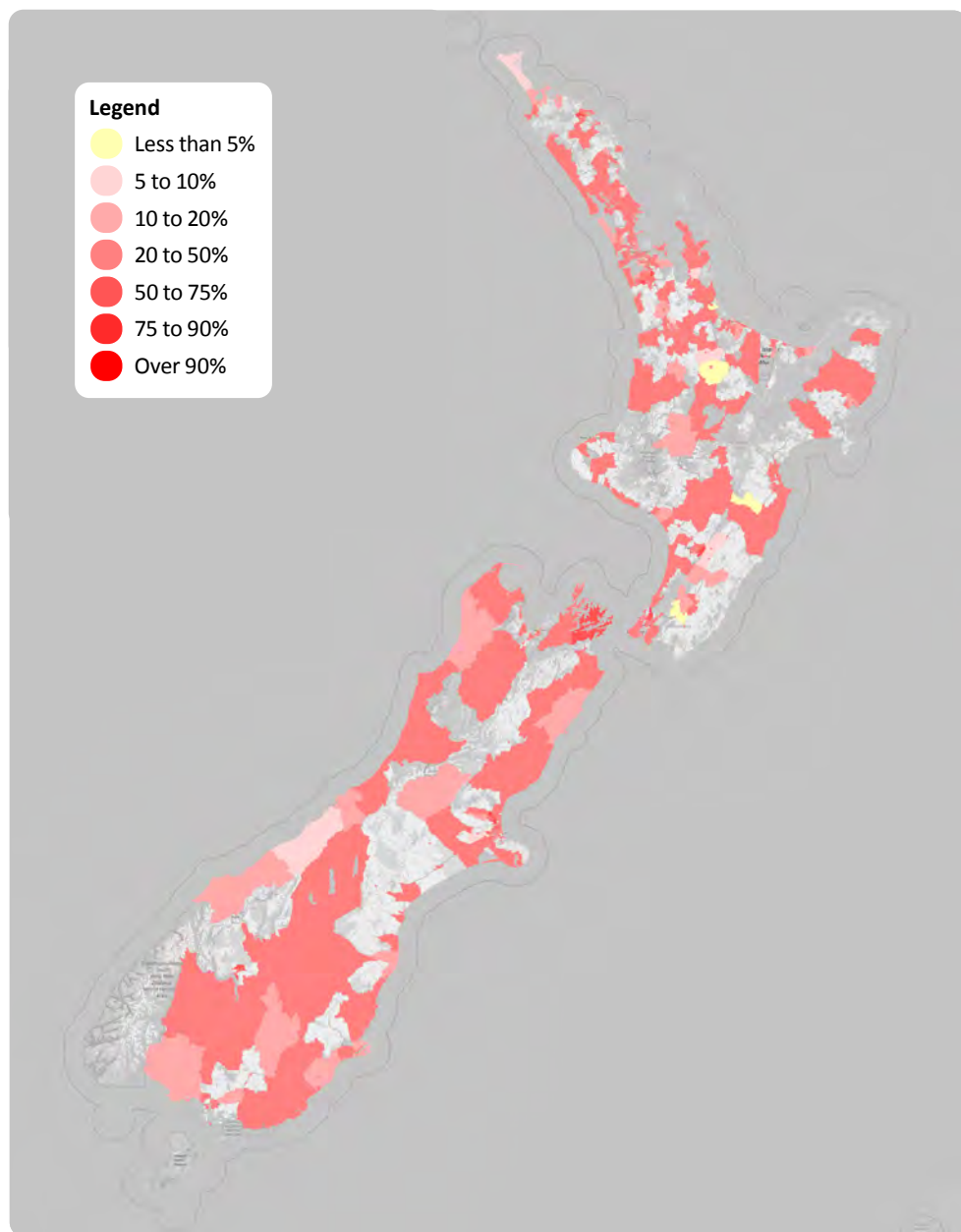


Source: Commission data

42. Sourced from 2018 Census information – see – <https://www.stats.govt.nz/tools/2018-census-place-summaries>

Fibre 300 plans

Fibre 300 is the most common fibre plan in urban areas and has high levels of uptake across New Zealand.

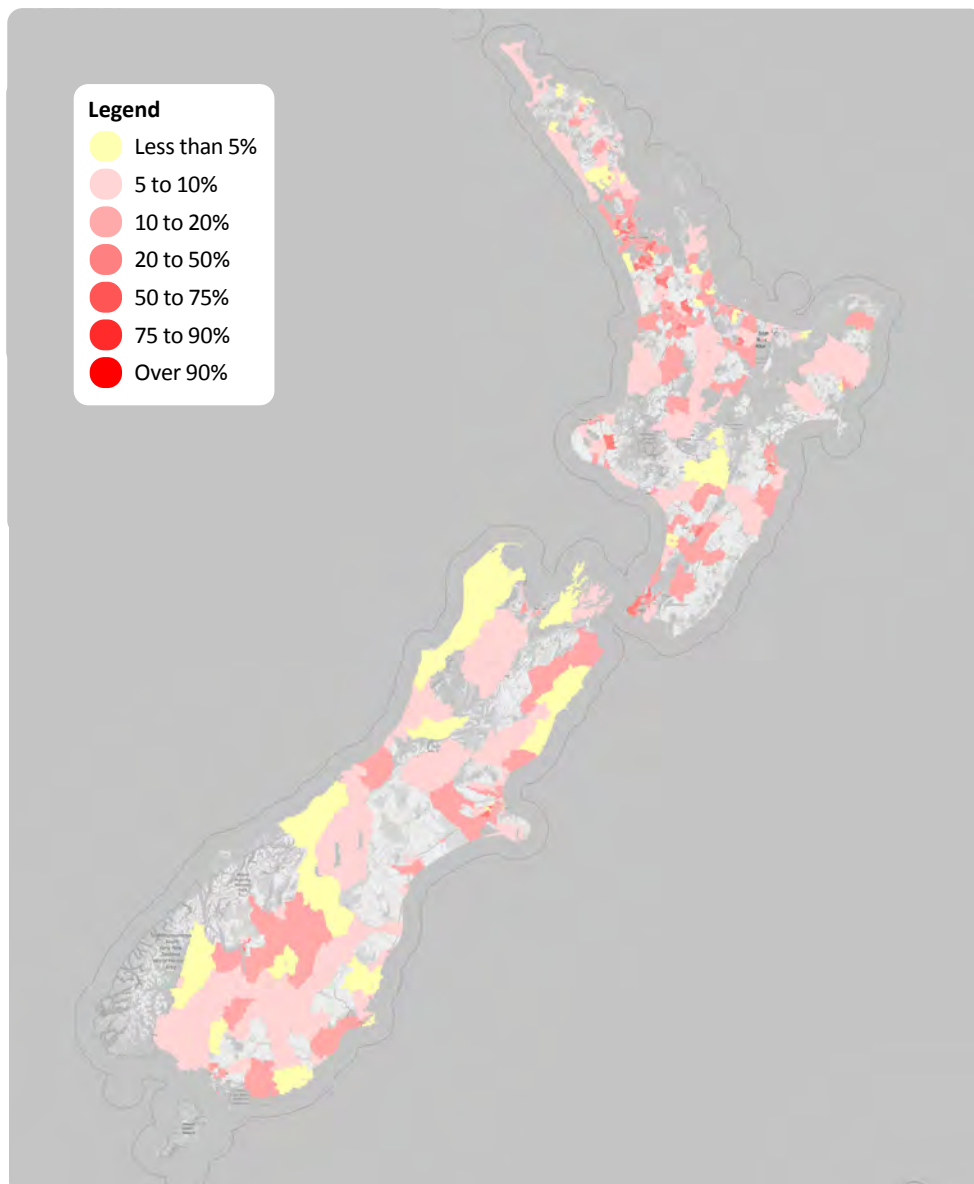


Source: Commission data

Fibre Max plans

Fibre Max plans are targeted at households with higher connectivity needs than the Fibre 50 and Fibre 300 plans. Fibre Max plans are also more expensive so uptake of these plans may reflect areas with higher household incomes. Areas in New Zealand that have over 20% uptake of Fibre Max plans include:

- Hobsonville point and Millwater in Auckland;
- Wigram east in Christchurch; and
- Māori Hill in Dunedin.



Source: Commission data

Uptake of non-fibre broadband connections in urban areas

This analysis looks at the location of households who are connected to alternatives to fibre broadband – using Auckland as an example. Other areas can be seen in our [interactive geospatial map](#).

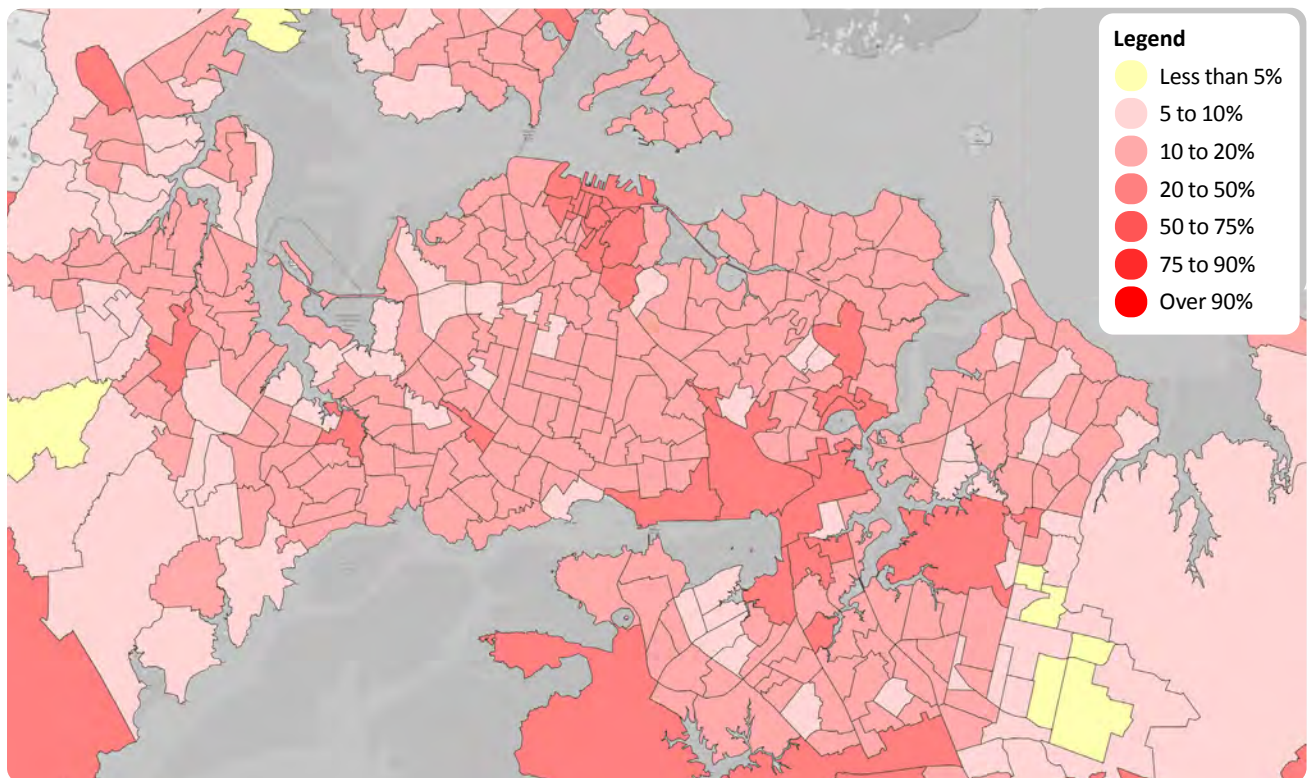
The maps below show the uptake of 4G cellular fixed wireless and copper across central Auckland. Areas coloured yellow have a low uptake of the technology, whereas areas coloured dark red show areas of higher uptake. Grey areas are where no connections exist. The maps below show:

- Uptake of 4G cellular fixed wireless plans is widespread across Auckland, with some areas of higher uptake. 4G cellular fixed wireless is targeted at more price-sensitive consumers so

areas of higher uptake may show suburbs with a higher proportion of households with lower or fixed incomes. We discuss the affordability of broadband plans later in the chapter.

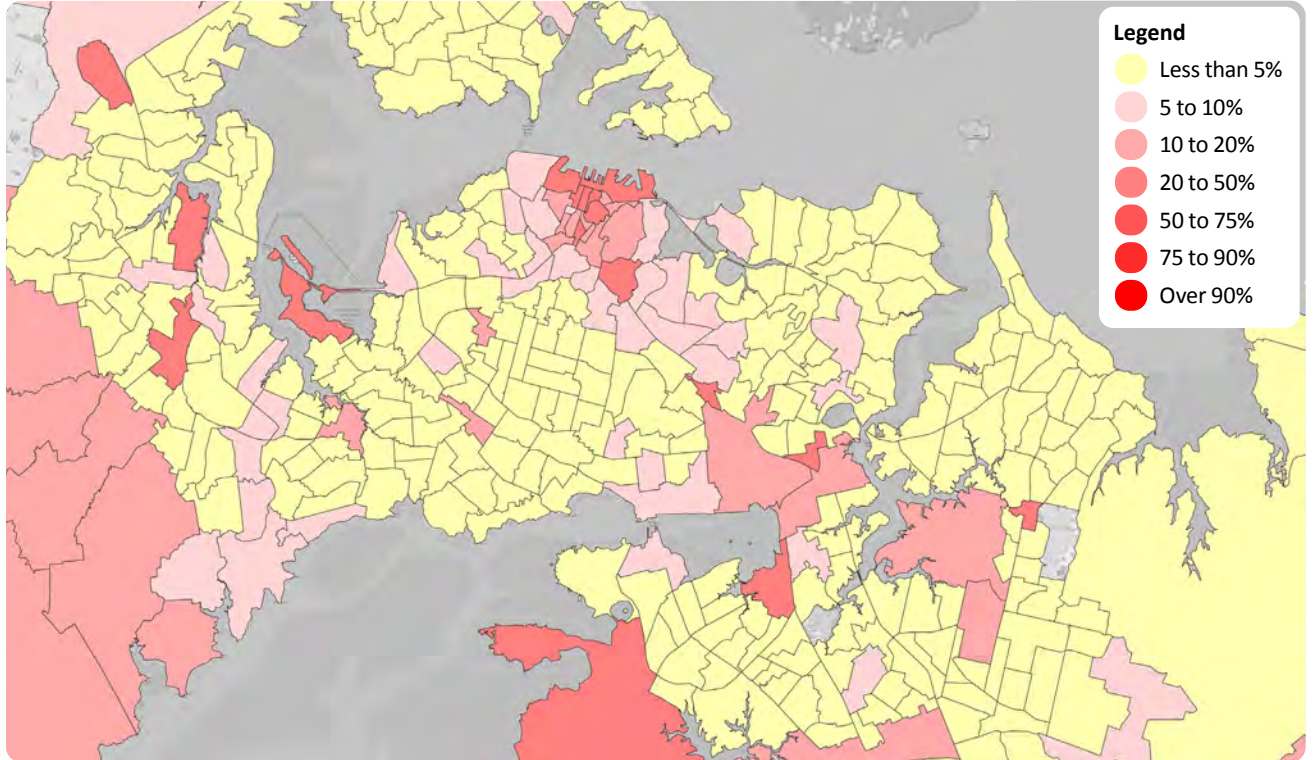
- Uptake of copper connections across Auckland is low, with areas around the CBD and Remuera having a slightly higher uptake of copper connections. This reflects Chorus withdrawing copper in urban areas with only certain areas within Auckland remaining with copper connections.
- Uptake of copper remains higher on the urban fringe where copper has not been withdrawn as the copper cabinets serve both urban and rural customers (for whom copper cannot be withdrawn).

4G cellular fixed wireless



Source: Commission data

Copper

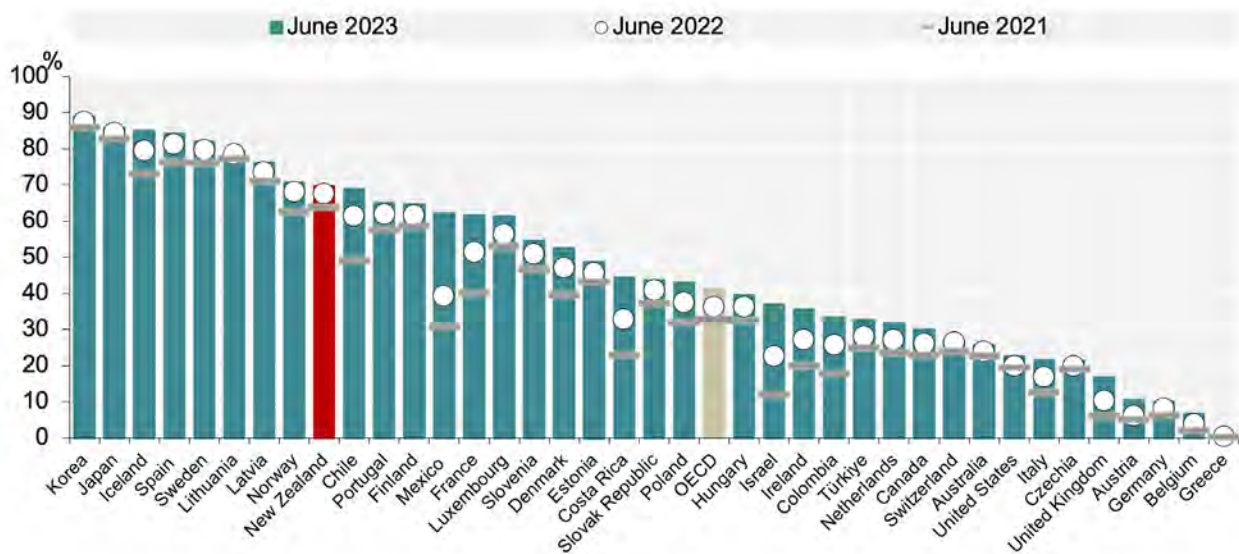


Source: Commission data

OECD technology comparisons

Figure 7 below shows fibre connections as a percentage of total fixed broadband connections in OECD countries. New Zealand ranks ninth in the OECD, with its uptake of full fibre broadband higher than the OECD average.⁴³ New Zealand’s annual growth in fibre subscriptions is around 7% and is lower than the OECD average of 16% reflecting slowing growth rates at the end of the UFB roll-out.

Figure 7: Percentage of fibre connections in total fixed broadband



Source: OECD (June 2023)⁴⁴

43. <https://www.oecd.org/digital/broadband/broadband-statistics/>

44. <https://www.oecd.org/digital/broadband/broadband-statistics/>

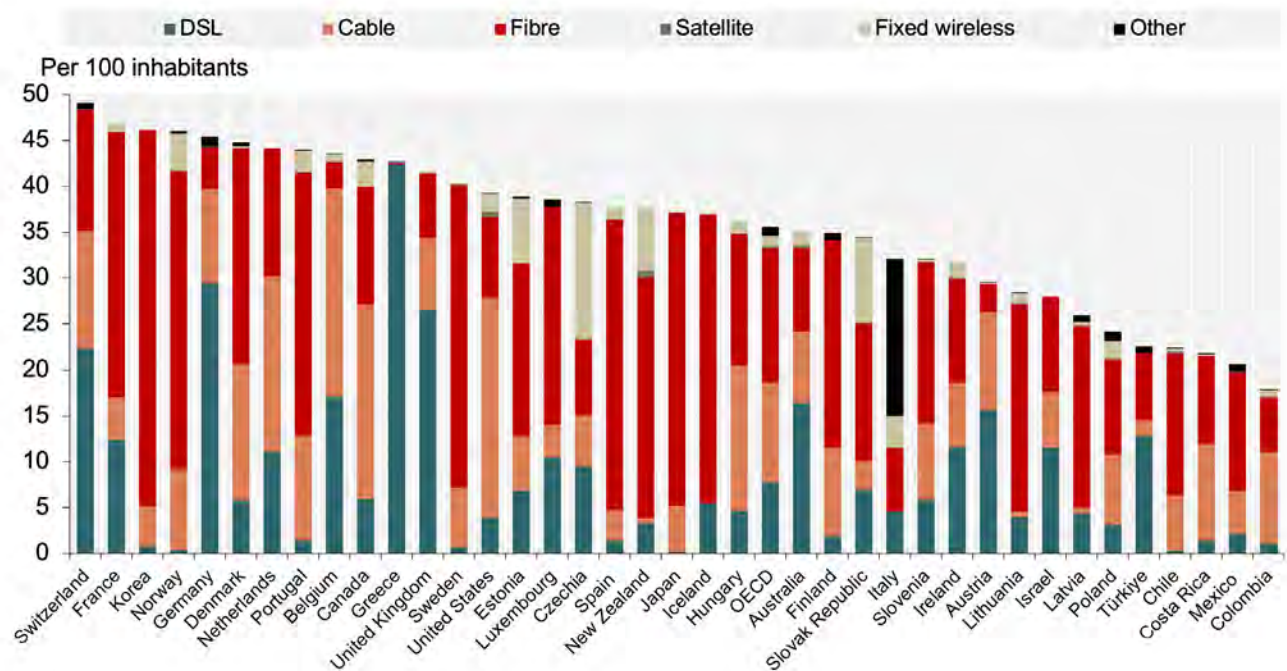
Figure 8 below shows the broadband technology mix of OECD countries.

New Zealand ranks 36 out of the 38 OECD countries for the number of copper connections per 100 inhabitants.⁴⁵ This reflects how consumers have switched away from copper with the UFB roll-out. This is further driven by Chorus' withdrawal of copper services in urban areas, meaning households must

switch to a different access technology. Around 82% of connections moving off copper are shifting to a fibre service.⁴⁶

New Zealand also has a relatively high proportion of fixed wireless broadband connections. The figure above shows that New Zealand ranks fourth in the OECD for the number of fixed wireless connections per 100 inhabitants.

Figure 8: OECD Fixed broadband subscriptions per 100 inhabitants, by technology



Source: OECD (June 2023)⁴⁷

45. <https://www.oecd.org/digital/broadband/broadband-statistics/>

46. Chorus HY24 Results, see – https://assets.ctfassets.net/7urik9yedtc/nzx-doc-413555/2927f97b649c5ba7deb4c5355d82d433/2_Investor_Presentation.pdf

47. <https://www.oecd.org/digital/broadband/broadband-statistics/>, note not all countries had data supplied.

Consumers of telecommunications services are presented with a wide range of retail offers that are products of the underlying market structure – the network infrastructure, its capabilities, ownership, regulatory settings, and competitive conditions.

Whether consumers understand and act on these offers is a product of the information available to them, including through marketing, and their innate preferences and behaviours.

2023 Highlights

- We began publishing customer service rankings for RSPs to help consumers identify the providers with the best customer service and encourage providers to improve their performance.

Understanding

The dynamic of wholesale-only LFCs providing fibre, and vertically integrated MNOs offering retail 4G wireless broadband services, has impacted the retail offers presented to consumers. LFCs are incentivised to get RSPs to move their consumers towards higher speed plans (such as Fibre Max). Moving end-users to higher speed fibre plans increases LFCs' revenue and reduces the perceived substitutability of their services with 4G cellular fixed wireless broadband.

Conversely, MNOs are incentivised to promote their wireless broadband products to minimise wholesale input costs and fully utilise their mobile networks. However, due to the technical capabilities of wireless broadband, the latency and speeds experienced on 4G plans may not be suitable for some consumers. The LFCs all sell Fibre 50 services which compete directly with the MNO 4G cellular fixed wireless products. Fibre 50 is also one of the fastest growing wholesale fibre services as RSPs compete for more price-sensitive consumers.

The bundling of broadband services with electricity and other services has grown significantly over the last few years as more electricity providers have begun to offer broadband services. This has led to concerns that consumers are finding it harder to compare prices and other key information when choosing what broadband product to purchase.

Many consumers are not aware of alternative technologies that they could switch to that would better suit their needs. 77,000 households are still using copper broadband services in urban areas where they could switch to a Fibre 50 product which is both cheaper and performs better than a copper broadband service.⁴⁸

48. According to our Measuring Broadband New Zealand testing.

MARKET OUTCOMES PUTANGA MĀKETE

Market outcomes flow from market structure, and cover the performance of telecommunications infrastructure, the levels of wholesale and retail pricing, through to consumer affordability and satisfaction.

INFRASTRUCTURE HANGANGA

Reliable, adaptable, and high-performing telecommunications infrastructure is fundamental for positive connectivity outcomes in Kiwi homes and businesses.

2023 Highlights

- Our RealSpeed testing shows drops in speeds between the router and the device across all technologies on home Wi-Fi networks – with the greatest drops observed for high-speed plans such as Fibre Max and HFC (the average speed between the router and device dropped by 64% and by 73% respectively).
- Urban connections experience fewer and shorter faults than rural connections. Urban customers on copper services are more likely to experience service interruptions than those on fibre.
- New Zealand’s average broadband download speed is 97Mbps – the 13th fastest in the OECD – ahead of Australia, the United Kingdom, Ireland, and Germany.⁴⁹

49. <https://www.cable.co.uk/broadband/speed/worldwide-speed-league/>

Performance

Broadband performance is about how much and how quickly data can move between the end-user and the online content they are accessing. This data is moving back and forth across telecommunications infrastructure – from the end-user’s device to servers around the world. We independently measure this through our Measuring Broadband New Zealand (MBNZ) programme.

Our analysis of broadband performance in urban areas covers fibre, HFC, 4G cellular fixed wireless broadband, 5G cellular fixed wireless broadband, LEO satellite, VDSL, and ADSL technologies.

To undertake the analysis, we have split our MBNZ results into urban and rural areas. The results for broadband performance in rural areas can be found in the rural chapter.

Broadband speed

Download and upload speed, in megabits per second (Mbps), as measured in our MBNZ programme, is the speed data travels between the internet and the router in the home.

The table below provides a guide on what activities various download speeds allow. Note that other factors such as latency and the location of hosted content will impact the online experience.

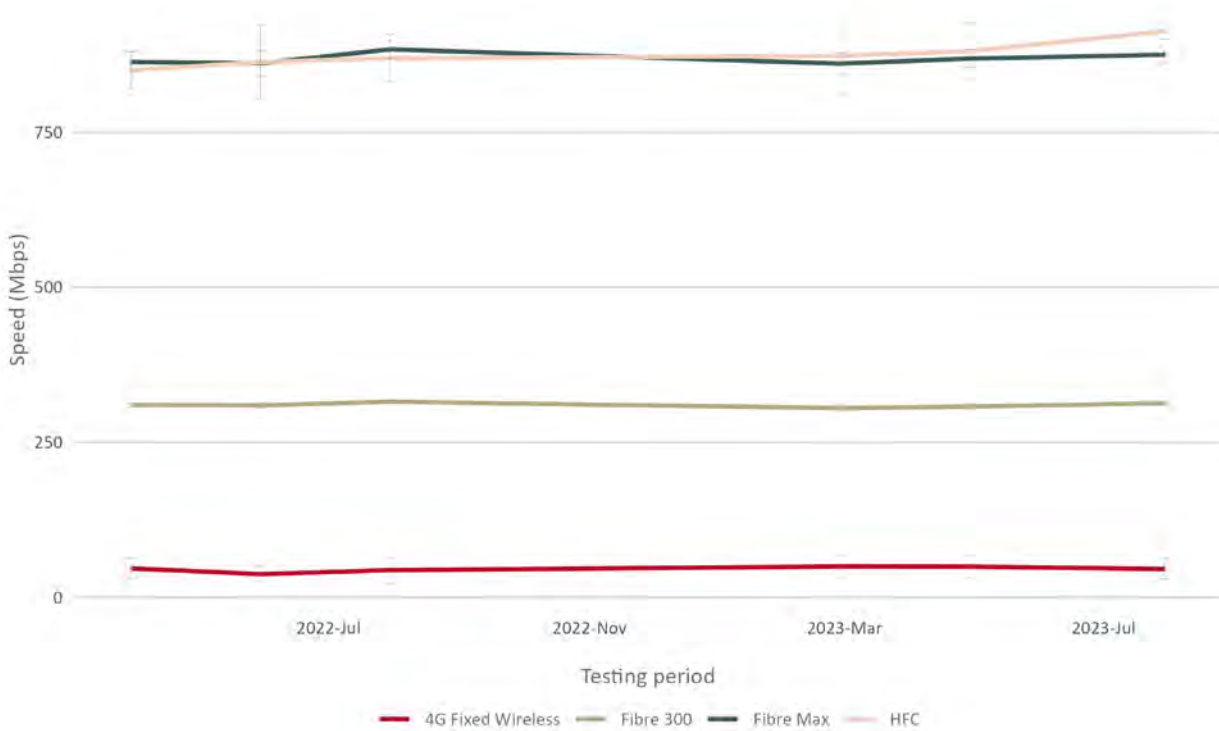
Upload speeds should be considered alongside download speeds. The main applications where the impact of upload speed is apparent are file transfers and video conferencing. For example, a lower upload speed will mean that it takes longer for files to sync or email attachments to be applied.

Download speed	Online experience
0 – 5Mbps	Browse the internet, use search engines, use emails, watch videos in lower resolutions (up to 720p). Individual large files take a long time to download (1GB at 5Mbps takes over 25 minutes).
5 – 40 Mbps	Possibly able to stream up to UHD on one device, or stream HD (1080p) on multiple devices. Able to download large individual files in a reasonable amount of time (1GB at 40Mbps takes just over 3 minutes).
40 – 100Mbps	Comfortably able to stream UHD without interruption, and have multiple people use streaming services. Able to download larger files, e.g. smaller modern game releases, in a reasonable amount of time (20GB at 100Mbps takes just over 25 minutes).
100 – 500Mbps	Multiple users can stream UHD video without interruption. Large files download very quickly (1GB at 500Mbps takes 16 seconds). Larger game releases download in a reasonable amount of time (80GB at 500Mbps takes just under 22 minutes).
500 – 1,000Mbps	Able to download even the largest video games quickly (120GB at 1000Mbps takes 16 minutes).
1000 – 8,000Mbps	6 to 25 times faster download speeds than the most common fibre plan (Fibre 300). Able to download large games very quickly (120GB at 4,000Mbps takes around 4 minutes).

Figures 9 and 10 below show the average urban download and upload speeds for the technologies measured by the MBNZ programme between June 2022 and July 2023.

Average download speeds across urban technologies measured have remained stable since July 2022.

Figure 9: Average urban download speeds (24h)

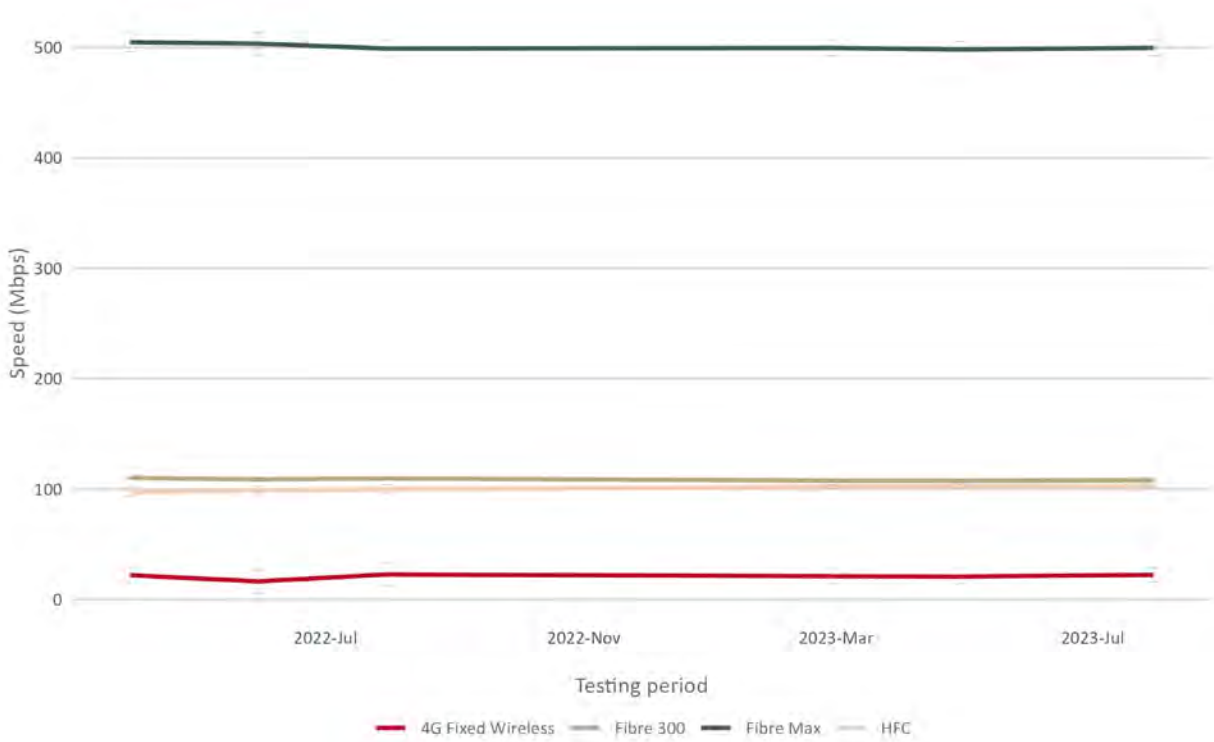


Source: Commission analysis of MBNZ data⁵⁰

50. The lines above and below each point show the 95% confidence intervals.

Average upload speeds across urban technologies measured have also remained stable in the year since our testing in July 2022. Fibre Max has significantly higher upload speeds than the other plans tested. Higher upload speeds are important for consumers to help ensure a consistent experience, particularly when it comes to using video conferencing and online meetings applications, and to ensure a stable upload speed for smooth gameplay for gamers.

Figure 10: Average urban upload speeds (24h)



Source: Commission analysis of MBNZ data⁵¹

51. The lines above and below each point show the 95% confidence intervals.

Latency

Figure 11 below shows the average urban latency for the technologies measured by the MBNZ programme between June 2022 and July 2023.

Latency is the delay an internet connection experiences. In this metric, lower values are better than higher values.

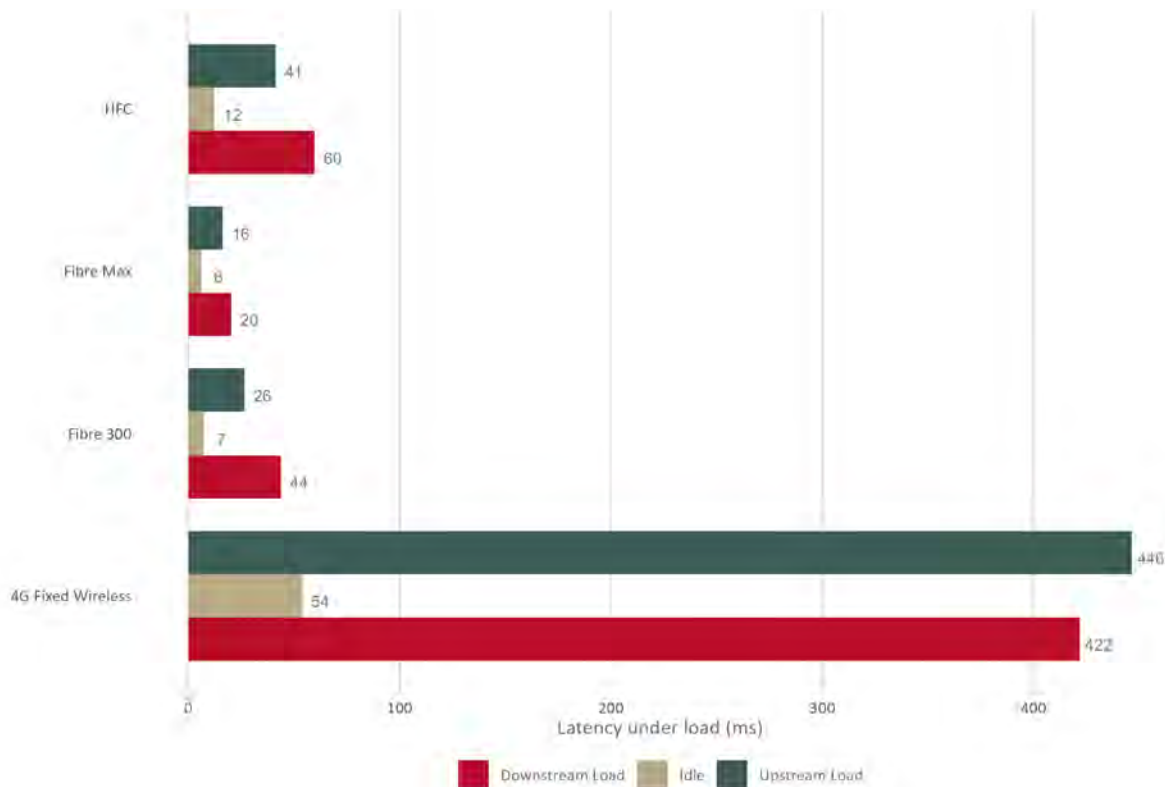
For someone playing an online game, higher latency introduces more delay between the time that they press a button and that action being registered by other players. Higher latency can also cause video calls to jump or dropout more often.

Latency under load

Figure 11 below shows that latency under load has a material impact on performance of urban 4G cellular fixed wireless connections compared with fibre or HFC connections.

Latency under load refers to the end-to-end latency of an internet connection when the network is loaded with traffic for a period. In our MBNZ testing we run multiple speed tests in parallel as a proxy for a more heavily utilised network connection. This test is more indicative of real-world usage i.e. multiple devices in the home competing for bandwidth.

Figure 11: Average urban latency under load (24/7)



Source: Commission analysis of July 2023 MBNZ data

Netflix⁵²

Our testing between June 2022 and July 2023 found that around 100% of connections tested on Fibre Max, Fibre 300, and HFC plans could stream four ultra-high-definition (UHD) streams concurrently.

Around 75% to 90% of households tested with a 4G fixed wireless connection could reliably support two UHD streams concurrently. Between 50% and 85% of households with a VDSL connection could do the same. No households on ADSL plans could reliably support two UHD streams concurrently.

Our testing also showed that Fibre 300, Fibre Max, and HFC plans could all comfortably stream four or more Netflix streams concurrently. These plans are more suitable for multi-user households.

Netflix is the most popular subscription streaming service in New Zealand with 42% of Kiwis aged 15 and older using the service in 2023. As such, the ability to stream Netflix in ultra-high-definition (**UHD**) is something our MBNZ programme measures.

Our MBNZ results reflect not just the performance of the infrastructure and RSPs, but also any changes Netflix makes in the background – in particular, video and audio encoding, which is the process of compressing files (making them smaller to download) without compromising the quality.

Figure 12: Netflix – ability to stream two ultra-high-definition streams in urban areas

Fibre 300 Fibre Areas, n = 305	UHD 100%	UHD 100%	UHD 100%	UHD 100%	4+ simultaneous UHD video streams
Fibre Max Fibre Areas, n = 336	UHD 100%	UHD 100%	UHD 100%	UHD 99%	4+ simultaneous UHD video streams
HFC Max Fibre Areas, n = 22	UHD 100%	UHD 100%	UHD 100%	UHD 100%	4+ simultaneous UHD video streams

Source: Commission analysis of MBNZ data

52. Where Are the Audiences 2023, NZ On Air, see – <https://www.nzonair.govt.nz/research/where-are-the-audiences-2023/>

Remote working

Internet New Zealand research showed that in 2023, 61% of employed New Zealanders do the type of work that allows them to work from home. Of these workers, 75% worked from home all or some of the time.⁵³

Our MBNZ programme tests performance across technologies for different video conferencing services. Figure 13 below shows the average latency of different technologies to the most popular video conferencing services. Fibre plans (Fibre 300 and Fibre Max) have the lowest latency across all services. Latency for Zoom’s free service was high across all technologies. This is because Zoom provides paid subscribers with access to servers geographically nearer to the users, than for unpaid subscribers. This results in lower latency for paid subscribers.

Lower latency is important for a good experience using video conferencing services, including when working remotely.

For someone in a video call, higher latency will result in a longer delay between users receiving audio or video from the person or people at the other end of the call. Higher latency can also cause video calls to jump or dropout more often.

Server location is another factor that affects the latency of video conferencing services. Services that use servers geographically further away from users will experience higher latency as traffic is required to travel further.

Figure 13: The urban p servers of different video conferencing services using free and paid accounts by plan



Source: SamKnows analysis for Commission

53. IGEA “Digital New Zealand 2023”, page 38. Available at https://igea.net/wp-content/uploads/2023/08/IGEA_NZ2023_REPORT-Final.pdf

In-home Wi-Fi speed

Our MBNZ programme tests volunteers' broadband performance to their router. However, our testing partner SamKnows also has a "RealSpeed" product that allows volunteers to test the performance they are receiving on their devices, showing their real in-home experience.

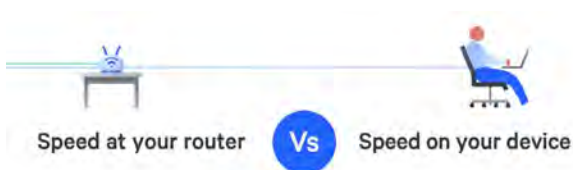


Figure 14 below shows the results of the national RealSpeed testing we conducted in July 2023.⁵⁴

The testing found that for high-speed fibre and HFC plans there is a large difference between speeds achieved by the Whitebox (which tests router performance) and the speed achieved by the end-user device (such as a laptop, tablet, or phone).

- For Fibre Max connections, the average speed dropped by 64% between the router and device; and
- For HFC connections, the average speed dropped by 73% between the router and device.

These results highlight the importance of in-home Wi-Fi set-up and device capabilities within Kiwi homes, and the impact this can have on the end-to-end connectivity chain. For example, the speed achieved by the end-user device may be influenced by how many other concurrent devices are using the Wi-Fi connection, the location of the router in the home, any connected mesh network devices, and the capabilities and age of the router, and of the end-user device.

However, speeds to devices using Fibre Max or HFC connections are still faster than other alternatives and connections can support more bandwidth-hungry users within the household.

Wi-Fi is a key part of the end-to-end performance most Kiwis experience each time they go online. While many providers encourage consumers to connect directly to their in-home broadband services (using an ethernet cable), outside of the main TV or computer, most Kiwi homes rely on Wi-Fi for their in-home connectivity.

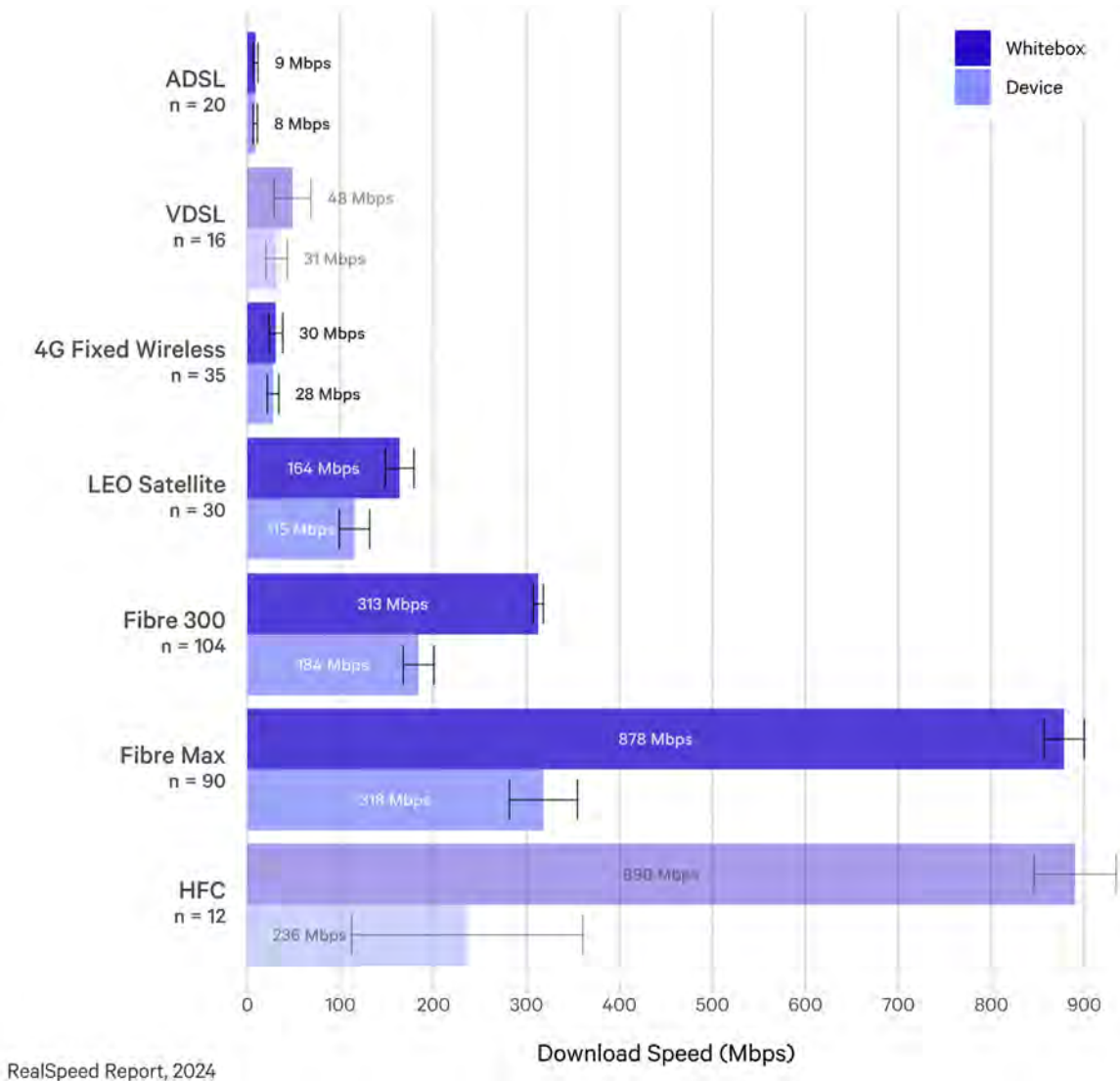
As Wi-Fi devices use radio frequencies, their performance is sensitive to a range of factors, such as the size of the home, walls, and other radio frequencies (such as microwaves and other Wi-Fi networks).

54. Analysis is based on 700 MBNZ volunteers who ran enough tests in the testing window to qualify for inclusion. To ensure statistical significance volunteers needed to run more than 5 RealSpeed download tests over 5 different days throughout July to qualify for inclusion. The test results are likely to include wired devices (ethernet). RealSpeed does not control for wired vs wireless.

Our testing also shows the average speeds to different devices – such as a laptop, or a smartphone, or a tablet – within a single home run over Wi-Fi. Average download speeds vary across different devices running RealSpeed tests within the home. This shows that the age and type of device used can have a significant impact on the download speeds a user experiences.

This could be due to a variety of factors, such as testing the devices in different rooms, or newer devices having better Wi-Fi capability.

Figure 14: Average urban and rural download speeds to the router vs speeds to the device⁵⁵



Source: SamKnows analysis for Commission

55. Average of household averages. Error bars show 95% confidence intervals of the mean.

OECD speed comparison

In 2023, New Zealand ranked 13th in the OECD, with average fixed broadband download speeds of 97Mbps, up from 94Mbps in 2022.⁵⁶ Average urban and rural download speeds to the router vs speeds to the device
Figure 15 below compares New Zealand against a subset of OECD countries. New Zealand’s average fixed broadband download speeds exceed average speeds in Australia, Ireland, Germany, the United Kingdom, and the OECD average of 91Mbps. A key factor is that New Zealand has a higher percentage of fibre connections compared with the other countries mentioned (see the section below on OECD technology comparisons).

M-Lab data is a measure of the speed available to a device via the router. The speeds shown above for New Zealand are slower than those recorded in our main MBNZ programme, which measures speeds to the router and reports those by each technology.⁵⁷

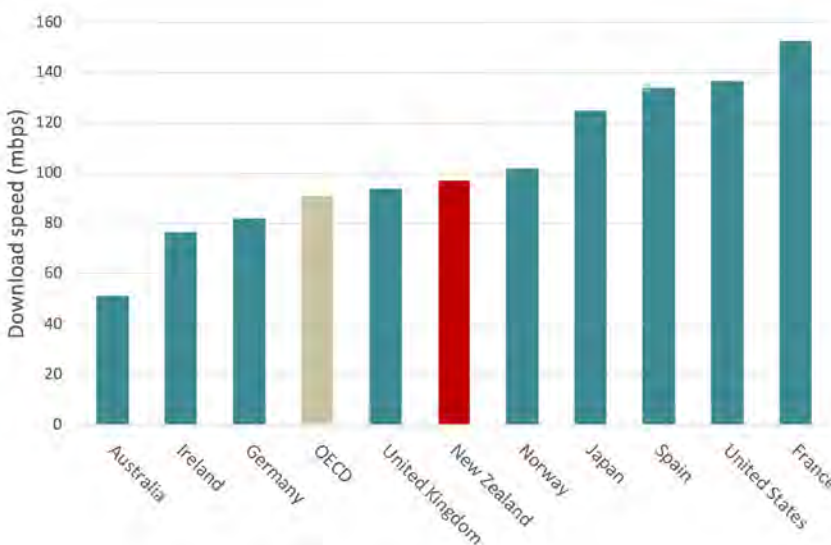
Speed drop-off between the router and the device is a common phenomenon, particularly when a

device is connected via Wi-Fi, reflected in the RealSpeed trial results reported above.

According to M-Lab, increases in New Zealand’s download speeds year-on-year have slowed in 2023, with speeds only increasing by 3% from 2022.⁵⁸ This may reflect the impact of the fibre speed boost from 100Mbps to 300Mbps, which was captured in previous reporting, and the UFB roll-out completion in 2022. With many households in urban areas already on fibre, the growth rate for fibre uptake is slowing.

The website Cable.co.uk creates a yearly worldwide broadband speed league based on data gathered internationally by Measurement Lab (**M-Lab**). The league ranks the average download speed recorded by devices on fixed broadband connections available in each country. Accordingly, countries with higher fibre penetration rank higher than those with more copper connections.

Figure 15: M-Lab average national broadband download speed (all technologies)



Source: Cable.co.uk worldwide broadband speed league

56. <https://www.cable.co.uk/broadband/speed/worldwide-speed-league/>

57. Methodology for the speed league, including an explanation of why results differ from router-based testing such as MBNZ, can be found at https://www.cable.co.uk/broadband/worldwide-speed-league/2023/worldwide_speed_league_methodology.pdf

58. <https://www.cable.co.uk/broadband/speed/worldwide-speed-league/>

Resilience

For our Rural Connectivity Study, we requested resilience data from providers, including faults and battery backup data for fixed cabinets and cellular and non-cellular wireless sites. The quality of this data has varied across providers which has meant we are unable to include this analysis in the report at a national level.⁵⁹

Fibre networks

Copper networks are more prone to damage than fibre or cellular networks, in part due to the age of the network, and the amount of overhead vs underground cabling. Copper networks are dependent on powered equipment in suburban streets to transmit electrical signals. In comparison, fibre is a passive network and uses light to transmit data.⁶⁰ This makes copper networks more prone to impacts from flooding and water inundation as the electricity powering the cables can be affected by moisture. This suggests that fibre is more resilient than legacy copper technologies to weather events and other natural disasters.⁶¹

In early 2023, the North Island was impacted by the Auckland floods and Cyclone Gabrielle, which caused significant damage to telecommunications networks. Chorus reported that during Cyclone Gabrielle copper network customers were up to ten times more likely to lose service than those on fibre. Chorus also said it restored fibre services twice as fast as copper services.⁶²

59. We are continuing to consider what monitoring the Commission can undertake in relation to the resilience of telecommunications networks and services.

60. TCF "2023 Telecommunications Resilience Plan" page 14 see <https://www.tcf.org.nz/news/2023-telecommunications-resilience-plan>

61. See <https://www.chorus.co.nz/blog/how-bad-weather-affects-different-types-broadband>

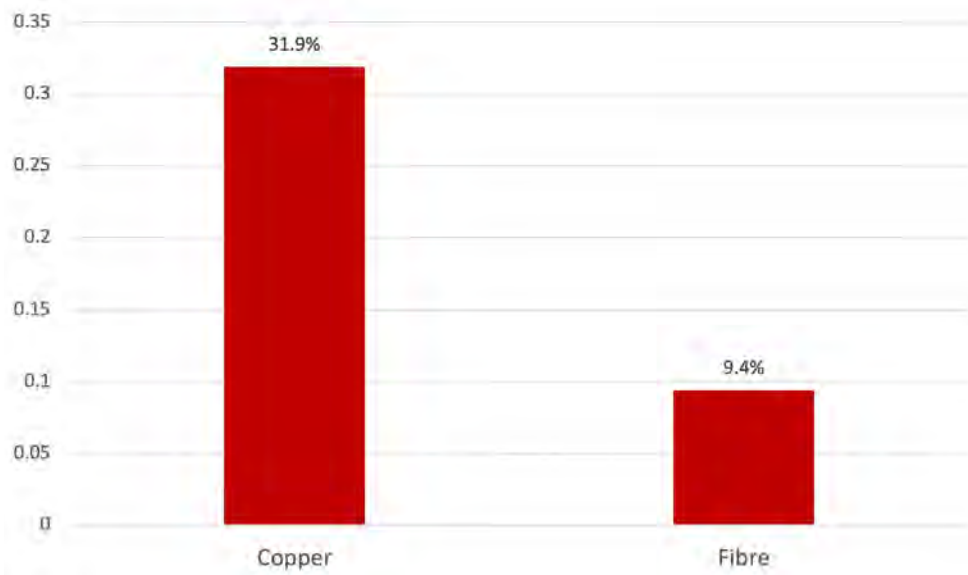
62. Chorus "Annual Report 2023" see <https://company.chorus.co.nz/investors/financial-reports/financial-results-presentations/2023-full-year-financial-results>

Reliability

For the first time, we have collected data from providers on the number and duration of faults experienced by connections. We received data about faults on copper, satellite, and some fibre connections.⁶³ There were some variances in the quality of the data provided, but the quality of the limited data sample is useful for indicative performance this year. We will review how we collect this data in the future.

Figure 16 below shows the average number of faults per urban fibre and copper connection, defined as involving a service interruption, in the two years from July 2021 to June 2023. 9.4% of fibre connections nationwide experienced a fault in that period, with an average fault duration of 151 minutes.

Figure 16: Percentage of urban connections that experienced one or more faults between July 2021 and June 2023



Source: Commission data

63. We defined a fault as a service interruption to a connection.

Wholesale-level pricing plays an important part in shaping retail-level pricing for consumers. Regulatory oversight or obligations commonly apply at the wholesale level of the market.

2023 Highlights

- There are small differences between LFC pricing on key bitstream products.
- Chorus pricing changes are in line with CPI inflation.
- Chorus and Tuatahi continue to offer discounted 50Mbps products.

The regulatory regime for fibre networks requires LFCs to offer several wholesale products. However, with a few exceptions, they have freedom to offer and price products on a commercial basis.

Telecommunications companies subject to price-quality regulation (currently Chorus) must ensure geographically consistent pricing. This means that prices for services must be uniform across different regions, ensuring fairness in service costs throughout the country.

Telecommunications companies subject to information disclosure regulation (currently Chorus and the LFCs) are required to periodically publish information about their performance. This includes requirements to publish data on pricing, current and future expenditure, quality performance and financial statements.

Spark, One NZ, and 2degrees are the largest wholesale customers of Chorus and the other LFCs. These MNOs also offer cellular fixed wireless broadband services over their cellular networks.

There is competitive tension between wireless and fixed broadband services that is reflected in the prices of these services.

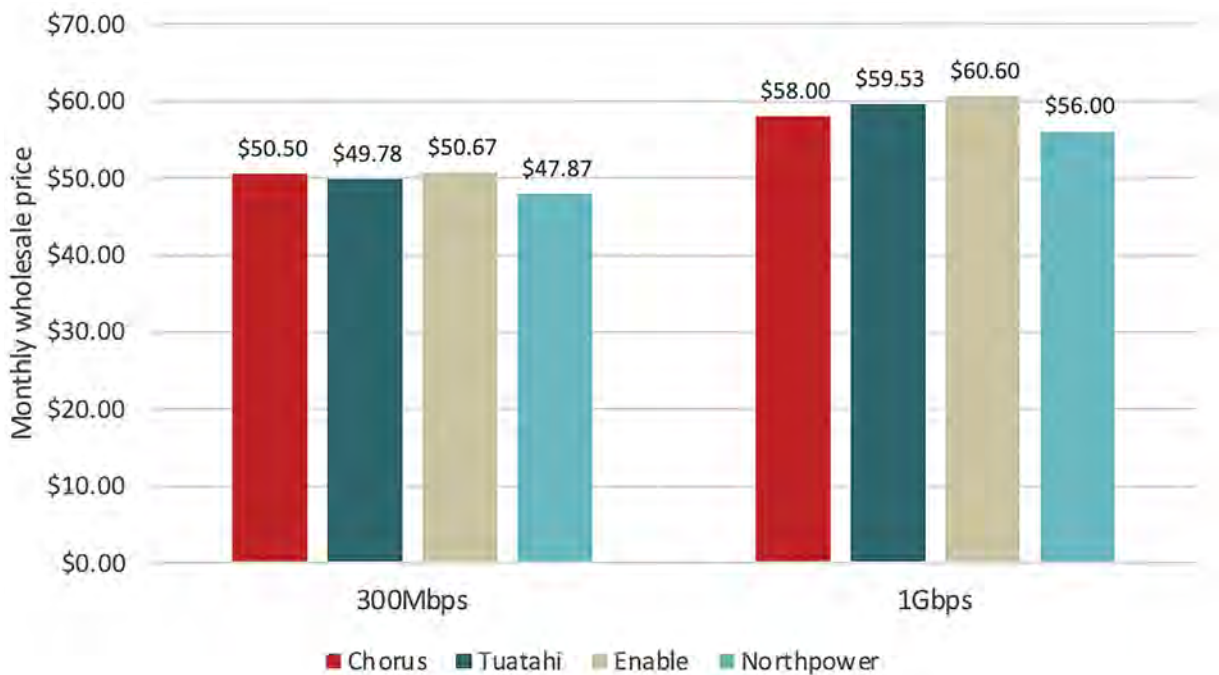
Fibre service pricing

As shown in Figure 17 below, Chorus and the LFC pricing for Fibre 300 and Fibre Max are fairly similar.

In July 2023, Chorus announced changes for the wholesale price of its core bitstream products, effective from October 2023. Chorus' price increases to its **Broadband Anchor, Voice Anchor, and User Direct Fibre Access** services are subject to annual CPI-adjusted price caps.⁶⁵

Chorus increased the price of its 300Mbps product by 5.5%, which it has tethered to the price of the Broadband Anchor Service. Chorus increased the 1Gbps product by 3.6% which is less than the March CPI increase. Chorus cited higher costs as the reason for these price increases.

Figure 17: Wholesale fibre prices



Source: LFCs' price lists (as of June 2023).⁶⁴

64. Wholesale price lists are available on each LFC's website.

65. The maximum price increases or decreases (as appropriate) is in line with the annual CPI adjustment on 1 July each year. In July 2023, this increase was 6.0%.

50Mbps service

*Table 6: Fibre 50 wholesale fibre prices
(as of June 2023)*

LFC	Fibre 50/10 (Fibre starter)	Fibre 50/20
Chorus	\$35.00/\$47.28	
Tuatahi First Fibre	\$38.00	\$45.99
Enable		\$46.82
Northpower		\$52.79

Source: LFCs' price lists⁶⁶

Both Chorus and Tuatahi continue to offer a discounted 50Mbps 'fibre starter' wholesale product. Chorus introduced its 'fibre starter' wholesale product in April 2022. This is currently priced at \$35 per month. Chorus restricts its offer to RSPs who retail the service at (or below) \$60 per month. As of June 2023, RSPs who charge above \$60 (inc GST) for the service to end consumers are now charged the standard wholesale fee of \$47.28 by Chorus.

The Fibre 50 wholesale product competes with MNO 4G cellular fixed wireless plans which target price-sensitive consumers. The MNOs have continued to reduce the cost of their plans over the last few years. This may be the reason Chorus has chosen to not adjust pricing for its Fibre 50 product. It also creates a larger price difference between Fibre 50 and higher-priced copper broadband which may encourage urban customers still on copper connections to move to fibre.

Tuatahi introduced a similar discounted 50Mbps 'fibre starter' product for \$38 per month wholesale in September 2022. Tuatahi does not impose a fixed retail price cap for its offer but has a target retail price of \$60 (inc GST). Tuatahi reserves the right to revert to the standard charge for the service if retailers do not pass on the benefit to consumers.⁶⁷

Enable and Northpower do not offer a discounted 50Mbps wholesale product and price their standard 50/20 Mbps product at \$46.82 and \$52.79 respectively.⁶⁸

66. Wholesale price lists are available on each LFC's website.

67. Tuatahi "Fibre starter repositioned" – see <https://www.tuatahifibre.co.nz/articles/fibre-starter-repositioned>

68. Enable's July 2023 price list is available at <https://www.enable.net.nz/assets/Reference-Offers/Enable-UFB-Price-List-Jul-2023-v1.15.pdf>; Refer to "Northpower Fibre UFB1 and UFB2 Services Agreement Price List Version 2.7 (1 July 2023)"

Retail pricing outcomes are based on the underlying infrastructure or wholesale costs but also take into account competitive dynamics, relativities between offers, and consumer demand.

2023 Highlights

- Larger RSPs have passed through wholesale price increases of around \$5 to \$7 per month for fibre and copper-based broadband services. However, some of the smaller brands have reduced retail pricing on these services by a similar amount.
- Urban broadband prices are in line with, or lower than, OECD averages.
- The most common urban plans connected by technology are Fibre 300 on fibre, Unlimited VDSL on copper, and 40GB-60GB 4G cellular fixed wireless plans.

The urban retail market is characterised by the three MNOs, who are also the largest RSPs for fibre broadband, balancing higher margins on their own cellular fixed wireless networks with wholesale fibre deployed across the customer base. There is a long tail of smaller broadband RSPs in the market, including energy retailers that bundle broadband with energy services.

Prices

We use two indicators for retail pricing. Teligen’s global price benchmarking looks at the lowest available prices across incumbent providers that make up at least 70% of customers in each country. In the case of New Zealand, Spark, One NZ, 2degrees, and Slingshot are the brands included.

We also use the average price of a larger selection of New Zealand providers across multiple technologies including fibre, copper, HFC, WISP networks, and satellite. We collect these prices periodically.

Table 7: Most common urban plans per technology

Technology	Average price of all plans on this technology 2023 ⁶⁹	Most common plan on this technology
Fibre	\$89	Fibre 300 unlimited
4G cellular fixed wireless	\$68	40GB capped
5G cellular fixed wireless	\$83	Unlimited
Copper	\$87	VDSL unlimited
HFC	\$63	Unlimited

Source: RSPs’ websites

69. For all residential retail plans by access technology. For fibre, only Fibre 300 plans were included.

Fibre

Fibre 300 is the most common urban fibre plan with two-thirds of residential consumers opting for this plan as of June 2023.⁷⁰

Fibre 300 retail pricing ranges from \$69 per month to \$100 per month. Smaller retailers tend to offer prices below the average, and larger retailers' pricing tends to sit at or above the average, ranging from \$90 to \$98 per month.

4G cellular fixed wireless

Around 45% of urban cellular fixed wireless broadband plans have a cap of 60GB or less. These plans have the least amount of data and the lowest prices, ranging from \$40 to \$51.75 per month. These plans will suit people with light internet usage, such as checking emails, social media, and browsing web pages.

The next most common urban 4G cellular fixed wireless plan is the unlimited data plan, accounting for around 32% of these connections. The prices for these plans range from \$55 to \$99 per month. The MNOs tended to have retail prices on the lower side of the average compared with non-MNOs that are retailing these plans via an MNO wholesaler.

Copper

In urban areas, copper customers are most likely to be on an Unlimited VDSL connection. Prices range from \$80 to \$106. Since March 2023 Chorus has placed a 'stop sell' on new copper services in areas where UFB fibre is available through Chorus or one of the LFCs.

HFC

One NZ is the network provider and sole retailer of broadband services on the HFC network available in parts of the Wellington region, Kāpiti Coast District, and parts of Christchurch. There is one current plan, around 900Mbps download speed, and unlimited data, which as of June 2023 was available online for \$63 per month.

70. Chorus FY23 Investor Presentation, see – <https://company.chorus.co.nz/investors/financial-reports/financial-results-presentations/2023-full-year-financial-results>

Wholesale flow through to retail pricing

The gap between wholesale and retail prices for Fibre 300 sits at approximately \$38, based on average retail prices, or \$29 based on Teligen’s price benchmarks.⁷¹ This is on par with 2022 where the price gap was approximately \$37. The gap between wholesale and retail prices for Fibre Max sits at approximately \$33, lower than last year’s price gap of \$43. Wholesale prices have increased since 2022. Major RSPs have increased retail prices in response, but some smaller RSPs have not.

While the price gap between wholesale and retail for Fibre 300 remains on par with last year, the total cost of accessing broadband services has increased since 2020 when some RSPs stopped offering free routers as part of the base price. Consumers can now either use their own router, pay a monthly router rental fee, pay outright for the router, or sign up for a term contract.^{72,73}

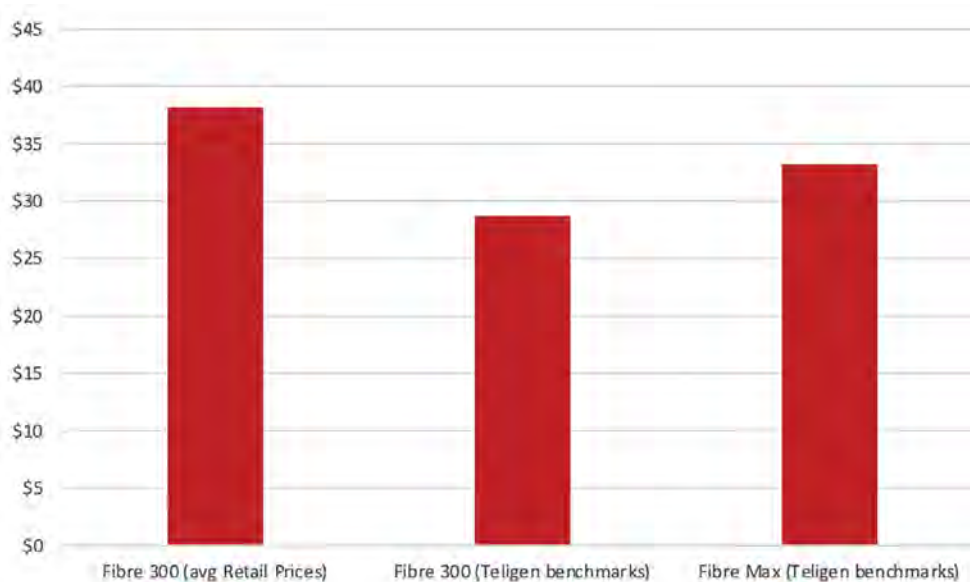
The retail price differential between Fibre 300 and Fibre Max sits at \$12. While Fibre Max offers faster speeds our MBNZ testing has shown that Fibre 300 will support all modern internet applications and the needs of multi-user households.⁷⁴ As such, the price premium for Fibre Max is most likely to be justified in cases where a household or business is frequently uploading or downloading large files or larger households with significant concurrent use.

Table 8: Teligen retail fibre price benchmarks⁷⁵

Plan	December 2021	December 2022	December 2023
Fibre 300	\$85	\$85	\$79
Fibre Max	\$100	\$100	\$91

Source: TechInsights

Figure 18: Wholesale to retail price gap



Source: TechInsights and Commission data

71. Which use a lowest price per basket methodology, rather than an average price across providers.

72. Spark “Essential Fibre Terms” (December 2022) – see <https://www.spark.co.nz/help/other/terms/personal-terms/essential-fibre-terms>

73. 2degrees “Fibre Broadband Offer Summary” (December 2022) – see <https://www.2degrees.nz/termsfuse/personal/broadband/offer-summary/2degrees-fibre-broadband-offer-summary>

74. MBNZ Spring 2022, page 5. Available at: https://comcom.govt.nz/_data/assets/pdf_file/0028/295804/MBNZ-Spring-Report-2022-27-October-2022.pdf

75. Lowest price across four incumbent providers.

MNO cellular fixed wireless broadband pricing

The retail prices for the most common 4G wireless broadband plans offered by MNOs have either held steady or increased by around \$5 in the past year – see Table 9. The average price gap between an unlimited 4G fixed wireless plan and a Fibre 300 plan decreased from around \$25 in December 2022 to around \$19 as of December 2023. Our MBNZ results show that fibre outperforms 4G wireless broadband, but consumers may be willing to accept lower performance for a lower price, and ease of installation in properties that do not yet have a fibre ONT installed.

The premium for a 5G fixed wireless plan over a 4G plan ranges from \$9 (2degrees) up to \$20 (Spark).

Table 9: MNO 4G cellular fixed wireless broadband monthly retail prices in urban areas

Plan	December 2021	December 2022	December 2023
40-60GB data cap	\$45	\$40 – \$50	\$40 – \$50
300GB data cap	\$55	\$45	\$55
Unlimited data	\$65 – \$70	\$60	\$55 – \$65

Source: MNOs' websites

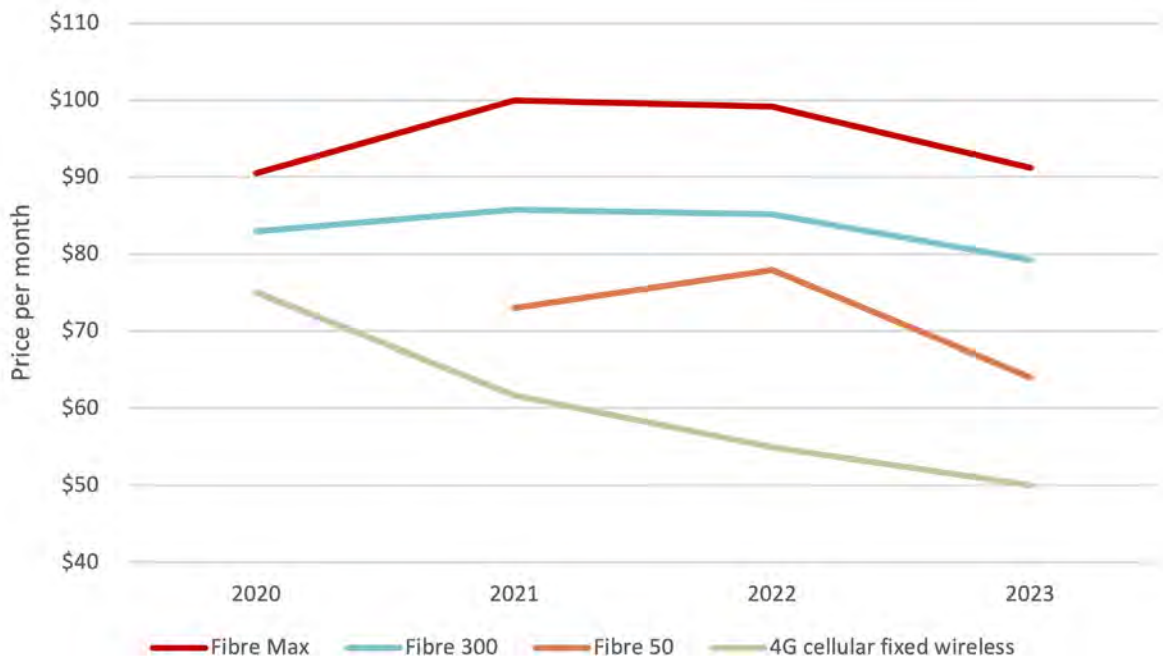
Fibre and fixed wireless broadband pricing trends

As shown in Figure 19, the Fibre 300 and Fibre Max benchmarks have dropped between 2022 and 2023. Larger RSPs increased fibre and copper retail prices, passing through wholesale price increases during this period. However, some retail brands, such as Slingshot and Skinny, reduced prices over the same period, which is picked up by Teligen’s benchmarking. Fibre 50 entered the benchmarking in 2021, experiencing a large price drop between 2022 and 2023, with major RSPs offering Chorus and Tuatahi’s discounted Fibre 50 wholesale products. These products may offer the RSPs a better margin profile than other fibre services, when sold at the maximum retail price. Additionally, Fibre 50 may

act as an alternative for 4G cellular fixed wireless in terms of price point and performance, where there may be coverage or capacity constraints.

The 4G cellular fixed wireless broadband benchmark has continued to fall over the last four years. This may be due to a variety of factors, including the different cost structures for the MNOs, the ‘discount’ required to win customers choosing between fibre and cellular fixed wireless broadband, and Chorus and Tuatahi discounting the prices on their competing wholesale Fibre 50 products.

Figure 19: Teligen fibre vs 4G cellular fixed wireless broadband benchmark retail prices in NZ⁷⁶



Source: TechInsights

76. Fibre price reflects the most common fibre plans (Fibre 50, 300 and Max). 4G cellular fixed wireless broadband price reflects a 4G 300Gb plan.

Consumers Price Index

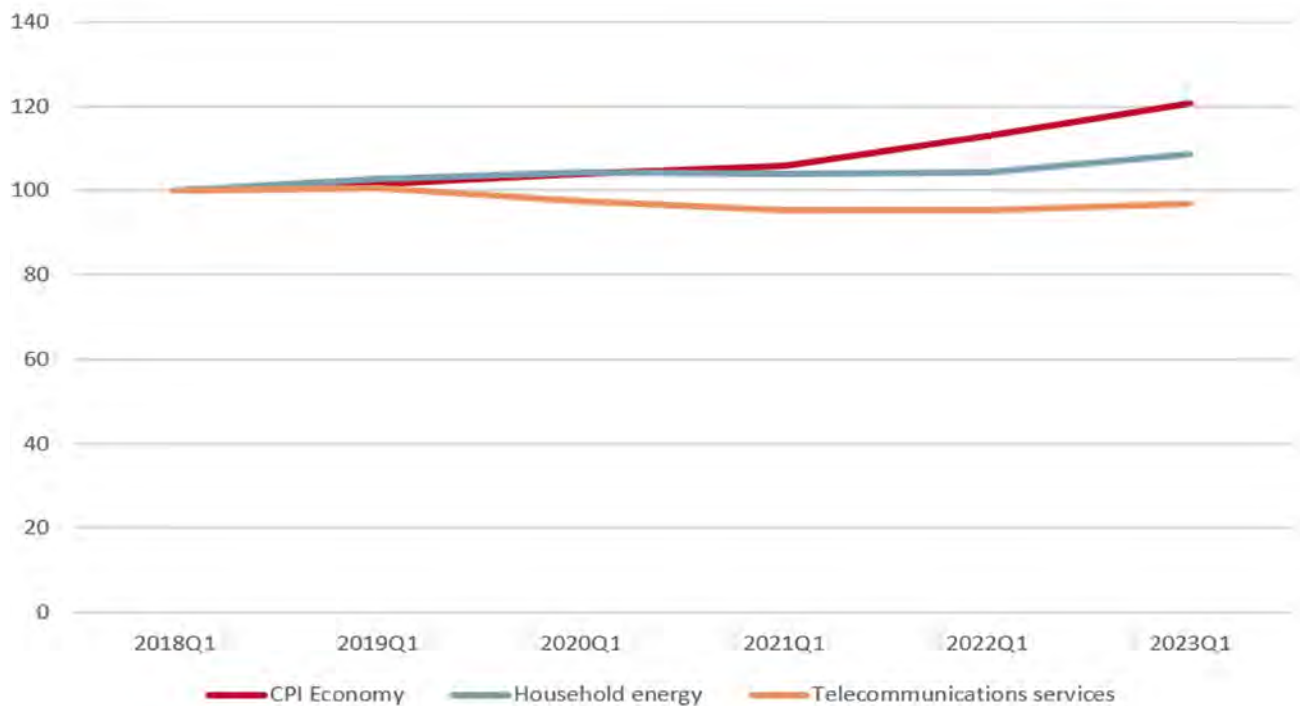
Over the period March 2018 to March 2023, prices for telecommunications services, as measured in the Consumers Price Index (CPI), fell by 3%. This compares with a 21% increase in the CPI economy, and an 8% increase in the prices for household energy services over the same period.

The CPI and its sub-indices (for example telecommunications services) is a constant quality index. This means that better quality services and plans are reflected as price decreases. For example, the speed upgrade applied to the 100Mbps plan – making it 300Mbps – without a resulting price increase is

treated in the CPI calculation as a quality improvement, which shows up as a price decrease to hold quality (in this case speed) constant.

As shown in Figure 20, the telecommunications services price index has been tracked down until mid-way through 2021, where price increases in telecommunications have marginally outstripped quality improvements being made by RSPs. Figure 20 shows that while there has been an increase in the price of telecommunications services relative to quality improvements over the past year, this increase has been less than that of both CPI and household energy services.

Figure 20: rebased CPI – telecommunications services vs energy 2018 Q1 – 2023 Q1



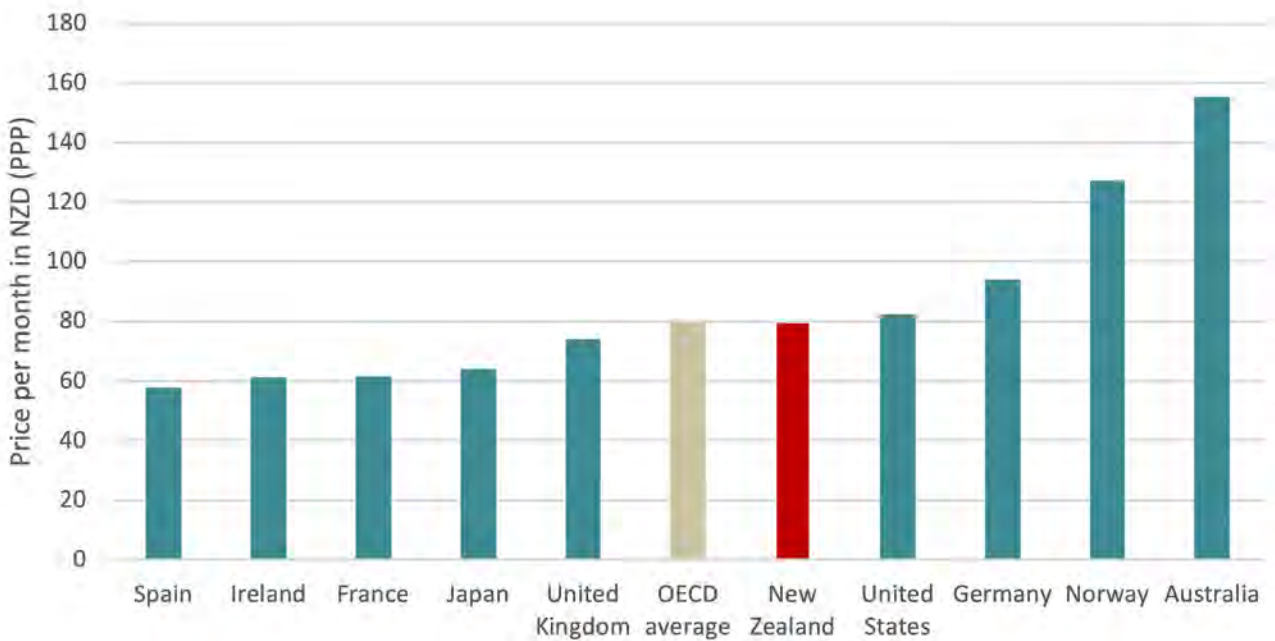
Source: Statistics New Zealand⁷⁷

77. Timeseries plots rebased CPI with a base period value 2022Q1. The series was prepared by Commerce Commission using Statistics New Zealand data.

International price comparison

To get an indication of how New Zealand broadband prices compare to those overseas, we use Teligen benchmarking to compare the price of the cheapest benchmark plan available in New Zealand against the cheapest benchmark plan available in OECD countries. The benchmarking covers three categories that represent the most common urban broadband plans in New Zealand.⁷⁸

Figure 21: Teligen price for Fibre 300 (or equivalent) – September 2023⁷⁹

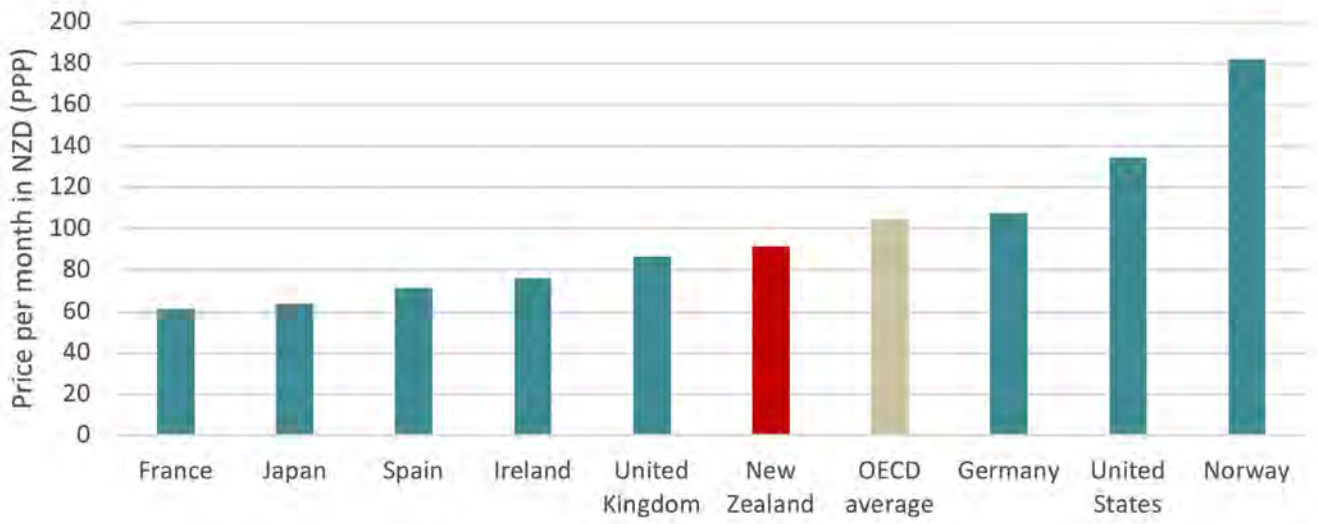


Source: TechInsights

78. The price of the plans used in the benchmarking analysis is adjusted to take into account whether the plan requires a consumer to purchase or rent a router.

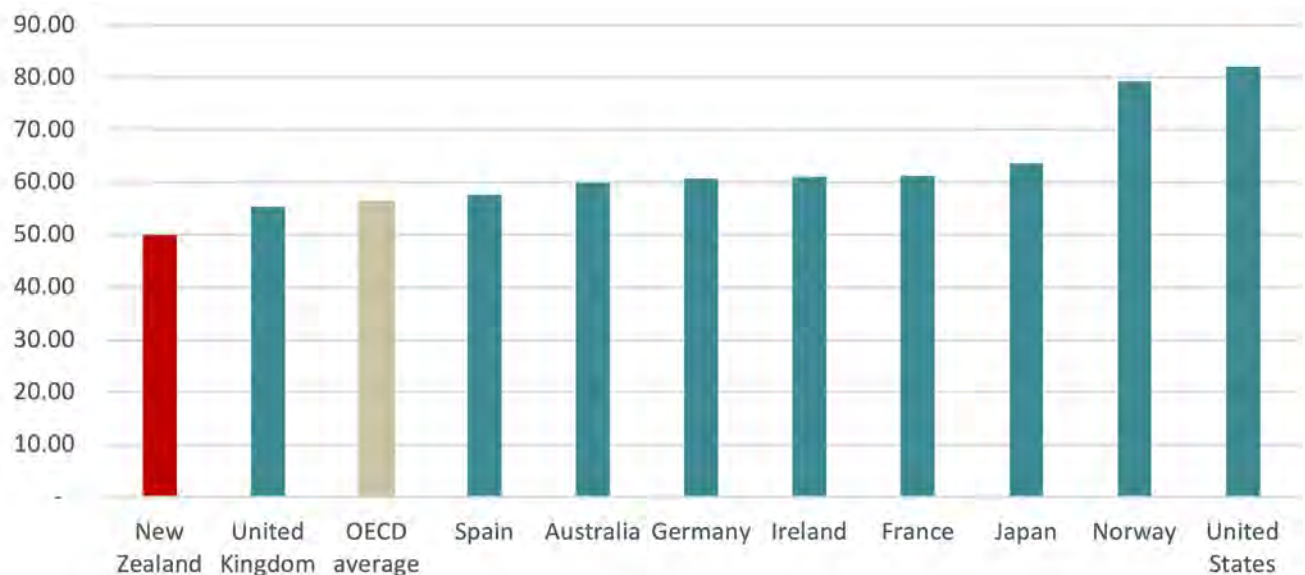
79. Price for unlimited broadband-only fibre service delivering a minimum of 300Mbps speeds.

Figure 22: Teligen price for Fibre Max (or equivalent) – September 2023⁸⁰



Source: TechInsights

Figure 23: Teligen 4G wireless broadband, 300GB (or equivalent) – September 2023⁸¹



Source: TechInsights

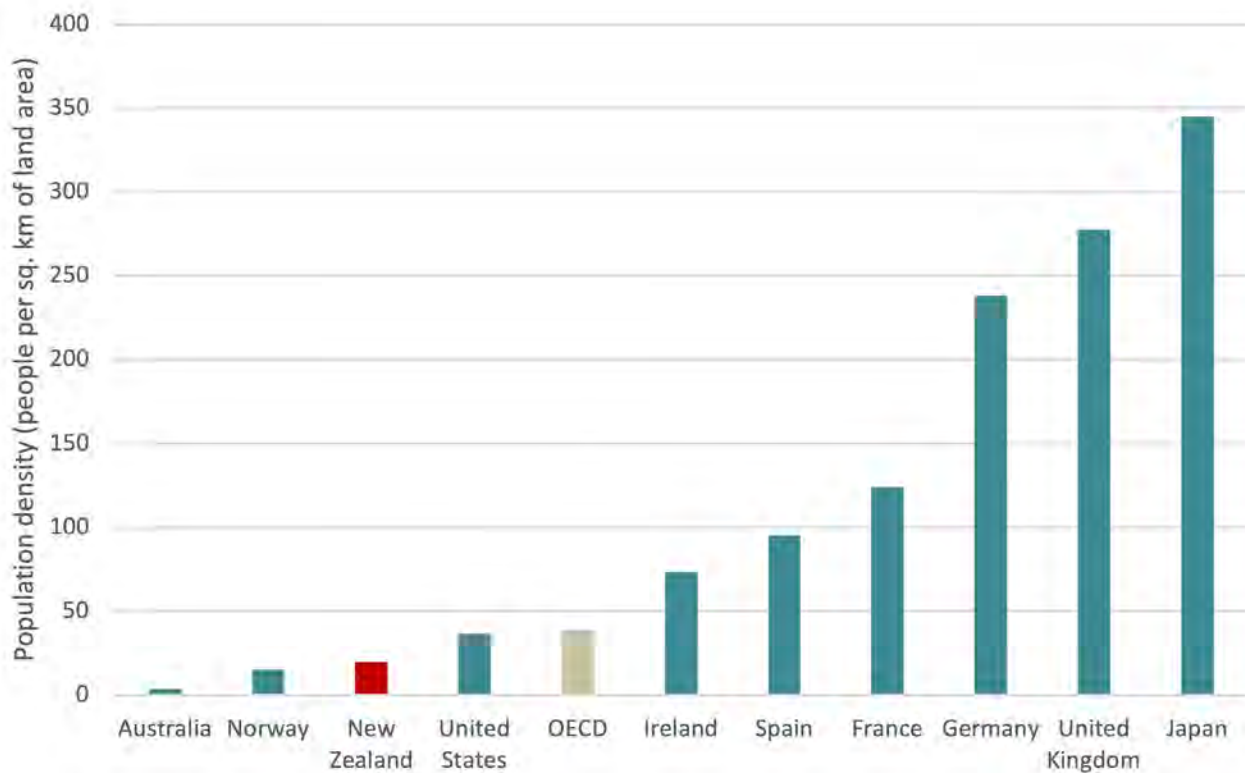
80. Price for unlimited broadband-only fibre service delivering a minimum of 800Mbps speeds. Australia is not displayed as no Fibre Max products are offered.
81. Price for broadband-only service (any technology) providing at a minimum 300GB of data and 20Mbps speeds.

Overall, relative to other OECD countries, the price of our broadband plans (Fibre 300, Fibre Max, and 4G wireless broadband) places us in the middle of the pack. However, New Zealand’s pricing of broadband plans has improved relative to other OECD countries compared to 2022.

- Fibre 300 pricing in New Zealand is equal to the OECD average.
- Fibre Max is \$14 lower in New Zealand than the OECD average.
- 4G wireless broadband in New Zealand is \$6 lower than the OECD average.

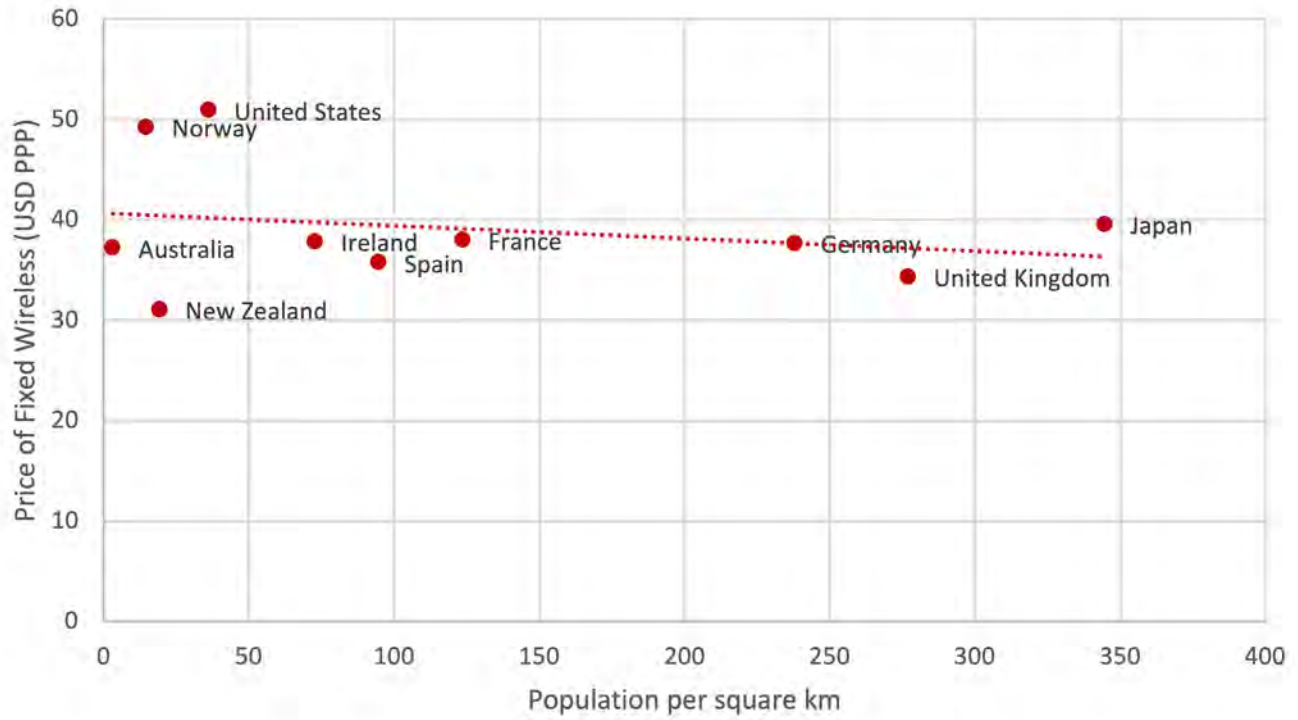
We looked at OECD broadband prices against relative population densities (refer to Figures 24 and 25 below) for 4G fixed wireless broadband, to understand if lower density tends to result in higher costs to serve each user. New Zealand’s 4G fixed wireless broadband pricing performs well relative to other countries. However, in the same benchmarking for 1GB of mobile data (see On the Move Chapter, Page 139), New Zealand performs relatively poorly, with the second highest price and the third lowest population density.

Figure 24: Population density of Teligen benchmark countries – 2021



Source: The World Bank

Figure 25: Population density of Teligen benchmark countries vs price of cellular fixed wireless broadband (USD PPP)



Source: Commission analysis of TechInsights and World Bank data

Lower price / digital equity urban broadband plans

Fibre Starter

As noted in the wholesale section above, Chorus and Tuatahi each offer a discounted wholesale Fibre 50 ‘fibre starter’ service, intended to make broadband more affordable for low-income consumers. Chorus requires RSPs to charge at or below the \$60 per month price cap to be eligible for a discounted wholesale charge. Tuatahi has no retail price restrictions on its Fibre 50 product but reserves the right to revert to the standard charge for the service if retailers do not pass on the benefit to consumers.⁸²

In last year’s *Annual Monitoring Report*, we found that none of the major retailers were offering the plan at the price cap. This year all major RSPs offer the Fibre 50 plan for \$60 per month. However, Spark currently only offers its Fibre 50 plan with a 120GB per month data cap. This may reflect Spark not wanting to take consumers away from its existing cellular fixed wireless products which have a similar price point.

In total, there are approximately 50,000 retail Fibre 50 connections as of June 2023. Around one-quarter of these plans are discounted Fibre Starter plans. We expect this percentage to increase in next year’s report as more RSPs, such as Sky and Mercury, have started selling the service.

Skinny Jump

Spark launched “Skinny Jump” in 2020 as a 4G cellular fixed wireless broadband service for people who do not have a broadband connection at home due to the cost.

Households eligible for Skinny Jump include some of the groups most at risk of digital exclusion, as identified in the Government’s digital inclusion blueprint.⁸³ These include:⁸⁴

- Families with children;
- Job seekers;
- Seniors;
- People with disabilities;
- Refugees and migrant communities; and
- Those in social housing.

Households who meet the criteria can sign up for the service through one of over 300 community partners nationwide which include community libraries and community hubs. The service is not available everywhere as households need to live in an area where Spark’s 4G cellular fixed wireless service is available.

Skinny Jump is prepaid with no contract or credit checks. Households are supplied with a free modem and receive 15GB of free data every month. Households can buy 35GB blocks of data for \$5, up to a maximum of 210GB (\$30) of data per month. Spark has chosen not to increase the price of Skinny Jump over the past year.

Skinny Jump prices are substantially cheaper than Skinny’s current standard 4G fixed wireless plans. 225GB of data will cost households \$30 per month with Skinny Jump. This compares to \$50 for 120 GB with Skinny’s standard plan.

As of June 2023, around 27,000 households have an active connection under Skinny Jump and around 30,000 had used the service in the last 90 days before 30 June 2023.⁸⁵ This compares to around 23,000 active connections last year.⁸⁶

82. Tuatahi “Fibre starter repositioned” – see <https://www.tuatahifibre.co.nz/articles/fibre-starter-repositioned>

83. <https://www.digital.govt.nz/digital-government/programmes-and-projects/digital-inclusion/governments-vision-the-digital-inclusion-blueprint/>

84. Department of Internal Affairs “The Digital Inclusion Blueprint” (March 2019). Available at: <https://www.digital.govt.nz/assets/Documents/113Digital-Inclusion-BlueprintTe-Mahere-mo-te-Whakaurunga-Matihiko.pdf>

85. Spark “FY23 Annual Report” page 65. Available at: [https://www.sparknz.co.nz/content/dam/SparkNZ/pdf-documents/governance/Annual_Report_\(2023\).pdf](https://www.sparknz.co.nz/content/dam/SparkNZ/pdf-documents/governance/Annual_Report_(2023).pdf)

86. This is lower than Spark’s target of connecting 35,000 households to Skinny Jump by the end of June 2023. Spark “FY22 Annual Report” page 140.

Tuatahi digital equity offer

In July 2022, Tuatahi launched its digital equity offer. This offer is a discounted Fibre 200 plan which is available to certain customers identified by Tuatahi. These customers are within Tuatahi’s original UFB1 area, have still not connected to the fibre network, and are believed to have barriers to access which involve affordability or technology inertia.

The wholesale price of Tuatahi’s digital equity offer is \$19.50 with a retail price cap of \$50. This makes the offer significantly less expensive than Tuatahi’s discounted ‘Fibre Starter’ plan and its Fibre 300 plan. The offer ends in June 2024.

Table 10: Tuatahi wholesale price comparison

	Digital equity offer (Fibre 200)	Fibre Starter (Fibre 50)	Fibre 300
Tuatahi’s wholesale price (June 2023)	\$19.50	\$38.00	\$49.78

Northpower digital equity offer

Between January and June 2023, Northpower began a trial of its digital equity offer.⁸⁷ This offer was a discounted Fibre 300 plan available to previously unconnected properties within Northpower’s fibre area, which had been identified at risk of digital exclusion. The wholesale price of Northpower’s digital equity offer was \$23.94 with a price cap of \$50 (including GST). This made it significantly cheaper than its regular Fibre 300 product.

Table 11: Northpower wholesale price comparison

	Digital equity offer (Fibre 300)	Fibre 300
Northpower’s wholesale price (June 2023)	\$23.94	\$47.87

87. Refer DY 2023 Standard Contract Disclosure.

The market outcomes produced through infrastructure, wholesale, and retail ultimately come down to consumers' usage and their overall satisfaction with the connectivity provided.

2023 Highlights

- The percentage of household average net income required to purchase broadband in urban areas continues to vary across New Zealand.
- Fibre 50 generally requires a lower percentage of income than other broadband options, with a range of 0.79% to 1.31%.
- Our survey results show that urban broadband customers are most satisfied with coverage and availability, and least satisfied with pricing.

Affordability

Affordability is a relative concept that does not lend itself to precise indicators. Affordability depends not only on price and income but also on other competing spending choices available.

Our affordability analysis compares the average available price of each urban broadband technology with the distribution of household average net income across the regions of New Zealand.

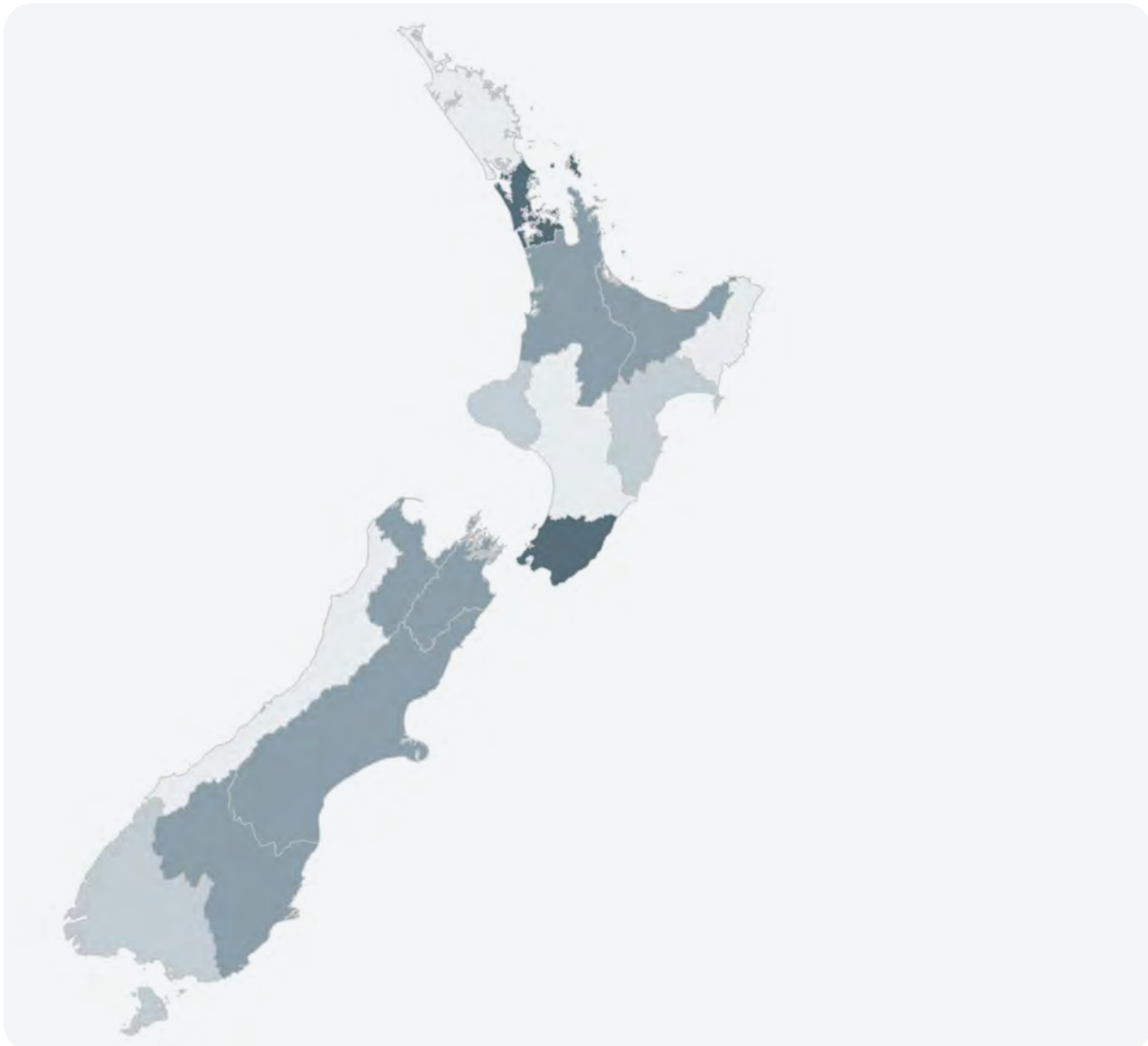
Average net income was derived by adjusting average gross income data from the 2018 Census by the Labour Cost Index and applicable tax rates. Census data was sourced from Statistics New Zealand and was mapped on an aggregated meshblock level.

These meshblocks were then compared against our fibre availability information. If at least one property from the meshblock was within an SFA, the entire meshblock was treated as a fibre area.

For readability these meshblocks where fibre is available have been aggregated to the regional level to produce the map and figures presented below.

Figure 26 below shows a heat map of where the price of urban broadband technologies requires a higher or lower percentage of average household income. In darker areas on the map, such as Auckland and Wellington, a lower percentage of income is required to purchase an urban broadband connection than in lighter-shaded areas such as Gisborne and the West Coast.

Figure 26: Percentage of average household income required to purchase broadband by region



Source: Commission analysis of Statistics New Zealand data

Figure 27 below shows that in urban areas, Fibre 50 generally requires a lower percentage of average household income than other broadband options, with a range of 0.79% to 1.31%. Interestingly, copper broadband requires a similar percentage of income to the most popular urban plan, Fibre 300. Fibre Max is most affordable in Auckland but requires 1.98% of the average income in the Hawke's Bay region.

As part of the Household Economic Survey, Statistics New Zealand publishes annual mean household income by quintile, see Table 12.

This shows that Fibre Max may not be affordable for households in the lowest income quintile given it requires 5.9% of average household income. However, it also shows the importance of lower priced services such as Skinny Jump, which requires 1.7% of average household income in the lowest quintile.⁸⁸

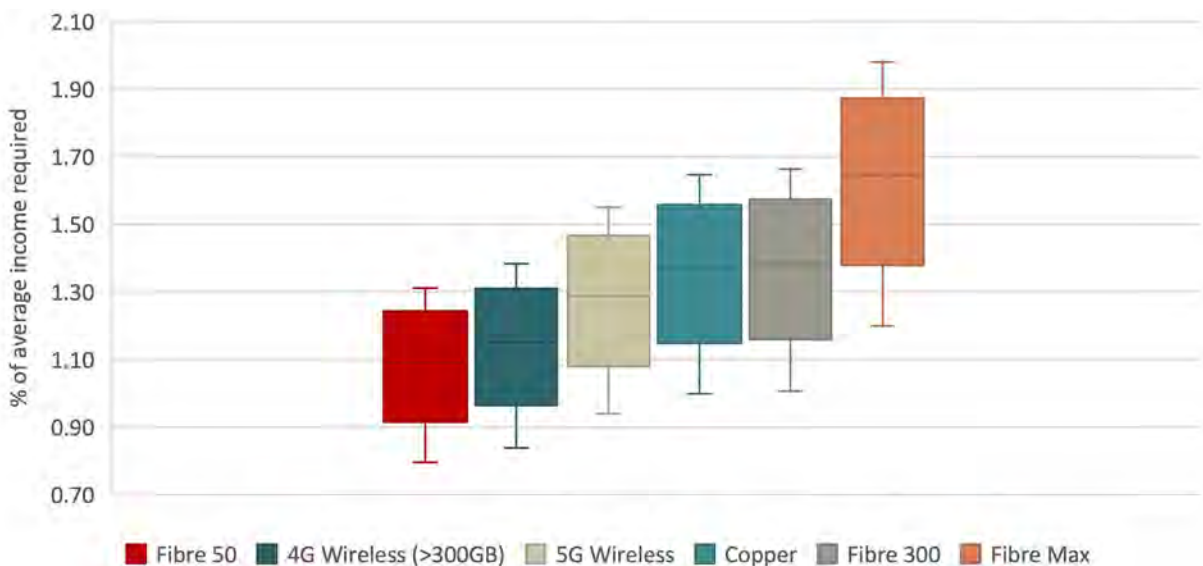
Table 12: Average household income by income quintile

Quintile	Average household income
1	\$21,527
2	\$36,563
3	\$50,225
4	\$66,522
5	\$114,473

Source: Commission analysis of Statistics New Zealand's Household Expenditure Survey data

As part of our wider monitoring work, we intend to further develop our understanding of the impact of connectivity and whether there are accessibility and/or affordability challenges that need to be highlighted.

Figure 27: Relative affordability of broadband in urban areas



Source: Commission analysis of Statistics New Zealand data

88. Based on \$30 per month, which includes a maximum of 210GB of data.

Household expenditure on telecommunications

Average monthly expenditure on telecommunications increases

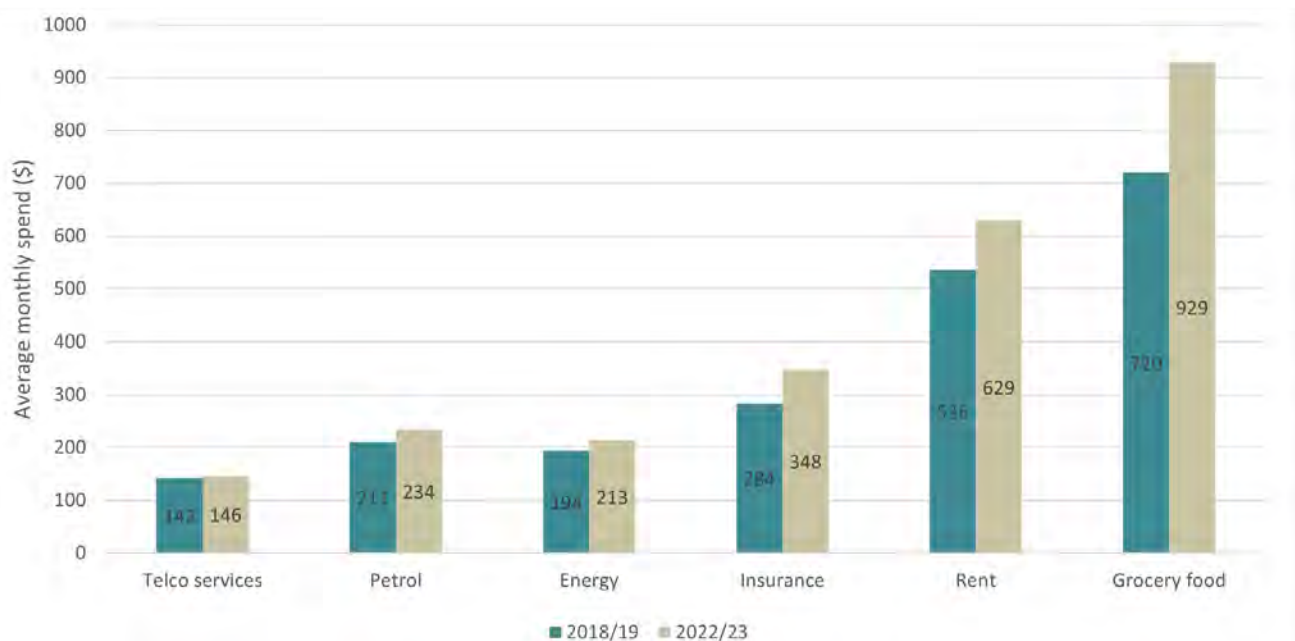
Figure 28 below shows the average New Zealand households spend on common household bills each month.

Spending has increased across the board between 2019 and 2023. Overall, the 2023 HES estimated that, on average, households spent a total of \$6,938 per month on goods and services in 2023, which is up

18.4% since 2019. Telco services expenditure increased the least, up only 3.1% from \$142 per month in 2019 to \$146 per month in 2023.

However, a recent report by DECA (Digital Equity Coalition Aotearoa) and figure.nz suggests that the 380,000 households in the lowest quintile (earning less than \$42,200) can afford to pay (on average) no more than \$8 per week for internet access.

Figure 28: Average monthly household expenditure on common household bills (June 2023)



Source: Commission analysis of Statistics New Zealand's Household Expenditure Survey data

Satisfaction

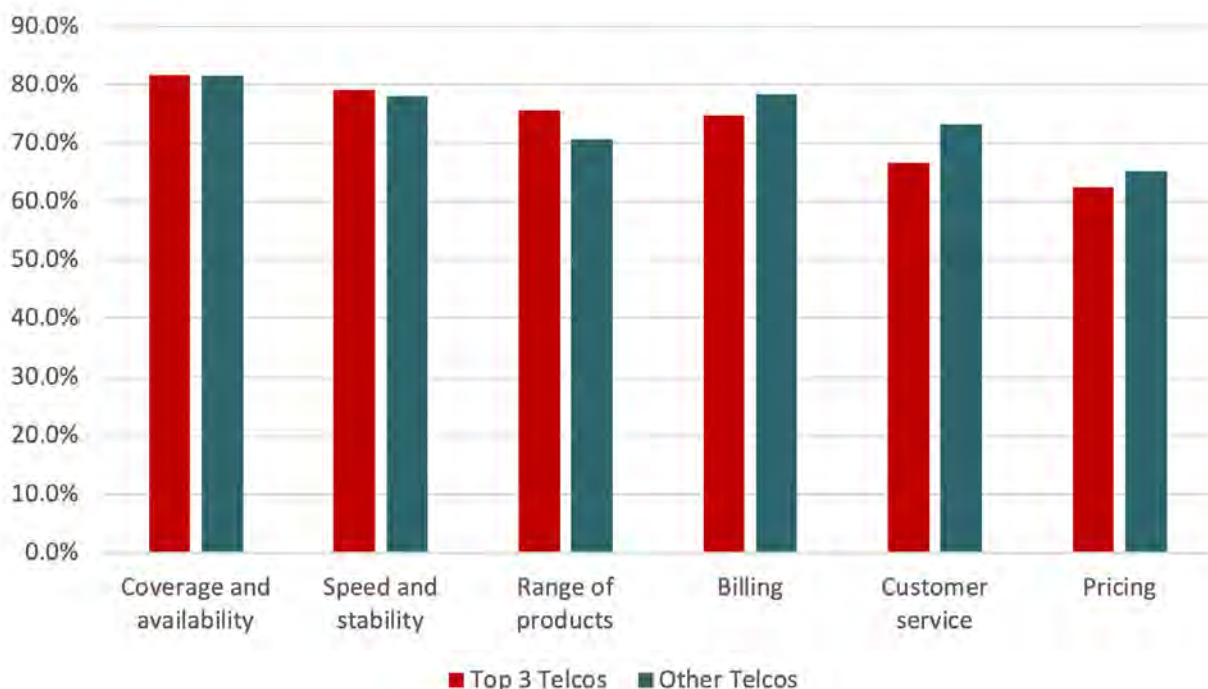
Our *Customer Satisfaction Monitoring Survey* shows that 78% of urban broadband consumers are satisfied with their broadband service over the reporting period. This compares to 81% in our initial analysis reported in our *2022 Telecommunications Annual Monitoring Report*. The benchmark for good performance is 80%. Currently, none of the monitored satisfaction areas measure up to the benchmark for good performance. The survey also asks urban broadband consumers to rate their satisfaction with various service areas.

In Figure 29 below, we compare the aspects of satisfaction for the top 3 telcos against other telcos measured in our customer satisfaction rankings.⁸⁹

Smaller telcos perform relatively better when it comes to billing and customer service. This may be due to better billing and customer relationship management systems. It may also be that smaller telcos can maintain more of a personal relationship with their smaller customer bases.

Consumers are more satisfied with the range of services offered through a top 3 telco. The difference in the range of broadband products will be that the top 3 telcos offer cellular fixed wireless broadband but only some smaller providers offer this range of services (as an MVNO).

Figure 29: Satisfaction levels of urban consumers with fibre broadband split by telco size



Source: *Customer Satisfaction Monitoring Survey*

89. Spark, One NZ, 2degrees.

Our data allows us to split satisfaction by technology type in urban areas as shown in Figure 30 below.

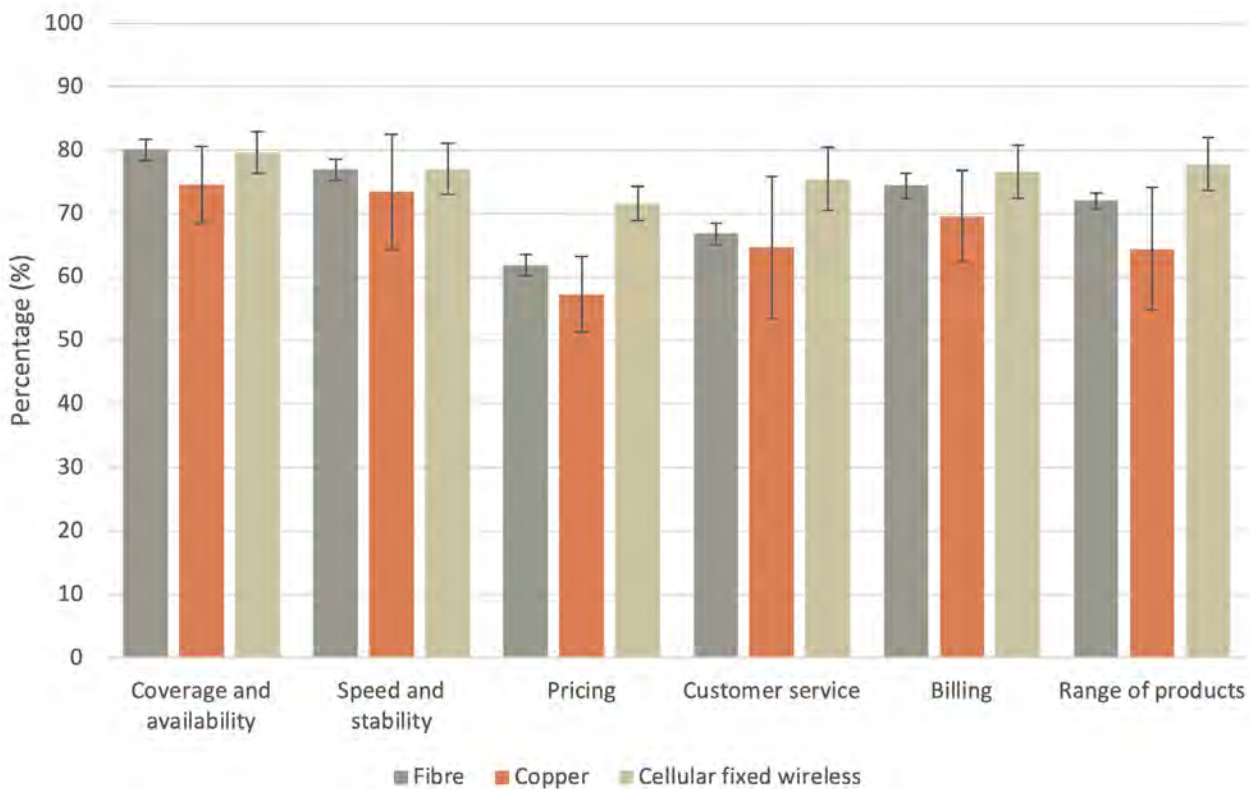
Our survey shows that consumers on copper technologies in urban areas are the least satisfied across all categories we measure. The number of copper consumers is continuing to drop as Chorus withdraws copper in urban areas and consumers move on to higher performing technologies.

Cellular fixed wireless broadband performed well across all satisfaction categories and outperformed copper and fibre significantly in pricing. We see pricing across cellular fixed wireless broadband continue to be highly competitive at a retail-level in terms of pricing and data caps. In contrast, copper prices

have increased but there has been no corresponding consumer benefit to the price increase.

We undertook analysis to understand the degree of correlation between overall satisfaction and its underlying service aspects. For urban customers, the strongest correlation was with speed and stability. The correlation suggests that if urban consumers are satisfied with their speed and stability, they are more likely to be satisfied overall, and vice versa. We also found that coverage and customer service were correlated higher to the overall score for urban consumers. Billing satisfaction had the weakest correlation to overall satisfaction, relative to other aspects. See further analysis in the section on customer satisfaction in the Rural Connectivity at Home chapter.

Figure 30: Satisfaction levels of urban consumers with fibre, copper, and cellular fixed wireless broadband



Source: Customer Satisfaction Monitoring Survey

Choice

The vast majority of urban customers have multiple choices when it comes to accessing technology. Our data indicates that 100% of urban households have fibre available and can connect to LEO satellite, while above 90% have access to 4G cellular fixed wireless. As copper is withdrawn in fibre areas, this is no longer a choice for new connections.

Switching

During the 12 months up to June 2023, our *Customer Satisfaction Monitoring Survey* indicates that 16% of urban households switched their broadband provider.

Looking more closely at urban households that switched we found that 25% switched to an RSP outside the top 3.⁹⁰ This is much lower than rural switchers, where 49% of switchers switched to an RSP outside the top 3.

The survey captures the reasons for switching from respondents, with the primary reasons being:

- I wanted to pay less (50%);
- My loyalty was not getting rewarded (23%); and
- I wanted a higher speed (23%).⁹¹

The level of switching observed in a market may be indicative of the ability of consumers to act and take advantage of competing offers. It may also indicate the presence of behavioural preferences towards the existing and familiar.

There is no fixed proportion of the market that should be expected to switch. Consumers not switching provider is not necessarily a concern if those consumers are satisfied with their provider and/or do not face significant barriers to switching.

90. The top 3 are categorised here as Spark (including Skinny), One NZ, and 2degrees (including Slingshot).

91. https://comcom.govt.nz/_data/assets/pdf_file/0021/335361/Telecommunications-Consumer-Satisfaction-Monitoring-Report-JanuaryJune-2023.pdf

Time spent with current provider

The results showed that 40% of urban broadband consumers surveyed have been with their current provider for more than five years. This is around the same as last year where 41% of consumers surveyed had been with their provider for more than 5 years.

Our data shows that consumers over the age of 55 are the least likely age group to switch providers or plans.⁹² Legacy copper services are more popular with this age group and these consumers could benefit by switching to higher performing technologies.

The results below come from our monthly *Customer Satisfaction Monitoring Survey*. Data was collected between December 2022 and June 2023 and includes responses from 2,933 residential broadband customers.

Figure 31: Time spent with current broadband provider in urban areas (2023)



Source: Customer Satisfaction Monitoring Survey⁹³

92. Commerce Commission – Telecommunications Consumer Satisfaction Monitoring Report July to December 2023 see: https://comcom.govt.nz/_data/assets/pdf_file/0028/348157/Telecommunications-Consumer-Satisfaction-Monitoring-Report-July-December-2023.pdf

93. Rounded numbers can generate a difference to total numbers in the report. 95% confidence intervals for “Up to 12 months” is between 4% – 7%, “1 – 2 years” between 9% – 14%, “3 – 5 years” between 21% – 28%, “More than 5 years” between 54% – 62%.

Rural connectivity at home

Honotanga
ā-tuawhenua
i rō kāinga

Where fibre
broadband is
unavailable



MARKET STRUCTURE HANGANGA MĀKETE

Market structure covers structural elements of telecommunications markets from infrastructure availability, and the share of wholesale and retail offerings using that infrastructure, to the transparency and understanding of these offers by consumers.

INFRASTRUCTURE HANGANGA

Telecommunications infrastructure – the physical components that connect homes and businesses to voice and broadband services – provides the foundation for how the rest of the market operates in New Zealand.

The starting point for connecting Kiwi homes with high-speed internet is the infrastructure that has been deployed throughout communities and neighbourhoods across New Zealand. In rural areas, infrastructure overlap is increasing, particularly that delivering high-speed connectivity. Much of the infrastructure in rural areas has been funded (in whole or in part) by government.

2023 Highlights

- LEO satellite connectivity continues to grow, with New Zealand having the highest level of uptake per capita in the OECD.
- Government programmes continue to fund the roll-out and upgrade of higher speed rural broadband services.

Copper

Our data indicates that over 60% of rural properties can access copper broadband. The remaining 40% of rural properties:

- May be too far from the local exchange or cabinet to receive basic ADSL services;
- Require a field technician to assess whether Chorus can provide a copper broadband service; or
- May have no copper line to the property (very remote properties, some new builds).

Chorus operates the copper network across New Zealand. At its peak, this covered 98% of the population.

The copper network supports voice and broadband (ADSL and VDSL) services.

Rural Capacity Upgrade programme

Chorus was awarded funding in late 2022 and early 2023 under the RCU programme to upgrade 73 rural cabinets to VDSL broadband. 3,400 additional rural households will have access to VDSL by the end of 2024.⁹⁴

In April 2020, the Government launched the Rural Capacity Upgrade (RCU) programme. The RCU builds on phase 1 of the Rural Broadband Initiative (RBI1), an earlier programme completed in June 2016 that delivered cellular fixed wireless and copper improvements for the urban fringe. RCU initially upgraded 70 rural cellular fixed wireless towers at the start of the first Covid-19 lockdown to ease network congestion. The RCU has subsequently expanded to include upgrades for other technology types – including fibre, copper, and non-cellular fixed wireless.

94. <https://sp.chorus.co.nz/product-update/rural-broadband-additional-copper-service-upgrades>

Cellular fixed wireless

As of June 2023, 252,000 or 73% of rural households are within the coverage area of at least one MNO network. Of those rural households with access to a mobile network, 3,600 or 1% have access to 5G. 93,000 or 27% of rural households are outside network coverage of any MNO network.⁹⁵

As cellular fixed wireless coverage in rural areas is impacted by topographic features such as trees, hills, and valleys, more remote rural areas may lack coverage. The MNOs are incentivised to target population coverage when building their cellular networks to maximise their usage. Therefore, rural areas almost always lag urban areas when new generations of mobile technology are deployed. Areas that lack cellular fixed wireless coverage include remote areas around the east coast of the North Island and west coast of the South Island.

However, the Government's direct allocation of 3.5GHz spectrum in return for faster roll-out of 5G services to around 55 regional towns across New Zealand (approximately 290,000 people) should see rural 5G coverage increase over the next few years.⁹⁶ While these towns have fibre coverage, we expect households on the fringe, outside fibre coverage, to be able to access 5G services.

Fixed wireless can be provided over various types of networks including cellular, non-cellular fixed wireless and satellite. In the cellular case, fixed wireless uses much of the same infrastructure and spectrum as mobile calling, text, and data services. In most cases, cellular fixed wireless is restricted to a set location and is delivered via a router.

The cellular fixed wireless coverage offered by mobile networks is based on the type and amount of spectrum the network operator has acquired, as well as the number and position of sites (towers and masts) hosting equipment.

Topographic features, such as trees, buildings, and other structures, can result in localised coverage gaps and the number of people potentially using a site at any one time is also an important consideration for these operators.

In New Zealand, there are three national mobile networks operated by 2degrees, Spark, and Vodafone. All three of these MNOs offer cellular fixed wireless in rural areas using their 4G and 5G networks, but coverage differs from other mobile services. The primary reason for the coverage difference is that cellular fixed wireless requires and uses significantly more network capacity than mobile.

95. <https://www.crowninfrastructure.govt.nz/wp-content/uploads/CIP-Digital-Connectivity-Quarterly-Report-JUNE-2023.pdf>

96. <https://www.beehive.govt.nz/release/govt-speed-5g-rollout-regional-towns>



Source: Commission data

RBI2⁹⁷

In the year to 30 June 2023, an additional 5,700 rural premises gained access to improved broadband through RBI2. This is less than 2022 when 7,700 rural premises gained access because of the programme moving into its final phase.⁹⁸

The Rural Broadband Initiative (RBI) aims to provide faster internet to hundreds of thousands of rural homes and businesses outside UFB areas, funded through the Telecommunications Development Levy (TDL).

RBI1 was completed in June 2016 and provided new or improved broadband to over 300,000 rural households and businesses.

In 2017, Crown Infrastructure Partners (CIP) found that 90,000 rural premises were unable to access broadband services of 20Mbps download or higher. The government launched its RBI2 programme to reduce this number. RBI2 extends geographically beyond RBI1 and RCU, into more rural areas best served by wireless technologies.

The Rural Connectivity Group (RCG) is an independent entity established by New Zealand's three MNOs, to deliver cellular fixed wireless and mobile services to rural New Zealand.

The RCG network uses 4G Multi-Operator Core Network (MOCN) technology which involves all three MNOs using the same radio spectrum band for the first time. This means all three providers will share

one piece of infrastructure including the pole, antenna, power, and backhaul.

Spark, One NZ, and 2degrees have allocated 700MHz spectrum to RCG, to enable the 4G LTE (Long Term Evolution) with VoLTE (Voice over LTE or high-definition calling) rural network.

RCG is using funding from the Government's RBI2 and the Mobile Black Spot Fund, as well as contributions from Spark, One NZ and 2degrees. Accordingly, each RCG site is required to meet government targets of providing fast cellular fixed wireless, connectivity to a tourist location, and/or coverage to rural state highways.

Fifteen WISPs are contracted alongside RCG to deliver the RBI2 programme.

RBI2 was set to be substantially completed by the end of 2022 and, as of 30 June 2023, the programme was 96% complete. A total of 81,000 rural households and businesses can now connect to high-speed broadband.

Additionally, RCG infrastructure can also accommodate equipment from at least one Wireless Internet Service Provider (WISP).

97. <https://www.crowninfrastructure.govt.nz/rural/rural-broadband-initiative-phase-two-rbi2/>

98. Commerce Commission analysis of June 2022 and June 2023 Crown Infrastructure Partners' Connectivity Quarterly Reports. Reports available at: <https://www.crowninfrastructure.govt.nz/about/publications/>

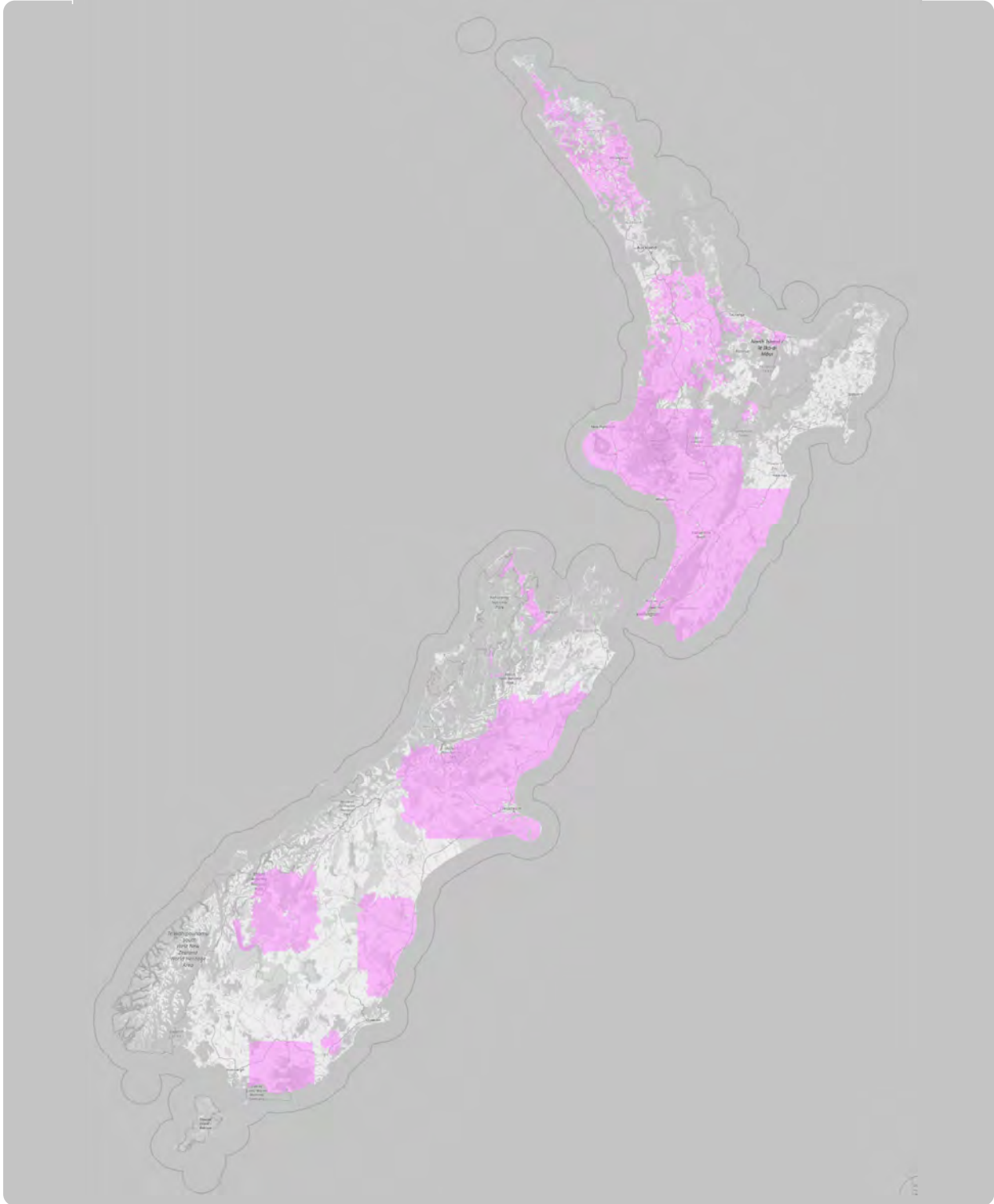
Non-cellular fixed wireless

As of June 2023, 68% of rural households are within the coverage area of at least one WISP network.

Non-cellular fixed wireless is a telecommunications technology aimed at providing wireless data over long distances in a variety of ways. Non-cellular fixed wireless is like long-range Wi-Fi, but it can enable usage at much greater distances.

WISPs typically use non-cellular fixed wireless networks to deliver their broadband service. They do this by installing a series of wireless receivers and transmitters, usually on high ground, connected to fibre at a central point, which deliver services to a set of users in mostly rural areas where fibre is not available.

There are around 30 WISPs operating in New Zealand. Many operate in a single region and there is limited overlap between their networks.



Source: Commission data

Geo-stationary satellite

As of June 2023, Optus and Kacific provide service to all parts of New Zealand capable of receiving a satellite signal, including Stewart Island and the Chatham Islands.

Geo-stationary (**GEO**) satellites operate approximately 35,000km above the Earth's surface and provide coverage to a specific area. Geo satellites orbit along a path parallel to the Earth's rotation at the same rate as the Earth to provide this fixed coverage.

While there are hundreds of Geo satellites orbiting the earth, there are two operators with satellites orientated towards New Zealand that can offer broadband services – Optus and Kacific. Optus has been providing satellite coverage to New Zealand for many years, while Kacific is a newer operator that has been operating in New Zealand for five years and partners with RSPs such as Gravity, Woi and Wireless Nation.

A household antenna receiving satellite services must have a clear view of the sky to connect to the satellite overhead. Topographic features, such as trees, buildings, and other structures, can result in localised coverage gaps not visible or known to the satellite provider.

Low Earth Orbit satellite

As of June 2023, Starlink is the only LEO provider with commercial operations in New Zealand. Starlink provides service to all parts of New Zealand capable of receiving a satellite signal, including Stewart Island and the Chatham Islands.

Low Earth Orbit satellites (**LEO**) are a type of satellite that orbits close to the Earth's surface. They operate at altitudes ranging from 160kms to 2,000kms (99 to 1,240 miles). LEO satellites have shorter orbital periods, typically ranging from 90 minutes to a few hours. This means they complete one orbit around the Earth quickly compared to satellites in higher altitude. Due to their lower altitude and faster orbital periods, LEO satellites can provide global coverage by forming large constellations of satellites. Starlink is a constellation of just over 5,000 satellites that orbit at about 550km and cover the entire globe. At present, Starlink is the only LEO satellite constellation providing broadband coverage to New Zealand.

A household antenna receiving satellite services must have a clear view of the sky to connect to the satellites overhead. Topographical features, such as trees, buildings and other structures, can result in localised coverage gaps not visible or known to the satellite provider.

Fibre

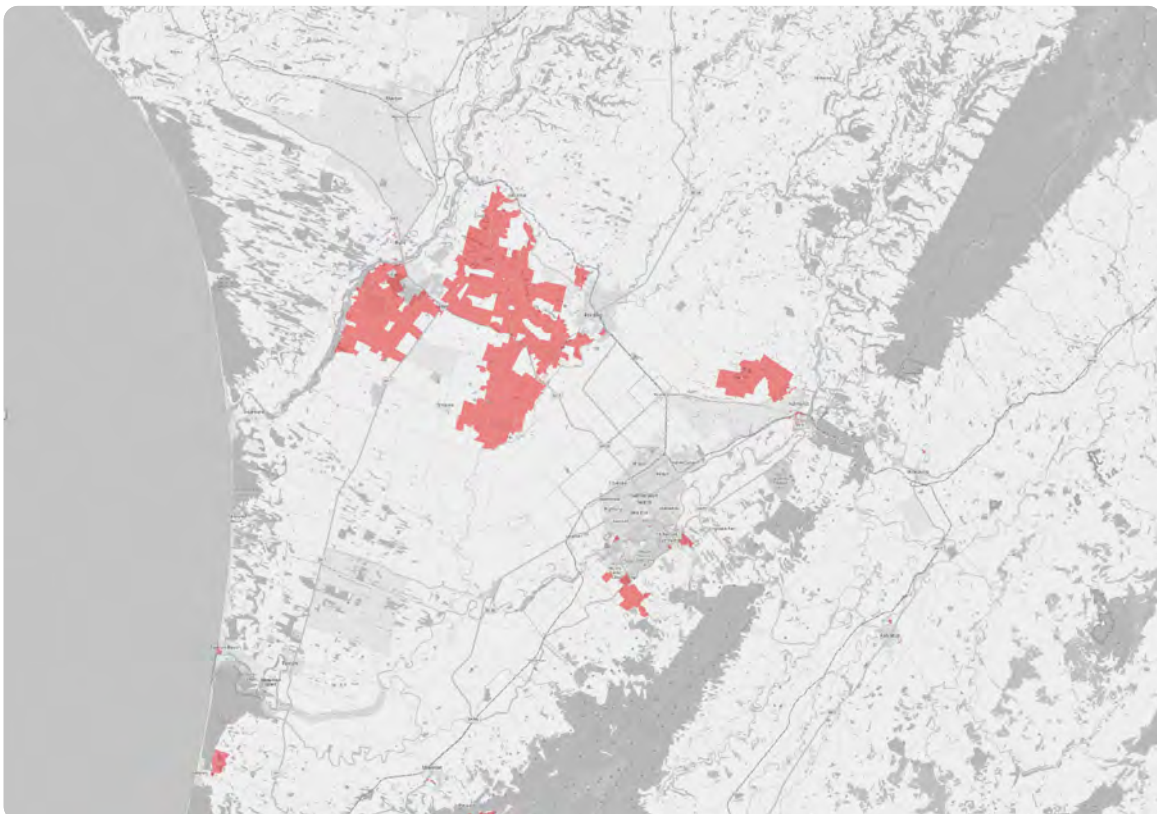
The map below shows Fibre coverage in rural areas outside of Palmerston North. This fibre is mainly provided by Inspire Net, which has begun rolling out its own rural fibre network outside of the City.

The UFB programme provided the option of fibre connectivity to 87% of households. However, independent of UFB, WISPs have begun to invest in deploying their own small scale fibre networks.

- Primo built and owns the fibre network in Egmont Village in Taranaki. Phase 1 of the fibre build was completed in 2023 and Phase 2 will begin in April 2024.
- Inspire Net has built and operates its own fibre network around Palmerston North.

- Aonet has built and operates fibre networks in Paritu and Matarua Farm Parks in the Hawke's Bay region.
- Lightwire has built and operates its own fibre network in Gordonton in the Waikato region.
- Amuri.net is currently rolling out fibre to Ohoka/Mandeville in the Canterbury region.

Other WISPs provide connections for rural fibre subdivisions and private fibre installs such as Full Flavour.



Source: Commission data

Remote Users Scheme^{99,100}

The Remote Users Scheme (RUS) is a New Zealand government initiative, designed to ensure that rural New Zealanders have access to the same fast and reliable broadband services as urban New Zealanders.

Launched in late 2022, the scheme is tailored to support residents in remote locations of New Zealand to obtain quality broadband services. The government allocated \$15 million towards funding the scheme.

The first phase of RUS aims to provide a broadband internet service to an area by extending existing networks. Those households still without coverage, after this has been done, may be eligible to receive a one-off grant of up to \$2,000 towards set up and installation costs of a suitable broadband solution – most likely satellite.

99. <https://www.crowninfrastructure.govt.nz/faq/>

100. <https://www.beehive.govt.nz/release/govt-delivers-connectivity-rural-and-remote-households>

The wholesale market plays an important role in shaping outcomes at the retail-level for consumers. Regulation usually applies where there is insufficient competition to result in access to key infrastructure, or access on sufficiently competitive terms, absent that regulation.

The wholesale market continues to play an important part in the overall market structure of telecommunications in New Zealand. Rural areas have benefitted more recently from Crown investment initiatives with associated wholesale obligations.

The most popular wholesale services in rural areas are delivered over the copper network to serve the residential broadband market – connecting the home back to a point in the network that houses electronics. However, competition from satellite technology is resulting in connection growth at both the wholesale and retail levels – by-passing the rural copper network completely.

2023 Highlights

- Copper connections in rural areas have decreased by 18% over the past year.
- Local providers are exploring wholesale partnership opportunities with international LEO providers.

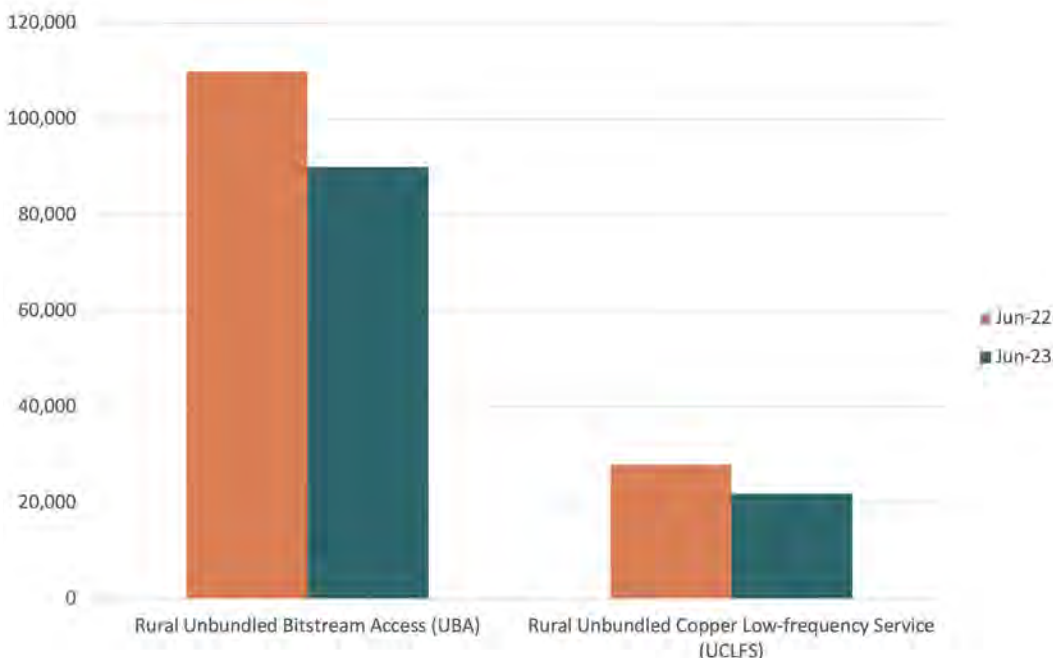
Wholesale copper connections

As of 30 June 2023, Chorus had 90,000 unbundled bitstream access (**UBA**) connections in rural areas, down 18% from a year earlier (110,000 connections).¹⁰¹ During the same period, Chorus had 22,000 unbundled copper low-frequency service (**UCLFS**) connections, down 21% from a year earlier (28,000 connections).

The drop in wholesale copper connections across New Zealand is due to several factors – the availability of alternatives, RSP marketing choices, alongside their commercial decisions to not provision new connections in some cases. UBA connections in urban areas, where copper withdrawal is underway, dropped by 53,000 in the year up to June 2023. This is compared to a drop of 20,000 in rural areas, where there is no copper withdrawal process.

As the owner of the copper network, Chorus is required by regulation to offer copper-based bitstream and voice services in rural areas – these wholesale services are respectively known as the unbundled bitstream access (**UBA**) service and the unbundled copper low frequency (**UCLF**) service. These wholesale services can be purchased by RSPs who use them as inputs to retail broadband and voice offers.

Figure 32: UBA and UCLFS connections in rural areas



Source: Chorus

101. In the 2022 Telecommunications Annual Monitoring Report we reported 142,000 copper connections as of June 2022. This number contained some fibre connections outside the UFB area. Chorus has changed the way it reports copper connections, and we are now able to provide a number for only copper broadband connections in rural areas.

Wholesale cellular fixed wireless broadband connections

We discuss wholesale cellular fixed wireless broadband connections at a national level in the Urban chapter.

Wholesale satellite connections

The two GEO satellite providers that cover New Zealand operate as wholesale-only companies and provide wholesale capacity to a range of RSPs as shown below in Table 13. Satellite services are wholesaled on commercial terms.

Table 13: Wholesale satellite agreements

Retailer	Satellite operator
Brdy	Kacific
Gravity	Kacific
One NZ (Farmside)	Optus
Woi	Kacific

Source: RSPs' websites

Kacific's launch in late 2019 provided additional satellite capacity to New Zealand and has seen new satellite-based RSPs emerge. Some established RSPs have also switched to Kacific's wholesale service.

LEO satellite service Starlink operates mostly on a direct retail basis. However, the company has set up two key partnerships in New Zealand. Noel Leeming announced its partnership with Starlink in December 2022, focusing on consumer sales. 2degrees is Starlink's official partner for business connections.

In April 2023, One NZ and 2degrees announced agreements with SpaceX and Lynk respectively to provide direct-to-cell services. Spark made a similar announcement in partnership with Lynk in June 2023. These partnerships will enable the MNOs to offer some cellular-based services, such as voice calls and text messages, in some areas where terrestrial services do not reach, by using non-terrestrial satellite connectivity that can work with a standard mobile phone. We expect to see the first of these services launch in late 2024.^{102,103,104}

102. Coverage like never before, One NZ – see <https://one.nz/why-choose-us/spacex/>

103. 2degrees announces satellite to cell trial with Lynk – see <https://www.2degrees.nz/media-releases/2degrees-announces-satellite-to-cell-trial-with-lynk>

104. Spark to launch satellite to mobile service see <https://www.sparknz.co.nz/news/Spark-to-launch-satellite-to-mobile-service/>

Retail telecommunications markets are the markets through which consumers can purchase access to products that use the infrastructure described above. These products are packaged up by competing firms/brands and marketed to consumers.

The rural retail market structure has been shaped significantly by past wholesale access regulation, and more recently, government rural broadband programmes, spectrum allocation decisions, and the emergence of new satellite offerings.

At a high level there are two distinct types of RSPs operating in the rural broadband market:

1. Vertically integrated players who can utilise their own networks to offer services. They may also sell services based on wholesale offerings from Chorus and satellite operators; and
2. RSPs who only buy wholesale inputs from Chorus, satellite operators, or via RBI towers.

2023 Highlights

- Just over a third of rural households remain on copper-based services.
- The rural broadband market is less concentrated than in urban, reflecting the growth of non-cellular fixed wireless and LEO satellite services.
- Some major RSPs no longer offer copper services in rural areas.
- Satellite connections are growing fast, reaching 37,000, making up 14% of rural connections.

Retail Market Share

Rural market share

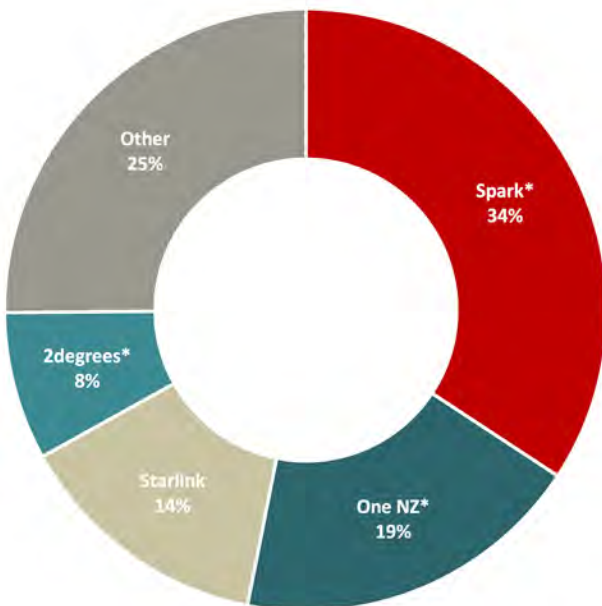
As Figure 33 below shows, the retail broadband market in rural areas is made up of several large RSPs, with a number of smaller providers holding around 2-3% each. However, there are significant market share disparities across the top 3 providers.

Starlink is now the third largest provider in rural areas with the growth of LEO satellite connections in recent years. Its connection growth trajectory, coupled with potential wholesale partnering opportunities, may signal a change in the nature and future of competition between the top 3 in rural areas.

Nationally, Spark, One NZ, and 2degrees (post-Vocus merger) serve 74% of the broadband market and 98% of the mobile market. The competition analysis throughout this report groups these three nationally significant RSPs collectively as the 'top 3'.

This serves two purposes. Firstly, it allows us to look at the competitive dynamics between the top 3 and other RSPs. Secondly, we can better understand the level of rivalry or competition that exists within the top 3.

Figure 33: Retail broadband market share in rural areas¹⁰⁵



Source: Commission analysis of CIP, Chorus and Commission data

105. RSPs with an asterisk are part of the 'Top 3' national providers.

Size of rural RSPs

Table 14 below shows the customer base for the rural providers covered in our reporting. The rural retail broadband market is characterised by several large providers with over 10,000 customers. However, there are also many smaller providers with under 1,000 customers that also participate in the market. This includes many smaller WISPs that often operate regionally.

Table 14: Size of rural RSPs

Number of rural retail customers	Number of providers
>50,000	1
10,001-50,000	3
5,001-10,000	4
1,000-5,000	12
<1,000	31

Source: Commission data (as of June 2023)

Market concentration

Market concentration, or the extent to which the distribution of the market across firms is limited to relatively few firms, is an important structural characteristic of a market.

We estimate that the fixed broadband market in rural areas is moderately concentrated with an HHI of 1,802. While this result places the rural broadband market within the same HHI category as urban ('moderate concentration'), the gap between urban and rural is significant. Spark, historically the rural incumbent, has the largest market share and a large proportion of the remaining copper connections.

With no fibre to retail, and reducing demand for copper services, providers within the top 3 are more reliant on their cellular fixed wireless networks in rural areas to compete with non-cellular fixed wireless and satellite providers – neither of whom feature prominently in urban areas.

HHI analyses market shares of each firm in a market to determine a value of market concentration – an HHI between 1,500 and 2,500 indicates moderate concentration, whereas values above this indicate high concentration.

The market concentration ratio looks at the market shares of the top 3 providers relative to the total market share.

Table 15: Market concentration and HHI

	Urban	Rural	National
Top 3 provider %	76%	66%	74%
HHI	2194	1802	2101

Source: Commission analysis of CIP, Chorus and Commission data

Retail offers

RSP offers in the retail telecommunications market are made up of several key aspects:

- Available network infrastructure (either through ownership or wholesale regulated/commercial access terms). In urban areas, this covers fibre, copper, 4G and 5G cellular fixed wireless broadband, and HFC.
- Service performance characteristics that are offered (such as download speeds, upload speeds, latency, and data caps).
- Service add-ons, if any, that will be included in the offer (such as subscription services, or electricity).

Network

As shown in Table 16 below, all major RSPs except Orcon (which is a sub-brand of 2degrees) offer a cellular 4G fixed wireless service. Some RSPs still offer copper while other RSPs do not offer any copper plans or only offer copper in limited cases.

Along with these national brands, some specialist rural providers offer a range of technology options including non-cellular fixed wireless, satellite, and copper.

Table 16: Technology offerings in rural areas by RSPs with a national presence

RSP	Copper	4G cellular fixed wireless	GEO satellite	LEO satellite
Spark	✓ ¹⁰⁶	✓		
Spark (Skinny)	✓	✓		
One NZ	✓	✓		
One NZ (Farmside)	✓	✓	✓	
2degrees (Orcon)				
2degrees (Slingshot)	✓	✓		
2degrees	✓	✓		
Mercury		✓		
Contact Energy	Unclear ¹⁰⁷	✓		
Starlink				✓

Source: Commission data (as of June 2023)

Table 17 below shows the number of providers offering services over different technologies in rural areas.¹⁰⁸ Consumers have a larger choice of providers for cellular fixed wireless (mostly RBI plans) and copper. Non-cellular fixed wireless services are offered by WISPs who operate regionally. Most rural areas will only have one WISP option available.

Table 17: Technology offerings by RSPs in rural areas

Medium	Technology/Plan	Number of providers
Cellular	4G	20
Non-cellular	Non-cellular	22
Copper	ADSL/VDSL	25
Satellite	GEO	4
Satellite	LEO	3

Source: Commission data (as of June 2023)

106. Only available in areas where unlimited cellular 4G fixed wireless plans are unavailable.

107. Availability of copper (ADSL & VDSL) services for new customers can only be confirmed after customers call Contact Energy.

108. Overall, over 60 providers participated in the RCS.

Service characteristics – speed

While we see speed differentiation for fibre in urban areas, most of the technologies available in rural areas are simply marketed as full speed – reflecting the speed limitations of most of the underlying technologies.

Speed differentiation on broadband plans is something that RSPs can market and sell in cases where the underlying technology has the ‘headroom’. In such cases, the RSP can create different speed tiers to enable price differentiation across consumer segments depending on their online needs.

Table 18: Speed tiers by technology

Technology	Speed tiers
Copper	No – although, where available, VDSL is faster than ADSL
Cellular 4G fixed wireless	No
Cellular 5G Fixed wireless	No
Non-cellular fixed wireless	Some providers
GEO satellite	Some providers
LEO satellite	No

Source: Commission data (as of June 2023)

Service characteristics – data caps

As noted above, data caps are a common feature of 4G cellular fixed wireless plans, and of GEO satellite plans.

Data caps are used to manage end-user behaviour in locations where the technology and/or network capacity is more limited.

Table 19: Data caps by technology

Technology	Data caps imposed
Copper	No
4G cellular fixed wireless	Yes
Non-cellular fixed wireless	Yes – although some unlimited plans available
GEO satellite	Varies – many providers use progressive speed shaping
LEO satellite	No

Source: Commission data (as of June 2023)

Table 20 below shows the availability of unlimited data plans is mixed across rural fixed wireless providers.

Table 21 shows the large variety of data caps offered by GEO satellite providers.

Table 20: Cellular and non-cellular fixed wireless data caps in rural areas by RSP

RSP	Technology	Data caps options	Unlimited plan available?
Spark	Cellular	60GB 200GB 350GB	
One NZ (Farmside)	Cellular	80GB 200GB 300GB 400GB 600GB	✓
2degrees	Cellular	170GB	
InspireNet	Non-cellular fixed wireless	50GB 100GB 200GB 500GB 1000GB	✓
Lightwire	Non-cellular fixed wireless	150GB 300GB	✓
Wireless Nation	Cellular	300GB	✓

Source: Commission data (as of June 2023)

Table 21: Satellite data caps by RSP

RSP	Technology	Data cap options	Unlimited plan available?
Farmside (One NZ)	GEO	10GB 40GB	✓
Gravity	GEO	120GB 180GB	✓
Starlink	LEO		✓

Source: Commission data (as of June 2023)

Service add-ons

As of June 2023, 3.5% of households in rural areas subscribed to a broadband/electricity bundle.

This is significantly lower than in urban areas where 12.5% of households subscribe to an urban broadband/electricity bundle. Bundling options are more limited outside fibre (urban) areas.

Bundling of telecommunications services together (fixed and mobile services) or bundling of telecommunications services with non-telecommunications services (video streaming subscription, electricity) is promoted by providers as offering single billing convenience and cheaper prices.

Retail share by technology

Figure 34 below shows the split of technology across rural homes and businesses.

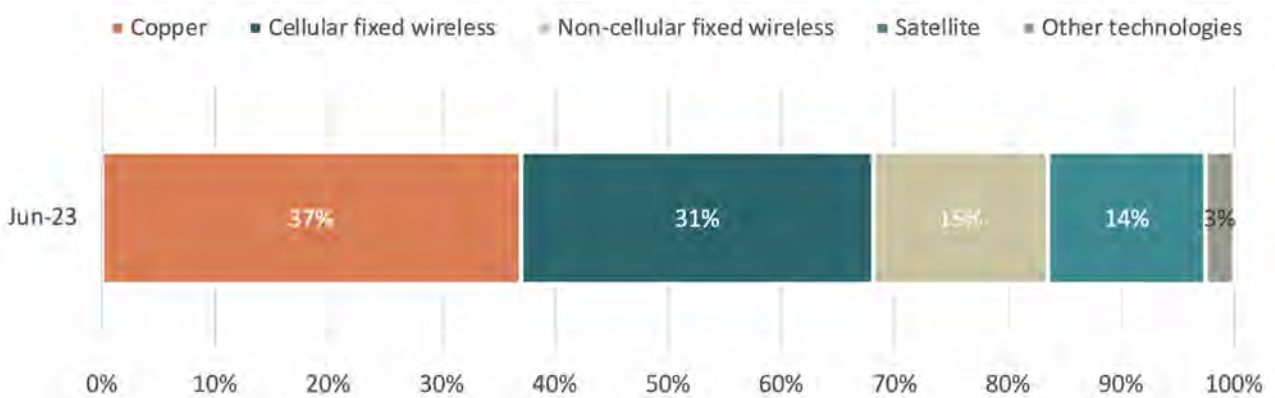
We know from our wholesale copper connections data that copper continues to reduce, as consumers shift to fixed wireless and satellite alternatives.¹⁰⁹

Of the 90,000 rural consumers on copper, 97% are within coverage of a cellular fixed wireless or non-cellular fixed wireless WISP network. In addition, those consumers who can receive a satellite signal will also be able to switch to a satellite technology.

Satellite remains the fastest growing technology, following the entry of Starlink, with connections increasing nationally from 12,000 to 37,000 over the past year – the highest number of satellite connections per capita in the OECD. Around 34,000 of these connections are in rural areas, which is around 14% of active rural connections.

Some homes and businesses will not have a fixed broadband connection but will instead use their phone’s mobile data allowance to access the internet. While there has been an increase in unlimited mobile plans in recent years, the speed caps/fair usage restrictions on these plans mean that they are only a viable alternative for people with low usage needs. We are currently unaware of any data on the number of homes and businesses that are mobile-only in New Zealand.

Figure 34: Estimated rural broadband connections by technology type



Source: Commission analysis of CIP, Chorus and Commission data¹¹⁰

109. Chorus Quarterly Connection updates, see: <https://company.chorus.co.nz/investors/financial-reports/quarterly-connection-updates>

110. Copper connections are based on Chorus public reporting. Cellular, non-cellular and satellite connections are based on the RCS data request.

Concentration of satellite and non-cellular fixed rural broadband connections

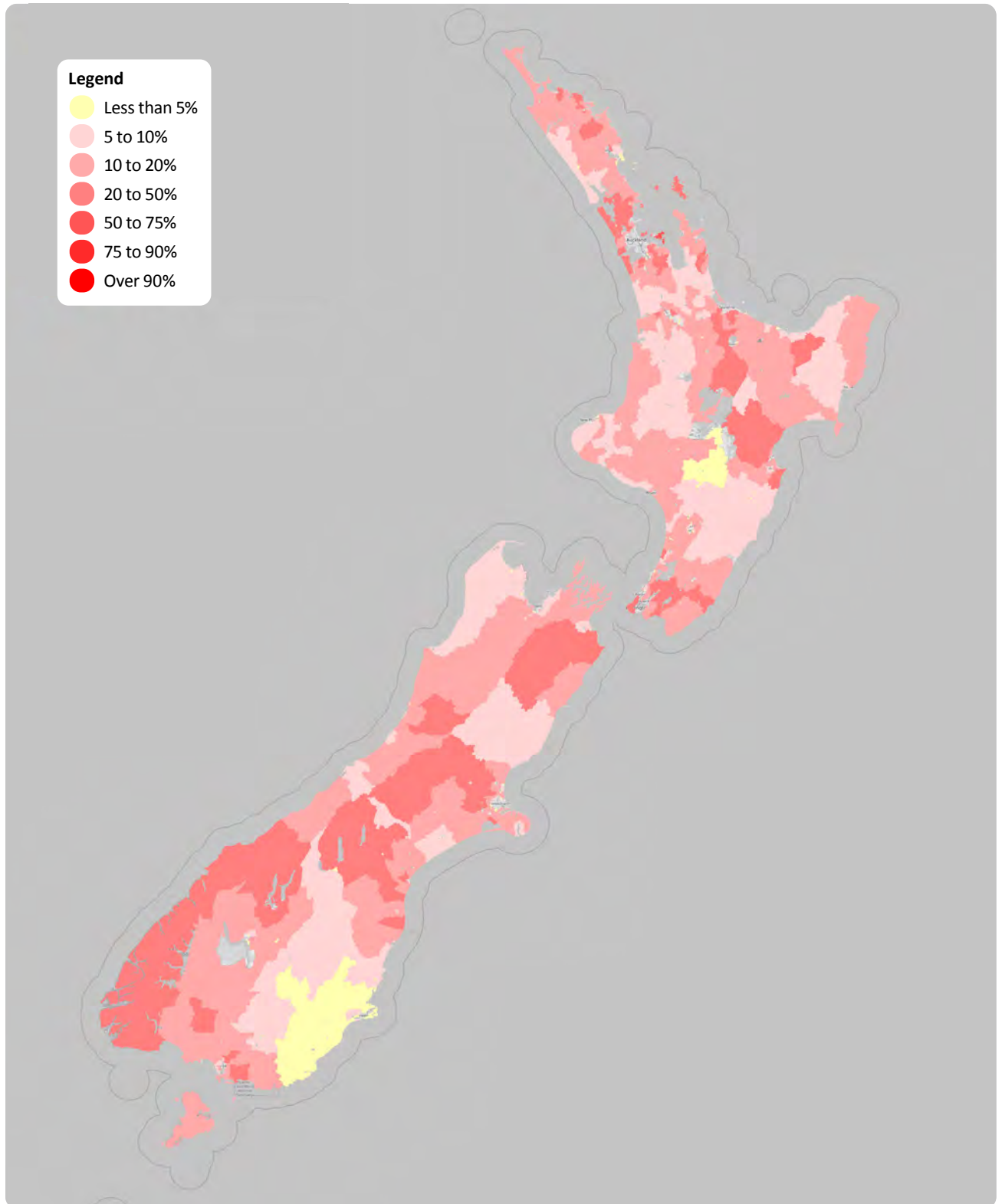
As of June 2023, 68% of rural households are within the coverage area of at least one non-cellular fixed network, with satellite also being an option for those who can receive a satellite signal.

The following analysis looks at the location of households connected to these broadband technologies – indicated by regional market shares in the following maps.

The following two maps show the concentration of satellite and non-cellular fixed wireless connections in rural areas across New Zealand. Areas coloured yellow have a low concentration of the technology, whereas areas coloured dark red show areas of higher concentration. The maps below show:

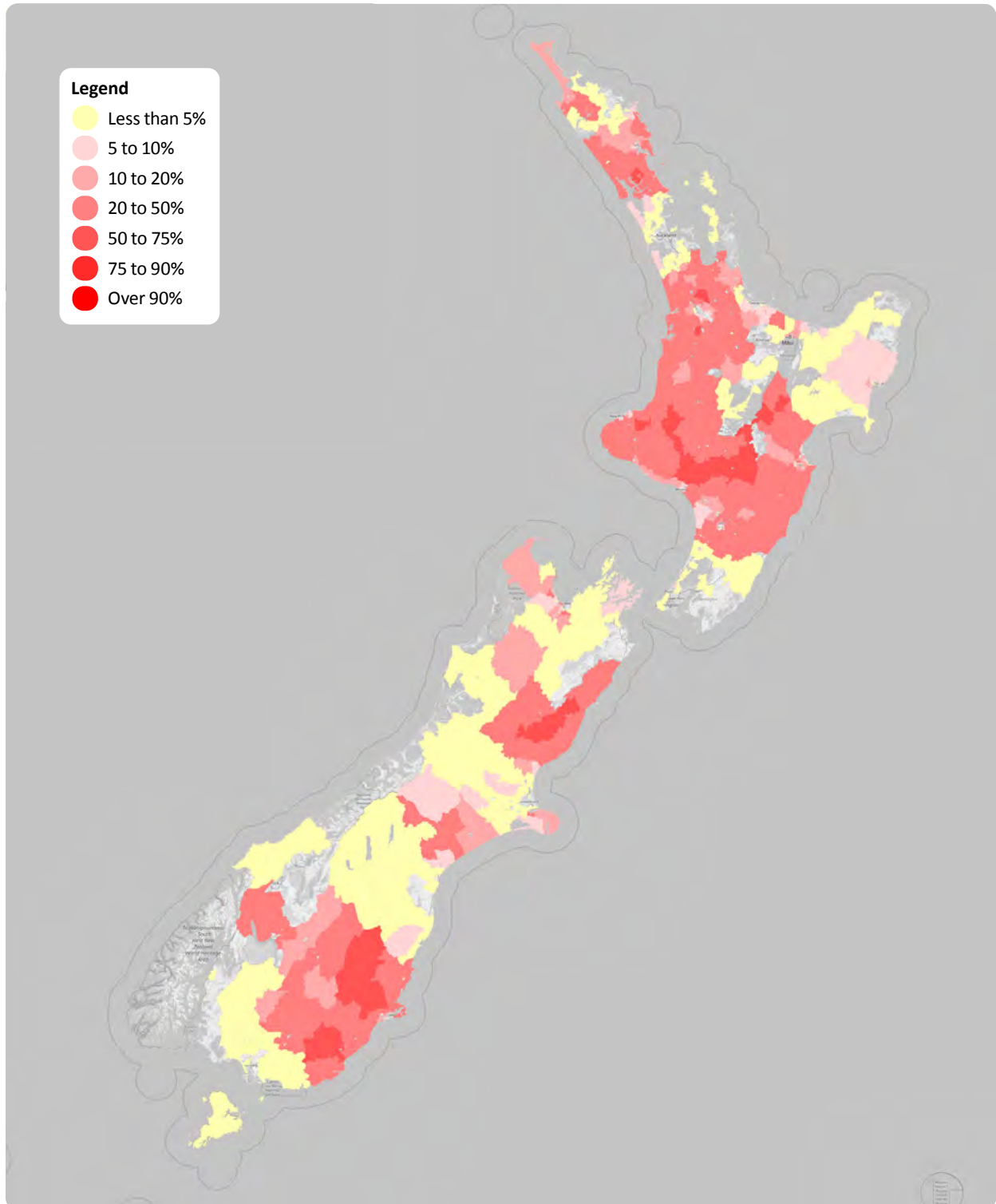
- Take-up of satellite connections is widespread across rural New Zealand and is becoming more popular with the introduction of Starlink.
- The highest concentration of satellite connections is around Fiordland where there are few connections and satellite is the only technology available in many cases.
- Concentration of satellite connections is higher in rural areas surrounding Auckland. This may reflect higher incomes in these rural areas as satellite plans are currently more expensive than alternative technologies.
- Non-cellular connections are more concentrated in areas where individual WISPs operate. This is because most WISPs operate their own regional networks.
- Higher concentration of non-cellular connections exists in rural areas around Northland, the bottom of the North Island, and Otago.

Satellite



Source: Commission data

Non-cellular fixed wireless



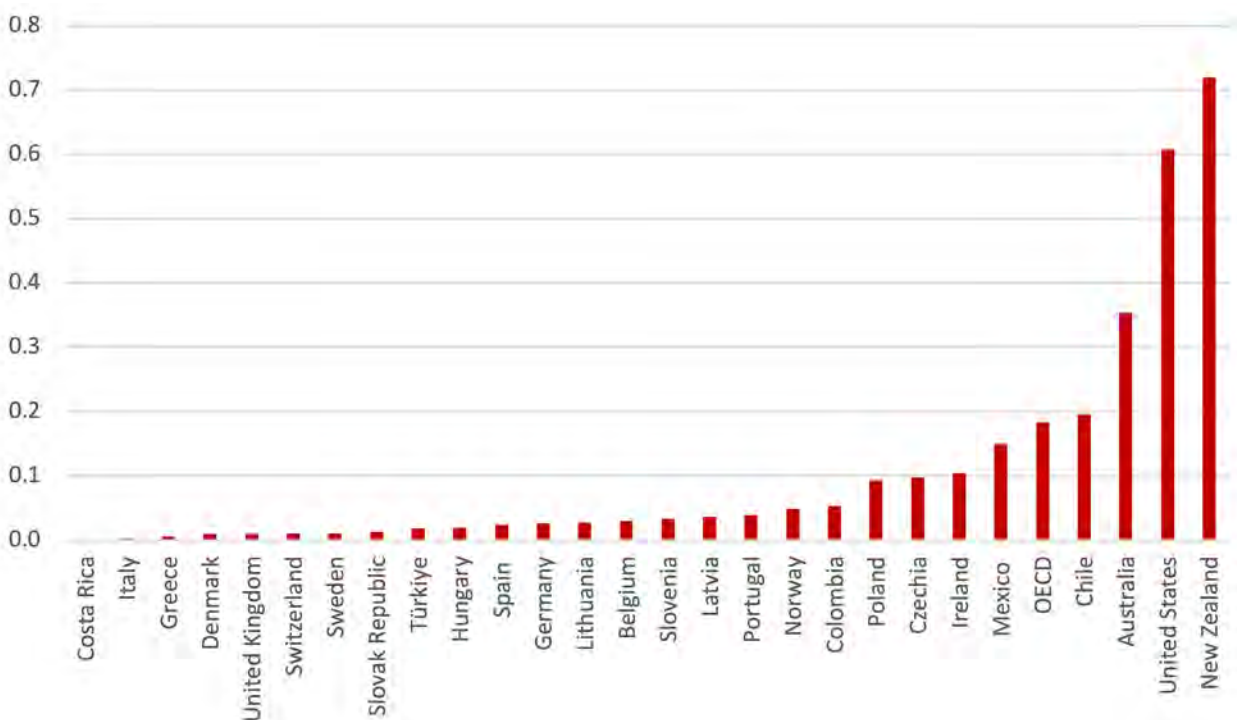
Source: Commission data

OECD comparisons

Figure 35 below shows that New Zealand has the highest number of satellite connections per 100 inhabitants of any OECD country.¹¹¹

Satellite connections have grown significantly since the entry of Starlink into the New Zealand market in 2021, with around 37,000 connections as of June 2023. This growth has occurred mainly in rural areas where consumers previously had limited choice of high-speed broadband options. While most satellite broadband connections are in rural areas, there are around 3,000 urban connections. The vast majority of these are LEO satellite connections including business satellite and mobility satellite plans (e.g. for campervans), as well as standard satellite broadband connections.

Figure 35: OECD satellite fixed broadband subscriptions per 100 inhabitants (June 2023)



Source: OECD¹¹²

111. <https://www.oecd.org/digital/broadband/broadband-statistics/>

112. <https://www.oecd.org/digital/broadband/broadband-statistics/>, note not all countries had data supplied.

Consumers of telecommunications services are presented with a wide range of retail offers that are products of the underlying market structure – the network infrastructure, its capabilities, ownership, and regulatory settings.

Whether consumers understand and act on these offers is a product of the information available to them, including through marketing, and their innate preferences and behaviours.

2023 Highlights

- Of the 90,000 rural copper connections in 2023, 97% are within coverage of cellular fixed wireless and non-cellular fixed wireless networks. Rural copper consumers could benefit from better understanding other technologies and providers available.

Understanding

Copper is still an important technology for consumers in rural areas. As the legacy technology, it is likely the best-understood and most trusted connectivity option.

However, we do know that of the 90,000 rural copper connections, 97% are within coverage of a cellular fixed wireless or non-cellular WISP network and those consumers who can receive a satellite signal will be able to switch to a satellite technology.

Many consumers are not aware of the alternative technologies that are available to them. In rural areas, alternative technologies such as cellular fixed wireless, non-cellular fixed wireless and satellite may better meet consumers' performance needs compared to a basic copper connection. Switching to an alternative technology or provider may also be cheaper for consumers.

Trust in copper technology may also be the reason why some rural consumers are not switching to alternative technologies. In many cases, consumers may be paying more for an inferior copper service.

The high proportion of consumers switching to RSPs outside the top 3 suggests that consumers' awareness and understanding of alternatives is increasing over time. As the alternatives become more prominent, in terms of marketing, word-of-mouth and media commentary, a positive feedback loop promotes greater awareness and understanding amongst those who have not considered switching.

MARKET OUTCOMES PUTANGA MĀKETE

Market outcomes flow from market structure, and cover the performance of telecommunications infrastructure, and the levels of wholesale and retail pricing, through to consumer affordability and satisfaction.

INFRASTRUCTURE HANGANGA

Reliable, adaptable, and high-performing telecommunications infrastructure is fundamental for positive connectivity outcomes in Kiwi homes and businesses.

2023 Highlights

- Download speeds for Starlink (184Mbps) are approximately four times faster than the next best alternative that we measure (rural 4G cellular fixed wireless 45Mbps).
- Download speeds for rural 4G cellular fixed wireless (45Mbps) are essentially the same as in urban areas (46Mbps).
- Our MBNZ testing shows that ADSL struggles to reliably stream UHD Netflix at all. Once the household goes to two or more simultaneous UHD streams, the only reliable technology is the LEO satellite.

Performance

Broadband performance is about how much and how quickly data can move between the end-user and the online content they are accessing. This data is moving back and forth across telecommunications infrastructure – from the end-user’s device to servers around the world. We independently measure all of this through our MBNZ programme.

Our analysis of broadband performance in rural areas covers ADSL, VDSL, 4G cellular fixed wireless, and LEO (Starlink). At this stage, we do not have sufficient performance data on non-cellular fixed wireless in rural areas. This continues to be an area of focus for our MBNZ programme.

International speed comparisons and results of our in-home performance testing can be found in the urban chapter.

Broadband speed

Download and upload speed, as measured in our MBNZ programme, is the speed data travels between the internet and the router in the home.

The table below provides a guide on what activities various download speeds allow. Note that other factors such as latency and the location of hosted content will impact the online experience.

Upload speeds should be considered alongside download speeds. The main applications where the impact of upload speed is apparent are file transfers and video conferencing. For example, a lower upload speed will mean that it takes longer for files to sync or email attachments to be applied.

Download speed	Online experience
0–5Mbps	Browse the internet, use search engines, use email, watch videos in lower resolutions (up to 720p). Individual large files take a long time to download (1GB at 5Mbps takes over 25 minutes).
5–40 Mbps	Possibly able to stream up to UHD on one device, or stream HD (1080p) on multiple devices. Able to download large individual files in a reasonable amount of time (1GB at 40Mbps takes just over 3 minutes).
40–100Mbps	Comfortably able to stream UHD without interruption, and have multiple people use streaming services. Able to download larger files, such as smaller modern game releases, in a reasonable amount of time (20GB at 100Mbps takes just over 25 minutes).
100–500Mbps	Multiple users can stream UHD video without interruption. Large files download very quickly (1GB at 500Mbps takes 16 seconds). Larger game releases download in a reasonable amount of time (80GB at 500Mbps takes just under 22 minutes).
500–1,000Mbps	Able to download even the largest video games very quickly (120GB at 1,000Mbps takes 16 minutes).

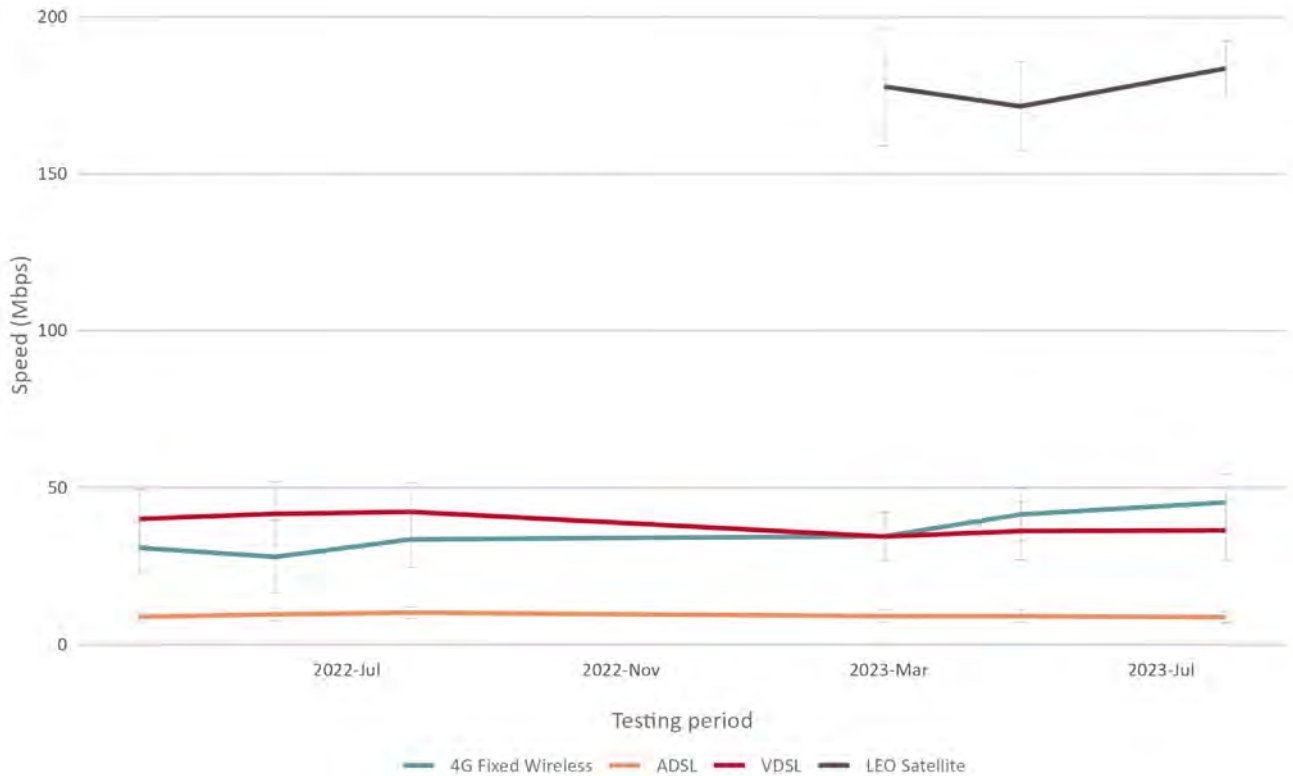
Figure 36 below shows the average rural download speeds for the technologies measured by the MBNZ programme over the year to July 2023.

Based on July 2023 testing, rural download speeds for VDSL (36Mbps) are around 10% slower than copper download speed testing in urban areas. However, download speeds for rural 4G fixed wireless (45Mbps)

are essentially the same as in urban areas (46Mbps). Download speeds for ADSL also do not vary between urban areas (9Mbps) and rural areas (9Mbps).

July 2023 testing shows that rural LEO download speeds (184Mbps) are 309% higher than the next best alternative (rural 4G Fixed Wireless 45Mbps) that we measure.

Figure 36: Average rural download speed (24/7)¹¹³



Source: Commission analysis of MBNZ data

113. The lines above and below each point show the 95% confidence intervals.

Figure 37 below shows the average rural upload speeds for the technologies measured by the MBNZ programme over the past 2 years.

Based on July 2023 testing, average rural upload speeds for ADSL (1Mbps) and VDSL (9Mbps) are consistent with copper upload speed testing in urban areas. However, upload speeds for rural cellular 4G fixed wireless (16Mbps) are slower than in urban areas (23Mbps). LEO satellite upload speeds (21Mbps) showed better performance than copper and cellular 4G fixed wireless in rural areas.

Overall, ADSL, VDSL and cellular 4G fixed wireless speeds have remained steady across our reporting

periods, with the minor changes for VDSL and cellular 4G fixed wireless unlikely to be noticeable by consumers. However, the introduction of LEO satellite into our MBNZ programme shows the order of magnitude improvement in performance relative to the existing rural technologies we measure.

The download (above) and upload (below) results indicate that consumers on ADSL are unlikely to be able to do much more than basic browsing, whereas VDSL and cellular 4G fixed wireless support a fuller online experience for a smaller household. LEO satellite represents a significant step up, being able to support the online experience of larger households.

Figure 37: Average rural upload speed (24/7)



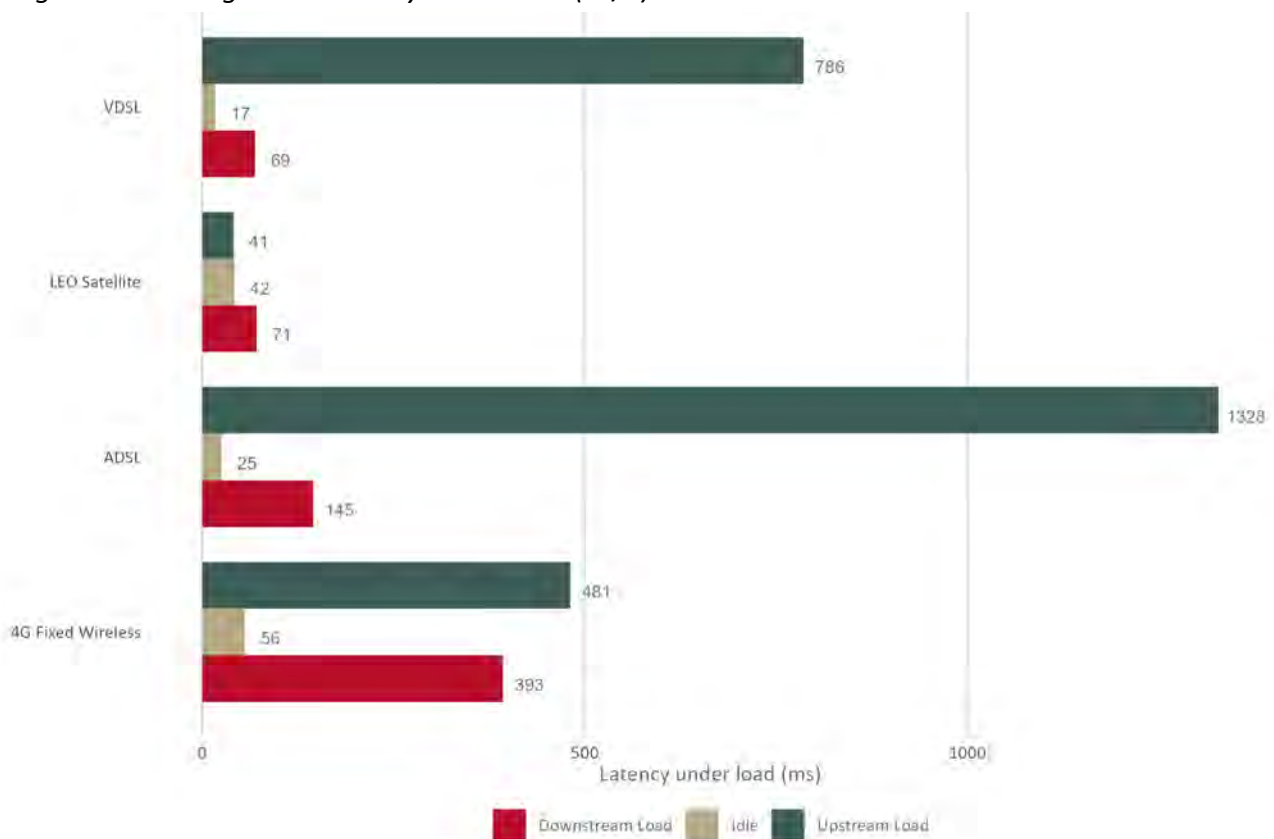
Source: Commission analysis of MBNZ data

Latency under load

Figure 38 below shows that latency under load has a significant impact on performance, particularly for copper connections – ADSL being the most heavily impacted technology for latency under load. LEO satellite performs much better under load than the other rural technologies we test.

Latency under load refers to the end-to-end latency of an internet connection when the network is loaded with traffic for a period. In our MBNZ testing we run multiple speed tests in parallel as a proxy for a more heavily utilised network connection. This test is more indicative of real-world usage (i.e. multiple devices in the home competing for bandwidth).

Figure 38: Average rural latency under load (24/7)



Source: Commission analysis of July 2023 MBNZ data

Netflix¹¹⁴

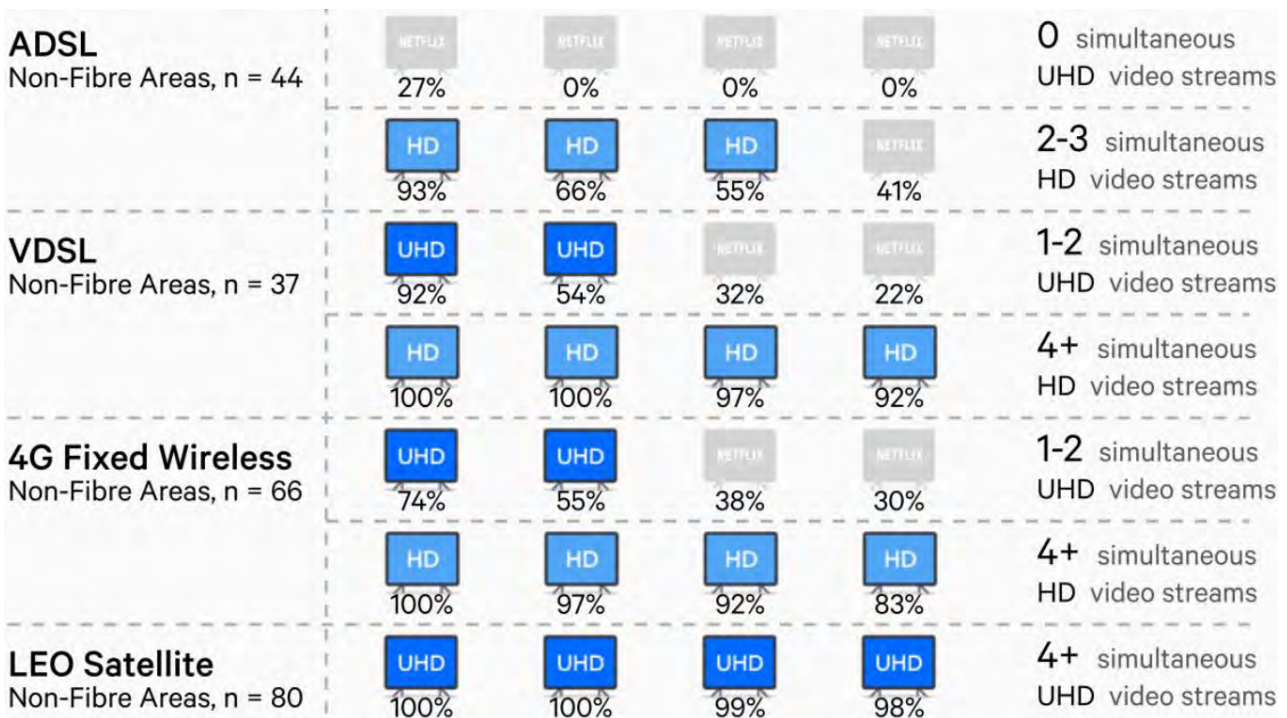
Results from our July 2023 MBNZ testing show that ADSL struggles to reliably stream UHD Netflix at all. Once the household goes to two or more simultaneous UHD streams, the only reliable technology is LEO satellite.

Netflix is the most popular subscription streaming service in New Zealand with 42% of Kiwis aged 15 and older using the service in 2023. As such, the ability to stream Netflix in UHD is an experiential measure included in MBNZ.

Note that some aspects of performance are outside the control of infrastructure owners, for example, Netflix encoding choices/policies.

Our MBNZ results reflect not just the performance of the infrastructure and RSPs but also any changes Netflix makes in the background – in particular, video and audio encoding, which is the process of compressing files (making them smaller to download) without compromising the quality.

Figure 39: The proportion of households that can reliably stream UHD from Netflix



Source: Commission analysis of MBNZ data

114. '42% of Kiwis aged 15+ use Netflix' – Where Are the Audiences 2023, NZ On Air, see – <https://www.nzonair.govt.nz/research/where-are-the-audiences-2023/>

Remote working

Video conferencing service latency is particularly important for remote working. Internet New Zealand research showed that in 2023, 61% of employed New Zealanders do the type of work that allows them to work from home. Of these workers, 75% worked from home all or some of the time.¹¹⁵

Our Measuring Broadband New Zealand programme tests the performance across technologies for different video conferencing services. Figure 40 below shows the average latency of different technologies to the most popular video conferencing services.

Out of ADSL, VDSL, 4G cellular fixed wireless, and LEO satellite, we can see that VDSL tends to have the lowest latencies to video conferencing services, and 4G cellular fixed wireless has the highest latencies.

The latency for Zoom’s free service was high across all technologies. This is because Zoom provides paid

subscribers with access to servers geographically nearer to the users, than for unpaid subscribers. This results in lower latency for paid subscribers.

Lower latency is important for a good experience using video conferencing services.

For someone in a video call, higher latency will result in a longer delay between users receiving audio or video from the person or people at the other end of the call. Higher latency can also cause video calls to jump or dropout more often.

Server location is another factor that affects the latency of video conferencing services. Services that use servers geographically further away from users will experience higher latency as traffic is required to travel further.

Figure 40: The latency to servers of different video conferencing services using free and paid accounts by plan



Source: SamKnows analysis for Commission

115. IGEA “Digital New Zealand 2023”, page 38. Available at https://igea.net/wp-content/uploads/2023/08/IGEA_NZ2023_REPORT-Final.pdf

In-home Wi-Fi speed

Our MBNZ programme does not yet split out in-home Wi-Fi speed by rural and urban categories. The national results of our testing partner SamKnows ‘RealSpeed’ product, which allows volunteers to test the performance they are receiving on their devices, showing their real in-home experience, can be found in the ‘Performance’ section in the Urban chapter.

Reliability

Faults

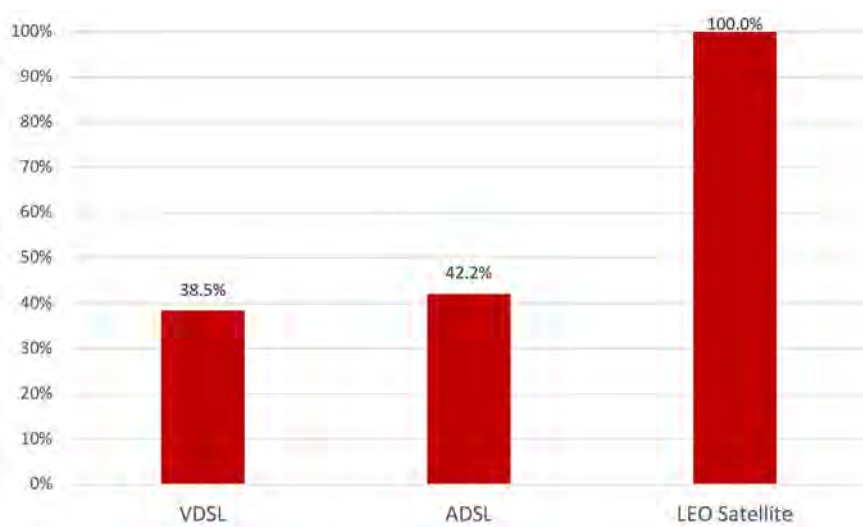
As we noted in the Urban chapter, we have collected data from providers on the number and duration of faults experienced by connections. This year the data focused on fibre, copper, and LEO satellite connections. We have not included cellular or non-cellular fixed wireless data around faults due to variances in data quality. However, the limited data sample we do have is useful for indicative purposes this year. We will review how we collect this data in the future.

Over the two years from July 2021 to June 2023 connections in rural locations:

- Experienced more service interruptions on average than those in urban areas; and
- Waited longer for fault resolution.

More copper connections experienced faults than fibre connections, due to the age of the network and lower resilience as described above in the Resilience section.

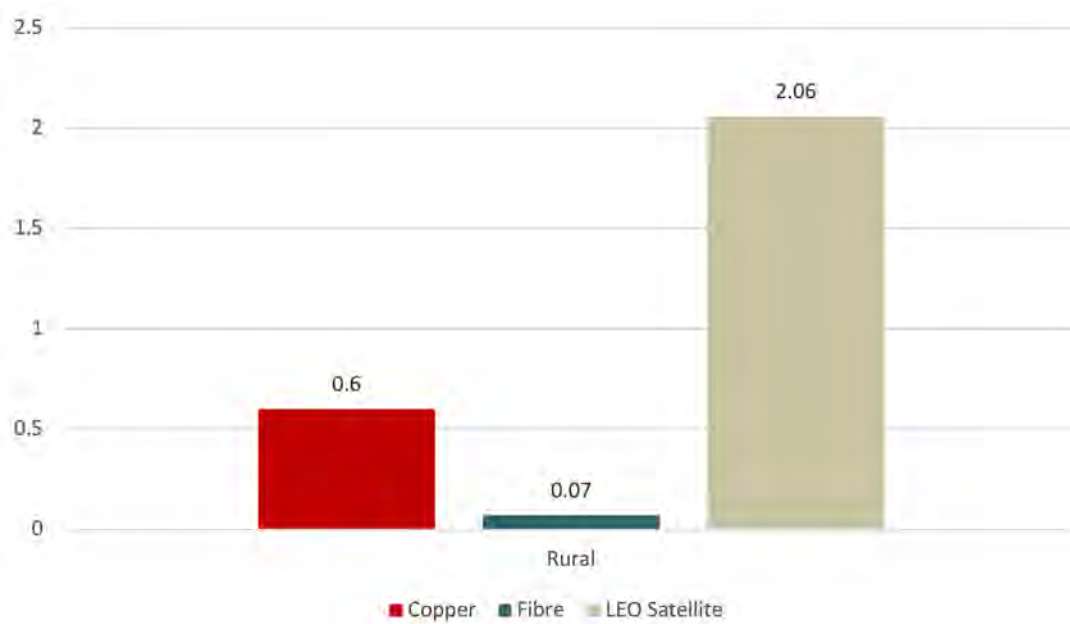
Figure 41: Connections that experienced one or more faults between July 2021 and June 2023



Source: Commission data

100% of LEO satellite connections experienced one or more faults due to two faults that affected every connection, see Figure 41. In the reported time period, LEO satellite users experienced a higher average frequency of faults, as shown in figure 42 below. This demonstrates a key difference between terrestrial and non-terrestrial networks. Terrestrial network disruptions typically affect localised components such as fibre cables or cell sites, impacting only the users that are ‘downstream’ of that node. LEO satellite service interruptions could affect all users within the satellite coverage area at a given latitude. Our faults data shows that LEO satellite faults can affect all users nationwide. This is a risk to note as the number of connections on LEO satellite increases.

Figure 42: Average frequency of faults between July 2021 and June 2023



Source: Commission data

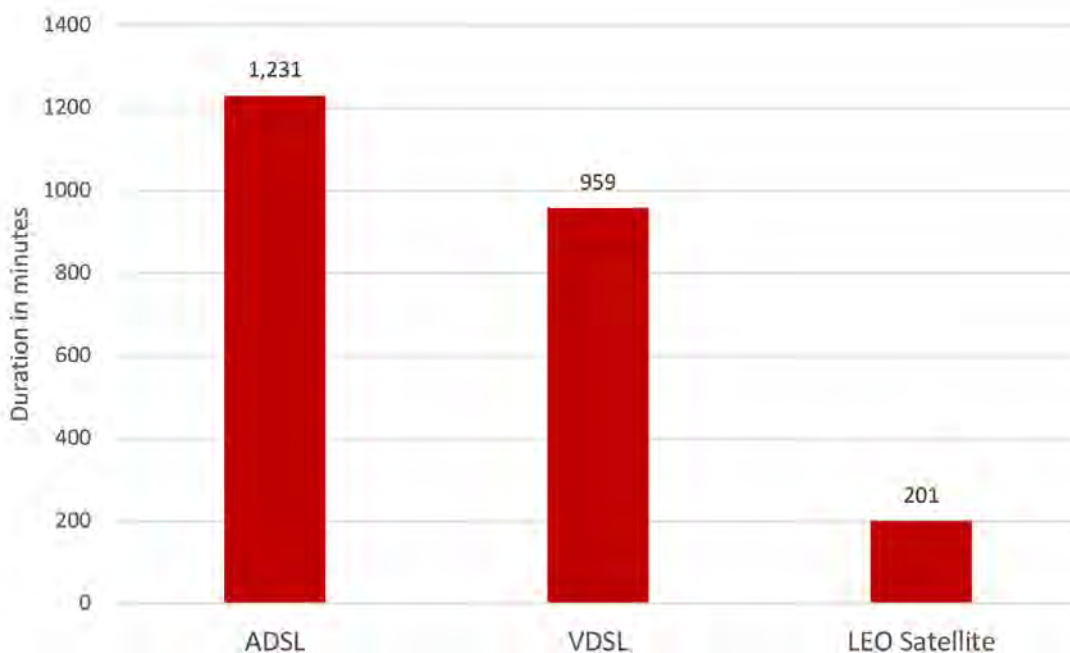
Within terrestrial networks, copper connections (ADSL and VDSL) have more faults than fibre. Copper faults take longer to resolve than fibre faults, both in urban and rural areas, as shown in Figure 43 below. In rural areas, a factor is the distance technicians must travel to assess and resolve faults. Also, copper faults are likely more prone to intermittent faults, due to the age of the network. The nature of intermittent faults may mean it takes longer to find the source of the fault on the line and fix it.

In rural areas, faults take an average of 809 minutes to be resolved, compared with 253 minutes in urban areas. Longer fault resolution times are often due to greater

distances for field technicians to travel in rural areas and more above-ground cabling exposed to the elements. Where RSPs are able, offering alternative options such as a large data cap of mobile data for a copper service interruption enables rural households at least basic connectivity while they await resolution.

LEO satellite faults took less time to restore (201 minutes on average) compared with VDSL faults (959 minutes on average) and ADSL faults (1,231 minutes on average). So, while we can see that LEO satellite faults may affect a larger number of connections concurrently, the duration of the impact is shorter than for copper connections.

Figure 43: Average fault duration (average minutes per fault) between July 2021 and June 2023



Source: Commission data

Wholesale-level pricing plays an important part in shaping retail-level pricing for consumers. Regulatory oversight or obligations commonly apply at this level of the market.

2023 Highlights

- Copper wholesale prices increased by 7% during the year.

Copper pricing

In December 2022, Chorus increased the wholesale price for its copper bitstream products, following the annual legislated CPI price adjustments to Chorus' regulated copper services.¹¹⁶

Table 22: Chorus wholesale prices

Plan	2022	2023	% change
Copper bitstream	\$45.09	\$48.35	7.2%

Source: Chorus¹¹⁷

Wholesale cellular fixed wireless broadband and satellite broadband pricing

We do not currently have information on the pricing of wholesale cellular fixed wireless services or wholesale satellite broadband services. We note that these services are subject to contractual terms agreed by wholesalers and retailers.

116. Chorus "FY23 financial results – Investor presentation" – see <https://company.chorus.co.nz/investors/investor-announcements>

117. <https://assets.ctfassets.net/7urik9yedtc/5HEZKMCr51rFgSQ76jOdAW/5ac859f42f9ccc37f3a1296dd4750ecf/chorus-financial-results-full-year-fy23-02-investor-presentation.pdf>

Retail pricing outcomes are based on the underlying infrastructure or wholesale costs but also consider competitive dynamics, relativities between offers, and consumer demand.

2023 Highlights

- The price for a basic copper service in New Zealand is \$28 per month more expensive than the OECD average.
- There continues to be a large variance in the copper prices offered by major RSPs, with the most expensive service costing \$32 per month more than the cheapest.
- We are yet to see a price response from MNOs to the competitive entry and expansion of LEO satellite.

Prices

We use Teligen's price benchmarking database for some aspects of our pricing analysis.

Teligen's benchmarks cover plans from incumbent providers who serve at least 70% of customers in each country. In the case of New Zealand, Spark, One NZ, 2degrees, and Slingshot are the brands included.

Copper prices and wholesale flow through

The wholesale price of copper has increased by just over \$3, or 7%, over the year. Some RSPs have passed on some or all of the wholesale price increase (Spark, 2Degrees, and Skinny), whereas other RSPs (One NZ and Slingshot) have increased headline retail prices significantly above the wholesale price.

There continues to be a large variance in the broadband prices offered by major RSPs in rural areas. The margin between monthly wholesale (UBA \$48.35) and retail prices ranges from \$32 for Skinny, through to \$64 for Spark. A landline can be purchased, usually for an additional \$10/month, except from Skinny, which does not offer the service.

Spark, historically the rural incumbent and the provider of last resort,¹¹⁸ is charging double the retail margin of its subsidiary brand (Skinny) which works out to be an additional \$384 per year. The landline service, an important feature in rural areas where mobile coverage can be patchy, is likely to reduce the take-up of Skinny's broadband offer in rural areas.

Table 23: Retail copper broadband monthly rental prices in rural areas (ex. Landline)

RSP	June 2022	June 2023
Spark	\$105	\$112
One NZ	\$79	\$94
2degrees	\$91	\$94
2degrees (Slingshot)	\$85	\$99
Spark (Skinny)	\$73	\$80

Source: RSPs' websites and Commission data

4G cellular fixed wireless prices

Prices for rural 4G cellular fixed wireless typically range from around \$96 to \$200 per month depending on the data cap, which ranges from 60-600GB/month.

As of June 2023, the most popular 4G cellular fixed wireless plans, by number of connections, were those around the 200GB/month mark. In this category, there was a significant price adjustment by Farmside in the last year:

- Spark's 200GB monthly plan price remained unchanged (\$96).
- 2degrees' 170GB monthly plan price remained unchanged (\$85).
- Farmside's 200GB monthly plan price was reduced by 63% (from \$156 to \$96). Farmside's price adjustment brings its unit pricing (\$0.48/GB) in line with Spark (\$0.48/GB) and 2Degrees (\$0.50/GB).

Installation costs for cellular fixed wireless range between \$0 – \$490 depending on whether the customer needs to install an antenna, the complexity of the installation, and the term of the plan.

Overall, the pricing of 4G cellular fixed wireless plans in rural areas has not shifted in response to the entry and expansion of LEO satellite services. The potential for MNOs to partner with international LEO providers may lessen price competition between 4G cellular fixed wireless and LEO providers due to the nature of partnership arrangements or as MNOs avoid cannibalising pricing between services.

118. Spark (supported by Chorus) is the TSO provider for the local residential telephone service, which includes charge-free local calling.

4G cellular fixed wireless prices – urban vs rural prices

4G cellular fixed wireless and satellite-based broadband are two technologies that are available in both urban and rural areas (alongside copper). Satellite pricing is consistent nationwide, but rural 4G cellular fixed wireless is more expensive than urban cellular fixed wireless, particularly for higher data cap plans, as can be seen in Table 24 below.

Table 24: Rural vs urban 4G cellular fixed wireless prices

RSP	Plan	Monthly cost	Plan	Monthly cost
Spark	Rural 4G Wireless 350GB	\$95.99	4G Wireless (Unlimited)	\$60
One NZ (Farmside)	Rural 4G Wireless 200GB	\$95.99	4G Wireless (Unlimited)	\$65
2degrees	Rural 4G Wireless 170GB	\$85	4G Wireless (Unlimited)	\$60

Source: RSPs' websites (as of June 2023)

Prices differ by around \$30 per month for 4G cellular fixed wireless broadband plans between urban areas and rural areas. Several factors may account for this:

- **Infrastructure and operational costs:** Urban areas have more users sharing infrastructure and operational costs, while rural areas have fewer users to share these costs.
- **Spectrum utilisation:** more efficient spectrum usage in urban areas. In rural, utilisation will depend on relative spectrum holdings between the MNOs. For example, Spark holds a lower frequency spectrum which is often utilised in rural areas. Where MNOs have a limited spectrum, they may use price to constrain demand.
- **Competition:** Rural areas face less competition due to limited coverage from RBI-funded networks and fewer competing technologies such as fibre, HFC, or affordable LEO satellite options.
- **Network performance:** MBNZ reports show similar performance metrics (download/upload speeds, latency) between urban and rural 4G fixed wireless networks, suggesting that superior performance is not a factor in higher prices in rural areas.

These factors suggest that higher costs and less competition influence the price differential in rural areas.

Non-cellular fixed wireless prices

Prices for non-cellular fixed wireless offered by WISPs typically range from \$70 for capped plans up to \$200 for unlimited plans. We have not undertaken unit price analysis on non-cellular fixed wireless plans. This is because these plans also factor in speed tier into their prices and speed tiers are set by each WISP, leading to a plethora of options at a nationwide level. This makes comparison at a 'per GB' level less informative than for cellular fixed wireless.

Installation costs for non-cellular fixed wireless range between \$0 – \$899¹¹⁹ depending on whether the customer needs to install an antenna, the complexity of the installation, and the term of the plan.

Satellite (GEO and LEO) prices

Prices for GEO satellite plans vary. The most basic plans that provide speeds of 10Mbps and limit data usage cost \$50 – \$60, while higher speed plans that allow for unlimited usage cost \$150 – \$200.

Standard LEO (Starlink) costs \$159 per month for unlimited usage, while its business-grade service costs from \$226 per month for 40GB to \$2,180 per month for 6TB.^{120,121}

Installation costs for satellite broadband range from \$495 – \$1,999. Some RSPs offer longer-term plans which reduce the installation cost for the customer. However, customers will be liable for an early termination fee if they want to exit their plan before the term ends. From time to time Starlink offers refurbished hardware at a discount to new hardware and sometimes offers hardware discounts for subscribers in rural areas.

119. Provider websites."\$899+" is where a provider said installation costs are "from \$899"

120. [Starlink.com/orders](https://starlink.com/orders)

121. In February 2024, Starlink introduced a deprioritised plan priced at \$79 per month. The cheaper plan has no data or speed caps. But users can "expect 50-100Mbps download speeds (as compared to 150-250Mbps for the Standard service plan", according to a statement from the company.

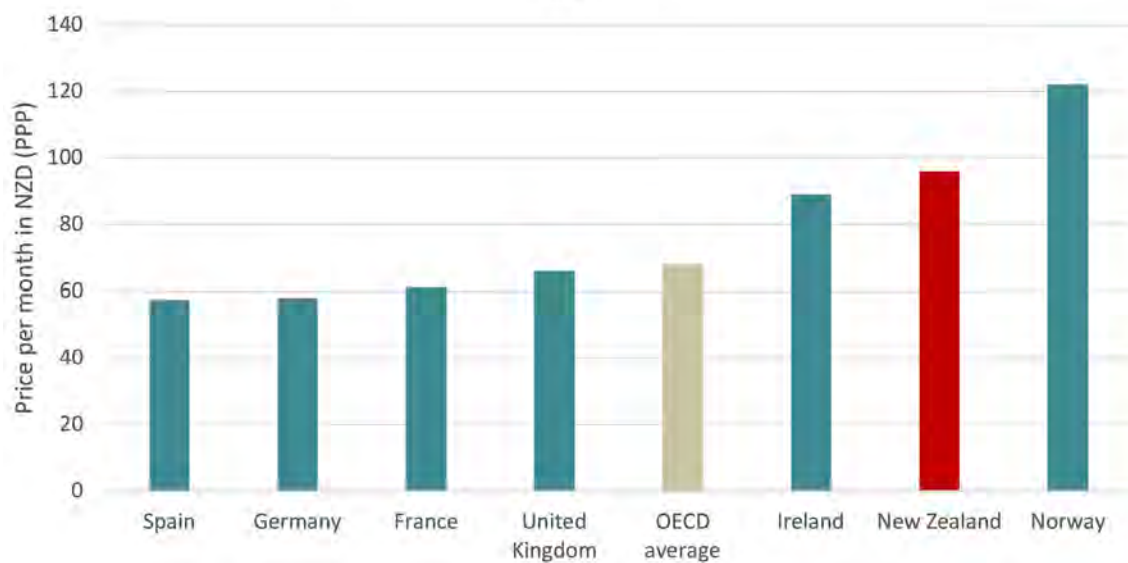
International price comparison

To get an indication of how New Zealand broadband prices compare to those overseas, we compared Teligen’s prices of the cheapest benchmark plan on offer in New Zealand against the cheapest benchmark plan available in OECD countries for a basic copper service.¹²²

While copper connections are reducing across New Zealand year-on-year, copper represents approximately a third of broadband connections in rural areas (as of June 2023), and therefore remains an important comparator.

The price for a broadband-only copper service in New Zealand increased by 28% more than the OECD average – the gap is \$27.86 in 2023 compared with \$20 in 2022. The price differences between comparator countries are due to a range of factors. Copper remains a prevalent broadband technology in some comparator countries (such as the UK), but has been replaced by fibre in others (such as Spain).¹²³

Figure 44: Teligen copper price benchmarks – September 2023¹²⁴



Source: TechInsights

122. Unlimited usage broadband-only copper service providing speeds of at least 5Mbps.

123. Refer <https://www.oecd.org/digital/broadband/broadband-statistics-update.htm>

124. Japan and United States are not displayed as no copper services meeting the specifications were included in Teligen’s benchmark.

The market outcomes produced through infrastructure, wholesale, and retail ultimately come down to consumers' usage and their overall satisfaction with the connectivity provided.

2023 Highlights

- Satellite requires the highest percentage of income in rural areas with a range of 1.68% to 2.81%.
- Survey results show that rural broadband households are less satisfied than urban.
- Survey results show that rural households with satellite broadband have significantly higher levels of satisfaction across all aspects than any other broadband type.

Affordability

Affordability is a relative concept that does not lend itself to precise indicators. Affordability depends not only on price and income, but also on other competing spending choices available.

Our affordability analysis compares the average available price of each urban broadband technology with the distribution of household average net income across the regions of New Zealand.

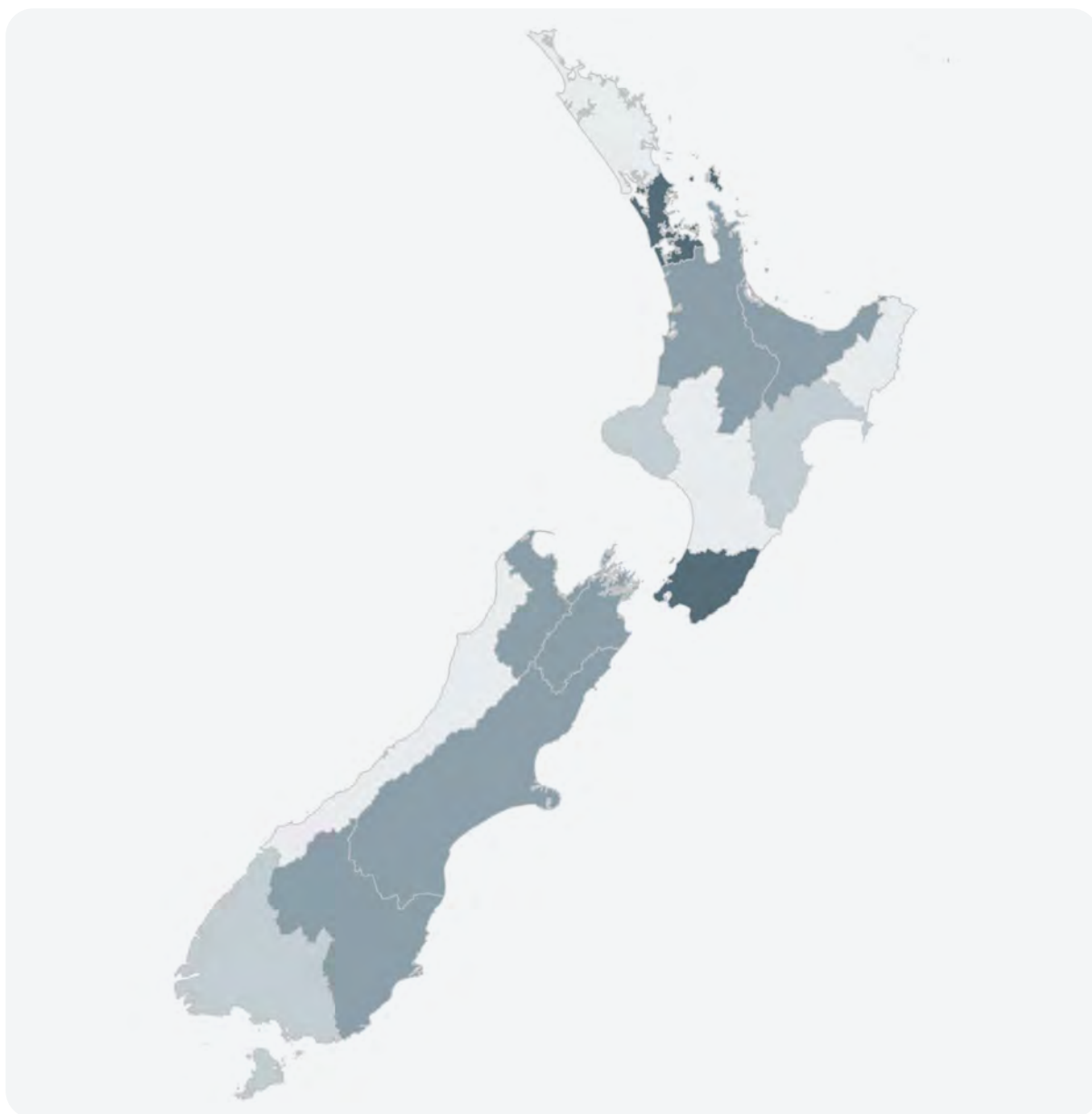
Average net income was derived by adjusting average gross income data from the 2018 Census by the Labour Cost Index and applicable tax rates. Census data was sourced from Statistics New Zealand and was mapped on an aggregated meshblock level.

These meshblocks were then compared against our fibre availability information. If at least one property from the meshblock was within an SFA, the entire meshblock was treated as a fibre area.

For readability these meshblocks where fibre is available have been aggregated to the regional level to produce the map and figures presented below.

Figure 45 below shows a heat map of where the price of rural broadband technologies requires a higher or lower percentage of average household income. In darker areas on the map, such as Auckland and Wellington, a lower percentage of income is required to purchase a rural broadband connection than in lighter-shaded areas such as the Gisborne and the West Coast.

Figure 45: Percentage of average household income to purchase broadband by region



Source: Commission analysis of Statistics New Zealand data

Figure 46 below shows that, in rural areas, a copper connection requires the lowest percentage of average household income, and with a range of 0.92% to 1.54% it is more affordable than it is in urban areas. Satellite requires the highest percentage of average household income in rural areas with a range of 1.68% to 2.81%, which means to get the fastest technology available, rural consumers are required to spend significantly more of their income than urban consumers need to for Fibre Max.

As part of the Household Economic Survey, Statistics New Zealand publishes annual mean household income by quintile, see Table 25.

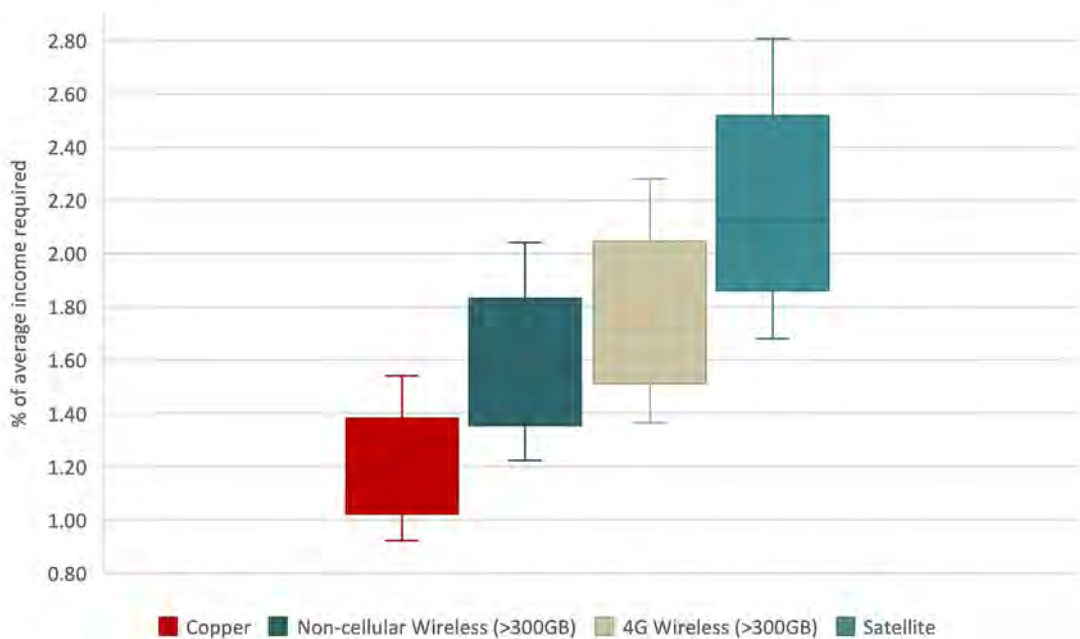
This shows that satellite broadband may not be affordable for households in the lowest income quintile given it requires 8.9% of average household income.¹²⁵ However, it also shows the importance of lower priced services such as Skinny Jump, which requires 1.7% of average household income in the lowest quintile.¹²⁶

Table 25: Average household income by income quintile

Quintile	Average household income
1	\$21,527
2	\$36,563
3	\$50,225
4	\$66,522
5	\$114,473

Source: Commission analysis of Statistics New Zealand's Household Expenditure Survey data

Figure 46: Relative affordability of broadband in rural areas



Source: Commission analysis of Statistics New Zealand data

125. Starlink's newer deprioritised service brings this down to 4.4% of average income.

126. Based on \$30 per month, which includes a maximum of 210GB of data.

Satisfaction

Customer satisfaction – rural vs urban

Results from our Customer Satisfaction Monitoring Survey found that 68% of rural broadband customers are satisfied with their broadband service, compared with 78% of urban consumers. This compares with 77% and 81% respectively from our initial analysis reported in last year’s *Annual Monitoring Report*.

The survey also asked rural broadband customers to rate their satisfaction with various service areas. As shown below in Figure 47, rural consumers are less satisfied with all aspects of their broadband service, relative to urban consumers.

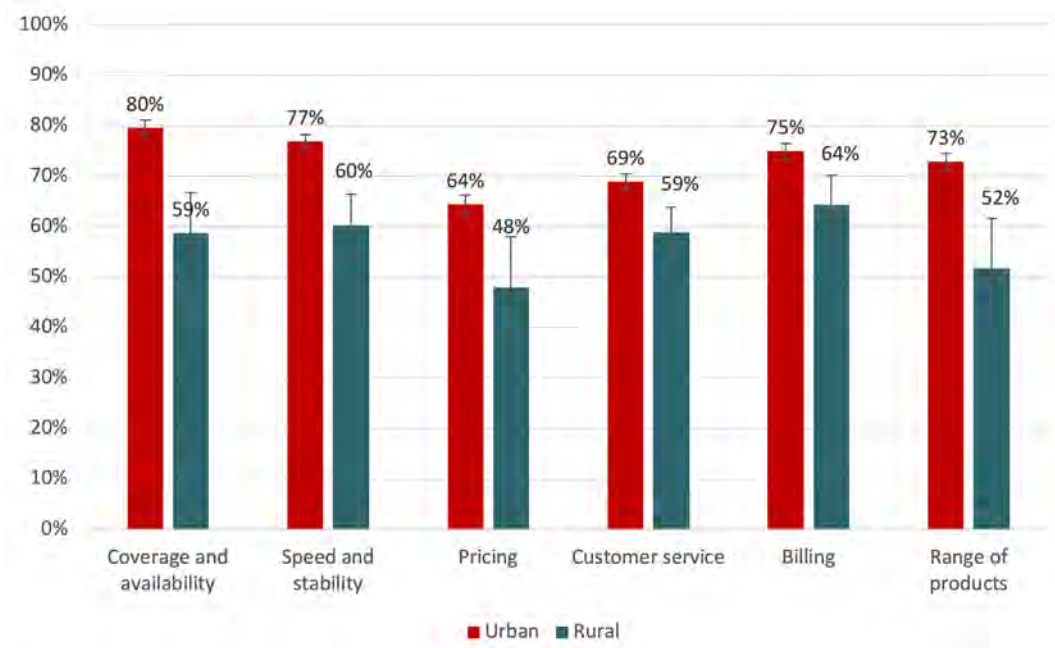
The benchmark for good performance is 80%. Currently, only urban Coverage and Availability meets the benchmark for good performance. This is likely due to the wide availability of fibre in urban areas, as well as alternatives such as cellular fixed wireless broadband.

Our survey results show the most prominent issues affecting rural consumers compared to their urban counterparts, in order of magnitude, are:

- Range of products (52% vs 73%);
- Coverage and availability (59% vs 80%); and
- Speed and stability (60% vs 75%).

The difference in satisfaction levels for these most prominent areas is likely explained by the availability and performance of fibre within urban areas, but also by the real or perceived lack of coverage and availability of copper alternatives for consumers in rural areas.

Figure 47: Comparison of satisfaction levels of rural vs urban consumers



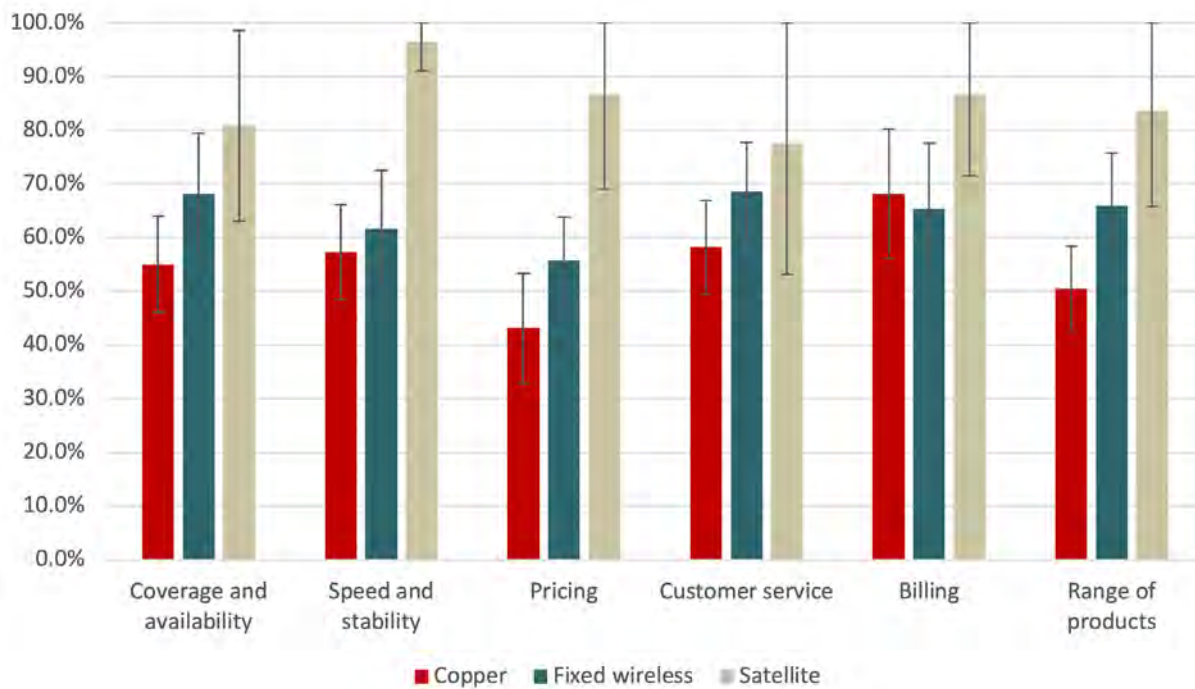
Source: Customer Satisfaction Monitoring Survey

Customer satisfaction – copper vs alternatives

With the growing availability of copper alternatives in rural areas, we have split the survey results to compare satisfaction levels of copper consumers with those on broadband alternatives (4G cellular fixed wireless, non-cellular fixed wireless, and satellite).

Our survey results show there are significant differences in the levels of consumer satisfaction across all aspects of the rural broadband service depending on whether they are on copper, fixed wireless, or satellite.

Figure 48: Satisfaction levels of copper, fixed wireless, and satellite broadband consumers in rural areas 2023¹²⁷



Source: Customer Satisfaction Monitoring Survey. Use satellite figures with caution due to low sample size (12)

127. This figure uses a wider data period from January 2023 to December 2023 to capture an acceptable sample size for satellite respondents

We undertook analysis to understand the degree of correlation between overall satisfaction and its underlying service aspects, Figure 49 below.

The results suggest that satisfaction with ‘speed and stability’ and ‘coverage’ have a stronger correlation to overall satisfaction for rural consumers than for urban consumers. It suggests that where consumers are satisfied with their speed and stability and/or with coverage of access technologies, they are more likely to be satisfied overall, and vice versa.

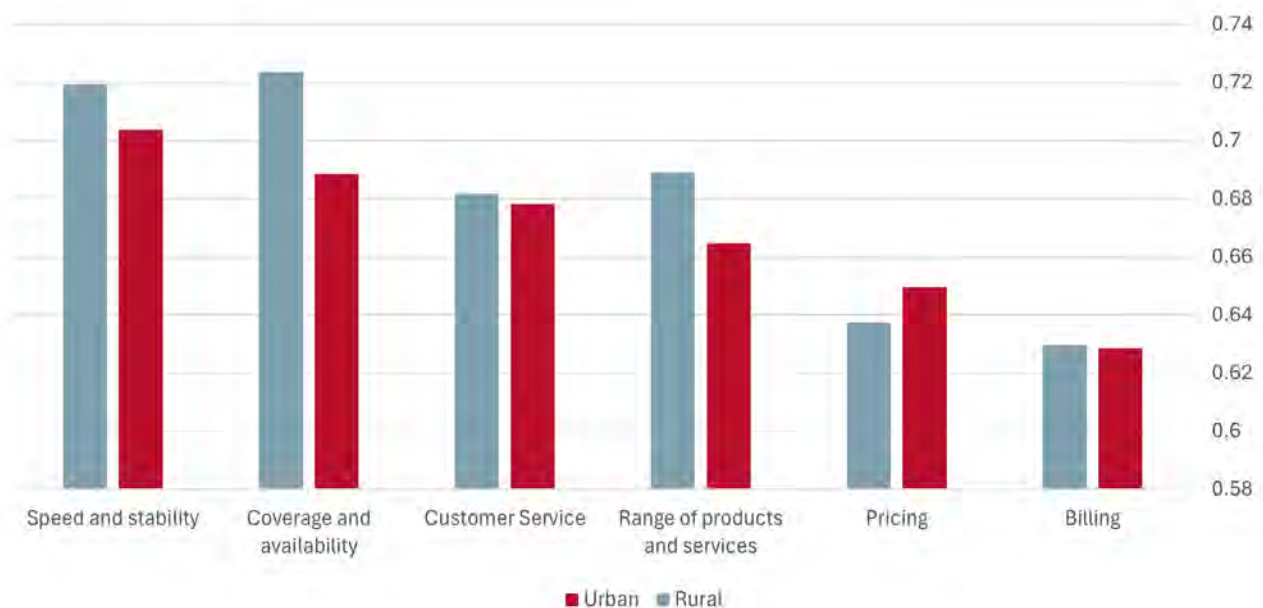
We then expect that the difference in satisfaction levels with ‘range of products’, ‘pricing’ (which is a value-for-money type indicator), and ‘coverage and availability’ are likely linked to satisfaction with ‘speed and stability’. Our MBNZ results show that, generally, rural broadband does not perform as well as urban broadband, and this analysis indicates that ‘speed and stability’ is important to rural consumers for their overall satisfaction with their broadband service.

Rural consumers who have switched from copper to either 4G fixed wireless or non-cellular fixed wireless service are likely to see improved satisfaction levels in ‘speed and performance’ and the other associated aspects – particularly where the consumer is switching away from ADSL. However, satellite offers a new level of ‘speed and stability’, such as concurrent UHD Netflix streaming, which is reflected in our customer satisfaction results.

The difference in satisfaction levels with ‘customer service’ may be associated with consumers’ experience with non-cellular services, which are operated by localised WISPs, who pride themselves on closer relationships with the community and customers.

The difference in satisfaction levels with ‘billing’, where satellite is 20% higher, may point to a more simplified product offering (i.e. one item on each monthly bill, as opposed to more complex bills with multiple products). It may also reflect that an uncapped data product is less likely to incur billing errors since the provider is not measuring or charging for usage.

Figure 49: Correlation between overall satisfaction and underlying service aspects



Source: Customer Satisfaction Monitoring Survey

Switching¹²⁸

During the 12 months to June 2023, our Customer Satisfaction Monitoring Survey indicates that 11% of rural households switched their broadband provider. In comparison, 16% of urban households switched.

Looking more closely at rural households that switched, we found that 42% switched to an RSP outside the top 3.¹²⁹ This is much higher than urban switchers, where only 25% switched to an RSP outside the top 3. The data shows the key difference is that, in urban areas, one of the top 4 providers is gaining double the percentage of switchers in urban than it is in rural.

The survey captures the reasons for switching from respondents, with the primary reasons being:

- I wanted to pay less (50%);
- My loyalty was not getting rewarded (23%); and
- I wanted higher speed (23%).¹³⁰

Respondents' reasons for switching align with our performance and pricing findings, which show that copper performance is not improving, but prices continue to increase, giving rise to consumers searching out alternatives. Respondents wanting to pay less and improve performance are most likely to have switched to 4G cellular fixed wireless (within the top 3), with those prioritising higher speed likely switching to Starlink (outside the top 3).

The high proportion of respondents switching to RSPs outside the top 3 suggests that consumers' awareness and understanding of alternatives is increasing over time.

The level of switching observed in a market may be indicative of the ability of consumers to act and take advantage of competing offers. It may also indicate the presence of behavioural preferences towards the existing and familiar.

There is no fixed proportion of the market that should be expected to switch. Consumers not switching provider is not necessarily a concern if those consumers are satisfied with their provider and/or do not face significant barriers to switching.

128. Rural consumers for the purpose of the survey are those who responded that they lived in a rural or remote area. This may not align with the definition of rural (an area where fibre is unavailable) used elsewhere in this report.

129. The top 3 are categorised here as Spark (including Skinny), One NZ and 2degrees (including Slingshot).

130. https://comcom.govt.nz/_data/assets/pdf_file/0021/335361/Telecommunications-Consumer-Satisfaction-Monitoring-Report-JanuaryJune-2023.pdf

Time spent with current provider

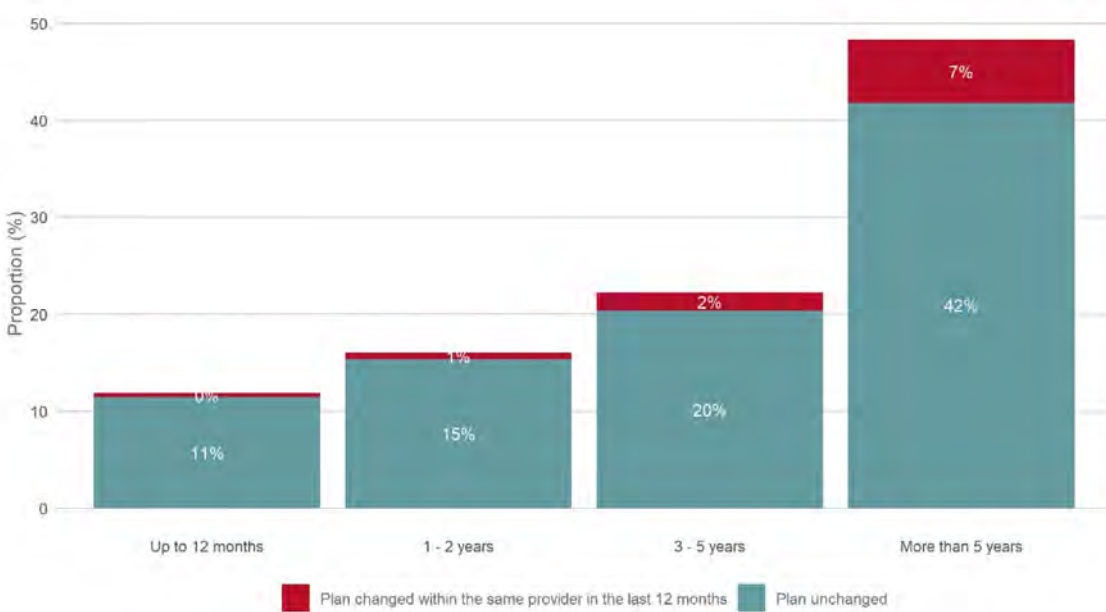
The survey results show that 49% of rural broadband customers have been with their current provider for more than 5 years, which is an increase of 16% from 2022.

A common reason given by consumers for not switching is that they are satisfied with their current provider. However, consumers tend to compare alternative offers infrequently. As a result, consumers may be unaware if there are other retail offers available that might better

meet their needs. In addition, many of the larger RSPs no longer offer copper broadband at all, limiting the choice of provider.

A further reason for not switching providers is that consumers are switching plans with the same provider. As shown in Figure 50 below, 7% of consumers who had been with their current provider for more than five years switched plans in the last 12 months.

Figure 50: Time spent with current broadband provider in rural areas



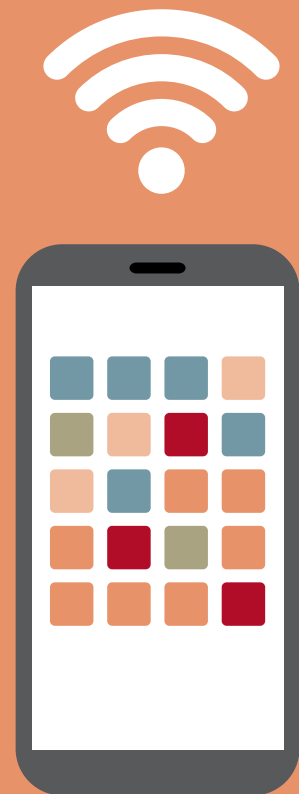
Source: Customer Satisfaction Monitoring Survey¹³¹

131. Data was collected between December 2022 and June 2023. Note that rounded numbers can generate a rounding difference.

Connectivity on the move

Honotanga
hāereerea

Mobile services
(data, calls and texts)



MARKET STRUCTURE HANGANGA MĀKETE

Market structure covers structural elements of telecommunications markets from infrastructure availability, and the share of wholesale and retail offerings using that infrastructure, through to the transparency and understanding of these offers by consumers.

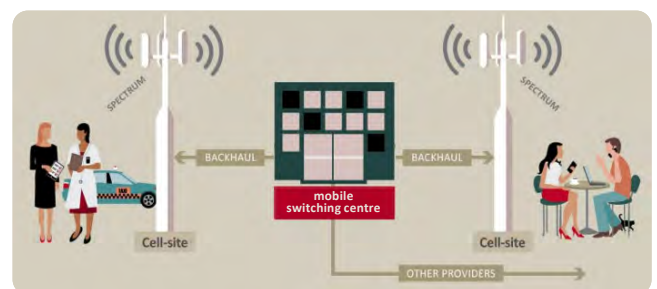
INFRASTRUCTURE HANGANGA

Telecommunications infrastructure – the physical components that connect homes and businesses to voice and broadband services – provides the foundation for how the rest of the market operates in New Zealand.

The starting point for connecting Kiwis on the move is the mobile infrastructure that has been deployed across New Zealand. This includes highways, holiday spots, and other parts of the country without permanent populations.

2023 Highlights

- 5G mobile coverage has continued to increase and now reaches 26.8% of the population.
- 2degrees completed the divestment of its passive mobile infrastructure – following similar deals by Spark and One NZ.
- The MNOs each announced planned 3G network shutdowns that will occur between 2024 and 2025.



Coverage

In New Zealand there are three national cellular networks operated by 2degrees, Spark, and One NZ.

Mobile coverage is generally measured by MNOs using computerised propagation models. These models can calculate coverage as a percentage of the land mass covered or the percentage of population covered. The models do not always reflect real-world experience.

The three MNOs produce their own coverage maps, but as they are not standardised or available in one place, comparing network coverage is challenging. There is currently no mobile equivalent of broadbandmap.nz that shows comparative coverage between the three MNOs. However, we have asked MNOs to take steps to standardise the presentation of their maps to make them more comparable.

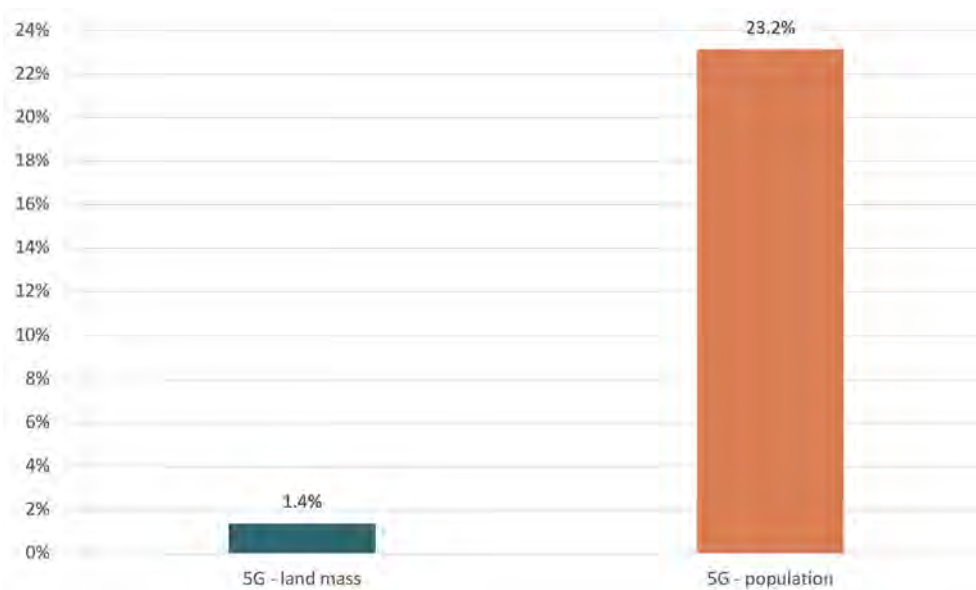
5G coverage

In 2023, the average reported 5G population coverage reached 26.8% (or around 1.4 million people). In 2022, 5G coverage reached 13.9% (or around 713,000 people).

The average reported 5G geographic coverage sits at 1.4% of New Zealand’s land mass, up from 0.4% in 2022. This is because the majority of 5G coverage so far is in urban areas where cell sites may have a smaller coverage area but can cater to more connections at the same time.

Figure 51 below shows the coverage position based on reported coverage by the MNOs.

Figure 51: Average reported 5G mobile coverage

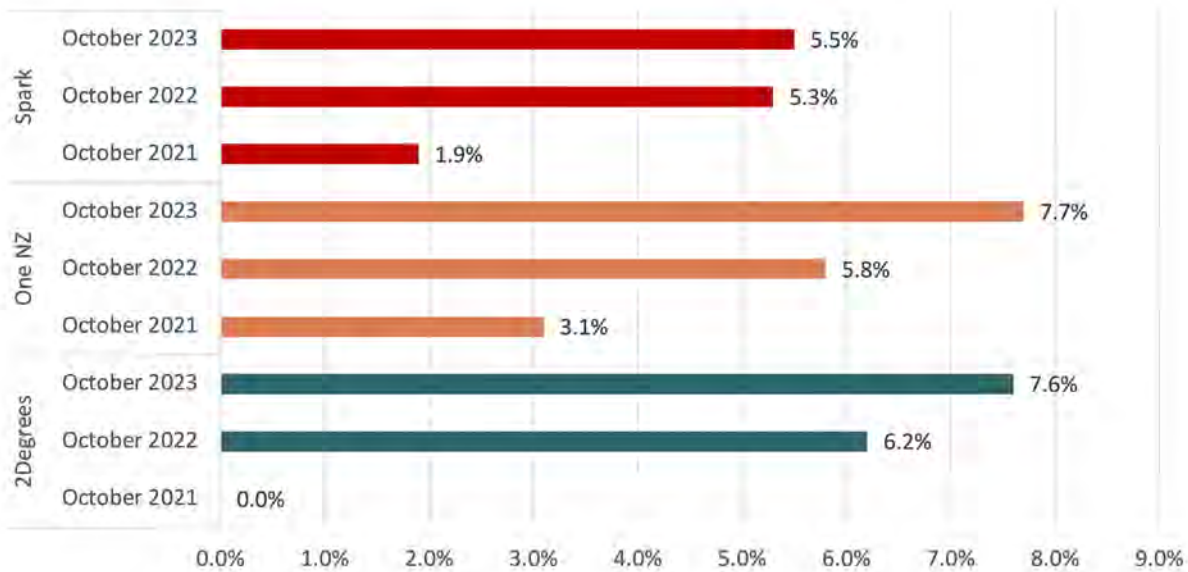


Source: Commission data

Figure 52 shows the user experience of 5G networks. This is the proportion of time that consumers with a 5G device had an active 5G connection. It demonstrates that, as 5G network builds continue, consumers with a 5G device are spending more time with 5G coverage available because it is available in more of the locations where these consumers spend time.

Despite being the last MNO to begin rolling out 5G, as evidenced in Figure 52 below, 2degrees has the second highest user-tested 5G coverage in 2023, only 0.1% behind One NZ.

Figure 52: User-tested 5G coverage

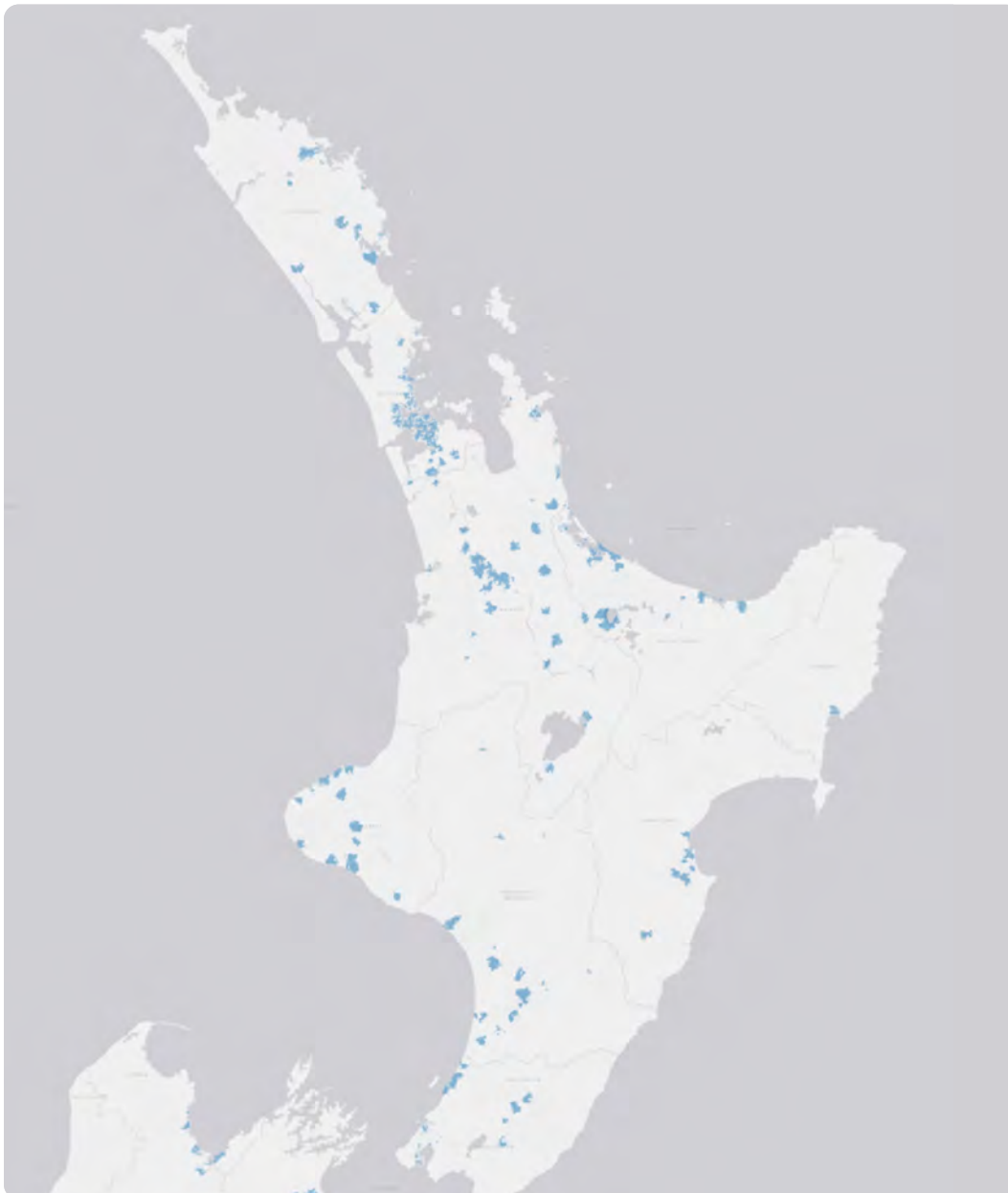


Source: Opensignal¹³²

132. Opensignal “New Zealand – mobile network experience report” (October 2022) – see <https://www.opensignal.com/reports/2022/10/newzealand/mobile-network-experience>; Open Signal “New Zealand – mobile network experience report” (October 2021) – see <https://www.opensignal.com/reports/2021/10/newzealand/mobile-network-experience>

This year we collected data on the MNOs' rural and urban mobile coverage, enabling a combined view of where coverage exists and where it does not (refer to Figures 53A and 53B). The map confirms the current focus on deploying 5G primarily in urban areas.

Figure 53A: Operators' combined 5G mobile coverage: North Island



Source: Commission data

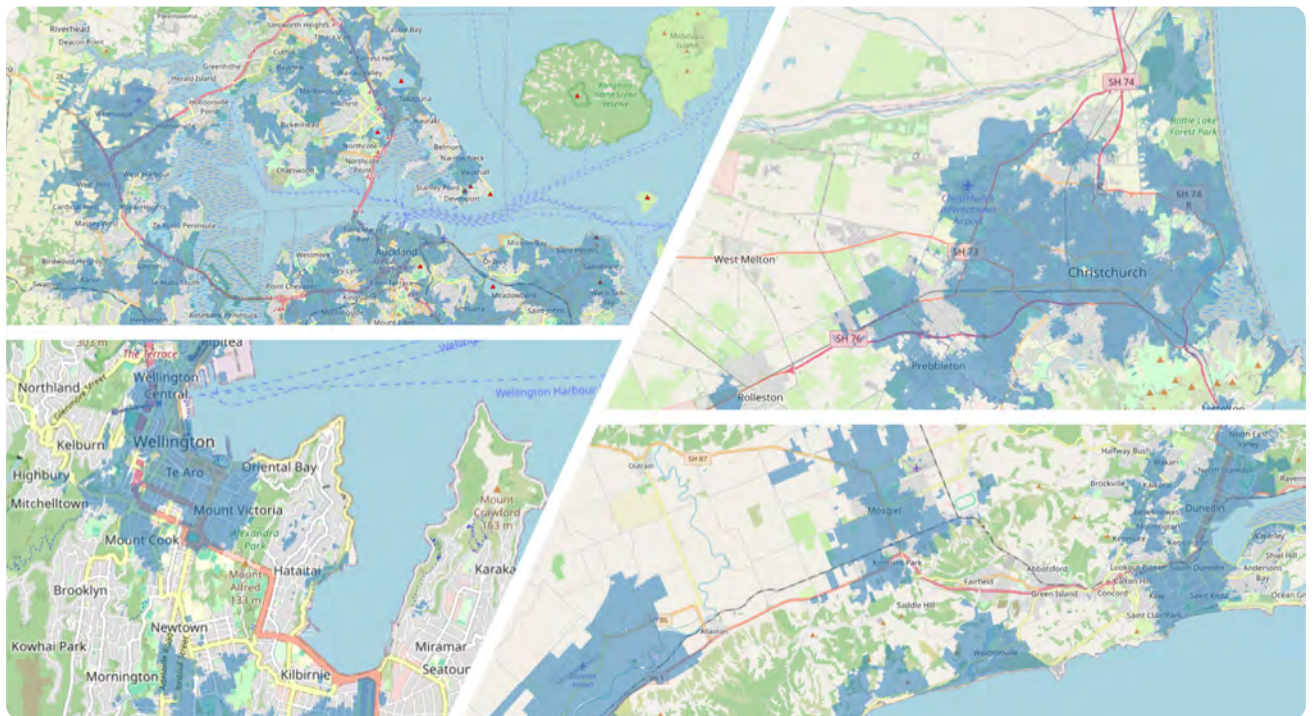
Figure 53B: Operators' combined 5G mobile coverage: South Island



Source: Commission data

In main cities, 5G coverage is becoming more widespread, but there are still gaps (of different sizes) where consumers' devices fall back to 4G connectivity, regardless of which provider they choose (see examples in Figure 53C below).

Figure 53C: Examples of large city combined 5G coverage



Source: Commission data

We expect 5G coverage in both urban and rural areas to continue to increase in the next few years following the long-term allocation of 3.5GHz spectrum. Each of the MNOs has set coverage targets:

- 2degrees plans for its 5G roll-out to reach 50 towns by the middle of 2024.¹³³
- One NZ says it is working on an upgrade project that will see 4G or 5G covering 99.5% of New Zealand’s population and 60% of New Zealand’s land area by the end of March 2025.¹³⁴
- Spark has publicly set a target to provide access to 5G connectivity to all towns with a population of more than 1,500 people by the end of June 2026.¹³⁵

In New Zealand, all three MNOs are currently building 5G non-standalone networks. Spark completed trials of 5G standalone in January 2023.¹³⁶ Spark is the first MNO to announce that it will deploy 5G standalone and says that it will have built it nationwide by 2026.¹³⁷

There are two main ways a network operator can build its 5G network:

- A 5G non-standalone (5G NSA) network is where the network operator puts 5G radio access network equipment on cell towers and connects that to its existing 4G core network (which acts as the control centre of the cellular network).
- In a 5G standalone network both the radio access network and the core network are 5G. This creates an end-to-end 5G network that can take full advantage of 5G’s faster speeds. 5G standalone also delivers more features and functions which the MNOs can use to create innovative new services for consumers and businesses.

133. 2degrees “2degrees expands 5G reach” (August 2023) – see <https://www.2degrees.nz/media-releases/2degrees-expands-5g-reach>

134. <https://infratil.com/news/infratil-investor-day-2024/infratil-investor-day-2024-one-nz-update/>

135. Spark “Sustainability at Spark” – see https://www.sparknz.co.nz/content/dam/SparkNZ/pdf-documents/sustainability/Sustainability_at_Spark_-V3.pdf

136. Datacenterdynamics “New Zealand telco Spark completes 5G standalone trial” (January 2023) – see <https://www.datacenterdynamics.com/en/news/new-zealand-telco-spark-completes-5g-standalone-trial/>

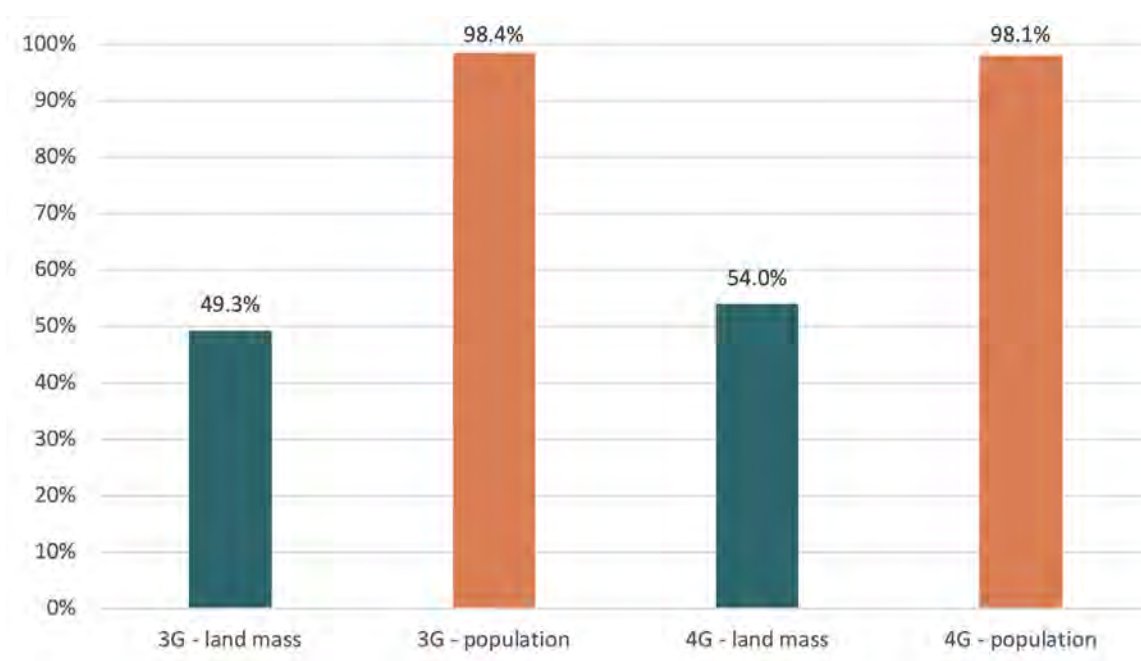
137. Spark’s website (as at June 2023)

4G coverage

Reported 4G mobile population coverage is consistent across all three MNOs. Average population coverage remained at 98% in 2023. Average 4G landmass coverage increased slightly from 50% in 2022 to 52% in 2023.

The higher population coverage and landmass coverage for 3G and 4G is indicative of the maturity of these network builds.

Figure 54: Average reported 3G and 4G mobile coverage



Source: Commission data

This year we collected data on the MNOs' rural and urban mobile coverage, enabling a combined view of where coverage exists and where it does not (refer to Figure 55). At an aggregate level we can see the top half of the North Island is generally well covered, but the lower half of the North Island and the South Island are less well covered. This coverage is consistent with the distribution of population across New Zealand.

Figure 55: Operators' combined rural and urban 4G and 5G mobile coverage



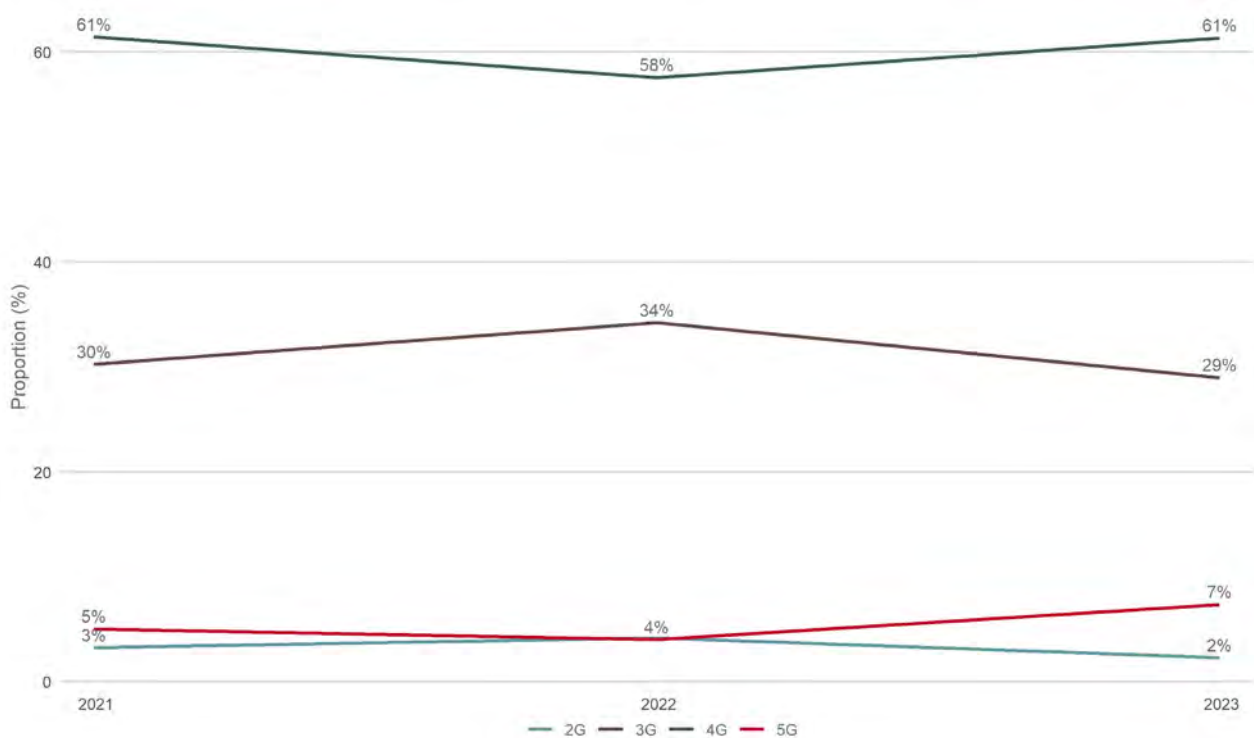
Source: Commission data

3G coverage

Reported 3G coverage is consistent across MNOs, but the average 3G population coverage decreased slightly from 99% in 2022 to 98.6% in 2023. Average 3G landmass coverage increased slightly from 49.2% in 2022 to 49.5% in 2023.

We expect 3G coverage to begin decreasing starting in the second half of 2024 as MNOs start to shut down their 3G networks. One NZ has announced that it will start switching off its 3G network from 31 August 2024.¹³⁸ Spark has reported that it will shut off its 3G network at the end of 2025, with 2degrees indicating a similar late 2025 timeframe.¹³⁹

Figure 56: Highest cellular network generation farmers can connect to



Source: Federated Farmers of New Zealand¹⁴⁰

138. One NZ “We’re switching off 3G from late 2024” (20 March 2024) – see <https://one.nz/3g-switchoff/#:~:text=You%20may%20have%20seen%20the,every%20step%20of%20the%20way>.

139. Spark “Our mobile network is changing” (13 February 2024) – see <https://www.spark.co.nz/shop/mobile/4g-ready.html>. 2degrees “Things to know about our 3G shutdown” – see <https://www.2degrees.nz/help/mobile-help/troubleshooting/things-to-know-about-our-3g-shutdown>

140. 2023 Federated Farmers Rural Connectivity Survey data

The Government’s Lifting Connectivity in Aotearoa programme contains a vision that all people in Aotearoa New Zealand have internet and voice connectivity networks available to them which meet their life, work and study needs.¹⁴¹ It is important that, as technologies change, consumers are protected from declining levels of connectivity, such as that resulting from planned 3G network shutdowns.

The 2023 Federated Farmers survey data suggests that around 35% of farmers rely on a 3G service, either because they are using a 3G device, or they are in an area with only 3G coverage. An Opensignal report says New Zealand consumers spend 6.9-7.8% of their time connected to 3G on average. For consumers that never connect to 4G or 5G, most (82%) have a 4G capable device and they are in 4G coverage areas, but either do not have a 4G capable SIM card or 4G is not enabled on their phones.¹⁴² This suggests that industry can play a part in identifying these consumers and providing new SIM cards or helping them enable 4G. In many cases, these consumers may be unaware that their 4G phone is only using 3G services.

Many rural consumers will need to upgrade their handset to a 4G/5G capable device to remain connected to the mobile network. Where this is not possible, coverage blackspots are likely to cause connectivity issues for people in rural communities.

Direct satellite to cellular connectivity (such as Starlink’s Low Earth Orbit satellite network) extends cellular network coverage by enabling standard smartphones to communicate via satellite network in areas where there is direct line of sight to the sky. The MNOs are partnering with satellite providers to provide limited services in rural and remote areas, where it is uneconomic to place cell towers. All three MNOs are trialling these services with satellite operators. Spark and One NZ plan to launch text messaging services in late 2024.

141. <https://www.mbie.govt.nz/science-and-technology/it-communications-and-broadband/digital-connectivity-programmes/lifting-connectivity-in-aotearoa-government-statement-of-intent/lifting-connectivity-in-aotearoa>

142. <https://www.opensignal.com/2024/05/29/understanding-3g-usage-in-new-zealand-ahead-of-the-2025-shutdowns>

Government investment

Under the MBSF, in the year to 30 June 2023, an additional 29 tourism sites and 214km of state highway gained mobile coverage.¹⁴³ The majority of the additional sites and state highways covered in that time period were in the South Island – West Coast, Canterbury, Otago, and Southland.

The MBSF programme was set to be completed by December 2022. As of 30 June 2023, coverage to 124 tourism sites (74%) and 1,273km of state highway (91%) had been completed.¹⁴⁴

The Mobile Black Spot Fund (**MBSF**) was announced by the Government in 2018. MBSF seeks to provide greater mobile coverage on approximately 1,400km of state highways and in 168 tourism locations where no coverage previously existed. RCG is contracted to deliver the MBSF programme.

Refer to our Market Structure/Infrastructure section under 'Rural Connectivity at Home' for our discussion of the RCG and other government infrastructure investments.

Spectrum

In May 2023, Spark, One NZ, and 2degrees signed agreements with the Government for long-term access to 80MHz each in the 3.5GHz band, a key 5G spectrum band. The Māori Spectrum Commission received 100MHz in the 3.5GHz band.

The Government provided access through a direct allocation process to the MNOs, instead of via the more traditional spectrum auction.¹⁴⁵

In return, MNOs must invest \$24m each to expand mobile coverage into rural areas. This funding is additional to the value of the works required to accelerate the provision of 5G to urban and suburban areas.¹⁴⁶

We expect that this will result in a faster roll-out of 5G to rural New Zealand and further investment by MNOs in their RCG joint venture.

MNOs use a variety of spectrum bands to provide mobile services. Lower spectrum frequencies provide wider coverage and have better penetration (meaning they are better able to pass through objects such as walls) than higher spectrum frequencies. However, higher spectrum bands have higher capacity to carry more data.

Spectrum is a finite resource and MNOs can only use a certain range of frequencies to provide mobile services. However, MNOs can improve the mobile services they provide by building more towers/antennae. In urban areas, 5G operates on a higher frequency than previous generations, and as higher frequencies have lower penetration and coverage radius, MNOs will look to build more sites to provide 5G mobile services to consumers. Where 5G is deployed in rural areas, lower frequency spectrum will carry the signals further.

143. Crown Infrastructure Partners' Connectivity Quarterly Report. Report available at: <https://www.crowninfrastructure.govt.nz/about/publications/>

144. [June 2023 Crown Infrastructure Partners' Connectivity Quarterly Report](https://www.crowninfrastructure.govt.nz/wp-content/uploads/CIP-Digital-Connectivity-Quarterly-Report-JUNE-2023.pdf). Report available at: <https://www.crowninfrastructure.govt.nz/wp-content/uploads/CIP-Digital-Connectivity-Quarterly-Report-JUNE-2023.pdf>

145. Beehive "Kiwis to benefit from accelerated 5G roll-out" (20 October 2022) – see <https://www.beehive.govt.nz/release/kiwis-benefit-accelerated-5g-roll-out>

146. Radio Spectrum Management "Preparing for 5G in New Zealand" – see <https://www.rsm.govt.nz/projects-and-auctions/current-projects/preparing-for-5g-in-new-zealand/>; Beehive.govt.nz "Govt to speed up 5G rollout to regional towns" (May 2023) – see <https://www.beehive.govt.nz/release/govt-speed-5g-rollout-regional-towns>

Spectrum holdings and One NZ’s proposed acquisition of Dense Air

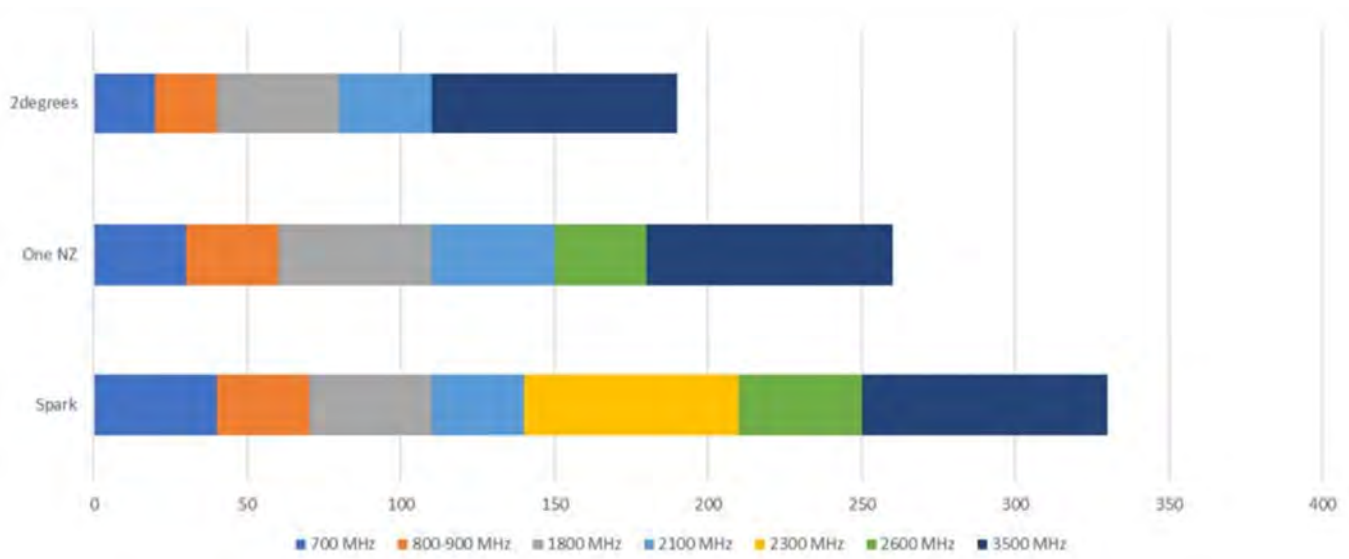
Figure 57 illustrates the current spectrum holdings of One NZ, 2degrees, and Spark. Spectrum holdings contribute to the relative capacity of each MNO and, as a result, are a factor in their ability to compete in the provision of retail and wholesale mobile and cellular fixed wireless broadband services. Figure 57 shows that Spark currently holds the most spectrum of all three MNOs and 2degrees holds the least spectrum.¹⁴⁷

Tū Ātea (previously the Interim Māori Spectrum Commission) holds an additional 100MHz of 5G spectrum in the 3.5GHz band and is expected to

receive further spectrum over time that is potentially available to MNOs on commercial terms.

In November 2023, One NZ announced its intention to acquire Dense Air New Zealand including a spectrum licence for 2x35MHz of 2600MHz spectrum. The transaction required Commerce Commission merger clearance. In May 2024 the Commission granted clearance for One NZ to acquire Dense Air, noting it was satisfied that the acquisition is unlikely to substantially lessen competition in any New Zealand market.^{148,149}

Figure 57: Spectrum holdings¹⁵⁰



Source: Commission data

147. Commerce Commission “One NZ and Dense Air Statement of Issues”, (February 2024) see https://comcom.govt.nz/_data/assets/pdf_file/0021/342255/One-NZ-and-Dense-Air-Statement-of-Issues-2-February-2024.pdf.

148. <https://comcom.govt.nz/news-and-media/media-releases/2024/commission-grants-clearance-for-one-nz-to-acquire-dense-air>

149. While this increases the gap in relative holdings between One NZ and 2degrees, the commission said 2degrees has access to other mid-band spectrum it can use, it can deploy its existing spectrum at more sites, and it can improve spectral efficiency

150. Spectrum holdings prior to completion of One NZ’s acquisition of Dense Air

Tower ownership¹⁵¹

The TowerCos, Connexa and Fortysouth, operate the tower network and lease space on the towers back to the network operators for their radio access network equipment.

Connexa has 2,530 towers in its network¹⁵² and is now 83% owned by Ontario Teachers' Pension Plan and 17% owned by Spark. Connexa is delivering Spark's build programme of 670 towers over the next 10 years including the six new sites delivered during the year to June 2023.¹⁵³ Connexa bought 2degrees' passive mobile network infrastructure in 2023.^{154,155}

Fortysouth has 1,500 towers in its network¹⁵⁶ and is owned by Infratil, Infrared Capital, and Northleaf Capital. Its build programme for the next decade includes both new connectivity and improved connectivity across all regions of New Zealand.¹⁵⁷

The MNOs are using some of the sale proceeds from the sale of these towers to invest in growth areas, such as their 5G deployments. For example:

- Spark has committed to using \$250m to \$350m of the proceeds from its passive network sale to invest in projects including accelerating its 5G roll-out and investing in data centre expansions over the next three years.¹⁵⁸
- 2degrees noted in December 2022 that the proceeds from the sale will enable further investment in its 5G roll-out.¹⁵⁹

Passive infrastructure refers to infrastructure that is not part of the active layer of a telecommunications network. It typically consists of network elements such as towers, masts, and poles.

Internationally, MNOs have been divesting their passive infrastructure to tower companies (or 'TowerCos'). This frees up capital for investments including 5G deployment. New Zealand's MNOs have followed this trend. Spark and 2degrees have divested their towers to Connexa and One NZ to Fortysouth.

151. In June 2023, 2degrees completed the sale of its passive cellular network infrastructure to Connexa, following clearance from the Commerce Commission.

152. <https://www.2degrees.nz/media-releases/connexa-complete-aquisition-of-2degrees-tower-assets>

153. Spark's Annual Report 2023

154. The Commerce Commission cleared the merger noting that it was satisfied that the merger will not have, or would not be likely to have, the effect of substantially lessening competition in a market in New Zealand. Connexa will continue to face sufficient competitive constraint from Fortysouth, and its existing and potential customers could still elect to use small-scale providers, and self-supply remains a credible option as well. Determination: Connexa Limited and Two Degrees Networks Limited and Two Degrees Mobile Limited – see https://comcom.govt.nz/_data/assets/pdf_file/0018/317223/Connexa-Limited2C-Two-Degrees-Networks-Limited-and-Two-Degrees-Mobile-Limited-Clearance-determination-4-May-2023.pdf

155. This includes a 20-year agreement between 2degrees and Connexa for tower access and a tower build and colocation agreement of 450 sites over 10 years. See – Connexa completes acquisition of 2degrees' passive mobile tower assets, 2degrees, June 2023 – see <https://www.2degrees.nz/media-releases/connexa-complete-aquisition-of-2degrees-tower-assets>

156. <https://fortysouth.co.nz/aboutus/>

157. ibid

158. Spark FY23 Results Investor Presentation

159. <https://www.crn.nz/news/2degrees-sells-tower-infrastructure-to-connexa-in-billion-dollar-deal-589144>

The wholesale market plays an important role in shaping outcomes at the retail-level for consumers. Regulation usually applies where competition by itself is insufficient to result in access to infrastructure with natural monopoly characteristics.

The wholesale mobile market has been integral in helping to facilitate the entry and expansion of New Zealand's third mobile network 2degrees – a fundamental shift in the overall market structure of telecommunications in New Zealand. Current wholesale activity generally takes place on commercial terms, subject to certain regulatory provisions.

Over time, certain regulatory protections have been put in place to preserve incentives for competitive outcomes in the mobile market. These include price caps for mobile termination access services (**MTAS**), and provisions for services that are critical in a multi-operator environment, such as mobile co-location and national roaming.

With three established MNOs now operating in the market, the wholesale regulatory protections provide a back-stop where commercial terms continue to be needed.

2023 Highlights

- Four new MVNOs have launched services: Contact Energy Mobile, Nova Energy Mobile, Mighty Mobile, and Rocket Mobile (previously MyRepublic).
- In 2023, there were 106,000 MVNO subscribers, up 37% from 77,000 in 2022.
- Most MVNOs are offering 5G service, as well as 4G service.

MVNOs

Four MVNOs have entered the market since our last monitoring report. These are Contact Energy Mobile, Nova Energy Mobile, Mighty Mobile, and Rocket Mobile.

As a result, there are nine MVNOs currently operating in New Zealand. As set out in Table 26 below, all three MNOs are hosting MVNOs on their networks.

In addition, telecommunications automation company Devoli signed an MVNO agreement with Spark in 2023, noting that it intends to launch wholesale mobile plans to Managed Services Providers after a pilot phase.¹⁶⁰

This increase in the number of MVNOs is consistent with an international trend towards increased network utilisation by MNOs as they seek to monetise ongoing investments into their networks. With all three MNOs active at the wholesale level, current and future MVNOs are more likely to obtain access on competitive terms, given the incentive for MNOs to capture wholesale revenues on their networks.

In 2023, there were 106,000 MVNO subscribers, up 37% from 77,000 in 2022. The increasing number of competitors in the mobile market means MVNOs are offering new types of services that will be attractive to some consumers. For example, some MVNOs are offering plans based on data speed tiers instead of data caps.

An MVNO is a mobile provider that does not own the network infrastructure or spectrum over which it provides services to its customers. An MVNO enters into an agreement with an MNO to obtain bulk access to network services at wholesale rates, then sets retail prices

Table 26: MVNOs operating in New Zealand

MVNO	MNO host
Compass	Spark
Contact Energy Mobile	One NZ
Kogan Mobile	One NZ
Megatel	Spark
Mercury (formerly Trustpower)	Spark
Mighty Mobile (from Mighty Ape)	One NZ
Nova Energy Mobile	2degrees
Rocket Mobile (formerly MyRepublic)	One NZ
Warehouse Mobile	2degrees

160. Spark Wholesale New Zealand, 2023, see – https://www.linkedin.com/posts/sparkwholesale_mvno-telecommunications-activity-7101784150227001344-n1iO/?trk=public_profile_like_view

5G network access

Whether MVNOs get access to the latest features and upgrades of their host MNO network depends on the contractual agreements between the two parties. An example is whether the MVNO gets access to 5G. Currently:

- Nova Energy Mobile has access to 2degrees' 5G network, but Warehouse Mobile does not;
- Contact Energy Mobile, Kogan Mobile, Mighty Mobile, and Rocket Mobile have access to One NZ's 5G network; and
- Compass, Mercury, and Megatel have access to Spark's 5G network.

National roaming

2degrees utilised a national roaming service on One NZ's network (then called Vodafone) while it built out its own network. In 2020, 2degrees announced that it had signed a new infrastructure sharing agreement that meant it would no longer roam on Vodafone's network.¹⁶¹ Prior to the agreement, 2degrees reported that less than 1% of its traffic was being carried on Vodafone's network.

Under the new infrastructure sharing agreement, 2degrees provides services using Multi-operator Radio Access Network (MoRAN) equipment installed on One NZ towers.

National roaming allows customers of one cellular network to use another network when they are outside their own provider's coverage area within New Zealand.

We are required to undertake a statutory review of the national roaming service every five years to determine whether reasonable grounds exist to investigate its removal from the Telecommunications Act.

We undertook our latest review of national roaming in 2023. We have retained the regulatory back-stop to ensure existing network operators deal with access seekers on reasonable terms.

161. Scoop "2degrees To Complete National Network, Deploys Innovative Infrastructure Sharing Model" (June 2020) – see <https://www.scoop.co.nz/stories/BU2006/S00398/2degrees-to-complete-national-network-deploys-innovative-infrastructure-sharing-model.htm>

Mobile co-location

We do not currently have information on the extent of mobile co-location in New Zealand. With the creation of the two key TowerCos, Connexa and Fortysouth, we expect this market to grow over time, given the commercial incentives of TowerCos to attract more tenants on to their towers. RCG offers co-location services to WISPs.

2degrees provides services using MoRAN equipment installed on One NZ cell sites. Under this form of arrangement, 2degrees and One NZ share not only the cell tower (now owned by TowerCo Fortysouth), but the radio access network equipment as well.

Mobile co-location allows an MNO to locate its equipment on another MNO's existing infrastructure (mast or tower). Co-location helps reduce network infrastructure costs for existing and potential MNOs by providing for the sharing of network infrastructure.

Co-location is available under regulated and commercial terms.

We are required to undertake a statutory review of the mobile co-location service every five years to determine whether reasonable grounds exist to investigate its removal from the Telecommunications Act. We are next due to review mobile co-location in 2026.

Retail telecommunications markets are where combinations of infrastructure and wholesale offers are packaged up by competing firms/brands to be marketed to consumers. The structure of the retail market has the most direct effect in shaping the experience of consumers.

The retail mobile market structure has been significantly shaped by past wholesale access regulation and spectrum allocation decisions that supported the entry and expansion of 2degrees – New Zealand’s third, fully-fledged, MNO.

Retail mobile services are predominately supplied by the three MNOs – 2degrees, Spark, and One NZ. In addition, there are nine MVNOs (Compass, Contact Energy Mobile, Kogan Mobile, Megatel, Mercury, Mighty Mobile, Nova Energy Mobile, Rocket Mobile, and Warehouse Mobile) who serve a small share of mobile subscribers.

2023 Highlights

- The mobile market is highly concentrated with the three largest providers – 2degrees, Spark and One NZ – holding 98.4% of the market.
- MVNO subscribers make up 1.6% of the mobile market, up from 1.3% in 2022.

Retail market share

Market concentration

Market concentration, or the extent to which the distribution of the market across firms is limited to relatively few firms, is an important structural characteristic of a market.

The mobile market in New Zealand is highly concentrated with an estimated HHI of 3,453 in 2023.¹⁶² This is marginally lower than our estimate in 2022 of an HHI of 3,484. This reflects the whole of the market (both residential and business segments).

There are several ways to look at market concentration. We have chosen to use both HHI and a simpler market concentration ratio.

- HHI analyses market shares of each firm in a market to determine a value of market concentration – an HHI between 1,500 and 2,500 indicates moderate concentration, whereas values above this indicate high concentration.
- Our simpler market concentration ratio looks at the market shares of the top four providers, relative to the total market share.

162. This figure was calculated using the market shares of the MNOs (including their sub-brands) and the five MVNOs included in the industry questionnaire.

Figure 58 shows that the market concentration ratio of the MNOs (including their sub-brands) has been static in recent years. MVNO subscribers make up the final 1.6% of the mobile market, up from 1.3% in 2022.¹⁶³

Between 2018 and 2020 there was little change in the number of retail competitors (MNO and MVNO) except that Kogan Mobile launched as an MVNO with Vodafone in 2019, the same year that the Commerce Commission undertook its Mobile Market Study, which noted that MVNO-based entry can bring a range of potential competitive benefits.¹⁶⁴

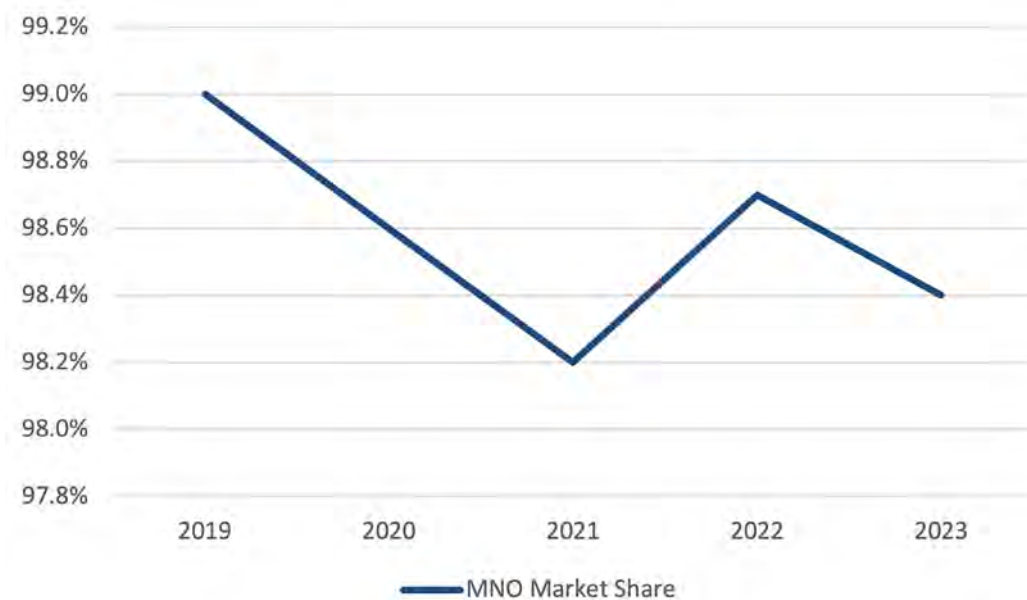
Since 2020, there have been notable changes in the MVNO market. The merger of Vocus and 2degrees was completed on 1 June 2022, so Vocus’s mobile customers have been included in the MNO figure for 2022 onwards. There has also been further entry by new MVNO providers.

These changes explain the minor volatility in MNO market share between 2021 and 2023.

As our questionnaire covers the year to 30 June 2023, the newest MVNO subscribers, such as those with Mighty Mobile and Contact Energy Mobile, will only be captured from next year onwards.

With nine MVNOs now in the market we expect that some of them will seek to scale quickly, but others, particularly those that bundle services together, will be more focussed on improving ARPU in their existing customer base.

Figure 58: Market share of the MNOs by connections



Source: Commission data

163. It should be noted that Rocket Mobile did not provide its connection numbers to us. It is probable that, with Rocket Mobile’s numbers, the overall MVNO market share would be closer to 2.0% of the market.

164. Mobile Market Study – Findings (September 2019) – see https://comcom.govt.nz/_data/assets/pdf_file/0022/177331/Mobile-Market-Study-Findings-report-26-September-2019.PDF

Competition between MNOs

Having looked at the MNOs relative to the total market, it is important also to understand the level of rivalry or competition that exists among the MNOs. To do this, we have looked across the market shares of the MNOs to identify whether any volatility exists over time. At a high level, we would interpret volatility between providers' market shares as an indicator of competition.

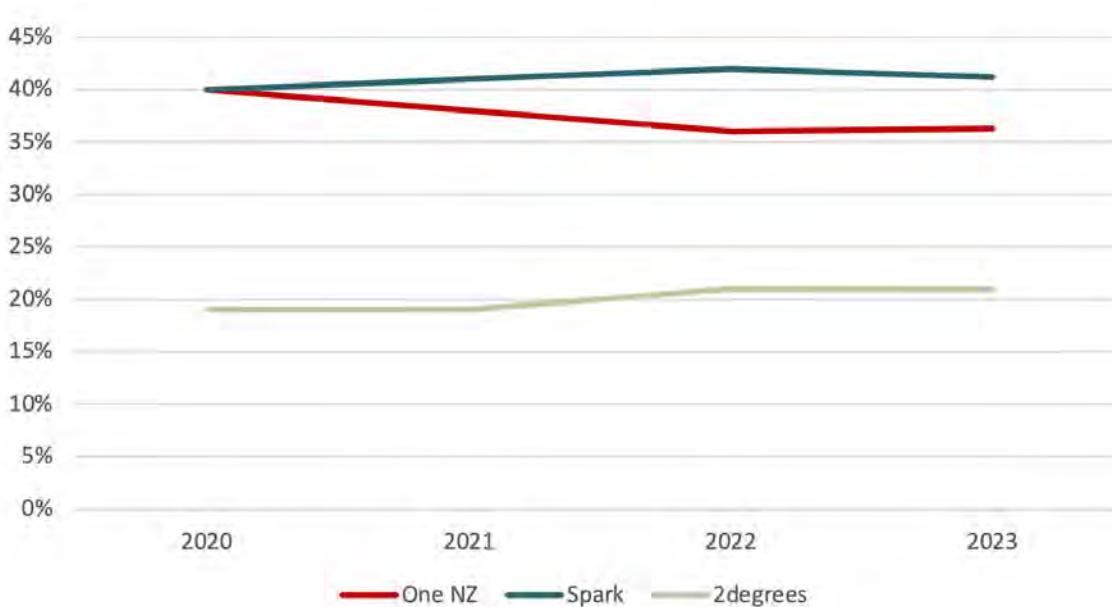
While we do not have the data required to produce a long time series,¹⁶⁵ Figure 59 does suggest some volatility in the market shares between MNOs.

However, it is likely the volatility in market shares in 2021 to 2022 was driven by external factors rather than by increasing competition in the market. Border closures due to COVID-19 meant fewer travellers to New Zealand during that time, and reduced the number of short-term traveller prepaid connections.

The merger between 2degrees and Vocus in 2022 created a newer, stronger, full service 2degrees with an integrated portfolio of broadband, mobile, and energy services in the consumer market and a strong portfolio of infrastructure for digital services for enterprise, government, and wholesale customers. We expect to see increased competition across different market segments with 2degrees' new scale and portfolio. At this stage it is too early to see any impact of the merger on market shares.

We know that consumer inertia (aversion to changing plans and/or providers) also plays a role in the modest rates of MNO market share change. We discuss inertia and switching in more detail in the Consumer section below.

Figure 59: MNO market shares 2020-2023



Source: Commission data

165. Due to a change in methodology between 2019 and 2020 for calculating this metric, prior data is no longer comparable.

Retail offers

Mobile retailers' offers in the retail telecommunications market are made up of three key components:

1. Plan types – prepaid vs postpaid;
2. Plan allowance of texts, calls, and data; and
3. Data speeds.

Service characteristics – plan type

In 2023, 59% of residential mobile consumers were on prepaid plans, up from 57% in 2022. Up until 2022 there was a trend of consumers moving away from prepaid to postpaid plans, particularly to take up endless/unlimited plans. From 2022 to 2023 this trend has reversed and we see connections on prepaid plans increasing again. We see several likely factors for this reversal in trend:¹⁶⁶

- Increasing numbers of inbound travellers taking short-term prepaid plans
- Increasing pressure on household budgets from inflation may have meant some consumers changed to prepaid connections to better manage household spend
- The increasing availability of endless data plans on prepaid connections.

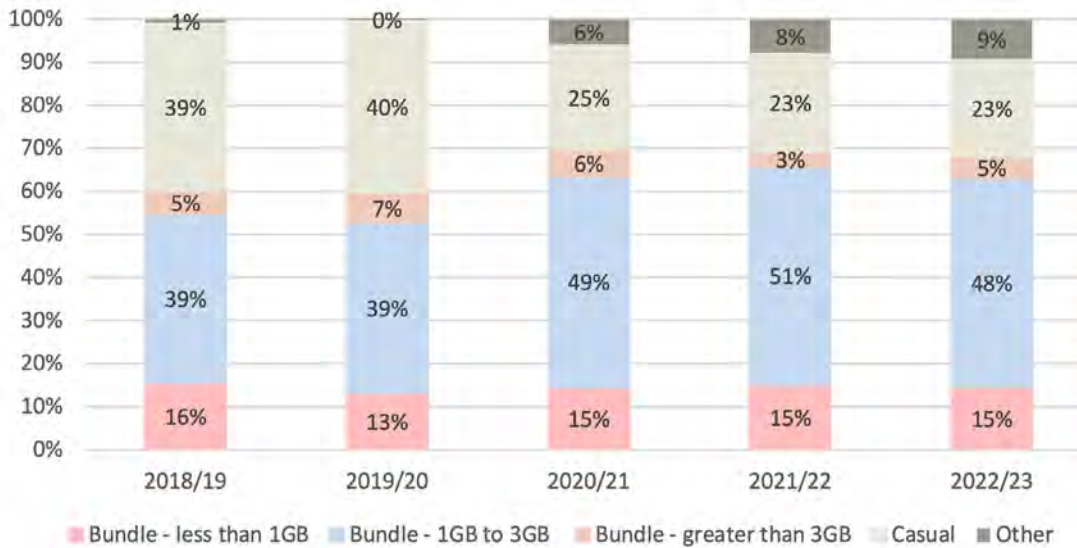
There are two types of mobile plans – prepaid and postpaid.

- Prepaid plans require customers to load credit onto their accounts. Using this credit customers can then purchase bundles of calls, texts, and data or pay as they go (casual).
- On the other hand, for postpaid plans, providers send customers a bill each month for the service.

166. It is also possible, but not yet demonstrated in the available data, that parents are becoming more likely to buy their children prepaid connections to ensure a means of family communication and safety

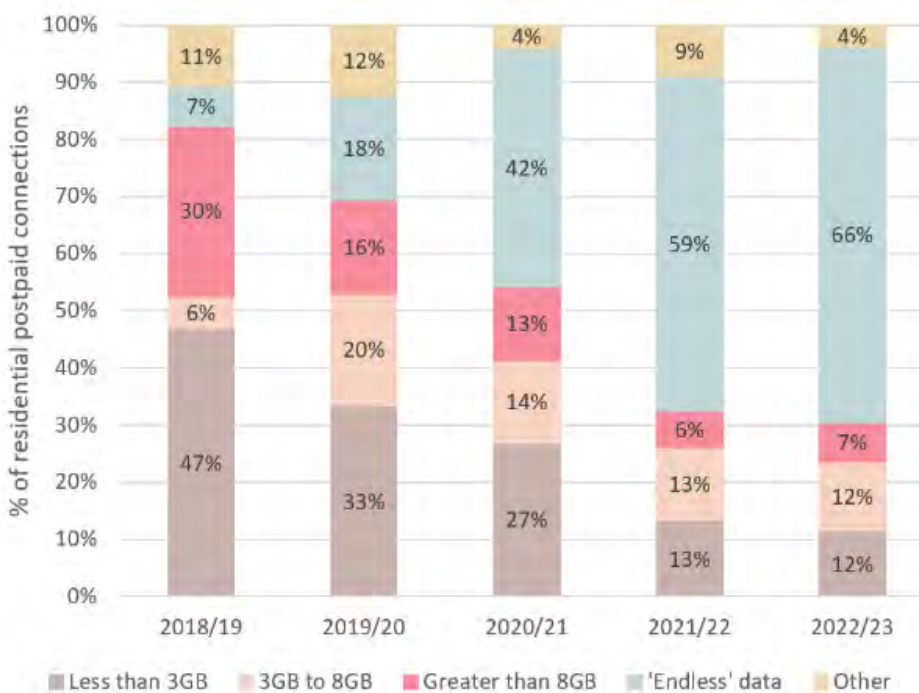
Service characteristics – allowance

Figure 60: Data allowances of residential prepaid plans¹⁶⁷



Source: Commission data

Figure 61: Data allowances of residential postpaid plans



Source: Commission data

167. 'Other' includes data-only and 'endless' plans.

The make-up of data allowances in prepaid plans has remained mostly steady over time, with some increases in the percentage of connections on endless plans or data-only plans.

The make-up of data allowances in postpaid plans has changed over time, with more consumers taking up Endless/Unlimited plans.

In 2023, two-thirds (66%) of postpaid connections were on endless/unlimited data plans, up from only 7% when these plans first came to market in 2018. This significant uptake indicates strong marketing efforts from the MNOs and demonstrates the value of data to consumers, allaying the fear of running out of data and the potential for a shift towards unlimited data differentiated by speed tiers.

'Endless' plans provide consumers with a cap of data at maximum speed. Once the cap is reached, the consumer can continue to use data, but at a much slower speed.

'Unlimited' plans provide customers with uncapped data, subject to Fair Use policies.

Service characteristics – speeds

There are two providers that sell mobile plans based on their speed — Mighty Mobile and Rocket Mobile (previously My Republic)

- Mighty Mobile offers three unlimited data plans at different speeds. Consumers can choose between a plan of up to 10Mbps, up to 50Mbps, and Max speed data.
- Rocket Mobile offers four unlimited data plans at different speeds. Consumers can choose between a plan of up to 2Mbps, up to 10Mbps, up to 40Mbps, and Max speed data.

The speed a consumer gets will depend on factors such as how far they are from a cell tower, whether they are indoors or outdoors, and whether they are connecting to a 3G, 4G, or 5G tower. A plan rated at 'up to 40Mbps', for example, will not achieve 40Mbps all the time.

Consumers can run their own speed tests on various websites or mobile apps such as speedtest.net or opensignal.com.

Consumers of telecommunications are presented with a wide range of retail offers that are products of the underlying market structure – the network infrastructure, its capabilities, ownership, and regulatory settings.

Whether consumers understand and act on these offers is a product of the information available to them, including through marketing, and their innate preferences and behaviours.

2023 Highlights

- Our survey results show that 60% of mobile consumers have been with their provider for more than 5 years.
- A Consumer New Zealand review¹⁶⁸ indicates that efforts by MNOs to improve transparency and reduce customer inertia in the mobile market has shown less progress in 2023 than a similar review indicated in 2022.
- However, since the 2023 review, Spark has released its Made For You Review, which uses AI to review customer usage data and recommend the best plan for the consumer.

168. Paid for by the Commerce Commission

Market transparency

In 2022, we engaged Consumer New Zealand to undertake an independent assessment of the changes to usage and spend information made by MNOs.¹⁶⁹

The review found consumers are getting better usage and spend information (through either the MNO's app or annual reminders) than before the Commission's review, but there are significant opportunities for further improvement across all MNOs.¹⁷⁰

In 2023, Consumer New Zealand undertook a second review.¹⁷¹ The review shows that, at that time, providers had made little progress over the prior year. It gave the following overall scores for the tools for consumers to understand usage and spend information:

- 2degrees, 84% in 2023 — no change from 84% in 2022;
- Spark, 65% in 2023 — no change from 65% in 2022;
- One New Zealand 65% in 2023 — up from 62% in 2022.

Consumer New Zealand undertook this review before Spark launched its Made For You Review initiative.¹⁷²

This initiative uses AI to analyse a consumer's usage trends and billing details. Spark uses this to make proactive recommendations when it identifies an opportunity for customers to save by moving to a different plan.

In 2020, a Commission review of bills from 80,000 mobile customers identified issues of transparency and consumer inertia in the residential mobile market. We asked MNOs to improve the usage and spend information made available to mobile consumers.

169. Commerce Commission "Addressing transparency and inertia issues in the residential mobile market" (19 May 2022) – see https://comcom.govt.nz/_data/assets/pdf_file/0026/283904/Addressing-transparency-and-inertia-issues-in-the-residential-mobile-market-update-Open-letter-20-May-2022.pdf

170. Consumer New Zealand's full review can be found at <https://www.consumer.org.nz/articles/how-consumer-friendly-is-your-telco-provider>

171. Consumer New Zealand's 2023 review can be found at <https://www.consumer.org.nz/articles/mobile-plans-which-mobile-provider-is-most-consumer-friendly>

172. Spark Made for You Review – see <https://www.spark.co.nz/getmore/made-for-you-review/html>

Switching providers and changing plans

The level of switching observed in a market may be indicative of the ability of consumers to act and take advantage of competing offers. It may also indicate the presence of behavioural preferences towards the existing and familiar.

There is no fixed proportion of the market that should be expected to switch. Consumers not switching providers is not necessarily a concern if those consumers are satisfied with their provider and/or do not face significant barriers to switching.

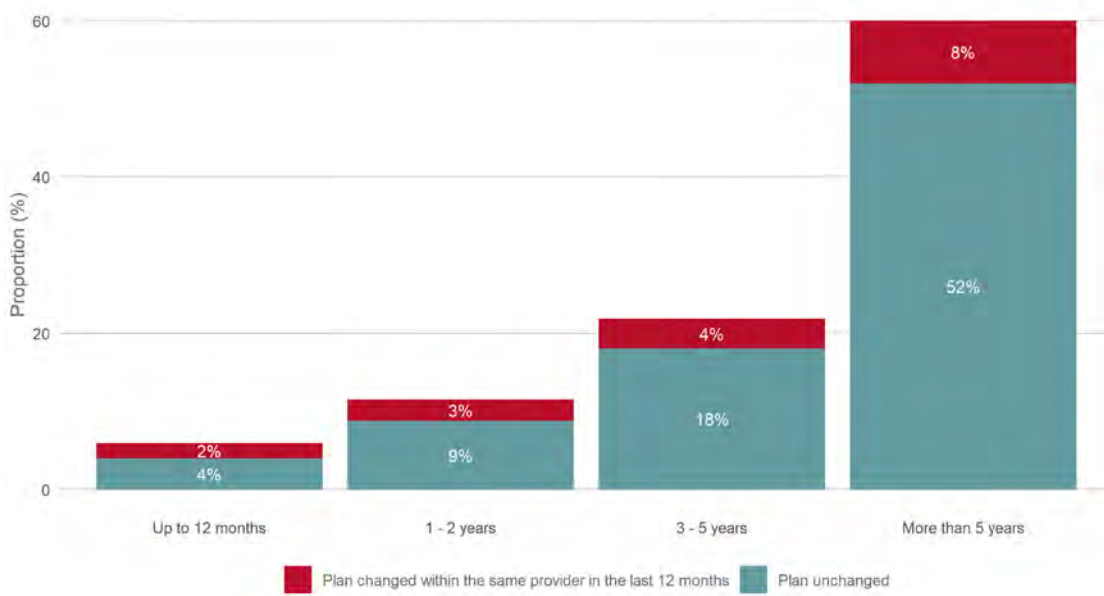
Time spent with current provider

Our survey results show that 60% of mobile consumers have been with their current provider for more than 5 years. This is slightly higher than last year where 58% of consumers surveyed had been with their provider for more than 5 years. In that time nearly 1 in 5 (17%) of consumers have switched to a different plan with the same provider.

This is also higher than the broadband market where our recent survey showed that only 40% of consumers have been with their broadband provider for more than 5 years.

The results below come from our monthly Customer Satisfaction Monitoring Survey. Data was collected between December 2022 and December 2023 and includes responses from 5,753 residential mobile customers.

Figure 62: Time spent with current mobile provider (2023)



Source: Customer Satisfaction Monitoring Survey¹⁷³

173. Rounded numbers can generate a difference to total numbers in the report. 95% confidence intervals for “Up to 12 months” is between 4% – 7%, “1 – 2 years” between 9% – 14%, “3 – 5 years” between 21% – 28%, “More than 5 years” between 54% – 62%.

Switching provider

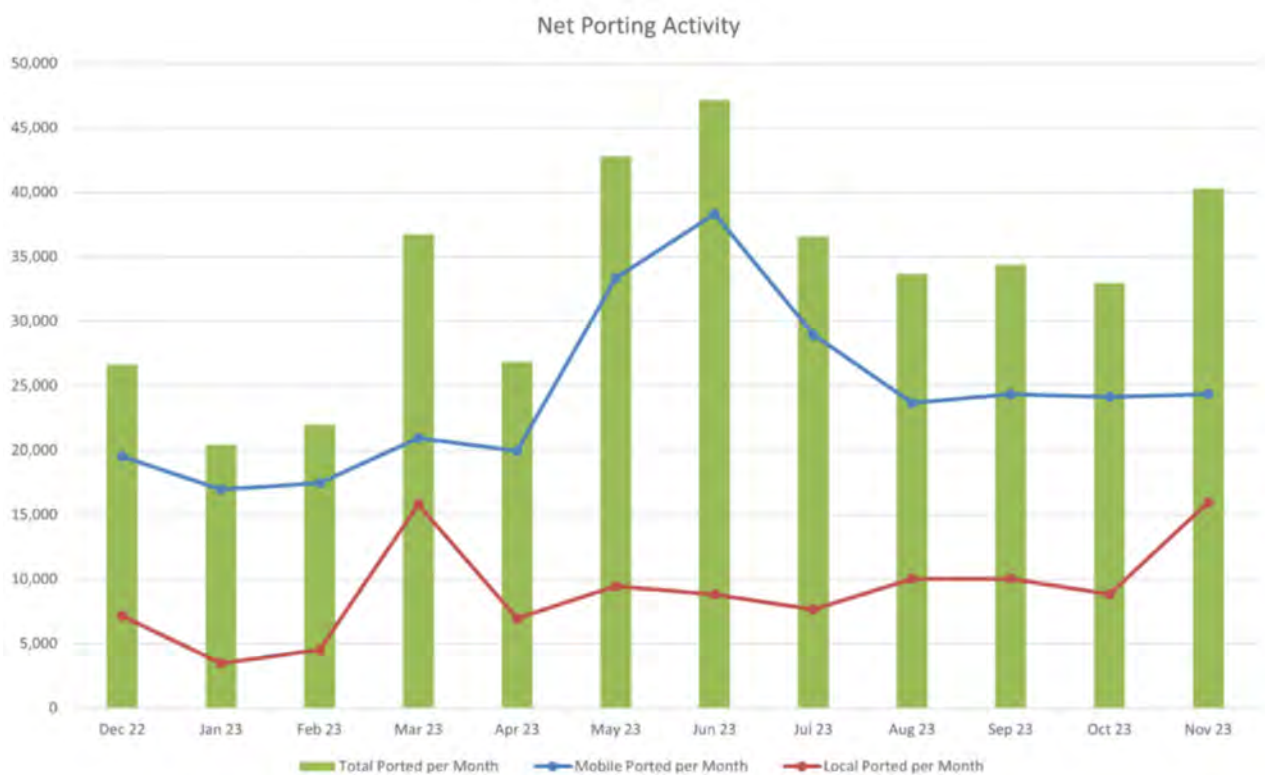
As can be seen from Figure 63 below, the level of mobile porting fluctuates during the year. This is not a seasonal variation.

The TCF notes that fluctuation happens as large businesses switch all of their mobile connections to a new provider. This could happen in any month, but because they tend to involve large numbers of connections, it can make the numbers rise and fall across the months.

Our Customer Satisfaction Monitoring Survey asks consumers if they have switched provider in the last 12 months. This includes where consumers have ported their number to a new provider. It also captures where consumers have cancelled

their service and then taken up a new service with another provider, without porting their number. Overall, 6% of consumers said they have switched providers in the last 12 months. The data shows that fewer rural consumers have switched mobile providers in the last 12 months (4%) compared to urban consumers (7%). There are likely multiple factors for this difference. On some rural properties, one MNO may have much better coverage than the others, meaning the consumer has little choice but to reliably use that one provider. Anecdotally, we hear that farming and rural communities tend to be less aware about the options available to them (for example, new MVNOs).¹⁷⁴

Figure 63: Switching providers



Source: TCF¹⁷⁵

174. Federated Farmers Presentation, Rural Women Presentation at 2023 Rural Connectivity Symposium

175. TCF "Number Portability Statistics" – see <https://www.tcf.org.nz/industry-hub/number-portability/number-portability-statistics>

The same survey notes the top two reasons consumers switch plans with the same provider are to get more data (for example, moving to an endless/unlimited data plan) or to get a lower price for similar plan inclusions.

The top reasons for going to a new provider are to get a lower price for similar plan inclusions or for better coverage.

In telecommunications, porting is the process of transferring a phone number from one network to another. The ability for consumers to port their numbers – particularly mobile numbers – is a critical market feature that supports switching, which in turn promotes competition and positive consumer outcomes. For this reason, the porting service and associated process is regulated.

The TCF manages the operational aspects of porting in New Zealand across more than 30 fixed and mobile RSPs. The TCF tracks the porting of numbers month to month and publishes activity on a quarterly basis.

We use porting data as a proxy metric for consumers switching between different providers.

eSIMs

Most consumers who are switching providers must get a new SIM card with the new provider. With eSIM, a SIM is embedded directly into a device, functioning like a digital version of a physical SIM card. This makes it faster and easier to swap provider.

eSIMs may be embedded into smartphones as well as other devices such as smartwatches, laptops, connected vehicles and IoT devices. When it comes to smartphones, not every phone can be eSIM enabled. Some devices don't have the capability available and the MNOs don't yet support every device that does have eSIM capabilities. We expect the range of eSIM capable phones that are supported by MNOs to increase over time.

MARKET OUTCOMES PUTANGA MĀKETE

Market outcomes flow from market structure and cover the performance of telecommunications infrastructure and the levels of wholesale and retail pricing through to consumer affordability and satisfaction.

INFRASTRUCTURE HANGANGA

Reliable, adaptable, and high-performing telecommunications infrastructure is fundamental for positive connectivity outcomes in Kiwi homes and businesses.

2023 Highlights

- New Zealand remains in the top 15 markets for average download speeds in Opensignal's Global 5G experience report in June 2023.^{176,177}
- However, New Zealand is in the bottom 10 markets for 5G availability (the amount of time spent with an active 5G connection).¹⁷⁸
- In addition, 32% of respondents to Federated Farmers' 2023 Rural Connectivity Survey said their mobile phone service had declined in the last 12 months, consistent with last year's results.
- The MNOs have each announced the shutdown of their 3G services over the next two years. However, 38% of respondents to the Federated Farmers' survey said they can only connect to 3G on their farm.

176. Of 56 reported markets.

177. Benchmarking the Global 5G experience – June 2023 – see <https://www.opensignal.com/2023/06/30/benchmarking-the-global-5g-experience-june-2023>

178. Ibid

Speeds

Figure 64 below shows the average download speeds experienced by users across an MNO’s networks (3G, 4G, and 5G). 5G can provide faster data download speeds than 4G or 3G. Therefore, as more consumers refresh to 5G-capable devices and as 5G coverage expands, we can expect to see the average speed across all connections increase.

Download speed is the rate at which data travels from the internet to the mobile device, measured in Mbps.

Figure 64: Average mobile download speeds



Source: Opensignal¹⁷⁹

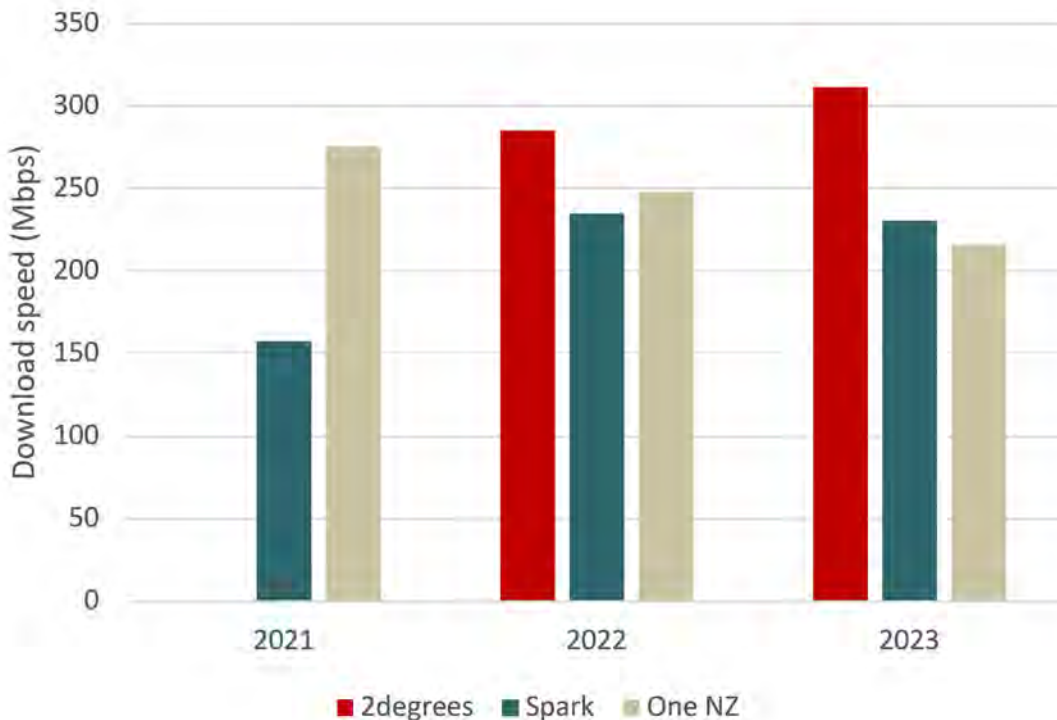
179. Open Signal “New Zealand – mobile network experience report” (October 2023) – see <https://www.opensignal.com/reports/2023/10/newzealand/mobile-network-experience>; Open Signal “New Zealand – mobile network experience report” (October 2022) – see <https://www.opensignal.com/reports/2022/10/newzealand/mobile-network-experience>; Open Signal “New Zealand – mobile network experience report” (October 2021) – see <https://www.opensignal.com/reports/2021/10/newzealand/mobile-network-experience>

5G network

2degrees launched its 5G mobile service in February 2022, so we are not able to provide figures for 2021. As coverage continues to build and more users are on the network more frequently, fluctuations in these figures will likely reduce.

As the MNOs build out their 5G networks and more consumers buy 5G capable phones, then the number of consumers using the 5G networks will increase. As that happens the MNOs must carefully balance the dimensions of the network with the number of users as more users will place more pressure on the network. While the MNOs might get very high average download speeds with only a small number of users, the speeds may trend downwards as more users move onto the 5G network over the coming years.

Figure 65: 5G average download speeds where available



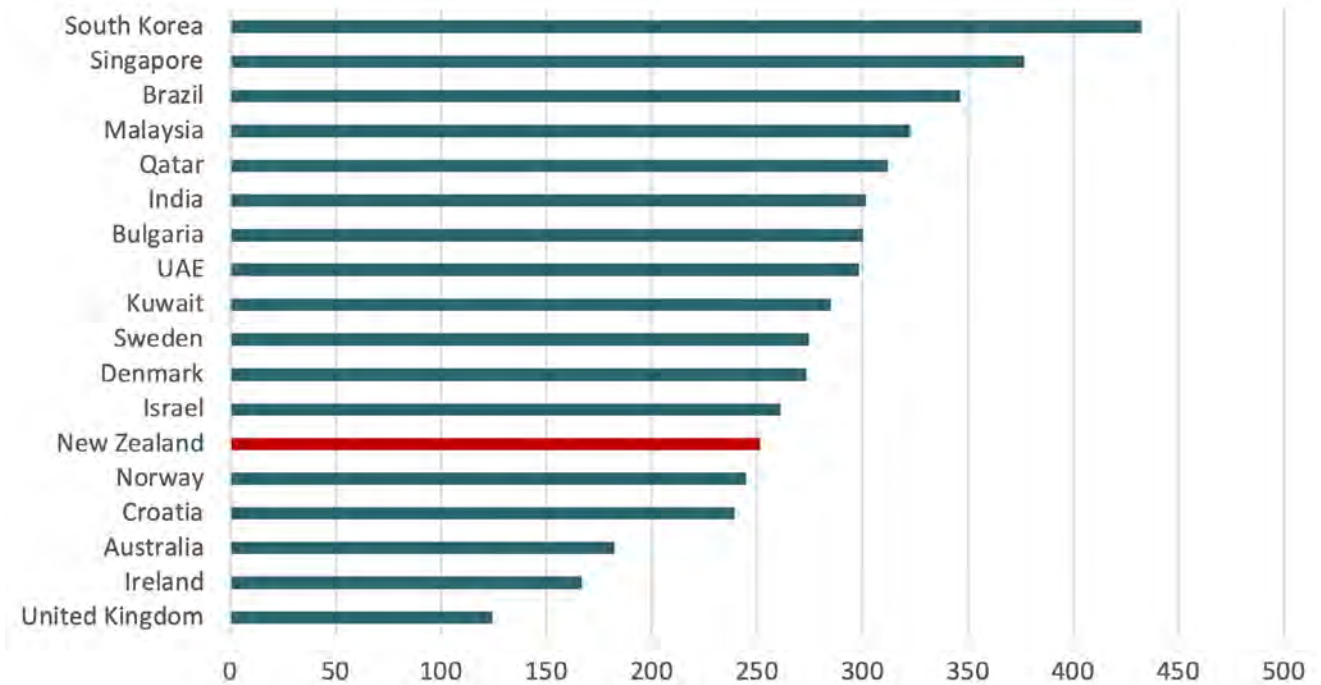
Source: Opensignal¹⁸⁰

180. Open Signal “New Zealand – mobile network experience report” (October 2023) – see <https://www.opensignal.com/reports/2023/10/newzealand/mobile-network-experience>; Open Signal “New Zealand – mobile network experience report” (October 2022) – see <https://www.opensignal.com/reports/2022/10/newzealand/mobile-network-experience>; Open Signal “New Zealand – mobile network experience report” (October 2021) – see <https://www.opensignal.com/reports/2021/10/newzealand/mobile-network-experience>

International speed comparison

New Zealand was one of Opensignal’s 5G Global top 15 markets for average download speed in its Global 5G experience report in June 2023, out of 56 markets. This result was better than for comparable markets such as Australia, Ireland, and the UK.

Figure 66: 5G Global Markets 2023



Source: Opensignal¹⁸¹

181. Opensignal “Benchmarking the Global 5G Experience” (June 2023) – see <https://www.opensignal.com/2023/06/30/benchmarking-the-global-5g-experience-june-2023>

Performance – video and games experience

Opensignal’s mobile video experience measures how users experience mobile video, taking into account video load times, stalling, and video resolution. This is measured across all the MNOs network generations and is tested by measuring real-world video streams over an MNO’s network. It uses an international measurement standard to derive a score from 0 to 100.

Top MNOs in this category scored between 71.2 and 73.9. In New Zealand, 2degrees provides the best mobile video experience to consumers.

Opensignal’s mobile gaming experience measures how users experience real-time multiplayer mobile gaming

on an operator’s network. This is measured across all the MNOs’ network generations and is tested by measuring aspects of the experience of playing real-time multiplayer, mobile games such as Fortnite and Pro Evolution Soccer. Its testing approach is based on research that quantifies the relationship between technical network parameters and the gaming experience and reports this as a score between 0 and 100.

Top MNOs in this category scored between 77.9 and 82.6. In New Zealand, 2degrees and One NZ provide the best mobile gaming experience for consumers.

Figure 67: Mobile video experience



Source: Opensignal¹⁸²

Figure 68: Mobile gaming experience



Source: Opensignal¹⁸³

182. Opensignal “New Zealand Mobile Network Experience Report” (October 2023) – see <https://www.opensignal.com/reports/2023/10/newzealand/mobile-network-experience>

183. Ibid

Availability

While the New Zealand market is performing well on speed, it has room to improve on availability. On average, consumers spend only 6.9% of their time with an active 5G connection. As the MNOs continue to build their 5G coverage this number should improve.

Opensignal measures availability as the amount of time a device is on an active 5G connection. It tells us how long consumers have a 5G signal on average across activities and locations such as being at work, being at home, and being on the move.

Figure 69: 5G Availability by provider, 2023



Source: Opensignal¹⁸⁴

184. Ibid

Reliability

Rural mobile experiences

Our customer satisfaction monitoring (set out later in this chapter) suggests a gap in satisfaction levels between urban and rural mobile consumers, with the biggest gap in coverage and availability.

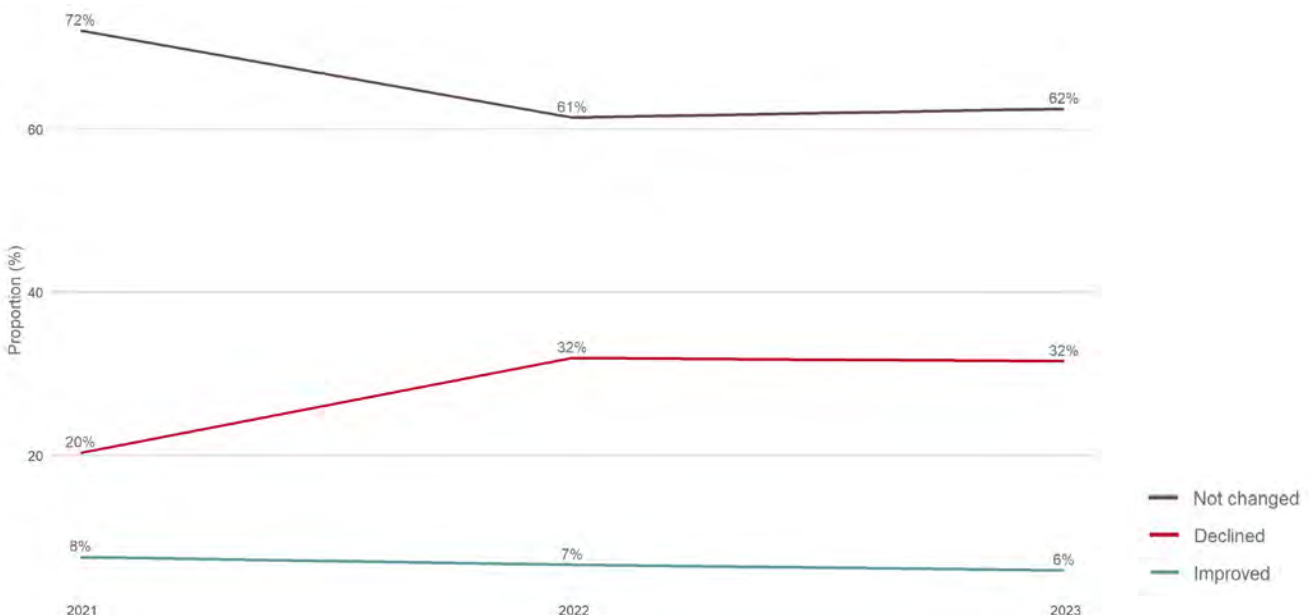
Reflecting this, in the 2023 Federated Farmers Rural Connectivity Survey, 32% of respondents said their mobile phone service had declined in the last 12 months. This is consistent with the level of decline recorded in 2022, as shown in Figure 70.

The planned closure of 3G networks in New Zealand over the next two years will impact people who live, work, or play in places where there is no 4G or 5G coverage. 38% of respondents from the 2023 Federated Farmers survey said they can only get 3G/2G coverage on their farm. This situation may arise where the

consumer is using a 2G or 3G only device, or where there is no 4G or 5G coverage.

In December 2023, Vodafone Australia began shutting down its 3G network. An Opensignal report found that this move didn't increase signal loss for consumers; instead, it increased the use of 4G and 5G networks.¹⁸⁵ The report showed little to no disruption to service during the shutdown. However, the report looked at experience on mobile broadband-only, and concerns remain for other services reliant on 3G. The report emphasises the need for a gradual transition to address potential gaps. For example, the Australian Senate has opened an inquiry, looking into issues for consumers using some older 4G devices, such as not being able to call emergency services after the shutdown. New Zealand has the opportunity to learn from the Australian experience in managing the 3G shutdown.

Figure 70: In the last 12 months has your mobile phone coverage:



Source: Federated Farmers of New Zealand

185. <https://www.opensignal.com/2024/04/02/vodafones-users-spend-more-time-on-5g-as-it-shuts-down-3g-across-australia>

Cyclone Gabrielle

When Cyclone Gabrielle struck in February 2023, it caused widespread telecommunications outages. Power loss contributed to approximately 80% of cell site outages and the loss of backhaul connectivity contributed to the remaining 20%.¹⁸⁶

The telecommunications sector worked well together in response to this. According to the New Zealand Telecommunications Forum (NZ TCF), 96 hours after the telecommunications sector initiated its response work, more than 90% of the towers were back online.¹⁸⁷

NZ TCF stated that the sector was prepared for a regional response, but the scale of the cyclone's damage was much bigger than anticipated. Since Gabrielle we understand the industry has been working on actions to be better prepared to meet public expectations next time there is an unplanned event of this nature. This includes evolving key working relationships, such as those with the power companies, and re-engineering networks to make them more resilient and redundant.¹⁸⁸

186. <https://www.rnz.co.nz/news/national/485259/why-nz-s-communications-networks-broke-down-in-cyclone-gabrielle>

187. <https://www.tcf.org.nz/news/battening-down-the-hatches-the-telco-sectors-response-to-cyclone-gabrielle#:~:text=Generators%20were%20deployed%20to%20keep,the%20towers%20were%20back%20online.>

188. <https://www.tcf.org.nz/news/one-year-on>

Wholesale-level pricing plays an important part in shaping retail-level pricing for consumers. Regulatory oversight or obligations commonly apply at this level of the market.

2023 Highlights

- MNOs continue to price MTAS services at the regulated price caps set in 2011.

Mobile termination access services

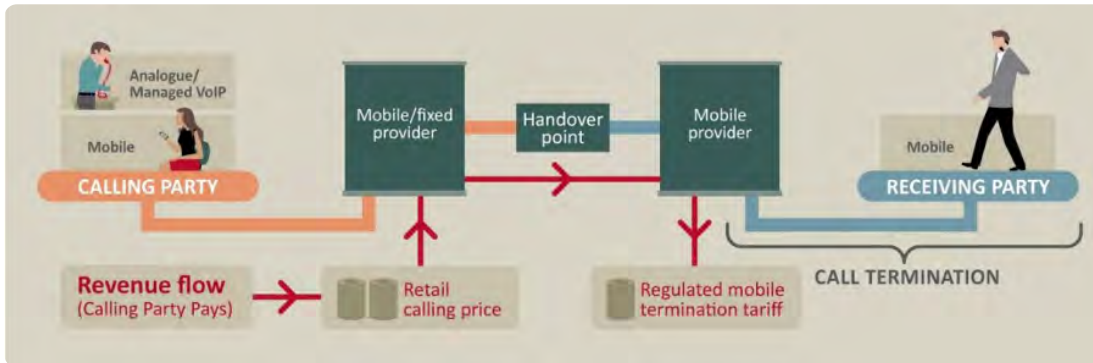
Mobile termination access services (**MTAS**) are the termination services a fixed or cellular network operator needs to allow its subscribers to communicate with the subscribers of a cellular network.

MTAS is a designated access service under Schedule 1 of the Telecommunications Act 2001. This means that we can determine price and non-price terms for the service. The MTAS service includes termination of voice calls (fixed-mobile and mobile-mobile) and SMS.

We first regulated MTAS in 2011 at a time when the mobile market was characterised by:

- significant on-net off-net price differences;
- very little cross-net traffic;
- high prices relative to other OECD countries (particularly for prepay customers); and
- low mobile voice usage compared to other countries.

The regulated MTAS pricing for voice was set using a glidepath that reduced from \$0.0748 in May 2011 down to \$0.0356 in April 2014. MTAS SMS pricing did not use a glidepath. All MTAS pricing was set using benchmarks from other countries based on comparability criteria.



In general, nothing has changed in this area from our last report. Following our last review of MTAS in 2020, we have collected more detailed information on MTAS traffic and revenue in our industry questionnaire. This information shows that all three MNOs are currently charging at, or marginally below, the regulated MTAS price caps for both voice and SMS services that are based on 2011 benchmarks.

In our 2020 MTAS review, we noted that as the cost-based benchmarks used to set prices in the MTAS standard terms determination have been dropping, we would view MTAS prices below the regulated price cap as evidence of some competitive constraint.¹⁸⁹ However, we have yet to observe any material price movement below the regulated price caps.

We have observed, through our industry questionnaire, that MTAS revenue is mostly flat over time. However, we are seeing growth in consumers’ use of Over-The-Top (OTT) voice and messaging services, which is likely to impact MTAS revenue over time (see our section further down in this report on OTT usage).

Table 27: Most common rates

	Current rate
Voice (cents per minute)	3.56
SMS (cents per SMS)	0.06

MVNO

Prices

MVNO agreements are reached on commercial terms so there is no public information on wholesale prices. However, all three MNOs now have multiple MVNOs as wholesale customers, suggesting a degree of competitive tension on pricing at this level of the market.

189. Commerce Commission “Final decision on Mobile Termination Access Services (MTAS): Final decision on whether to commence an investigation under clause 1(3) of Schedule 3 of the Telecommunications Act” (2 September 2020) – see https://comcom.govt.nz/_data/assets/pdf_file/0018/224127/Final-decision-on-Mobile-Termination-Access-Services-MTAS-2-September-2020.pdf

Retail pricing outcomes are based on the underlying infrastructure or wholesale costs but also reflect competitive dynamics, relativities between offers, and consumer demand.

2023 Highlights

- The average data usage by postpaid consumers has increased by 2GB (from 6.9GB to 8.9GB) per month from 2022 to 2023 as consumers move to endless/unlimited plans.
- According to Teligen’s benchmarking of mobile prices in 2023, the price per month to meet the average postpaid consumer’s needs is \$60 in New Zealand. This is \$15 higher than the OECD average. For prepay consumers it is \$29, similar to the OECD average.
- Our analysis suggests that countries with lower population density, such as New Zealand, tend to pay higher prices for data.
- MVNOs are pricing their plans below MNOs but some may not match MNO plan inclusions such as hotspotting or carryover data.

Prices

We use Teligen’s price benchmarking database for some aspects of our pricing analysis. Teligen’s benchmarks cover residential plans from incumbent providers who, combined, serve at least 70% of customers in a given country. In the case of New Zealand, Spark, One NZ, 2degrees, Orcon and Slingshot are the brands included.

Price trends

The price an average prepaid consumer needs to pay to meet their usage has decreased slightly by \$1 since 2022. Average data usage has increased slightly by 200MB since 2022.

The price an average postpaid consumer needs to pay to meet their usage has increased slightly by \$1 since 2022. Average data usage has increased by 2GB since 2022.

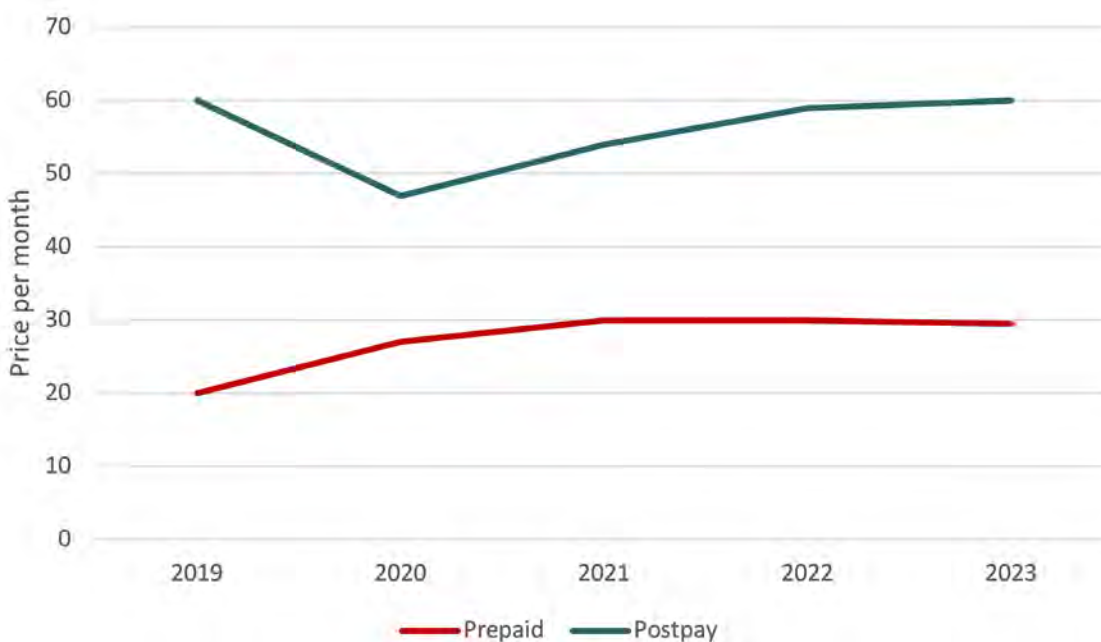
Postpaid usage has increased by 29% in 2023 to 8.9GB per month but the price for consumers' usage has only increased by \$1. However, when comparing between countries, that price is \$15 above the OECD average, as seen in Figure 71 below. Consumers have not had to pay a lot more to meet a 29% increase in data demand, but are paying more than consumers in other comparable countries on average. At the same time, MNOs such as Spark have noted in financial results that the mobile market is a 'star performer' for revenues.¹⁹⁰

Table 28: Average mobile data usage

	2019	2020	2021	2022	2023
Prepaid	1.3GB	1.8GB	2.5GB	2.8GB	3.0GB
Postpaid	3.4GB	4.7GB	6.0GB	6.9GB	8.9GB

Source: Commission data

Figure 71: Teligen's price benchmarks to meet average mobile usage



Source: TechInsights, prices are nominal and not adjusted for inflation

190. Spark FY23 Results Call, August 2023

MNO vs MVNO pricing

As demonstrated below, MVNOs can price their plans below their MNO partners for the equivalent amounts of data. However, they may not match all the plan inclusions of their MNO partners, such as hotspotting or carryover data.

Table 29: MNO vs MVNO pricing

Pre-paid 3GB data	Price	Note
2degrees	\$25	250 mins, hotspotting included, 5G capable
Warehouse Mobile	\$25	Unlimited mins

Source: Providers' websites (accessed July 2024)

Pre-paid 4GB data	Price	Note
One NZ	\$45	Carry over data
Kogan	\$25	No carry over data

Source: Providers' websites (accessed July 2024)

Postpaid unlimited data	Price	Note
One NZ	\$85	Add up to three companion plans for \$40/month per plan
Contact Energy	\$80	Add up to four companion plans for \$25/month per plan

Source: Providers' websites (accessed July 2024)

Postpaid endless data	Price	Note
Spark	\$79.99	100GB data at max speed. Endless data at reduced speed
Megatel	\$79 ¹⁹¹	Unlimited data at max speed

Source: Providers' websites (accessed July 2023)

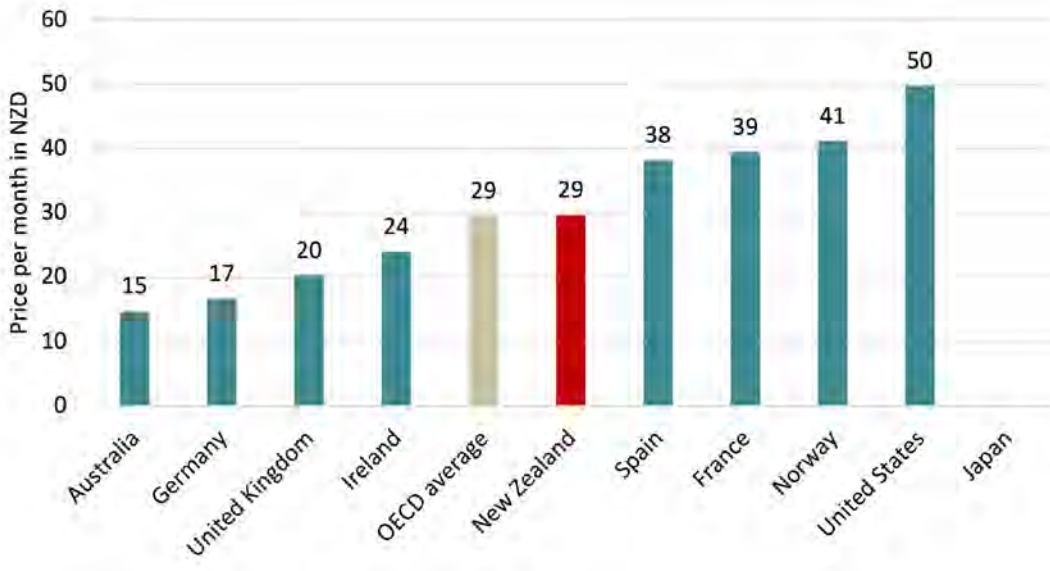
International price comparison

To get an indication of how New Zealand mobile prices compare to those overseas, we compared Teligen's price of the cheapest benchmark plan on offer in New Zealand against the cheapest benchmark plan available in OECD countries for two custom baskets.

The baskets were based on average usage for prepaid and postpaid consumers in New Zealand. In 2023, the average usage for a prepaid consumer was 68 minutes of calling, 3GB of data, and 53 texts. The average usage for a postpaid consumer was 211 minutes of calling, 8.6GB of data, and 113 texts.

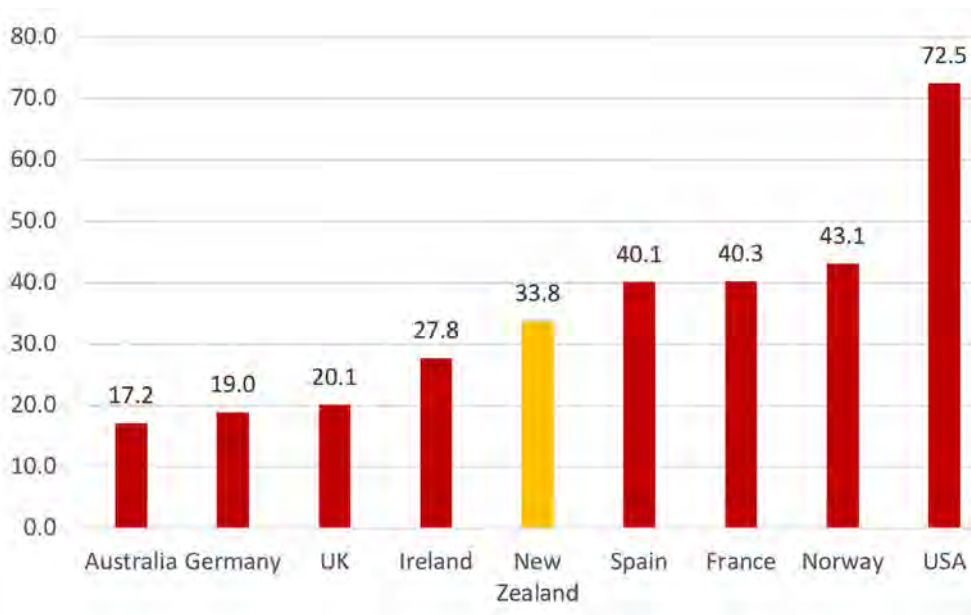
191. First 3 months half-price only valid from 02 October 2023 until 31 April 2024

Figure 72: Teligen’s price to meet average prepaid usage (September 2023)¹⁹²



Source: TechInsights

Figure 73: Cheapest plan per provider in each country (ex: in NZ, cheapest plan from One NZ, Spark, and 2degrees averaged)

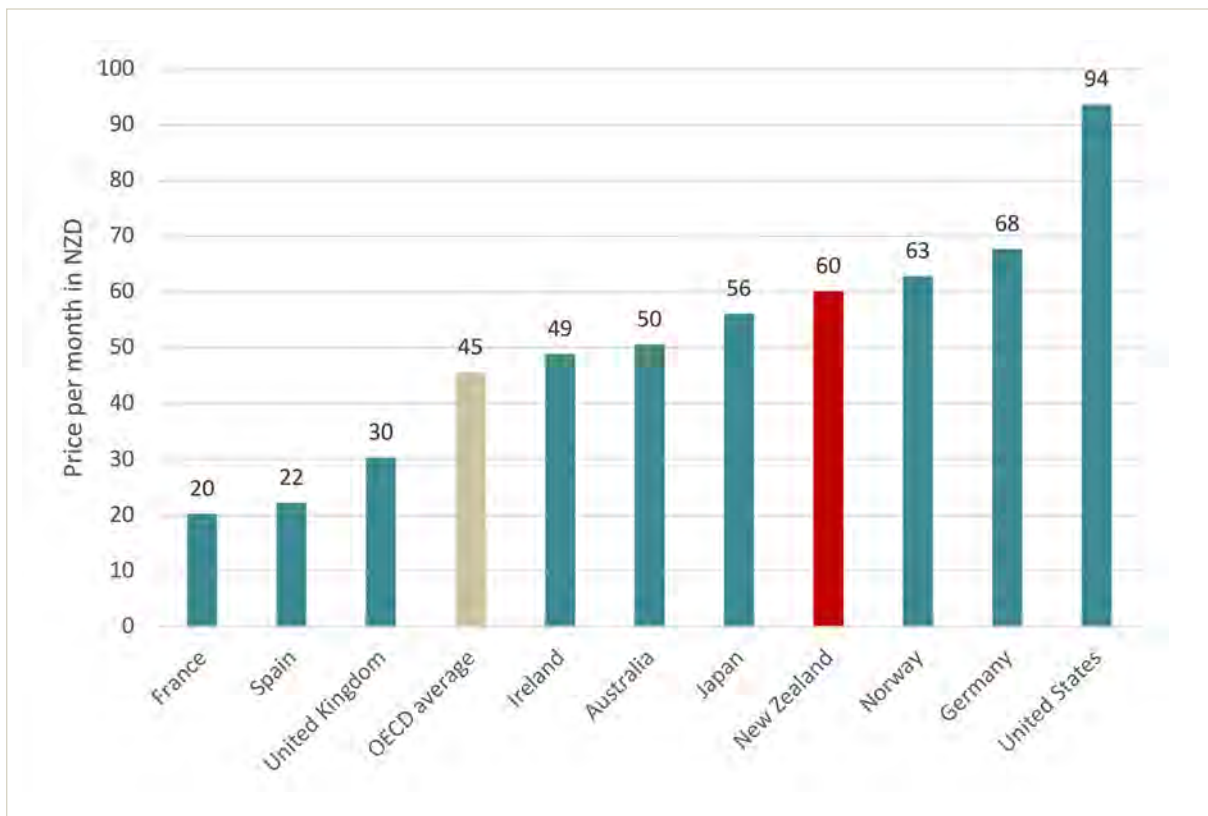


Source: Commission analysis of TechInsights data

192. Japan is not included as there were no prepaid plans included in the benchmark.

In 2023, New Zealand’s price per month for prepaid use is similar to the OECD average of \$29, but it is still twice as much as the price for Australian consumers. However, New Zealand’s price per month for postpaid use is \$15 higher at \$60 than the OECD average of \$45.

Figure 74: Teligen’s price to meet average postpaid usage (September 2023)



Source: TechInsights

Figure 75 shows the average price, in U.S. dollars, of 1GB of mobile data across the same countries shown above. Cable.co.uk undertakes an extensive annual snapshot of mobile plans in 237 countries to produce this information. The researchers looked at 5,600 mobile data plans worldwide to calculate the average cost of 1GB of data.¹⁹³

Prices gathered are for SIM-only plans (that don't include a monthly payment in the bill for a smartphone handset). Researchers select one SIM plan from each data amount/cap each provider offers. A country with eight providers, for example, each offering three different SIM data sizes, will have 24 plans recorded.

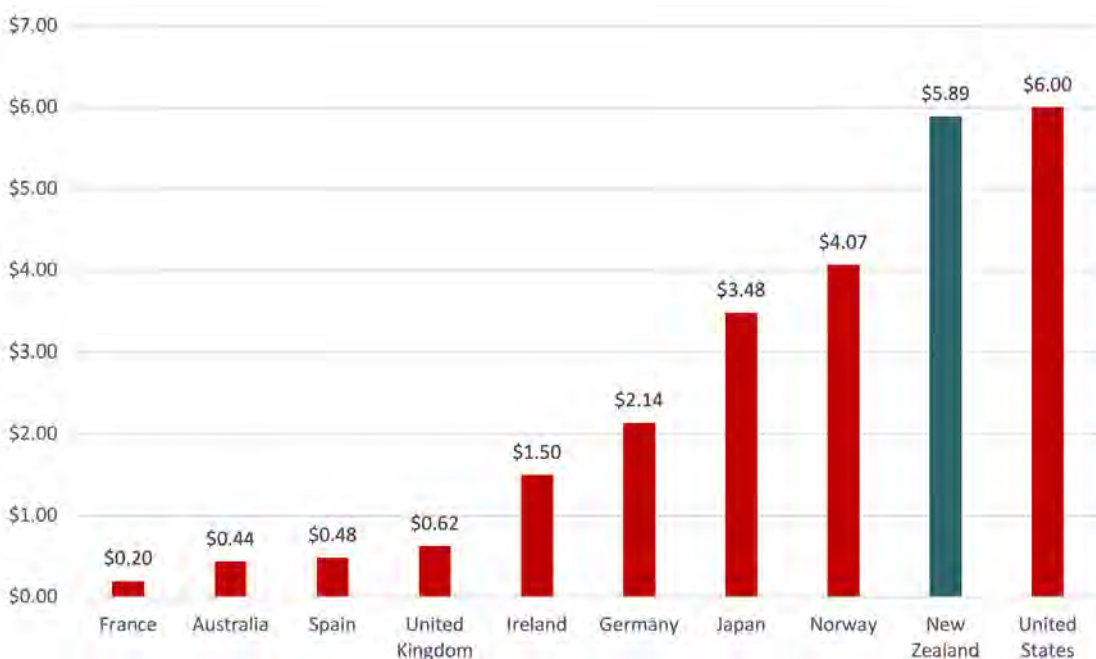
If a provider offers otherwise identical plans, but with different add-ons, incentives, or regional variation, the cheapest price is recorded.¹⁹⁴

The price for New Zealand of \$5.89 puts it in the 218th position out of 237 countries, meaning 217 countries offer 1GB of data at a lower price than in New Zealand, on average. Looking across just the Oceania region, New Zealand ranks 18th of 24 countries measured.

Based on its full data set, Cable.co.uk offer some factors that can influence mobile data pricing. These are:

- Countries with long-established, ubiquitous 4G or new 5G infrastructure tend to have lower retail prices for 1GB of data. This is because with excellent infrastructure, providers often offer plans with very large data caps, which means the cost per GB is low.

Figure 75: Average price of 1GB of mobile data (USD) in selected OECD countries compared to New Zealand



Source: Cable.co.uk

193. Note: the method used by cable.co.uk takes a simple average of all the qualifying plans (excluding unlimited plans), which differs from the basket approach used by Teligen.

194. Cost of a Gigabyte Research Method, see <https://s3-eu-west-1.amazonaws.com/assets.cable.co.uk/mobile-data-cost/cost-of-a-gigabyte-research-method.pdf>

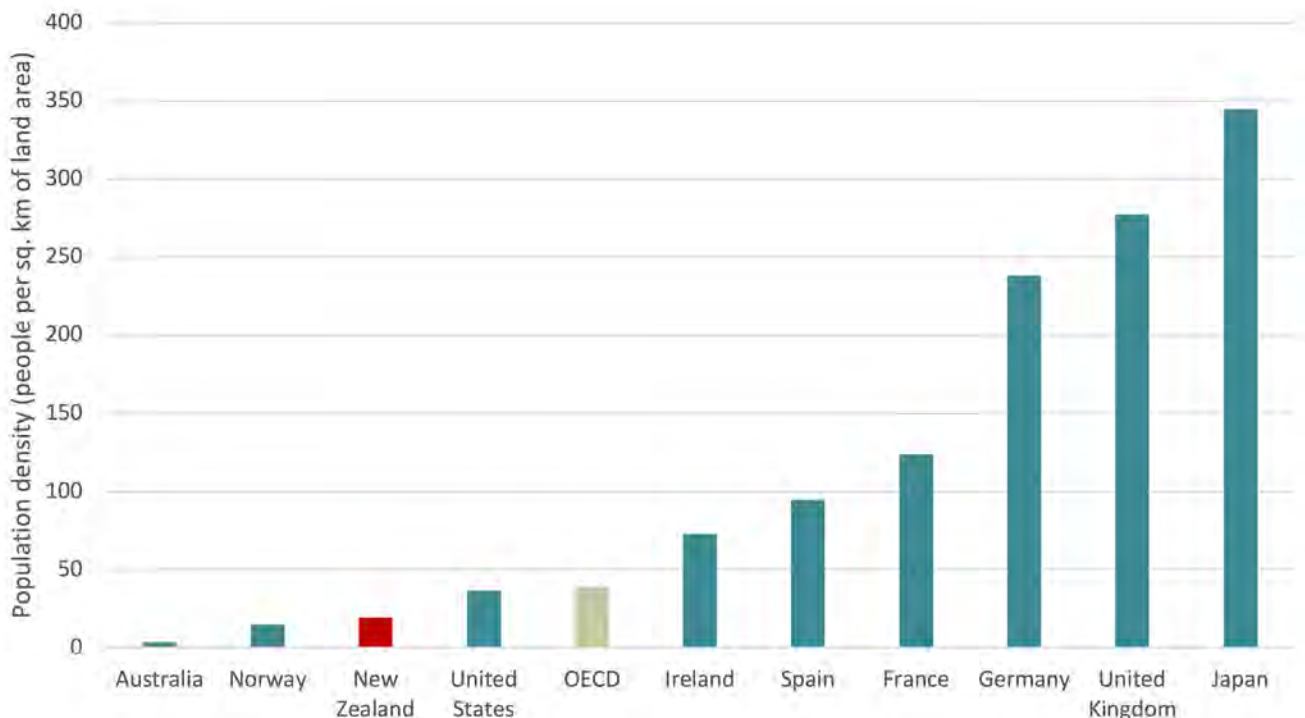
- Lower cost per GB in countries where there is heavy reliance on mobile data because there is little to no fixed broadband availability. This means adoption is often near ubiquitous and with a saturated market and a lot of competing providers, the price per GB tends to be lower than the average.
- At a global level, in countries where mobile infrastructure is overburdened, providers will offer smaller data caps and sometimes constraints such as single-day expiries. This limited-use culture can result in prices per GB that are higher than average.
- In wealthy nations, the price per GB of data tends to trend towards the global average. This is because wealthy nations tend to have good mobile infrastructure, decently-sized data caps and relatively healthy markets.

New Zealand is a relatively wealthy nation, ranking 28 of 179 countries in GDP per capita.¹⁹⁵ Mobile infrastructure is not overburdened, and we have good fixed broadband availability in most areas. These factors suggest New Zealand’s price per GB should be lower than the average, rather than at the highest end.

We have well established 4G infrastructure but our 5G deployments are still in their early stages. Our population density varies considerably from urban to rural to remote areas.

New Zealand has a lower population density than average (see Figure 76). We looked at the correlation between population density and mobile data price in 10 OECD countries, including New Zealand (Figure 77). The chart shows some correlation (the less dense a country, the more expensive mobile data is).

Figure 76: Population density



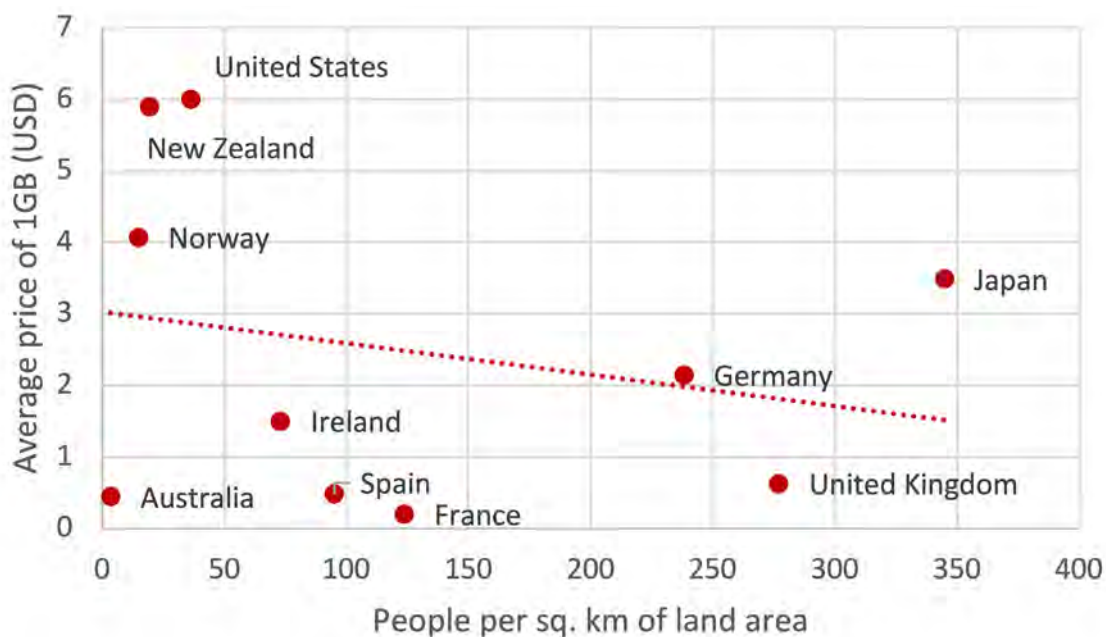
Source: World Bank

195. GDP per capita, 2022, see <https://www.worldometers.info/gdp/gdp-per-capita/>

New Zealand has the second highest price for 1GB of data of the countries shown in Figure 58 and the third lowest population density. This suggests that scale, in terms of number of subscribers, plays into the retail price for data. The higher the number of subscribers, the bigger the connection base for MNOs to spread their costs over.

In Figure 77, Australia appears to be an exception, with lower population density and a low price for 1GB of data. However, Australia’s population is mostly within higher-density cities with large swathes of the country barely populated. Where there are cell towers, they are highly utilised, and that utilisation is a factor in data pricing. Retail competition is also higher in Australia. Around 9% of subscribers are with an MVNO and another 9% are with MNO sub-brands that operate like MVNOs.¹⁹⁶

Figure 77: Correlation between population density and mobile data price



Source: Cable.co.uk and World Bank

196. ACCC “Communications Market Report 2021-22” (December 2022) – see https://www.accc.gov.au/system/files/22-71RPT_Communications%20Market%20Report_FA.pdf

The market outcomes produced through infrastructure, wholesale, and retail ultimately come down to consumers' usage and their overall satisfaction with the connectivity provided.

2023 Highlights

- Mobile consumers are most satisfied with coverage and availability and least satisfied with customer service. This is consistent with our initial survey results published in last year's Annual Monitoring Report.
- Consumers are using text messaging less and are shifting to using internet-based messaging apps such as Facebook Messenger and Whatsapp.

Satisfaction

Customer satisfaction monitoring

Our customer satisfaction survey found that, while most customers are satisfied with their overall level of service, there is significant room for improvement in different aspects of service. These are split out below based on their urban or rural location (Figure 78).

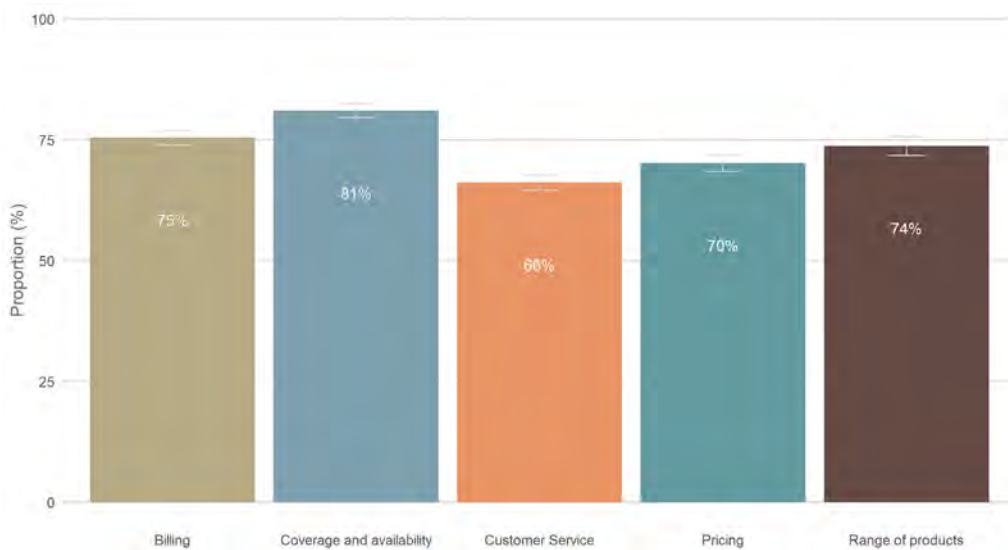
The benchmark for good performance is 80%. Across most areas this benchmark is not met.

The results below come from our monthly Customer Satisfaction Monitoring Survey. Data was collected between December 2022 and December 2023 and includes responses from 5,753 residential mobile customers.

The survey shows that satisfaction is higher in urban groups compared to rural groups across all aspects of service. Mobile providers need to focus more on improving their performance and services in rural areas. Consumers in both urban and rural areas are most satisfied with their mobile provider’s coverage

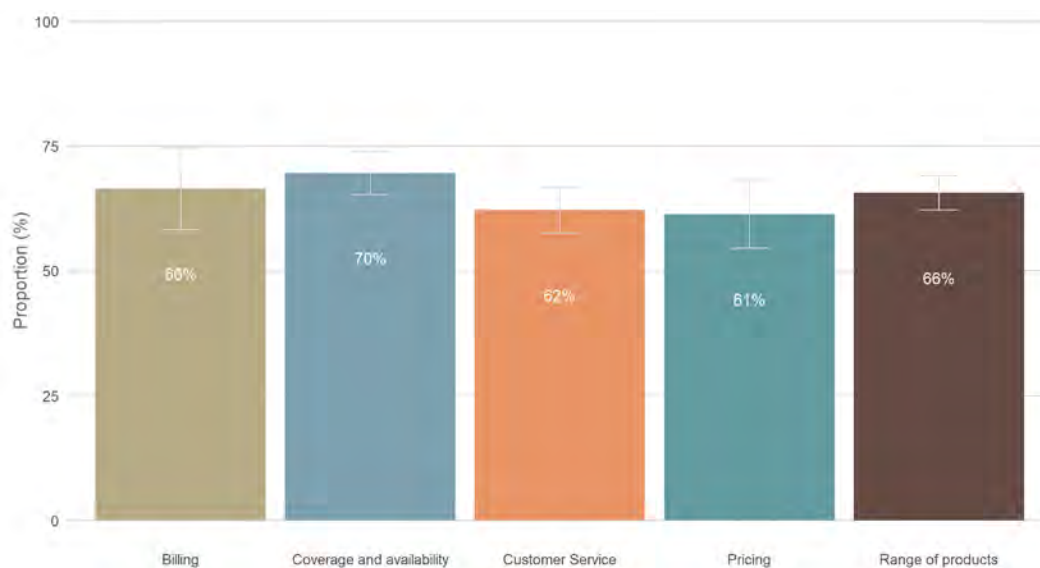
and availability.¹⁹⁷ However, consumers in urban areas are more satisfied with their mobile provider’s coverage than consumers in rural areas. The survey also shows that consumers in both urban and rural areas are least satisfied with their mobile provider’s customer service.

Figure 78: Satisfaction levels of mobile consumers in urban areas 2023



Source: Customer Satisfaction Monitoring Survey

Figure 79: Satisfaction levels of mobile consumers in rural areas 2023



Source: Customer Satisfaction Monitoring Survey

197. The coverage and availability question is a broad question that covers both mobile and fixed technologies. It was historically worded this way to group items consumers tend to think about together. In future Customer Satisfaction Monitoring reports the question wording will change to focus on coverage only.

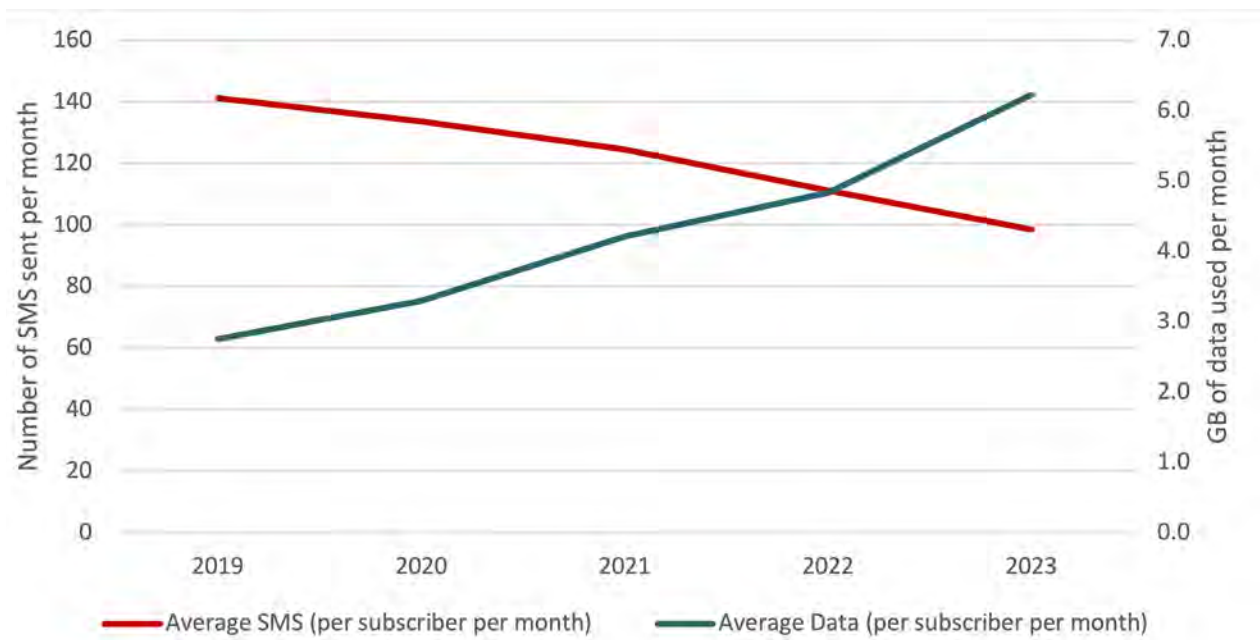
OTT: Use of SMS declining, use of messaging apps increasing

New Zealanders are using SMS (text messaging) less. According to InternetNZ’s New Zealand Internet Insights 2023 report, the daily use of SMS has declined to an all-time low. Just 49% of people use SMS once a day or more often, compared with 55-60% in the prior four years.¹⁹⁸ Figure 80 shows that the use of SMS is trending downwards while the use of data continues upwards, consistent with data provided to us in our annual industry questionnaire. This suggests New Zealanders are replacing the use of SMS with online messaging applications.

The use of OTT social media applications such as Facebook, Instagram, TikTok, and X (formerly Twitter) is also declining in New Zealand according to InternetNZ.

Consumers are gravitating towards messaging apps. It is likely that the decline in SMS use is because consumers are using messaging apps as a replacement. This includes messaging apps that are part of social media apps, such as Facebook Messenger (53% use it daily, up from 52% in 2022), and standalone messaging apps such as WhatsApp (24% use it daily, up from 23% in 2022).

Figure 80: Average monthly SMS vs data usage



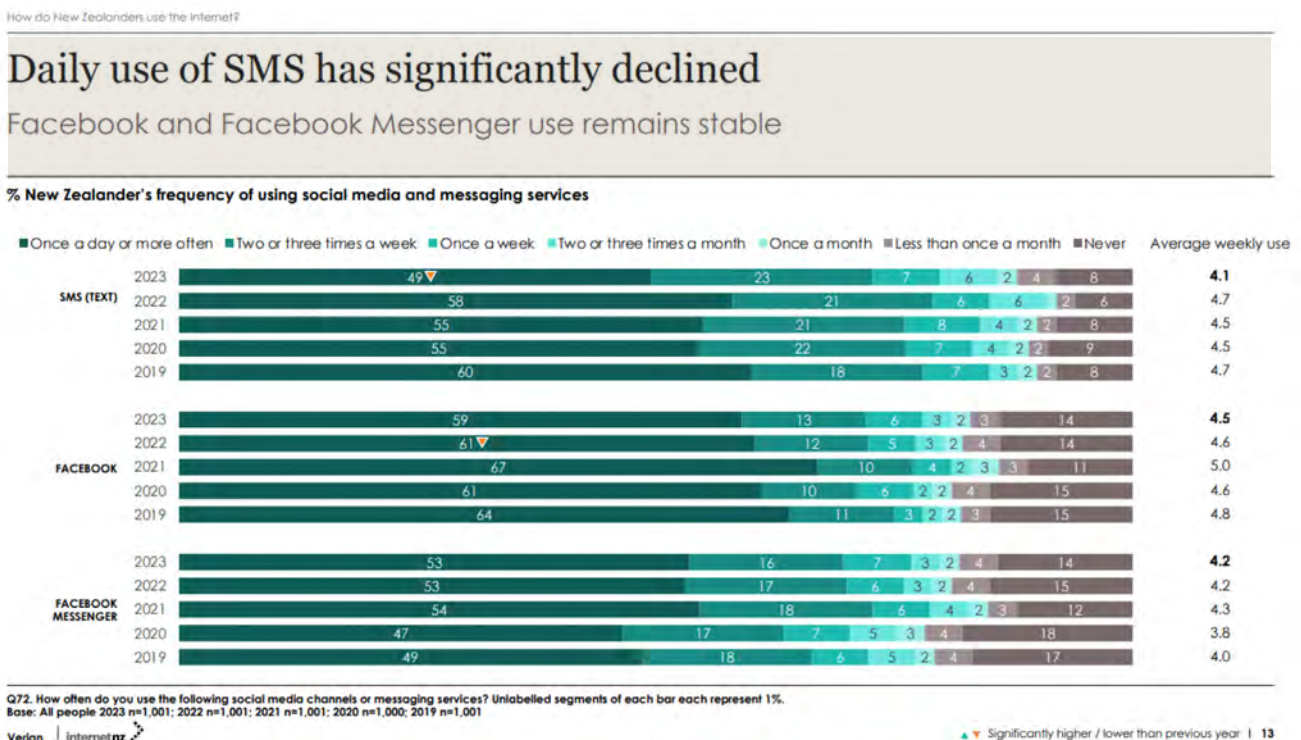
Source: Commission data

198. InternetNZ “New Zealand’s Internet Insights 2023” (December 2023) – see <https://internetnz.nz/assets/Uploads/New-Zealands-Internet-Insights-2023-v2.pdf>

There are several benefits to consumers of using these messaging apps:

- No price-per-message or messaging cap;
- The apps can be used across devices seamlessly, for example on a smartphone and on a laptop;
- Consumers with text message caps can use messaging apps via fixed internet connections on Wi-Fi to avoid drawing on the cap;
- Ability to make voice/video calls and send voice messages;
- Additional functionality such as ease of setting up groups and real-time notifications; and
- Messaging apps allow consumers to be more selective about what they share and to whom than posting on social media. An international report said that people are becoming more protective about sharing their lives online.¹⁹⁹

Figure 81: Daily use of SMS (texting) is declining



Source: InternetNZ

199. Morning Consult Pro "People Have Become Pickier About What They Post to Social Media" (October 2023) – see <https://pro.morningconsult.com/analysis/social-media-posting-frequency-preferences-survey>

Special topics

Ngā kaupapa
motuhake

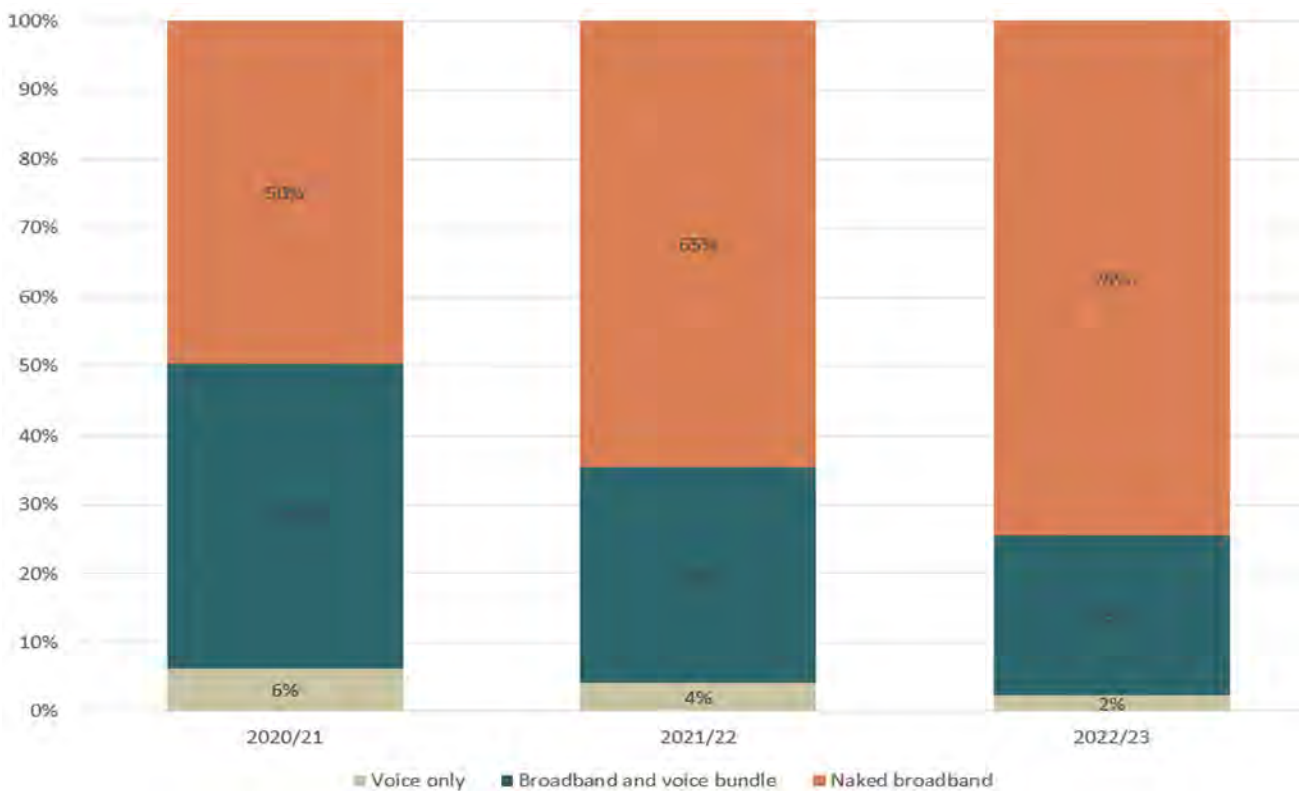


LANDLINES RAINA WHENUA

Households are moving away from traditional landline services for calling. Landline connections across all access technologies (including broadband-voice bundles) have continued to decline in 2023, down 33% from 2022.

Of the remaining 505,000 landlines, the majority are broadband-voice bundles, with less than 40,000 residential voice-only connections remaining.²⁰⁰

Figure 82: Residential fixed lines by connection type²⁰¹



Source: Commission data

200. Due to revisions and differences in methodology by some respondents, these results may not be consistent with responses to the Annual Industry Questionnaire results or previous *Annual Monitoring Reports*.

201. Due to revisions and methodology differences by some respondents 2021 results may differ from those reported in previous *Annual Monitoring Reports*.

PSTN

Our 2023 Commission data indicates that there were at least 60,000 residential customers on the PSTN, which equates to 12% of all residential landline services. This is a drop from 2022 when 17% of residential landline services were served by the PSTN.

The switch-off is ongoing and a list of affected switches is available on Spark's website.²⁰²

Spark operates the Public Switched Telephone Network (**PSTN**) network and wholesales access to other RSPs providing a landline service. The PSTN operates over the copper network, which is owned by Chorus.

In 2020, Spark began switching off the PSTN network on a switch-by-switch, location-by-location basis, citing that the network was at the end of its life. Spark is replacing its PSTN network with its Converged Communications Network (CCN) which enables it to deliver voice services over different platforms and technologies such as cellular, fibre, Wi-Fi, and app-based calling. The upgrade is in progress.

Who has a landline in 2023?

Landline connections with no broadband

There are around 90,000 landline-only connections in New Zealand, with no broadband on the same connection. Our data shows that these landline connections are spread across the country, rather than more densely connected in urban areas, Figure 83 below.

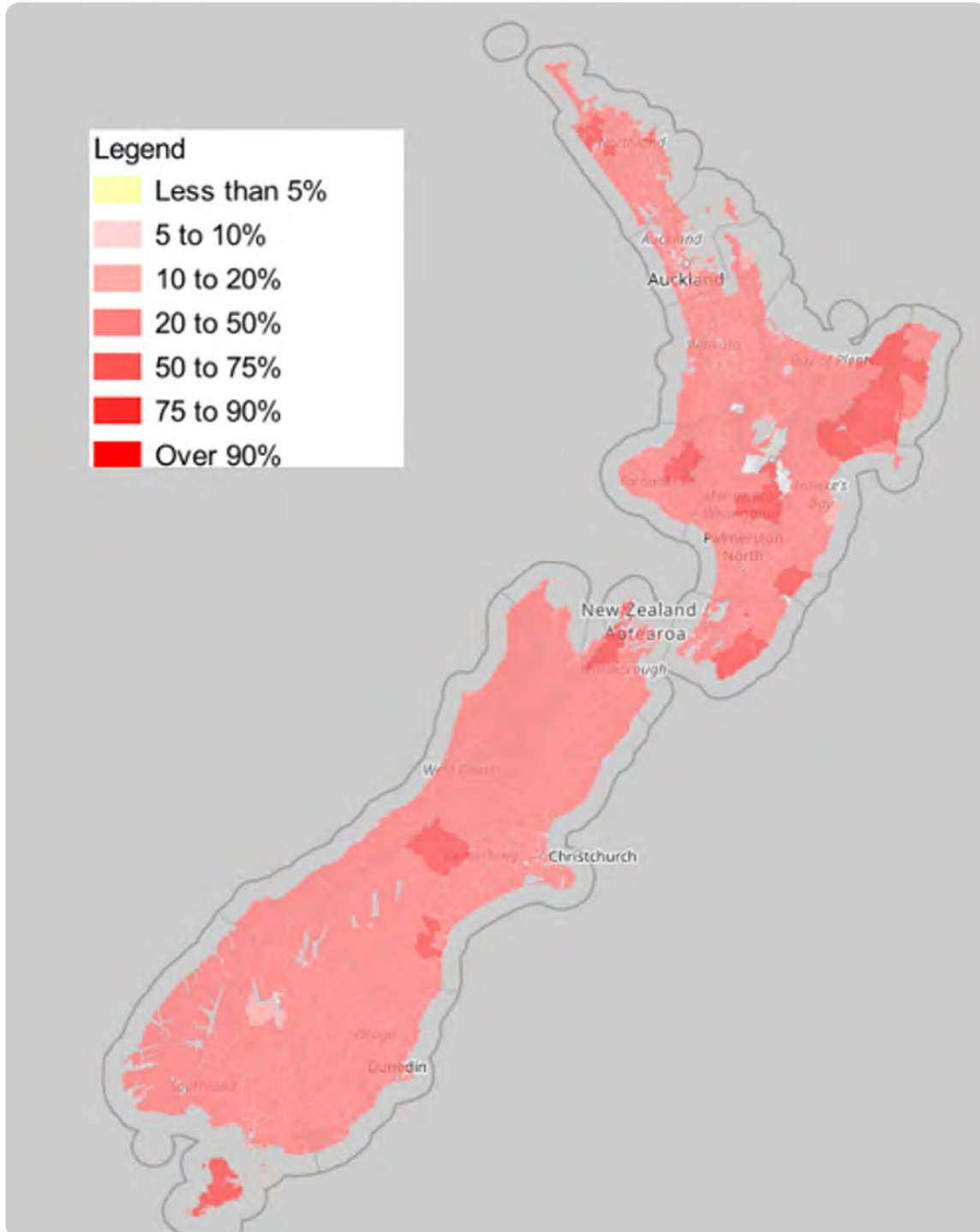
About 50,000 of these are business connections across urban and rural areas. These could be small businesses, such as small convenience stores, which may still be running EFTPOS over a plain old telephone service.

About 40,000 are residential voice connections with no broadband. 35% of these, almost 14,000 connections, are in rural areas, where we can see that many residences take up a landline connection where there is no mobile coverage. However, we also see landlines at rural properties where there is mobile coverage. This might be where households prefer a backup connection to their mobile phones, particularly where neighbours can be longer distances away.

In urban areas, there are 25,000 landline-only residential connections. Some of these are in homes, and we see some in organisations such as churches, bowling clubs, some schools, football clubs, and in some supermarkets and shopping malls.

202. <https://www.spark.co.nz/shop/landline/landline-migration/>

Figure 83: Spread of landline connections in New Zealand



Source: Commission data

Total voice connections – including those with a broadband bundle

Around 415,000 households and businesses in New Zealand have a landline that comes as a bundle with a broadband connection. These are predominantly:

- residential connections (86%) rather than business connections;
- fibre connections (59%) rather than copper or fixed wireless; and
- urban connections (85%) rather than rural.

These bundled landlines are significantly cheaper (at around \$10 per month) compared to a standalone landline for around \$40 to \$65 per month.

We can see that, in urban areas, approximately a quarter of homes with broadband also have a landline connected.

Choice

All major RSPs offer landline bundles except Skinny. Rural-focused providers such as Farmside, Primo, and Lightwire also provide landline bundles.

Fewer RSPs currently retail landline-only services. Spark provides three landline-only plans, using cellular fixed wireless broadband, fibre, and copper for the respective offerings. Spark only offers new copper landline services where wireless or fibre landline services are unavailable. Mercury also provides landline-only services.

While landline numbers continue to fall, it remains an important service for rural areas where mobile coverage is poor or non-existent, and for older consumers who are not confident using a mobile phone or have the perception that landlines are more reliable, failsafe, or have better quality calls.²⁰³

Price

RSPs typically charge approximately \$10 extra per month to bundle landline services with broadband services.

Spark's 4G wireless landline-only plan costs \$45 per month, while its fibre landline-only plan costs \$61 per month. Where copper landline-only plans are available, Spark charges \$65.20 per month. The prices for its copper and fibre-based landline services have increased in the last year as Spark passes on wholesale input cost increases from Chorus and the LFCs.

203. Refer https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Rural_and_Regional_Affairs_and_Transport/3GNetworkShutdown

COMPLAINTS ABOUT TELECOMMUNICATIONS SERVICES NGĀ AMUAMU MŌ NGĀ RATONGA TOROTORO WAEA

The Telecommunications Dispute Resolution Scheme (**TDRS**) is the independent and free dispute resolution service for consumers who have disputes with their telecommunications service providers about mobile, internet and landline services. It is also the dispute resolution service for disputes relating to the 111 Contact Code and Copper Withdrawal Code.

Table 30: Complaints and enquiries to the TDRS

Category	Number of complaints/enquiries 1 July 2021 to 30 June 2023	Percentage of complaints/enquiries
Customer complaints code		
Billing	1511	40.6%
Customer service	688	18.5%
Faults	601	16.1%
Network performance	185	5.0%
Contracts/ terms and conditions	127	3.4%
Transfer	103	2.8%
Other	43	1.2%
Complaints handling	29	0.8%
111 Contact code		
Vulnerable customer application	1	0.0%
Copper withdrawal code		
Customer service	1	0.0%
Other	1	0.0%
Fibre Installation Code		
Installation	435	11.7%
TOTAL	3725	100%

Source: TDR²⁰⁴

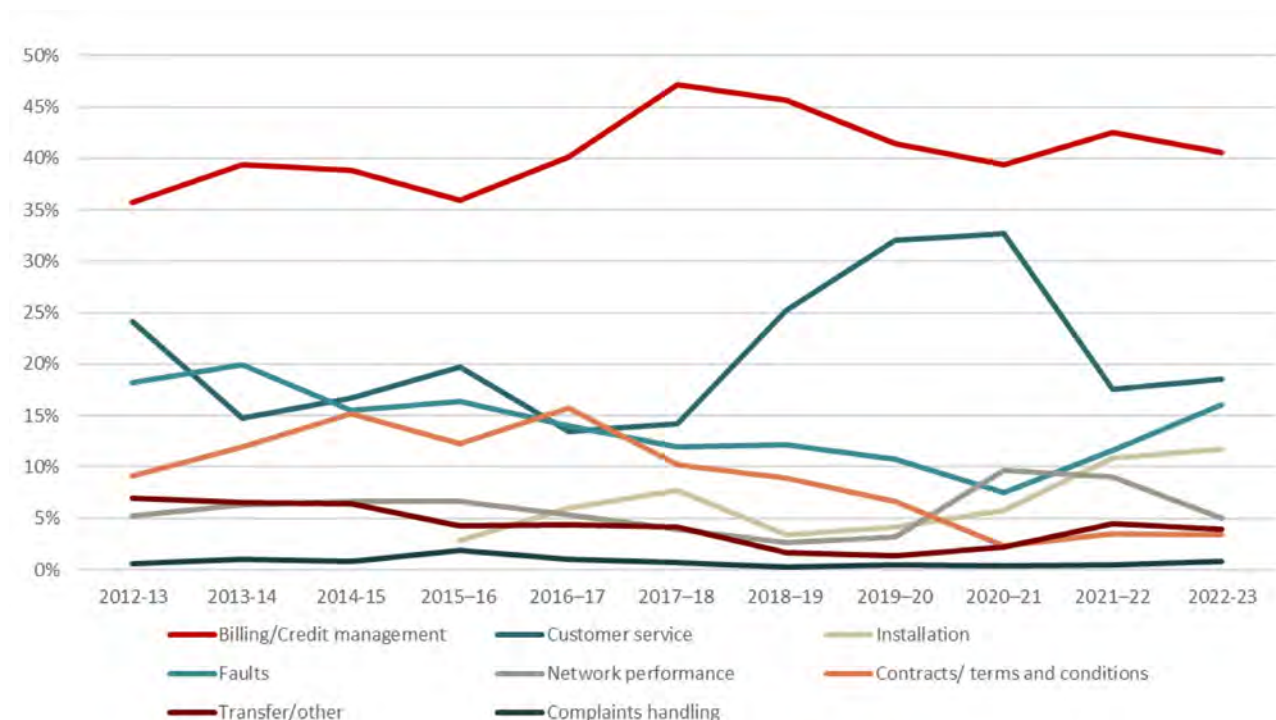
204. TDR "TDR Annual Report 2022 – 2023" page 7. Available at: <https://www.tdr.org.nz/sites/default/files/2023-10/2023%20TDR%20Annual%20Report.pdf>

The overall number of complaints for 2022/23, 3725, is up 64% from 2021/22 at 2,271 complaints. This is attributed to a major advertising campaign delivered by the TDRS in 2022 with a second series of advertisements in 2023. This meant more consumers were aware that they could take a complaint to the TDRS. It is also attributed partly to the removal of a range of exclusions that previously prevented many complaints from being accepted by the scheme.

Billing and credit management complaints remain the highest proportion of complaints in 2022/23, with an increase in these complaints relating to customers disputing charges, Figure 84.

The percentage of complaints about faults increased; a key complaint was about delays in service restoration. At this time Chorus was facing difficulties recruiting skilled field technicians. The company adjusted its recruiting approach, and the Government approved the role on its immigration Green List in March 2023, making it more attractive for people with the right skillsets to work in New Zealand. We should expect to see a reduction in these types of complaints in next year's report as Chorus noted in its 2024 report it had resolved its labour shortage.

Figure 84: TDRS complaints and enquiries



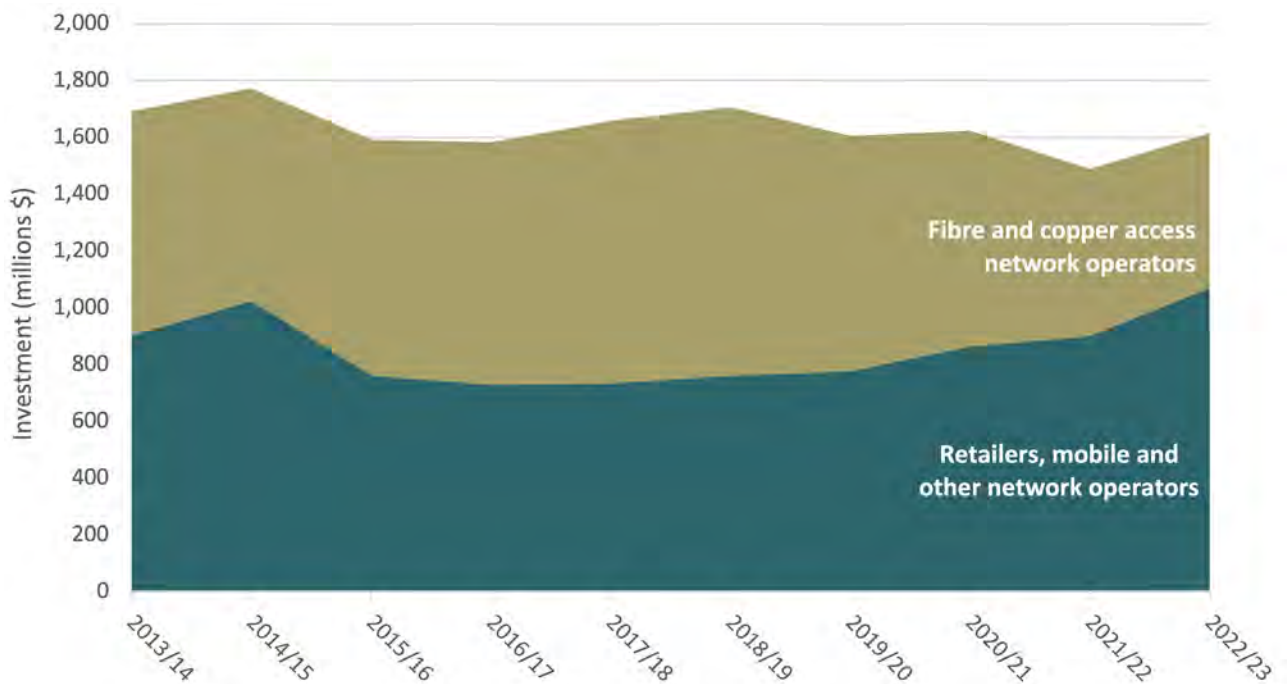
Source: TDR²⁰⁵

205. Based on TDR annual reports. Annual reports are accessible at <https://www.tdr.org.nz/resources/publications>

INVESTMENT HAUMITANGA

Figure 85 below shows that investment in the telecommunications industry has been heavily influenced by Chorus and the other LFCs over the last decade with the roll-out of the UFB programme. However, with the UFB roll-out being completed in December 2022, investment by Chorus and the other LFCs has begun to drop in the last few years as the programme wound down. The drop has been off offset by investment in other areas, with overall investment increasing by 8% to \$1.61 billion in 2023.

Figure 85: Telecommunications investment

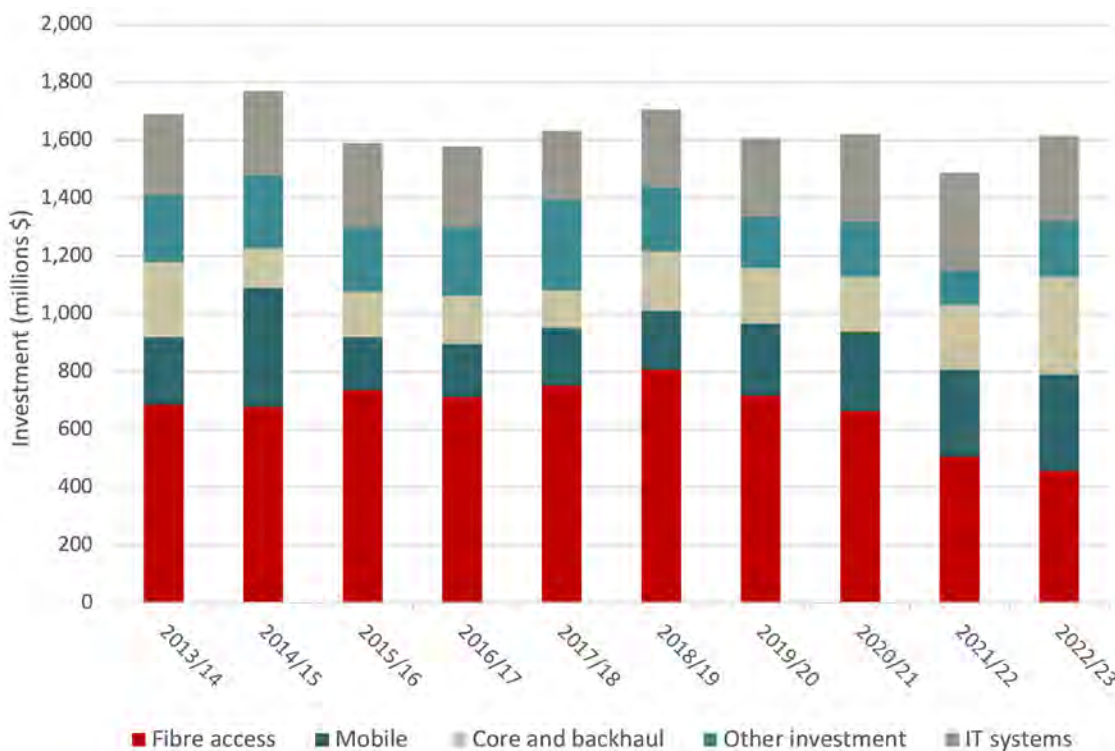


Source: Commission data

Figure 86 below shows investment broken down by each component. Investment in the fibre access network peaked in 2019 and has decreased every year since then. In 2023, investment in the fibre access network decreased by 10% to \$457 million, while investment in mobile networks increased by 10% to \$332 million. This increase in investment reflects the ongoing roll-out of the 5G mobile networks.

Investment in the core and backhaul network has increased by 51% from 2022 to \$339 million, while investment in IT systems decreased by 14% to \$295 million. Other investment, which includes copper access and spectrum investment, increased by 67% to \$191 million.

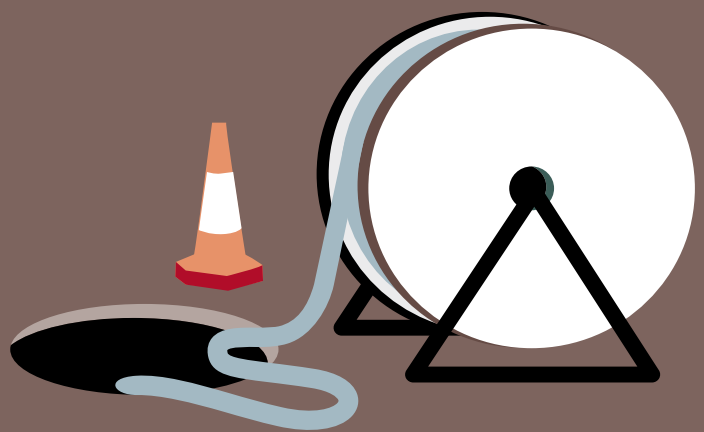
Figure 86: Investment by component



Source: Commission data

Market monitoring updates

Kōrero hou a
te mākete



Section 9A studies

Measuring Broadband New Zealand (MBNZ)

Our MBNZ programme aims to provide consumers with independent information on broadband performance across different technologies, providers, and plans to enable them to make confident and informed choices about their broadband.

Our quarterly MBNZ reports compare technologies across several measures, including download and upload speeds, latency, video streaming, social media, online gaming, and video conferencing performance.²⁰⁶

This year we have continued to work to expand the programme to cover more providers and services, with a focus on improving our coverage of 4G, 5G, and non-cellular wireless and satellite technologies, and of rural experiences.

In May 2023 we included LEO satellite results for the first time, and as shown in this report, we have seen LEO satellite performance continue to improve across most metrics throughout the year.

We are now able to provide more RSP splits in our reports, thanks to volunteer recruitment support from those RSPs. We are also reporting results for more geographic regions than we have previously been able to.

In April 2024, we published our first RealSpeed report,²⁰⁷ which compares measurements taken from the router with measurements taken on various devices being used in the home – such as laptops, TVs, tablets, and phones. The goal is to help consumers understand how their home set-up can impact the performance of their broadband connection within their home.

Router testing

We have been working with Consumer NZ to test the performance of different routers available on the market. This will compare devices supplied by service providers as well as common off-the-shelf options available for purchase in New Zealand. The results of Consumer NZ's router testing are due in late 2024.

Broadcasting transmission services

On 12 June 2024, we published a report on broadcasting transmission services in New Zealand.

The report measures key metrics on the broadcasting transmission services market structure in New Zealand, encompassing the key players, services, and infrastructure, and ongoing development of the market.

Given the ongoing disruptive market forces and emerging consequences, we must continue to monitor developments in both the demand and the supply side of the market, to assess whether further investigations into broadcasting transmission may be warranted.

206. MBNZ quarterly reports can be found at <https://comcom.govt.nz/regulated-industries/telecommunications/monitoring-the-telecommunications-market/monitoring-new-zealands-broadband/Reports-from-Measuring-Broadband-New-Zealand>

207. https://comcom.govt.nz/_data/assets/pdf_file/0031/348961/RealSpeed-Report-April-2024.pdf

Retail service codes and guidelines

In 2018, Parliament amended the Telecommunications Act 2001 to introduce Part 7: Consumer matters, aimed at improving retail service quality (RSQ). These new consumer provisions directed us to monitor RSQ and make information available in a way that informs consumer choice. Part 7 also empowered us to review industry RSQ codes, issue guidelines, and create Commission RSQ codes.

Product Disclosure – Retail Service Bundling Guidelines (Energy and Telecommunications Bundles)

On 22 November 2023, we published our Retail Service Bundling Guidelines for Energy and Telecommunications Bundles under section 234 of the Act. These guidelines set out our expectations concerning the bundling of energy and telecommunications services by RSPs.

The guidelines are intended to ensure that price and other key information relating to bundles is displayed clearly and transparently to allow consumers to make appropriate comparisons and fully informed choices.

Product Disclosure – Price, Cost, and Coverage Map Guidelines

On 14 December 2023, we issued two sets of draft Product Disclosure Guidelines for consultation.

The *Draft Retail Service Price and Cost Guidelines* cover the presentation of average price, total cost, early termination fees, and offer summaries. These guidelines apply to all providers of broadband and mobile services.

The *Draft Coverage Maps Guidelines* cover the presentation of coverage maps alongside mobile services. These guidelines apply to all providers of mobile services.

Both sets of draft guidelines are intended to address several issues faced by consumers that were identified in our Baseline Report and follow submissions made in response to the proposals for addressing these issues set out in our Emerging Views paper.

The Draft Retail Service Price and Cost Guidelines set out our expectations regarding the measures RSPs should implement to increase the transparency of retail service pricing and to aid the comparability of offers between RSPs. They include guidance on the introduction of a “monthly average price” as a reference price, the introduction of a standardised summary of total minimum costs, how early termination fees are to be treated, and the improvement of offer summaries.

The *Draft Coverage Map Guidelines* set out our expectations regarding the way mobile providers prepare and present coverage maps, to increase consumer awareness of the coverage they can expect, and their rights in the event of experiencing a material coverage issue.

We will publish both sets of final guidelines in 2024.

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