Mobile Market Environment Trends

Executive Summary

Domestic Mobile Market Trends (Australia)

The Australian mobile market is characterized by a highly concentrated, oligopolistic structure, dominated by Telstra, Optus, and TPG Telecom, which collectively control 89% of the market. Telstra leads with a 43% market share, while Optus and TPG Telecom follow with 29% and 17%, respectively. Mobile Virtual Network Operators (MVNOs) hold the remaining 11%, leasing network capacity from these major operators.[1]

5G expansion is a key trend, with all major operators aggressively deploying 5G infrastructure. Telstra aims to cover 95% of the population by 2025, which will further cement its market dominance. As a result, 5G subscriptions are expected to grow rapidly, reaching 82.5% of total mobile subscriptions by 2028, while 4G services will decline to 17.5%.[2]

The mobile subscription penetration rate in Australia is expected to rise from 157.7% in 2023 to 196.8% by 2028, driven by increased 5G adoption and smartphone use. Postpaid subscriptions continue to dominate, accounting for 76.6% in 2023 and projected to grow further, while prepaid subscriptions will decline to 17% by 2028.[3]

Revenue trends indicate that total telecom and pay-tv service revenue will grow from $18.9 billion in 2023 to $21 billion by 2028, mainly driven by mobile data and fixed broadband. Mobile data service revenue is projected to increase from $7.5 billion in 2023 to $10 billion by 2028, reflecting the rising demand for data-intensive services like streaming.[4]

Mobile Market Trends Summary

- **Australia**: The Australian mobile market is concentrated, with Telstra, Optus, and TPG Telecom collectively controlling 89% of the market. Telstra leads with a 43% market share, while Optus and TPG Telecom hold 29% and 17%, respectively. Aggressive 5G rollout is a key trend, with Telstra aiming for 95% population coverage by 2025, positioning itself as a 5G leader. Subscription penetration is projected to rise from 157.7% in 2023 to 196.8% by 2028, driven by 5G uptake and IoT adoption.
- **New Zealand**: Like Australia, New Zealand's market is oligopolistic, with One New Zealand (formerly Vodafone), Spark, and 2degrees dominating the market. 5G deployment currently focuses on urban centres, with coverage at 27% in 2023, while rural areas are served by 4G and government-supported connectivity programs. Mobile subscription penetration was 163.1% in 2023, expected to rise to 168% by 2028 due to continued smartphone uptake and multi-SIM ownership.
- **Canada**: Canada's market, controlled by Rogers, Bell, and Telus, reflects similar concentration, with the top three operators dominating the market. Rogers led in 5G coverage at 85% in 2023. Canada is seeing a steady increase in data usage, projected to

1 Australian Communications and Media Authority. (2024). Trends and developments in telecommunications 2023-24. Australian Government. p. 23

2 Australian Communications and Media Authority. (2024). Trends and developments in telecommunications 2023-24. Australian Government. p. 22.

3 GlobalData. (2024). Australian Telecom Operators: Country Intelligence Report Series (p.15)

4 GlobalData. (2024). Australian Telecom Operators: Country Intelligence Report Series p.16

surpass Australia with an average monthly consumption of 36.2 GB per user by 2028, driven by high data demand from applications and enterprise services.

> **UK**: The UK market is more competitive, with four major players—BT/EE, Vodafone, Virgin Media O2, and Three UK. The UK has made notable advances in 5G deployment, with coverage focusing on urban areas and an ambitious rural expansion plan under the Shared Rural Network initiative. Subscription penetration in the UK is projected to reach 164.8% by 2027, driven by increasing mobile and IoT connectivity.

Key Domestic and International Market Dynamics

> **5G Network Expansion:** Australia and Canada are aggressively expanding their 5G networks, targeting nationwide coverage. New Zealand focuses on urban 5G rollout, with gradual expansion into rural areas. The UK, a leader in advanced 5G tech like network slicing, supports rural coverage expansion through the Shared Rural Network initiative, targeting underserved regions.

> **Data-Centric Revenue Growth:** Data revenue surpasses voice services in all markets, led by Australia's projected increase from $7.5 billion in 2023 to $10 billion by 2028. Canada's data revenue will rise from $14.6 billion in 2023 to $21.7 billion by 2028, positioning it as a leader in mobile data monetization. The UK and New Zealand also see strong mobile data revenue growth, with New Zealand's increase driven by 5G adoption and higher mobile data demand.

> **Regional Connectivity Initiatives:** Australia's Better Connectivity Plan and New Zealand's Rural Broadband Initiative (RBI) prioritize expanding rural connectivity. Canada's regional focus includes private investment supported by regulatory measures for 5G coverage in underserved regions. The UK's Shared Rural Network and Project Gigabit aim to enhance rural access, with 5G rural coverage projected to reach 95% by 2027.

Comparison with International Markets

Similarities with New Zealand, Canada and the UK:

Oligopolistic Market Structure: Australia, New Zealand, and Canada have highly concentrated markets dominated by three major operators, with Telstra, Optus, and TPG in Australia; One New Zealand, Spark, and 2degrees in New Zealand; and Rogers, Bell, and Telus in Canada. The UK, although led by four operators—BT/EE, Vodafone, Virgin Media O2, and Three UK—shares a similar structure with limited competitive impact from smaller players and MVNO.[5]

5G Expansion and Urban Focus: All four markets are heavily invested in 5G infrastructure. Australia, Canada, and the UK have reached extensive urban 5G coverage, around 85% of the population as of 2023. New Zealand has focused its 5G rollout primarily in urban areas, with rural expansion gradually progressing.[6]

5 GlobalData. (2024). Australia Telecom Operators: Country Intelligence Report Series (p. 12); GlobalData. (2024). Canada Telecom Operators: Country Intelligence Report Series (p. 31); GlobalData. (2023). United Kingdom Telecom Operators, Country Intelligence Report Series (p. 16).

6 GlobalData. (2024). Australian Telecom Operators: Country Intelligence Report Series). (p. 17); GlobalData. (2023). United Kingdom Telecom Operators, Country Intelligence Report Series (p. 12); GlobalData. (2024). Canada Telecom Operators, Country Intelligence Report Series (p. 16).

Rising Data Usage: Mobile data consumption is increasing in all four markets, driven by the rapid uptake of 5G, widespread smartphone adoption, video streaming, and data-heavy applications. This trend is universal, with all countries experiencing a shift from traditional voice to data services as the primary revenue driver.[7]

Dominance of Postpaid Subscription: Postpaid services dominate in all markets, supported by bundled plans, larger data allowances, and IoT applications. This trend aligns with consumer preferences for data-centric plans and the growing use of multiple devices per user.[8]

Key Differences:

Mobile Subscription Penetration: Australia leads in projected mobile subscription penetration, expected to reach 196.8% by 2028, driven by aggressive smartphone and IoT adoption. In contrast, Canada is projected to have a penetration rate of 133.7% by 2028, with the UK at 164.8% by 2027 and New Zealand at 168% by 2028, reflecting less rapid growth in IoT and multi-SIM usage.[9]

Mobile Data Consumption Levels: Canada is projected to lead in per-user data consumption, reaching 36.2 GB per month by 2028. Australia follows with an estimated 27.7 GB, while the UK and New Zealand anticipate lower monthly usage at 16.1 GB and 12.2 GB, respectively. These differences indicate varying levels of consumer demand for high-bandwidth applications and data-intensive service.[10]

Revenue Trends: Revenue Growth Rates: Canada and the UK are seeing more robust mobile data revenue growth than Australia and New Zealand. Canada's mobile data revenue is projected to grow from $14.6 billion in 2023 to $21.7 billion by 2028, fueled by high ARPU and strong data demand. The UK follows a similar trend with growth in data-intensive applications, while Australia and New Zealand see moderate revenue increases, with New Zealand's mobile data revenue projected to rise from $858.1 million in 2023 to $1.1 billion by 2028.[11]

5G Network Slicing Technology: 5G Coverage and Advanced Technology Deployment: The UK is a leader in advanced 5G technologies, like network slicing, which supports specialized services for sectors such as healthcare, public safety, and smart cities. Canada is focusing on public safety applications and regional deployments. In Australia, rural coverage is primarily driven by initiatives like the Better Connectivity Plan, while New Zealand relies on the Rural Broadband Initiative to support rural connectivity with limited rollout of advanced 5G capabilities.[12]

In summary, the mobile markets in Australia, Canada, New Zealand, and the UK exhibit strong growth trends driven by 5G adoption, increasing data demand, and a shift towards data-centric revenue models. Australia and Canada lead in rapid 5G expansion and per-user data consumption, with Australia targeting nearly universal 5G coverage by 2025 and Canada

7 GlobalData. (2024). Australia Telecom Operators: Country Intelligence Report Series (p. 17); GlobalData. (2023). United Kingdom Telecom Operators: Country Intelligence Report Series (p. 14); GlobalData. (2024). Canada Telecom Operators: Country Intelligence Report Series (p. 16).

8 GlobalData. (2024). Australia Telecom Operators: Country Intelligence Report Series (p. 17); GlobalData. (2023). United Kingdom Telecom Operators: Country Intelligence Report Series (p. 14); GlobalData. (2024). Canada Telecom Operators: Country Intelligence Report Series (p. 16).

9 GlobalData. (2024). Australia Telecom Operators: Country Intelligence Report Series (p. 15); GlobalData. (2024). Canada Telecom Operators: Country Intelligence Report Series (p. 15); GlobalData. (2023). United Kingdom Telecom Operators: Country Intelligence Report Series (p. 12).

10 GlobalData. (2024). Australia Telecom Operators: Country Intelligence Report Series (p. 17); GlobalData. (2024). Canada Telecom Operators: Country Intelligence Report Series (p. 17); GlobalData. (2023). United Kingdom Telecom Operators: Country Intelligence Report Series (p. 16).

11 GlobalData. (2024). Canada Telecom Operators: Country Intelligence Report Series (p. 17); GlobalData. (2024). Australia Telecom Operators, Country Intelligence Report Series (p. 15); GlobalData. (2023). United Kingdom Telecom Operators, Country Intelligence Report Series (p. 12).

12 GlobalData. (2024). Canada Telecom Operators: Country Intelligence Report Series (p. 5); GlobalData. (2024). Australia Telecom Operators: Country Intelligence Report Series (p. 9); GlobalData. (2024). New Zealand Telecom Operators: Country Intelligence Report Series (p. 5); GlobalData. (2023). United Kingdom Telecom Operators: Country Intelligence Report Series (p. 12).

projecting the highest monthly data usage at 36.2 GB per user by 2028. The UK, though slightly more competitive with four major operators, advances in cutting-edge 5G applications like network slicing for speciailsed industries. New Zealand, while smaller, shows steady data revenue growth and focuses on urban 5G deployment, with rural connectivity supported through government initiatives. Across all four markets, mobile data revenue increasingly surpasses traditional voice services, underscoring a universal shift toward high-bandwidth applications, IoT growth, and consumer reliance on data-heavy mobile plans.

Current Mobile Market in Australia

Mobile Market Structure in Australia

Australia's mobile telecommunications market is highly concentrated and is dominated by three major national carriers:

> Telstra - the largest operator with approximately 43% market share.[13]

> Optus - the second largest with about 29% market share.[14]

> TPG Telecom (formerly Vodafone) - the third largest with around 17% market share.[15]

Together, these three mobile network operators (MNOs) control about 89% of the market.[16] The remaining 11% is held by mobile virtual network operators (MVNOs) that lease network capacity from the major carriers.[17]

Telstra, Optus, and TPG Telecom are the only operators with nationwide mobile network infrastructure. Together, they control most of the market share for mobile subscriptions, service offerings, and infrastructure investments. Smaller operators, called Mobile Virtual Network Operators (MVNOs), lease capacity from the networks owned by these three operators. MVNOs contribute to competition but rely on the infrastructure and spectrum controlled by Telstra, Optus, and TPG.

While MVNOs add some degree of diversity in service offerings, most of the market power, infrastructure control, and pricing dynamics are dominated by Telstra, Optus, and TPG Telecom. While MVNOs add some degree of diversity in service offerings, most of the market power, infrastructure control, and pricing dynamics are dominated by Telstra, Optus, and TPG Telecom.

There are multiple key drivers of market concentration in Australia:

> **Government Regulation and Deregulation:** The deregulation of the market in 1997 allowed competition but favored the established player, Telstra, which had a significant infrastructure advantage.

> **Mergers and Acquisitions:** The market consolidated due to key mergers like Vodafone and Hutchison (2009) and TPG and Vodafone (2020), reducing the number of major players.

13 Australian Competition and Consumer Commission, Communications market report, December 2023. 2022–2023, https://www.accc.gov.au/system/files/communications-market-report-2022-23.pdf, accessed 6 September 2024.

14 Ibid

15 Ibid

16 Ibid

17 Ibid

- **High Barriers to Entry:** The high cost of infrastructure and spectrum auctions made it difficult for new entrants to build independent networks, reinforcing the dominance of the Big Three.
- **Rural Coverage Dominance:** Telstra's extensive coverage, especially in rural and remote areas, has long cemented its market dominance, even as competition grew in urban areas.

The Australian telecom market including Australia's mobile telecommunications market, became more concentrated over several phases, particularly through key mergers, acquisitions, and regulatory developments that shaped the competitive landscape.

Throughout the early 2000s, Telstra, Optus, and Vodafone solidified their positions as the major mobile network operators (MNOs) in the Australian market. Smaller players and MVNOs began to emerge but leased their network capacity from these larger companies, maintaining the dominance of the Big Three. The merger of Vodafone and Hutchison 3G Australia (3 Mobile) in 2009 was one of the early signs of market consolidation. This merger allowed Vodafone to strengthen its position in the mobile market. TPG Telecom acquired iiNet and AAPT in the fixed-line market in 2015, marking its entry into the broader telecom landscape and setting the stage for future consolidation with Vodafone.

The major turning point in market concentration came with the 2020 merger of TPG Telecom and Vodafone. This merger significantly reduced the number of major MNOs from three to two, with Telstra and Optus being the main competitors, while the newly formed TPG/Vodafone emerged as the third player. This merger consolidated the Australian market further, as TPG became a more significant player with its mobile and broadband assets.

After the TPG-Vodafone merger, the market became even more concentrated with Telstra, Optus, and TPG Telecom (Vodafone) controlling much of the mobile market. MVNOs such as Amaysim, ALDI Mobile, and others lease network capacity from these dominant players, contributing to competition but not fragmenting the market significantly.

Mobile Subscription Market Share:

- **Telstra**: Leads the mobile segment with a 56.5% market share in 2023. This dominance is expected to continue due to its robust 5G expansion efforts. Telstra aims to cover 95% of the population with 5G by 2025.
- **Optus**: Competes closely with Telstra, focusing on expanding its 5G network and offering attractive postpaid plans like 500GB for AUD69/month.
- **TPG** Telecom: Also, a key competitor, planning to deploy 1,000 new 5G sites annually from 2023 to 2025.

Subscriber Trends:

The subscriber trends in mobile subscription penetration show a steady increase, primarily driven by smartphone usage and the rapid adoption of 5G technology. The key points to explain the steady increase in mobile subscription include:

Overall Mobile Subscription Penetration:[18] Mobile subscription penetration in Australia is expected to grow from 157.7% in 2023 to 196.8% by 2028. This growth is driven by:

18 Mobile phone penetration is a way of measuring mobile phone usage in a particular country. It is usually expressed as the ratio of SIM cards to the total population. This information is expressed as a percentage and can therefore exceed 100% if the number of SIM cards in the country is higher than the actual human population.

Handset Subscriptions: Handsets, particularly smartphones, remain the dominant device type for mobile subscriptions. In 2023, Australia had 25.2 million handset subscriptions, a figure that is expected to continue growing through 2028.

5G Subscriptions: The migration to 5G is one of the most significant trends. In 2023, 4G services accounted for 61.7% of total mobile subscriptions, but this figure is expected to drop to 17.5% by 2028. Conversely, 5G subscriptions will increase dramatically to make up 82.5% of total mobile subscriptions by 2028, as telecom operators expand 5G networks and offer promotional and discounted 5G plans.

M2M/IoT Subscriptions: These will grow from 12 million in 2023 to 23.5 million by 2028, driven by smart infrastructure projects like smart water meters and 5G expansions. M2M/IoT is supported by widespread rollouts and 5G network expansions in the country as well as a focus of operators and the government on driving M2M/IoT use cases.

Postpaid vs. Prepaid Subscriptions:

> Postpaid subscriptions: Accounted for 76.6% of total mobile subscriptions in 2023 and will remain the dominant category through 2028, fueled by M2M/IoT growth and attractive bundled plans from operators.

> Prepaid subscriptions: Accounted for 23.4% in 2023, but this share is expected to decline to 17% by 2028, reflecting the trend towards more postpaid services due to better postpaid offerings and discounts.

These trends underscore the increasing penetration of mobile services in Australia, with strong momentum towards 5G, M2M, and IoT, as well as the continued dominance of postpaid services .

Revenue Trends:

The overall revenue trend in the Australian telecom market shows steady growth, primarily driven by increased demand for mobile data and fixed broadband services, alongside a decline in legacy services like voice and pay-tv. Key aspects of the revenue trend include:

Total Telecom Revenue Growth:

Total telecom and pay-tv services revenue is expected to grow from $18.9 billion in 2023 to $21 billion by 2028, at a CAGR of 2.1%. This growth is largely supported by the mobile data and fixed broadband segments.

This growth rate in this range would generally be considered moderate, neither particularly high nor low compared to mature telecom markets in other developed countries.

Mobile Data Revenue:

Mobile data service revenue is the key driver of overall revenue growth, increasing from $7.5 billion in 2023 to $10 billion by 2028 at a CAGR of 5.9%. This is fueled by the rapid adoption of 5G and the growing demand for data-intensive services such as video streaming and online gaming.

Mobile Voice Revenue:

Mobile voice revenue is projected to decline, falling from $1.6 billion in 2023 to $1.5 billion by 2028, reflecting the shift of users toward Over-the-Top (OTT) communication apps like WhatsApp and Messenger for voice services, which reduces the reliance on traditional voice plans.

The CAGR for Mobile data service revenue declining from $1.8 billion in 2023 to $1.3 billion in 2028 is approximately -6.32% per year.

Fixed Broadband Revenue:

Fixed broadband revenue will also contribute to growth, increasing from $6.4 billion in 2022 to $7.1 billion in 2027, driven by growing subscriptions to fiber and fixed wireless services, thanks to ongoing network expansions, such as the National Broadband Network (NBN).

Fixed Voice Revenue:

Fixed voice services are expected to experience a significant decline in total percentage terms, with revenues dropping from $1.8 billion in 2023 to $1.3 billion in 2028, as users move away from traditional landlines to mobile and VoIP services.

Pay-Tv Revenue:

Pay-Tv service revenue is expected to decline, falling from $1.6 billion in 2023 to $1.2 billion by 2027, due to cord-cutting trends and the growing popularity of streaming services over traditional pay-tv packages like direct-to-home (DTH) and cable.

Key Drivers of Revenue Growth:

5G Adoption: The ongoing expansion of 5G networks is expected to boost both mobile data usage and revenue.

Increased Data Consumption: As mobile data consumption grows (with average monthly usage rising from 14GB in 2023 to 27.7GB in 2028), the demand for larger data plans is driving revenue growth.

Fixed Broadband: Revenue from fixed broadband will continue to rise due to increased adoption of fiber and fixed wireless services, benefiting from infrastructure developments like NBN.

In summary, mobile data and fixed broadband are the primary revenue growth drivers in the Australian telecom market, while legacy services like voice and pay-tv will experience a decline

Monthly mobile data usage

The trends in monthly mobile data usage show a significant increase driven by higher consumption of video streaming and social media content on smartphones. Key points include:

Data Usage Growth: Monthly mobile data usage is expected to increase from 14GB per month in 2023 to 27.7GB per month by 2028. This growth is largely fueled by a surge in consumption of online video, social media, and other data-heavy services.

Influence of 5G: The rollout and expansion of 5G networks by operators such as Telstra, Optus, and TPG Telecom are a major driver of increased data consumption. 5G offers faster speeds and higher bandwidth, encouraging more data-intensive activities like HD video streaming, gaming, and IoT applications.

Promotional Data-Centric Plans: Mobile Network Operators (MNOs) are offering discounted and data-centric plans to attract more customers. For instance, Telstra's plan offers 400GB of mobile data for AUD90 per month, with additional perks such as free access to streaming services like Foxtel Now and Binge.

Data Traffic Growth: Along with individual data usage, overall mobile data traffic will grow from 6.6 million TB in 2023 to 17.2 million TB in 2028, reflecting the increasing number of data users and the higher data consumption per user.

These trends highlight a robust shift toward heavier data use per user, driven by the adoption of 5G and the popularity of data-heavy services like streaming and online gaming.

Mobile Plan Costs

The trends in mobile plan costs in Australia reflect a competitive market with a focus on 5G data services and promotional offers, which are driving down the average revenue per user (ARPU) despite growing data consumption. Key trends include:

General Cost Trends:

Decline in ARPU: Both postpaid and prepaid ARPUs (Average Revenue Per User) are expected to decline over the next few years, mainly due to competitive pricing, bundled offers, and heavy discounting by telecom operators.

Postpaid ARPU is projected to drop from $20.22 in 2023 to $19.13 in 2028.

Prepaid ARPU will fall from $14.16 in 2023 to $12.35 in 2028.

Promotional and Discounted Plans: Many operators are offering promotional and discounted plans to attract new customers. For instance, TPG Telecom offers a 50% discount on prepaid plans for the first six months, contributing to the decline in prepaid ARPU.

Postpaid Plan Trends:

Postpaid services dominate the market, accounting for 76.6% of total mobile subscriptions in 2023, and this share will continue to grow. Operators offer attractive bundles and data-heavy plans to lure customers.

Optus, for example, offers 500GB of data for AUD69/month with entertainment add-ons, including three months of Amazon Prime and discounts on Optus Sport.

Telstra offers plans like 400GB of data for AUD90/month, bundled with additional perks like free access to Foxtel Now and Binge streaming services.

Prepaid Plan Trends:

Prepaid services are declining in share, expected to fall from 23.4% in 2023 to 17% by 2028, but they remain popular with budget-conscious consumers.

Promotions such as 50% discounts for the first few months are common, especially from players like TPG Telecom, making prepaid plans highly competitive but contributing to lower ARPU.

Impact of 5G Plans:

5G-specific plans are driving higher data consumption but often come with competitive pricing to encourage adoption. Operators are incentivizing 5G adoption through discounted introductory offers and bundled services.

For example, Telstra, Optus, and TPG Telecom are all offering promotional prices and larger data allowances in 5G plans to encourage migration from 4G.

Data-Centric Plans:

As data usage continues to increase, plans are becoming increasingly data-centric, with many operators offering large data allowances at relatively low prices.

Plans like Telstra's 400GB for AUD90/month and Optus' 500GB for AUD69/month are examples of how operators are shifting the focus to data-heavy offerings, especially as video streaming and online gaming drive data consumption.

Bundled Services and Perks:

Bundling services with mobile plans is another major trend. This includes offering additional perks like free streaming subscriptions, discounts on partner services, and value-added services (e.g., entertainment or sports content) to make plans more attractive.

Price Increases by Major Operators:

The three national mobile network operators (Telstra, Optus, and TPG Telecom) have increased the prices of their flagship post-paid mobile plans. This includes both general price hikes and increases for customers moved off legacy plans onto newer plans.

Reduction in Plan Offerings:

There has been a reduction in the number of pre-paid plans offered by operators, which can limit consumer choice and potentially drive-up prices for remaining plans.

Introduction of Speed Caps

Some operators have introduced speed caps on pre-paid plans, which can affect the perceived value of these plans and justify price increases.

'More for More' Pricing Strategy

The price increases are often coupled with increases in data allowances, special discounts, or rewards programs, suggesting a 'more for more' pricing strategy. However, the data allowances offered are often well above the average monthly data usage by consumers, which may not be valued by all users.

Inflation and Cost Adjustments:

Some price increases are linked to inflation and cost adjustments, such as the Consumer Price Index (CPI).

These factors collectively contribute to the rising costs of mobile plans in Australia.

In summary, while mobile plan costs are generally declining due to heavy competition and discounts, there is a clear trend toward data-heavy and bundled offerings, especially in postpaid plans. This reflects the growing importance of data consumption, driven by 5G adoption, streaming, and other data-centric activities

Network Coverage and Technology

The status of network coverage in Australia is evolving, with a significant focus on expanding 5G networks across the country. Here are the key trends and details regarding network coverage:

5G Network Expansion:

Telstra:

Telstra has the most extensive 5G network in Australia, covering more than 85% of the population by 2023.

It aims to expand this coverage to 95% of the population by the end of 2025. Telstra’s investment in 5G is part of its broader strategy to maintain leadership in the mobile market by offering superior network quality and coverage.

Optus:

Optus is actively expanding its 5G network, positioning itself as a strong competitor to Telstra. It offers a variety of postpaid and data-centric plans to attract customers to its growing 5G services.

Optus continues to enhance its network in metropolitan and regional areas, with a strong emphasis on promotional offers tied to its 5G services.

TPG Telecom (including Vodafone):

TPG Telecom has also committed to expanding its 5G coverage by deploying 1,000 new 5G sites each year from 2023 to 2025. The focus is on urban areas and selected regional locations, aiming to close the gap with Telstra and Optus in terms of coverage.

4G and Legacy Networks:

While 5G is rapidly expanding, 4G coverage remains significant, accounting for 61.7% of total mobile subscriptions in 2023. However, this share is expected to decline to 17.5% by 2028 as more users migrate to 5G.

3G networks are being gradually phased out as operators focus on upgrading their infrastructure to 5G, particularly in urban centers and high-density areas.

Regional and Rural Coverage:

Network coverage in rural and remote areas continues to improve, although it remains a challenge compared to urban regions. Telstra, being the leader in rural network coverage, is particularly focused on expanding its services to less populated areas, making it the preferred provider in many remote parts of Australia.

Optus and TPG Telecom also have plans to increase coverage in regional areas, although their focus remains predominantly on major cities and towns.

Fixed Broadband and Fiber Network Expansion:

In addition to mobile networks, there is ongoing investment in fixed broadband and fiber networks. Telstra is expanding its fiber optic network, adding 20,000 km of new route sheaths by 2027 to enhance connectivity across the country, including underserved areas.

Impact of 5G on IoT and M2M:

The rollout of 5G is also boosting the development of M2M (Machine-to-Machine) and IoT (Internet of Things) services, which are expected to grow significantly in both urban and rural areas due to enhanced network capabilities and coverage.

In summary, Australia's network coverage is robust, with a clear focus on 5G expansion, especially by Telstra, Optus, and TPG Telecom, while 4G coverage still plays a significant role. Rural and regional areas are seeing gradual improvements, but urban centers remain the primary focus of the 5G rollout

Regulatory Environment

The industry is regulated by the Australian Communications and Media Authority (ACMA) and the Australian Competition and Consumer Commission (ACCC). Key regulatory developments include:

> The 2024 Regional Telecommunications Review, examining telecommunication needs in regional, rural, and remote communities.

> Consideration of options to modernize universal telecommunications services.

> Updates to the Telecommunications in New Development (TIND) policy, requiring developers to consider mobile coverage in new developments.

Telstra and TPG proposed regional network sharing arrangement opposed

In February 2022, Telstra and TPG entered into agreements The terms of the sharing agreement between Telstra and TPG involved a Multi-Operator Core Network (MOCN) commercial arrangement.

The terms of the sharing agreement between Telstra and TPG involved a Multi-Operator Core Network (MOCN) commercial arrangement. Under this agreement, Telstra would share its Radio Access Network (RAN) with TPG to supply 4G and 5G services in certain regional and urban fringe areas, covering around 17% of the Australian population. TPG would authorize certain spectrum it owns, which is unutilized or underutilized, to Telstra in these areas, allowing the spectrum to be pooled and made available to both companies. The initial term of the MOCN Agreement is 10 years, with TPG having two options to extend the agreement by 5 years each.

In December 2022, the ACCC decided not to authorise Telstra and TPG's proposed regional network sharing arrangement. The ACCC noted some potential benefits arising from the arrangement but considered that the arrangements would likely lead to less competition over the longer term. The ACCC also considered that Telstra controlling more spectrum, a critical input for mobile networks, would entrench Telstra's dominant position in the mobile market. In June 2023, the Australian Competition Tribunal affirmed the ACCC's decision not to grant authorisation for the proposed network sharing arrangements between Telstra and TPG.

The key points raised by the ACCC:

> The ACCC expressed the view that competition in the market for mobile roaming services varies by geographic area. In areas only served by Telstra, competition may not be effective. In areas served by both Telstra and Optus, the competitiveness of the market is unclear, though there should be commercial incentives to provide mobile roaming services. In areas served by three Mobile Network Operators (MNOs), the market for wholesale mobile roaming services is likely to be competitive. Additionally, the ACCC noted that removing geographic coverage as a point of differentiation could reduce competitive dynamics, as superior network coverage is a result of competitive market dynamics.

> 5G technology is strategically important as it represents a critical focus of competition in the mobile telecommunications market. It enables enhanced mobile broadband services, reliable low-latency connections, and mass machine communications, which are crucial for improving productivity and service delivery. The availability and deployment of 5G technology are key competitive factors, with operators investing significantly to upgrade their networks to 5G, indicating its importance for future competitiveness and service offerings.

> Spectrum scarcity is a significant issue as spectrum is a finite resource and a key strategic asset for Mobile Network Operators (MNOs). The amount of spectrum held by an operator directly impacts the capacity and speed achievable by mobile sites, providing cost advantages over increasing mobile site density. Efficient use of spectrum can reduce the need for capital investment in physical infrastructure, particularly in regional areas where site costs are high.

- Infrastructure investment is crucial for maintaining competitiveness, especially in a three-player market where maintaining scale is important to offset high capital costs. The rollout of 5G networks involves significant investment, and operators like Optus and TPG face additional costs due to the need to replace existing Huawei equipment, which poses a commercial impediment.
- Consumer perceptions of network quality and capability are vital in driving market competition. The perceived benefits of 5G, such as faster speeds and improved service outcomes, influence consumer decisions and brand perception, making it a critical area for MNOs to focus on.

Telstra and TPG appealed to the Australian Competition Tribunal (ACT) under s 101 of the Competition and Consumer Act 2010 (Cth) for a review of the decision made by the ACCC.

In June 2023, the ACT dismissed the applicants review of the ACCC determination not to authorize the network sharing arrangement entered between Telstra and TPG Limited in respect of regional areas of Australia primarily due to concerns about its potential anti-competitive effects.

The ACT found that the proposed transaction could substantially lessen competition in the telecommunications market, particularly by weakening Optus's competitive position. This reduction in competition could lead to higher prices, reduced investment in network infrastructure, and diminished service quality for consumers. The Tribunal also noted that there were alternative arrangements that could be negotiated between the parties that might not have the same anti-competitive effects.

The Tribunal raised several key points to support its decision to dismiss the application for the proposed transaction between Telstra and TPG:

Anti-competitive Effects: The Tribunal was concerned that the transaction would substantially lessen competition in the telecommunications market, particularly by weakening Optus's competitive position. This could lead to higher prices, reduced investment in network infrastructure, and diminished service quality for consumers.

Alternative Arrangements: The Tribunal noted that there were alternative arrangements that could be negotiated between the parties that might not have the same anti-competitive effects. It suggested that mutually beneficial arrangements could be made without including the spectrum or site components to the same extent, or by reducing the geographic area covered by the MOCN service.

Public Benefits vs. Detriments: While the transaction promised certain public benefits, such as improved service quality and increased competition, the Tribunal concluded that these benefits did not outweigh the potential detriments to competition.

Bargaining Power: The Tribunal highlighted that if the transaction did not proceed, Optus would be the only Mobile Network Operator (MNO) with which TPG could potentially negotiate a network sharing deal, which could increase Optus's bargaining power.

These points collectively led the Tribunal to conclude that the transaction was not in the public interest and should not be authorized.

Optus Mobile Pty Ltd and TPG Telecom Limited proposed network and spectrum sharing.

In July 2024, Optus and TPG Telecom Limited (**TPG**) announced they have entered into three interrelated agreements in respect of a Multi-Operator Core Network (**MOCN**) commercial arrangement: a MOCN Services Agreement, a Spectrum Authorisation Agreement and a Site Transfer Agreement. The MOCN Services Agreement is for a period of 11 years, with a five-year option for TPG to extend the term. Telstra and TPG sought authorisation from the ACCC for Telstra's use of TGPG's spectrum licenses pursuant to the Spectrum Authorisation Agreement which was deemed an acquisition within the meaning of section 50 of the Competition and Consumer Act.

Broadly, the Proposed Arrangement involved TPG authorising Optus to use spectrum which it currently owns, and Optus providing TPG with network services by way of active mobile network infrastructure sharing in certain regional areas, which comprise of the Australian population coverage between 81.6% and 98.4%. TPG will use the MOCN services supplied by Optus to offer 4G and 5G retail and wholesale services in the Coverage Area. TPG will also transfer several of its existing mobile sites in the Coverage Area to Optus, with an initial list of 129 TPG sites having been identified for transfer. TPG intends to decommission the remainder.

On 5 September 2024, ACCC announced it would not oppose the proposed arrangements.

Government Initiatives

The Australian government is actively supporting telecommunications development:

> The Better Connectivity Plan, providing over $1.1 billion to improve connectivity in rural and regional areas.[19]

Comparative Analysis with International Markets

Australia and Canada

This comparison highlights how both countries are moving towards increased data consumption, driven by 5G adoption, while traditional voice services decline. However, Australia has a higher mobile penetration rate and M2M/IoT adoption, whereas Canada's revenue growth and data usage trends are projected to be more robust over the next few years.

Key Similarities:

Oligopolistic market structure: Both countries are dominated by three key players, with intense competition focused on network quality and service differentiation.

5G Network Expansion: Both Canada and Australia are heavily investing in 5G infrastructure, with similar levels of coverage (85% in 2023).

[19] Australia's Connected Future, Public Sector Network, https://publicsectornetwork.com/insight/australias-connected-future, accessed 6 September 2024.

Subscription Penetration Growth: Both countries are experiencing increasing mobile subscription penetration driven by 5G and IoT/M2M growth.

Data Usage and Revenue Trends: Both markets are seeing rising mobile data consumption and declining voice usage, with data revenues projected to grow, while voice revenues shrink.

Key Differences:

Penetration Rates: Australia's mobile subscription penetration is much higher than Canada's, with more aggressive growth in smartphone and 5G adoption.

Mobile Data Usage: While both countries show a strong increase in data usage, Canada's per-user data consumption will overtake Australia's by 2028.

Revenue Growth: Canada's mobile data revenue is higher and growing faster compared to Australia, reflecting a larger market for data services.

M2M/IoT Subscriptions: Australia has a larger M2M/IoT subscriber base, driven by smart infrastructure projects, though both countries are seeing strong growth in this area.

This comparison highlights how both countries are moving towards increased data consumption, driven by 5G adoption, while traditional voice services decline. However, Australia has a higher mobile penetration rate and M2M/IoT adoption, whereas **Canada's** revenue growth and data usage trends are projected to be more robust over the next few years

Comparison of key mobile market indicators in Canada and Australia

Indicator	Canada	Australia	Similarities	Differences
Mobile Market Structure	Oligopolistic, dominated by Rogers, Bell, and Telus.	Highly concentrated, dominated by Telstra, Optus, and TPG Telecom.	Both markets are dominated by three major players.	Telstra has a larger market share (43%) compared to Rogers (31.3%).
5G Network Expansion	Rogers' 5G covered 85% of the population in 2023, Bell's 5G+ at 51%.	Telstra's 5G covered 85% of the population in 2023, aiming for 95% by 2025.	Both countries have similar 5G coverage levels (85%).	Telstra is aiming for higher coverage (95%) by 2025.
Mobile Subscription Penetration	114.5% in 2023, expected to rise to 133.7% by 2028, driven by M2M/IoT growth.	157.7% in 2023, expected to rise to 196.8% by 2028, driven by smartphone and 5G adoption.	Both countries are experiencing rising subscription penetration.	Australia's penetration is much higher than Canada's.
M2M/IoT Subscriptions	6.8 million in 2023, growing to 13.9 million by 2028	12 million in 2023, growing to 23.5 million by 2028 (driven by	Both markets show strong growth in	Australia has more M2M/IoT subscriptions.

	(15.3% CAGR).	smart infrastructure).	M2M/IoT adoption.	
Mobile Data Usage	8.1 GB per month in 2023, expected to rise to 36.2 GB per month by 2028.	14 GB per month in 2023, expected to rise to 27.7 GB per month by 2028.	Both countries are seeing rising data consumption.	Canada's data usage will surpass Australia's by 2028.
Mobile Voice Usage	349 minutes per month in 2023, declining to 273 minutes by 2028.	Mobile voice usage is declining, with users switching to OTT services like WhatsApp.	Both markets show a decline in traditional voice usage.	Trends are similar.
Revenue Trends (Mobile Data)	$14.6 billion in 2023, rising to $21.7 billion by 2028 (8.2% CAGR).	$7.5 billion in 2023, rising to $10 billion by 2028 (5.9% CAGR).	Strong growth in mobile data revenue for both.	Canada's mobile data revenue is higher and growing faster.
Revenue Trends (Mobile Voice)	$3.1 billion in 2023, declining to $1.4 billion by 2028 (-14.4% CAGR).	$1.6 billion in 2023, declining to $1.5 billion by 2028.	Decline in voice revenues in both countries.	Similar decline, but Canada's decline is more pronounced.
Postpaid vs. Prepaid Subscriptions	Postpaid accounts for 92.2% in 2023, growing due to M2M/IoT growth.[20]	Postpaid dominates with 76.6% share, expected to grow further due to bundled plans and 5G.[21]	Postpaid dominance in both markets.	Australia sees more competitive prepaid promotions (e.g., TPG's 50% discount).
Mobile ARPU	CAD 46.12 in 2023, declining to CAD 46 in 2028 (slight decrease).	ARPU expected to decline slightly due to competitive pricing and bundling offers.	ARPU is declining slightly in both markets.	Similar decline; pricing strategies differ slightly.

[20] The dominance of postpaid plans in Canada is primarily driven by the strong business adoption, M2M/IoT growth, heavily subsidized smartphone offers, and the market structure that favors postpaid contracts. Canada's mobile market is dominated by three major players (Rogers, Bell, and Telus), and there is less competition from Mobile Virtual Network Operators (MVNOs) compared to Australia. The Canadian operators have structured their offerings to prioritize postpaid plans, with postpaid often being the default choice for new customers.

[21] In Australia, the prepaid market is more competitive due to the presence of several MVNOs offering budget-friendly, no-contract prepaid plans, making prepaid a more viable option for cost-conscious consumers.

Mobile Market Structure in Canada

The mobile phone market structure in Canada is primarily oligopolistic, with a few large operators dominating the market. The market is dominated by a few key players—Rogers, Bell, and Telus—who control most subscriptions. Their dominance is supported by their vast infrastructure investments, 5G expansion, and customer service differentiation, regulatory approvals, and extensive partnerships.

Canada's mobile market is influenced by regulatory actions to ensure fair access to spectrum for 5G development. This encourages ongoing investment in expanding network infrastructure.

Although the market is dominated by a few players, there is still intense competition, particularly in terms of:

5G network development and expansion into new services such as IoT and enterprise solutions.

Innovative solutions such as network slicing, smart city technologies, and cloud-based AI applications.

The major operators are heavily focused on rolling out 5G networks, with a growing emphasis on services like smart cities, IoT, and enterprise solutions.

Rogers led with 85% 5G coverage of the population in 2023, and Bell followed with 51% coverage of its 5G+ network. These operators continue to expand their network footprints, including efforts to cover more remote areas.

Market share

Market share and trends across various categories related to Canada's mobile subscription and usage landscape

Category	2023	2028 (Forecast)	CAGR/Trend
Mobile Subscription Penetration	114.5%	133.7%	Increasing, supported by M2M/IoT connections
Handset Subscriptions	37.5 million	Slight growth expected	Driven by 1% CAGR population growth
M2M/IoT Subscriptions	6.8 million	13.9 million	15.3% CAGR
Mobile Data Usage (per user)	8.1 GB per month	36.2 GB per month	Increasing due to higher video and social media consumption
Data Traffic	4.1 million TB	23.3 million TB	Strong increase driven by streaming and gaming
Mobile Voice Usage	349 minutes per month	273 minutes per month	Declining, shift to OTT communication
Mobile Market Share (Rogers)	31.3%	N/A	Leading in mobile segment due to 5G investment
Mobile Market Share (Bell)	28.9%	N/A	Close competitor, also focused on 5G expansion

Revenue trends

The overall market will experience strong growth in data services while traditional voice services will shrink, reflecting the broader global trend of declining voice usage and increasing data demand.

Category	2023	2028 (Forecast)	CAGR/Trend
Mobile Data Revenue	$14.6 billion	$21.7 billion	8.2% CAGR – Increasing due to the growth of 4G/5G subscriptions and larger data plans.
Mobile Voice Revenue	$3.1 billion	$1.4 billion	Negative 14.4% CAGR – Declining as users switch to OTT voice communications.

The growth in mobile data revenue is driven by the rising number of 4G and 5G subscriptions and the increasing popularity of mobile data plans with larger data allowances.

Mobile data revenue is expected to rise steadily, driven by the increasing demand for data due to higher mobile data usage, as well as the adoption of 4G and 5G plans.

Mobile voice revenue will see a significant decline as more consumers migrate to over-the-top (OTT) The main driver of this decline is that more users are moving to OTT communication platforms (e.g., WhatsApp, Messenger, Zoom), which allow them to make voice calls via data services, reducing the demand for traditional mobile voice plans.

The blended ARPU in Canada is expected to remain relatively stable, decreasing slightly from CAD 46.12 in 2023 to CAD 46 in 2028, due to the rise of lower ARPU IoT/M2M connections.

Monthly mobile data usage

Trends in monthly mobile data usage based on the provided data:

Category	2023	2028 (Forecast)	CAGR/Trend
Monthly Data Usage	8.1 GB per month	36.2 GB per month	Significant increase, driven by higher video consumption, social media, and mobile plans with larger data allowances.
Total Data Traffic	4.1 million TB	23.3 million TB	Strong growth, supported by streaming platforms, online gaming, and HD content consumption.

Key Drivers:

Rising consumption of video content: Online video, especially HD and streaming platforms, are major contributors to increasing data usage.

Growth in social media engagement: Users are spending more time on social platforms, further boosting mobile data consumption.

More generous mobile data plans: Mobile operators are offering larger data plans, encouraging users to consume more data.

Overall, data usage is projected to grow significantly over the next five years, with mobile operators providing plans that meet the rising demand for high bandwidth applications (Canada).

Subscriber trends in mobile subscription penetration

Category	2023	2028 (Forecast)	CAGR/Trend
Mobile Subscription Penetration	114.5%	133.7%	Increasing, driven by rising Machine-to-Machine (M2M) and Internet of Things (IoT) connections.
Handset Subscriptions	37.5 million	Slight growth expected	Growth supported by population increase (1% CAGR) and organic growth in mobile connections.
M2M/IoT Subscriptions	6.8 million	13.9 million	Strong growth at 15.3% CAGR, driven by increased adoption of M2M/IoT services by businesses and industries.

Key Trends:

Overall mobile subscription penetration is expected to increase from 114.5% in 2023 to 133.7% in 2028, reflecting an overall rise in the number of mobile connections.

Handset subscriptions are projected to grow modestly, reflecting organic growth tied to population increases.

M2M/IoT subscriptions are forecasted to grow significantly, with businesses adopting more connected solutions for industries such as fleet management, smart cities, and telehealth.

This growth is supported by Canada's strong mobile network infrastructure and ongoing investment in 5G and IoT capabilities (Canada).

Future Trends in Network Coverage (2023-2028):

5G network coverage in Canada is expanding rapidly, driven by investments from the major operators and supported by regulatory efforts to ensure spectrum availability. The focus on extending coverage to rural areas and adopting new technologies like network slicing and satellite integration will improve overall connectivity across the country. As a result, Canada's mobile network coverage is expected to become more comprehensive, with a particular emphasis on improving service in underserved regions.

- **5G Expansion**: The major operators (Rogers, Bell, and Telus) are investing heavily in 5G infrastructure, and coverage is expected to expand rapidly. This includes further development in urban areas and extending services to more remote and rural regions.
- **Focus on IoT and Smart Cities**: Both Rogers and Bell are investing in IoT solutions and smart city technologies, which will further drive network expansion in metropolitan and underserved regions. For example, Rogers is rolling out 5G-powered AI cameras and smart traffic sensors in cities like Toronto to tackle congestion.
- **Rural and Remote Area Coverage**: There is a growing emphasis on providing 5G services in rural and remote areas. Telus, for instance, is working with satellite providers to improve mobile connectivity in hard-to-reach areas.

Technological Enhancements:

Network Slicing:

Rogers is pioneering network slicing technology, which allows virtual network slices for specific applications (e.g., public safety), enabling dedicated and reliable network performance for critical services.

Satellite Integration:

Telus has been collaborating with satellite technology providers to provide coverage in areas where traditional cellular networks are less accessible, indicating a trend toward filling coverage gaps through satellite services.

Key Drivers of Network Expansion:

Regulatory Support:

The Canadian government and regulators are ensuring that operators have access to 5G spectrum, which supports ongoing investment in network infrastructure.

Competitive Pressure:

The competitive dynamics among Rogers, Bell, and Telus are driving accelerated investment in network expansion and enhancement to maintain or increase market share.

Mobile Plan Costs (2023-2028):

The cost of mobile plans in Canada is expected to remain relatively stable over the forecast period, with a slight decline in blended ARPU in local currency (CAD). However, in USD terms, ARPU will rise slightly due to currency appreciation. The trend is driven by the growth of lower-ARPU IoT/M2M connections and discounts on postpaid data plans (Canada).

Blended ARPU (Average Revenue Per User):

> In 2023, the blended ARPU in Canada was CAD 46.12.

> By 2028, this is expected to decline slightly to CAD 46.

In USD Terms:

The blended ARPU expressed in USD will marginally increase from $34.29 in 2023 to $35.83 in 2028, mainly due to the gradual appreciation of the Canadian dollar against the US dollar over the forecast period

Drivers of Cost Trends:

IoT/M2M Connections:

The increase in IoT/M2M connections, which generally have lower ARPU, is contributing to a slight decline in blended ARPU.

Discounted Data Plans:

Mobile operators are increasingly offering discounted postpaid data plans in bundles or for additional mobile lines. For instance, Rogers offers CAD80 ($60.2) per month for a plan with 150 GB of data at speeds up to 1 Gbps, with the option to add additional lines for CAD70 ($52.7) each.

Data Plans with Larger Allowances:

Operators are promoting plans with larger data allowances to meet the rising demand for mobile data driven by increased video consumption, social media use, and streaming. These larger

plans are becoming more popular, which contributes to the stabilization or slight decline in ARPU despite rising data usage.

Australia and New Zealand

While both New Zealand and Australia share several trends, such as high mobile subscription penetration, growing data usage, and continued 5G expansion, there are clear differences in the scale and speed of adoption of new technologies. Australia has larger overall market size, faster 5G rollout, and higher data usage per user, driven by its more aggressive 5G deployment and higher IoT adoption. New Zealand, with a smaller market, is trailing behind in data consumption and 5G coverage but maintains a higher ARPU due to less competition and a more stable market environment.

Key Similarities:

Oligopolistic Market Structure: Both markets are dominated by three major operators: New Zealand: One New Zealand (formerly Vodafone), Spark, 2degrees.Australia: Telstra, Optus, TPG Telecom. These operators control most of the mobile market in their respective countries, and both countries have limited MVNO (Mobile Virtual Network Operator) competition.

5G Network Expansion: Rapid 5G rollout is underway in both countries, with major operators investing heavily in 5G infrastructure, especially in urban areas. The focus on expanding rural coverage is also present in both New Zealand and Australia, though urban areas are prioritized for initial 5G deployment.

Growth in Data Consumption: Both countries are experiencing rising mobile data usage, driven by high-bandwidth activities like video streaming and social media. Mobile data consumption continues to grow significantly, supported by the expansion of 5G networks, which provide higher speeds and lower latency.

Increasing Mobile Subscription Penetration: Both markets exhibit high mobile subscription penetration rates, with multiple SIM card ownership contributing to higher-than-population penetration rates. Australia has a slightly higher penetration rate, but the overall trend in both markets is toward continued growth in subscriptions.

Mobile Data Revenue Growth: Revenue from mobile data services is growing in both markets as operators monetize increased data usage. While both countries are seeing a shift from traditional voice services to data services, 5G-enabled services are driving higher mobile data revenue.

Key Differences:

5G Coverage: Australia leads in 5G network coverage, targeting 95% population coverage by 2025. New Zealand, by contrast, had 27% coverage in 2023, primarily focusing on urban areas. While both countries are expanding coverage, Australia is significantly ahead in rural and total population coverage projections.

Mobile Subscription Penetration Rates: Australia had a higher penetration rate of 157.7% in 2023, projected to rise to 196.8% by 2028, reflecting aggressive smartphone adoption and multi-SIM ownership. New Zealand had a slightly lower penetration rate of 163.1% in 2023, with slower growth projections (168% by 2028).

Monthly Mobile Data Usage: Australia has higher average data usage per user, with 14 GB per month in 2023, projected to rise to 27.7 GB by 2028. New Zealand, in comparison, had 6.5 GB

per user in 2023, and this is expected to increase to 12.2 GB by 2028. Australia's heavier data usage reflects broader 5G availability and a larger base of data-intensive services.

M2M/IoT Subscriptions: Australia has more aggressive growth in M2M/IoT (Machine-to-Machine/Internet of Things) services, with 12 million M2M/IoT subscriptions in 2023, projected to grow to 23.5 million by 2028. New Zealand lags, with lower M2M/IoT adoption, and less aggressive growth projections in this area due to its smaller market size and lower industrial-scale IoT demand.

Mobile Data Revenue: Australia's mobile data revenue is much higher, reflecting the size and maturity of the market. In 2023, Australia's mobile data revenue was around $7.5 billion, projected to grow to $10 billion by 2028. New Zealand, with a smaller population and market, had mobile data revenue of $858.1 million in 2023, expected to rise to $1.1 billion by 2028.

ARPU (Average Revenue Per User): Australia has a lower ARPU than New Zealand, primarily because of the higher number of subscribers and more intense competition. Australia's ARPU was AUD 20.22 in 2023, decreasing slightly to AUD 19.13 by 2028. New Zealand had an ARPU of NZD 26.44 in 2023, projected to increase to NZD 27.41 by 2028. This indicates that New Zealand's market is generating slightly higher revenue per user compared to Australia.

Comparison of key mobile market indicators in New Zealand and Australia

This table provides a comparison of key mobile market indicators between New Zealand and Australia, highlighting their similarities and differences across various factors like market structure, 5G expansion, mobile data usage, and revenue trends.

Indicator	New Zealand	Australia	Similarities	Differences
Mobile Market Structure	Oligopolistic, dominated by One New Zealand, Spark, 2degrees.	Highly concentrated, dominated by Telstra, Optus, and TPG Telecom.	Both markets are dominated by three major players.	Telstra has a larger market share compared to New Zealand's major players.
5G Network Expansion	27% 5G coverage in 2023 (urban-focused).	Telstra's 5G covered 85% of the population in 2023, aiming for 95% by 2025.	Both countries are expanding 5G networks, with rapid urban rollouts.	Australia is ahead in 5G coverage and aims for broader rural expansion.
Mobile Subscription Penetration	163.1% in 2023, expected to rise to 168% by 2028.	157.7% in 2023, expected to rise to 196.8% by 2028.	Both countries are experiencing rising subscription penetration.	Australia's penetration is expected to rise significantly more than New Zealand's.
M2M/IoT Subscriptions	N/A	12 million in 2023, growing to 23.5 million by 2028.	Both markets see growth in M2M/IoT adoption, but	Australia has more M2M/IoT subscriptions and

Indicator	New Zealand	Australia	Similarities	Differences
			New Zealand's data isn't available.	higher growth in this segment.
Mobile Data Usage	6.5 GB per month in 2023, expected to rise to 12.2 GB by 2028.	14 GB per month in 2023, expected to rise to 27.7 GB by 2028.	Both countries are seeing rising data consumption.	Australia's data usage is much higher and will continue to outpace New Zealand.
Mobile Voice Usage	Declining with increasing reliance on OTT services (e.g., WhatsApp).	Similar trend with mobile voice usage declining.	Both markets show a decline in traditional voice usage.	Trends are similar, with OTT services growing in importance in both.
Revenue Trends (Mobile Data)	$858.1 million in 2023, rising to $1.1 billion by 2028.	$7.5 billion in 2023, rising to $10 billion by 2028.	Both markets see strong growth in mobile data revenue.	Australia's mobile data revenue is significantly higher than New Zealand's.
Revenue Trends (Mobile Voice)	Voice revenue is declining, with users switching to data services.	Voice revenue is declining, following the same trend as New Zealand.	Decline in voice revenues in both countries.	Similar decline patterns, driven by the shift to OTT services.
Postpaid vs. Prepaid Subscriptions	Postpaid is growing due to bundled plans and 5G, but prepaid remains important.	Postpaid dominates with 76.6%, expected to grow with 5G adoption.	Postpaid growth is dominant in both markets.	New Zealand's prepaid market remains slightly more competitive.
Mobile ARPU	NZD 26.44 in 2023, increasing to NZD 27.41 by 2028.	AUD 20.22 in 2023, declining slightly to AUD 19.13 by 2028.	ARPU is stable or declining slightly in both markets.	Australia's ARPU is lower and expected to decline slightly, while New Zealand's ARPU is projected to increase slightly.

Mobile Market Structure in NZ

New Zealand's mobile market is characterized by steady revenue growth driven by 5G adoption, increasing data consumption, and IoT advancements. The market is dominated by three key players—One New Zealand, Spark, and 2degrees operating in an oligopolistic structure with rising competition from MVNOs.

Technology trends like 5G, M2M, and IoT are reshaping services, while consumer demand shifts toward unlimited data plans. Despite a competitive landscape, investments in 5G and service innovation ensure continued growth and market dynamism through 2028

The mobile phone market structure in New Zealand is oligopolistic, dominated by three major Mobile Network Operators (MNOs):

One New Zealand (formerly Vodafone):

> The largest operator in New Zealand, with a significant market share in both mobile and broadband services.

> Strong focus on expanding 5G infrastructure, with plans to enhance coverage in urban and rural areas.

Spark:

> The second-largest provider, with extensive mobile and broadband services.

> Leading in prepaid mobile services and continuing to grow its postpaid segment, while expanding its 5G network.

2degrees:

> The smallest of the three, but with a competitive presence in both mobile and broadband services.

> Known for offering affordable mobile plans and focusing on customer service, 2degrees is expanding its 5G footprint and competes on price and service flexibility.

Market share

One New Zealand:

> Mobile subscriptions: 44.3% of total market.

> Fixed voice services: Leading provider with 15.6% share.

> Trend: Will maintain its leading position through 2028, focusing on mobile network development, including 5G and M2M/IoT expansions.

Spark:

> Mobile subscriptions: 34.8% of total market.

> Fixed broadband services: Leading provider with 35.9% of total access lines.

> Fixed voice services: Holds 13.9% share of total fixed voice lines.

> Trend: Strong focus on expanding its 5G network to cover 90% of the population and continued leadership in prepaid mobile segment.

2degrees:

> Fixed broadband services: Holds 20.7% of total access lines.

> Trend: Planning to expand its 5G network to cover 50 towns by mid-2024 and completed trials for satellite mobile networks.

Vector Communications New Zealand:

> Fixed voice services: 15.6% market share and expected to grow due to focus on VoIP

Subscriber Growth Trends:

Mobile Subscription Growth:

> Total mobile subscriptions in 2023: 8.4 million, expected to increase to 8.9 million by 2028.

> Penetration Rate: 163.1% of the population in 2023, projected to reach 168% in 2028.

> Growth is driven by multi-SIM ownership, smartphone adoption, and rural expansion through the Rural Broadband Initiative Phase 2.

Technology Trends:

> 4G: Dominates with 81.2% share in 2023 but will decline to 67.7% by 2028 as 5G grows to a 32.2% share.

> Postpaid: Postpaid subscriptions account for 61.5% of the market in 2023, expected to rise to 66.5% by 2028.

These trends reflect the competitive landscape with a clear focus on expanding mobile and broadband connectivity, especially in remote and underserved areas

Table outlining the market share and trends of New Zealand's telecom operators based on available data:

Operator	Mobile Subscription Share (2023)	Fixed Voice Share (2023)	Fixed Broadband Share (2023)	Market Position	Trends in Subscribers
One New Zealand	44.3%	15.6%	-	Leading mobile operator with a strong presence in 5G and IoT.	Continuing to maintain leadership, with a focus on expanding 5G and IoT services.
Spark	34.8%	13.9%	35.9%	Leading in prepaid mobile and fixed broadband services.	Expanding 5G coverage and growing in the prepaid market.
2degrees	-	-	20.7%	Known for affordable plans and customer service, expanding 5G.	Increasing 5G services, planning to cover 50 towns by mid-2024.
MVNOs (e.g., Skinny)	-	-	-	Smaller players in the market with limited share.	Steady but small presence, offering low-cost alternatives.

This table summarizes the **market share** for mobile, fixed voice, and broadband services, along with subscriber trends for New Zealand's major telecom operators

New Zealand Mobile Telecom Market Metrics and Projections (2023-2028)

Metric	2023	2028 (Projection)	Trend
Total Mobile Subscriptions	8.4 million	8.9 million	Growth of approximately 511,000 mobile subscriptions, with a CAGR of ~1.2%.
Unique Mobile User Penetration	86.5%	87.1%	Marginal growth as penetration nears saturation.
Postpaid Share	61.5%	66.5%	Increasing postpaid share due to benefits and data-heavy plans.
Prepaid Share	38.5%	33.5%	Gradual decline in prepaid, as postpaid grows more dominant.
5G Subscription Share	15%	32.2%	Significant growth in 5G adoption driven by expanded infrastructure.
Churn Rate	1.4%	1.0%	Declining churn due to enhanced customer retention efforts.
Monthly Mobile Data Usage	6.5 GB	12.2 GB	Doubling of data consumption driven by video streaming and social media.

The table describes the key metrics and projected trends in New Zealand's mobile telecom market between 2023 and 2028, based on data from the GlobalData. It highlights the following aspects:

> Total Mobile Subscriptions: The number of mobile subscriptions is projected to increase modestly, from 8.4 million in 2023 to 8.9 million by 2028, reflecting a relatively mature market with slower growth.

> Unique Mobile User Penetration: The penetration rate of unique mobile users is nearly saturated, rising slightly from 86.5% to 87.1% over the five-year period.

> Postpaid and Prepaid Shares: There is a clear shift towards postpaid plans, with postpaid subscriptions growing from 61.5% to 66.5%, while prepaid subscriptions are expected to decline from 38.5% to 33.5%. This reflects increasing customer preference for bundled services and data-heavy postpaid plans.

> 5G Subscription Share: The share of 5G subscriptions is expected to more than double, increasing from 15% in 2023 to 32.2% by 2028, driven by continued investment in 5G infrastructure and services.

> Churn Rate: The churn rate (the rate at which customers switch providers) is projected to fall from 1.4% to 1.0%, indicating improved customer retention efforts, likely aided by loyalty programs and more attractive postpaid offerings.

> Monthly Mobile Data Usage: Average mobile data usage per user is set to nearly double, from 6.5 GB in 2023 to 12.2 GB in 2028, driven by the increasing use of high-bandwidth applications such as video streaming and social media.

Overall:

The table presents a snapshot of how New Zealand's mobile market is evolving, with gradual growth in total subscriptions, a strong shift toward postpaid services, rapid adoption of 5G technology, and increasing mobile data consumption. These trends reflect a maturing market that is transitioning to more data-centric services and technologies.

Revenue trends

The revenue trends related to mobile subscription penetration in New Zealand are as follows:

Mobile Subscription Penetration

In 2023, mobile subscription penetration reached **163.1%** of the population, which is significantly above the Asia-Pacific average of 38.6%. This figure is expected to increase to **168%** by 2028, driven by

> Increased smartphone connections

> rising multi-SIM ownership

> expansion of mobile services in rural areas through government programs like the Rural Broadband Initiative Phase 2 (RBI2).

Mobile Service Revenue

Mobile data service revenue is projected to grow from $858.1 million in 2023 to approximately $1.1 billion in 2028, at a 4.2% compound annual growth rate (CAGR). The key drivers of this growth are

> Improving mobile network coverage

> robust growth in 5G subscriptions

> Increase in mobile data ARPU (Average Revenue Per User).

Aggregate ARPU

In local currency, aggregate mobile service ARPU is set to increase from NZD 26.44 in 2023 to NZD 27.41 in 2028, reflecting higher-priced 5G plans. However, when converted to US dollars, ARPU appears to decline from $16.30 in 2023 to $16.02 in 2028 due to currency fluctuations.

These trends indicate a strong growth trajectory in mobile data services, with the expansion of 5G networks playing a crucial role in driving future revenue

Mobile Subscription Revenue Trends

Metric	Value	Trend
Mobile Subscription Penetration (2023)	163.1%	Above Asia-Pacific average, increasing.
Mobile Subscription Penetration (2028)	168%	Projected to increase driven by SIM ownership and rural expansion.
Mobile Data Service Revenue (2023)	$858.1 million	Expected growth due to mobile network expansion.
Mobile Data Service Revenue (2028)	$1.1 billion	Increase driven by 5G growth.
CAGR of Mobile Data Revenue	2.0%	Steady growth in data services.
Aggregate ARPU (NZD) 2023	NZD 26.44	Slight increase due to higher-priced 5G plans.
Aggregate ARPU (NZD) 2028	NZD 27.41	Further growth expected.

New Zealand's Mobile Revenue Projections (2023-2028):

Metric	2023	2028 (Projection)	Trend
Total Mobile Service Revenue	**$1.58 billion**	**$1.73 billion**	Growth driven by increasing mobile data usage, despite a decline in voice revenue.

Mobile Data Revenue	**$858.1 million**	**$1.1 billion**	Growth at a **CAGR of 4.2%**, driven by 5G adoption and higher data consumption.
Mobile Voice Revenue	**$720.4 million**	**$627 million**	Declining due to the shift to OTT and data-based communications.
Aggregate ARPU	**NZD 26.44**	**NZD 27.41**	Gradual increase driven by 5G plans and bundled services.
Postpaid ARPU	**NZD 29.50**	**NZD 31.00**	Driven by high-value 5G subscriptions and device-bundled plans.
Prepaid ARPU	**NZD 18.10**	**NZD 19.50**	Modest growth despite a declining prepaid share.

This table highlights how New Zealand's mobile market is evolving, with mobile data services driving growth and 5G acting as the key enabler for future revenue streams.

Total mobile service revenue is projected to grow modestly over the five-year period, driven primarily by mobile data services. This growth is happening despite the decline in traditional mobile voice revenue, as consumers shift from voice-based services to data-centric communication (e.g., video calls, OTT messaging). The overall growth reflects the increasing importance of mobile data usage, especially with the expansion of 5G.
Data Revenue Growth: The significant increase in mobile data revenue underscores the importance of 5G and mobile internet services as key drivers of growth in New Zealand's mobile market.

Voice Revenue Decline: The decline in mobile voice revenue is consistent with global trends, as users increasingly rely on data-based communication platforms rather than traditional voice services.

ARPU Growth: The modest rise in both aggregate and postpaid ARPU reflects the growing value of 5G and bundled services, allowing operators to maintain or increase revenue per user, even as certain segments of the market (e.g., voice services) decline.

Aggregate ARPU (Average Revenue Per User):

> 2023: NZD 26.44

> 2028: NZD 27.41

> Trend: The aggregate ARPU is expected to increase modestly over the projection period, largely driven by the higher value of 5G plans and bundled services. Despite some market saturation, operators can increase ARPU through new service offerings and data-heavy plans.

Postpaid ARPU:

> 2023: NZD 29.50

> 2028: NZD 31.00

> Trend: Postpaid ARPU is forecasted to rise, reflecting the shift toward more expensive postpaid plans that often bundle 5G, data services, and device financing. As 5G becomes more prevalent, postpaid customers are expected to adopt more premium data packages, increasing overall revenue per user.

Prepaid ARPU:

> 2023: NZD 18.10

> 2028: NZD 19.50

> Trend: Prepaid ARPU will also grow, albeit at a slower pace than postpaid ARPU. The prepaid market is shrinking as more users migrate to postpaid plans, but there is still some growth in ARPU as prepaid plans incorporate more data-driven offerings and pricing models.

Monthly mobile data usage

The monthly mobile data usage trends highlight the growing demand for mobile data, particularly for streaming and social media, supported by the enhanced capacity and speed of 5G networks. Monthly mobile data usage is expected to grow from 6.5 GB in 2023 to 12.2 GB in 2028, representing a substantial increase in data consumption due to 5G adoption, video streaming, and other data-heavy applications

Key Drivers of Growth:

Surge in consumption of high-bandwidth online video and social media applications, especially with the rise in data-centric mobile plans.

5G Network Expansions: The increasing availability of 5G services is promoting faster speeds, leading to greater data consumption.

Telco Incentives: Operators like One New Zealand and Spark are offering bonus data, unlimited data passes for social media, video streaming, and music apps, which further encourages higher data usage.

Summary of Monthly Mobile Data Usage Trends: for New Zealand (2023-2028):

Year	Monthly Mobile Data Usage (GB)	Trend
2023	6.5	Moderate growth driven by video streaming and social media usage.
2024 (Projection)	7.8	Increased data consumption as 5G adoption expands.
2025 (Projection)	9.4	Strong growth in data usage with more 5G services and applications available.
2026 (Projection)	10.8	Further expansion in data-heavy services like cloud gaming, VR, and AR.
2027 (Projection)	11.5	Slower growth as data consumption nears saturation.
2028 (Projection)	12.2	Data consumption projected to stabilize as most users adopt 5G services and consumption patterns peak.

Subscriber trends in mobile subscription penetration

New Zealand's mobile subscription penetration is high and continues to grow modestly, driven by multi-SIM ownership, rural expansion, and 5G adoption. However, the market is approaching saturation in terms of unique user penetration, signaling a shift toward increasing revenue from data services rather than significant subscription growth.

High Penetration Rates:

In **2023**, New Zealand's **mobile subscription penetration** stands at **163.1%**, significantly above the Asia-Pacific average of **38.6%**. This high penetration rate reflects the widespread use

of mobile devices, including **multi-SIM ownership**, where individuals hold multiple SIM cards for various purposes such as work and personal use.

Modest Growth Expected:

By **2028**, mobile subscription penetration is projected to increase to **168%**. This modest rise over the five-year period is driven by increasing **smartphone adoption**, particularly in more remote and rural areas, supported by government initiatives like the **Rural Broadband Initiative Phase 2 (RBI2)**, which aims to improve coverage in underserved regions.

Subscription Growth:

The total number of mobile subscriptions is expected to grow from **8.4 million in 2023** to **8.9 million by 2028**, reflecting a growth of approximately **511,000 subscriptions** over the period. This increase is attributed to **multi-SIM ownership** and more extensive mobile network coverage, particularly in rural areas.

Near Saturation of Unique Users:

The **unique user penetration** rate, which measures the number of individuals with at least one mobile subscription, is currently at **86.5%** and is projected to rise only slightly to **87.1%** by 2028. This indicates that the market is nearing saturation, with most individuals already owning mobile devices.

Shift to Data-Heavy Services:

As mobile penetration nears saturation, the focus shifts towards **data-heavy services**. Growth in **5G adoption**, **mobile data services**, and the increasing use of applications like **video streaming**, **social media**, and **cloud-based services** will continue to drive revenue growth, even as subscription growth slows.

Key Drivers:

Multi-SIM Ownership: The trend of users owning multiple SIM cards contributes to the high penetration rate.

Rural Expansion: The expansion of mobile services in rural areas through initiatives like RBI2 is expected to increase subscription numbers.

5G Adoption: As 5G networks become more widespread, mobile data services will be a key growth driver.

Subscriber trends in mobile subscription penetration in the NZ

New Zealand's **Mobile Subscription Penetration Trends** (2023-2028):

Metric	2023	2028 (Projection)	Trend
Mobile Subscription Penetration	**163.1%**	**168%**	Above Asia-Pacific average, slight growth expected as multi-SIM ownership increases.
Unique Mobile User Penetration	**86.5%**	**87.1%**	Nearing saturation, marginal increase expected.
5G Subscription Share	**15%**	**32.2%**	Significant growth driven by 5G network expansion and adoption.
Prepaid Share	**38.5%**	**33.5%**	Gradual decline as more users shift to postpaid plans.

Postpaid Share	**61.5%**	**66.5%**	Increasing share due to high-value 5G subscriptions and bundled plans.
M2M/IoT Connections	**N/A**	**N/A**	IoT connections growing, but data for this projection is currently unavailable.

Summary of Trends:

Mobile Subscription Penetration is projected to grow modestly, driven by multi-SIM ownership and smartphone adoption.

5G Subscription Share will experience substantial growth, from 15% in 2023 to 32.2% in 2028, reflecting the increasing adoption of 5G services.

Prepaid Share will decline as more users transition to postpaid plans, which offer better bundling options and 5G data packages.

Future Trends in Network Coverage

The network coverage in New Zealand is robust, with significant efforts to enhance both urban and rural connectivity. The country has implemented a range of initiatives to ensure widespread coverage, particularly focusing on the following key points:

> **4G and 5G Coverage**: New Zealand has extensive 4G coverage across most populated areas. 5G deployment is actively underway, with coverage expanding primarily in urban centers and gradually moving toward regional areas.

> **Rural Connectivity**: Various government initiatives, such as the Rural Broadband Initiative (RBI), aim to improve connectivity in rural and remote areas, addressing challenges of terrain and lower population density.

> **Fiber Network Expansion**: New Zealand's Ultra-Fast Broadband (UFB) program is in advanced stages, providing fiber connectivity to a significant portion of the population, particularly in urban and suburban areas.

> **Telecom Operator Investments**: Major telecom providers in New Zealand are investing in infrastructure to support increased data demand and future network advancements, including enhanced 5G services and preparations for next-generation technologies.

The UK has strong network coverage overall, with 4G covering most of the population and 5G expanding rapidly, especially in urban areas. Efforts are underway to close coverage gaps in rural and remote regions, and initiatives like the Shared Rural Network and Project Gigabit are expected to boost connectivity further by the mid-2020s.

5G Coverage:

5G networks are expanding rapidly across the UK, with all major mobile network operators (MNOs) – BT/EE, Vodafone, Virgin Media O2, and Three UK – actively investing in nationwide 5G rollouts.

As of 2023, 5G coverage is available in most large cities and towns, and coverage is expected to reach 75% of the UK population by 2027.

BT/EE has the most extensive 5G coverage, with ambitions to cover 90% of the UK's landmass by 2028.

4G and 3G Networks:

4G remains the most widely available mobile technology in the UK, covering 99% of the population and 87% of the UK's geographic area.

3G networks are being gradually phased out, with operators such as BT/EE planning to switch off 3G services by 2024 to focus on expanding 4G and 5G.

Rural and Remote Areas:

Network coverage in rural areas is a key challenge, with gaps still present in some remote regions, particularly in northern Scotland and Wales.

The Shared Rural Network (SRN) initiative, a collaboration between the UK government and mobile operators, aims to improve rural coverage, ensuring 95% geographic coverage by 2025

Investments in Fixed Wireless Access (FWA) solutions are helping extend high-speed internet to rural locations.

Broadband and Fiber Coverage:

Full-fibre broadband coverage is also increasing, with around 40% of UK homes having access to gigabit-capable broadband by 2023, a figure expected to reach 85% by 2025.

The government's Project Gigabit aims to connect more rural and underserved areas with full fibre broadband.

Spectrum and Technology:

Ofcom, the UK's telecom regulator, continues to auction spectrum to enable mobile operators to expand 5G networks. Recent auctions include spectrum in the 700 MHz and 3.6-3.8 GHz bands, vital for 5G.

Operators are also focusing on deploying mmWave spectrum to boost capacity in urban centres, ensuring fast speeds and low latency for 5G services.

Technological Enhancements

Network Slicing:

5G network slicing is an emerging technology in the UK that promises to revolutionize industries by providing tailored connectivity solutions. While still in its early stages, operators are actively deploying and testing network slicing to offer more resilient, efficient, and reliable 5G services.

5G network slicing enables operators to partition their physical network into customized virtual slices that can cater to different types of users or industries. Each slice is optimized for specific performance needs, such as ultra-low latency for autonomous vehicles, high bandwidth for HD video streaming, or enhanced reliability for critical infrastructure like healthcare and emergency services.

As 5G standalone networks become more widespread in the UK over the next few years, network slicing will play a pivotal role in enabling ultra-reliable low-latency communications (URLLC), massive IoT deployments, and enhanced mobile broadband (eMBB) applications. This will lead to innovative services across various sectors, with greater flexibility and customized network capabilities for enterprises and public services.

BT/EE, Vodafone UK, and Three UK are all experimenting with network slicing as they roll out their 5G networks:

BT/EE: Has been trialing network slicing technology to offer bespoke connectivity services for businesses, particularly in the industrial sector. BT has explored the use of slices for IoT devices and manufacturing processes that require low latency and high reliability.

Vodafone UK: Has conducted trials of network slicing for businesses, focusing on sectors like media, healthcare, and logistics. Vodafone's 5G network slicing allows it to provide unique connectivity features for enterprises, giving them dedicated bandwidth and isolated network performance.

Three UK: Has been working on deploying 5G standalone (SA) architecture, which is a key enabler for fully implementing network slicing technology. Three UK is focusing on offering specialized 5G services for industries like gaming, where low latency is essential.

Use Cases and Applications:

Private Networks for Enterprises:

One of the most promising applications of network slicing is the creation of private 5G networks for businesses. Companies can purchase dedicated slices to run specific applications (e.g., IoT management in factories, logistics tracking in warehouses) with guaranteed performance.

Smart Cities and Public Services:
Network slicing can also support smart city infrastructure, where different slices can be allocated for public safety (e.g., police and fire services), traffic management, and utility services. This ensures that critical services get priority connectivity without being affected by public usage.

Healthcare and Remote Surgery:
Slices can be tailored to provide ultra-reliable, low-latency connections for telemedicine and remote surgery applications, ensuring critical data is transmitted with minimal delay.

Challenges and Future Prospects:

Complexity of Deployment: While 5G network slicing holds great potential, it requires substantial infrastructure upgrades, particularly the transition to 5G standalone (SA) networks. Currently, much of the UK's 5G infrastructure operates on non-standalone (NSA) networks, which still rely on 4G cores. As operators like BT/EE and Vodafone accelerate their shift to SA networks, slicing technology will become more widely available.

Security and Management: Network slicing introduces new challenges in terms of security and network management. Each slice must be isolated to prevent interference and data breaches, which requires advanced orchestration and cybersecurity solutions.

Industry Collaboration: Telecom operators in the UK are partnering with industry stakeholders and tech companies to refine the use of network slicing in real-world applications. This includes collaborations with manufacturers, hospitals, and media companies to trial the technology in live environments

Mobile Plan Costs (2023-2028):

The overall trend in mobile plan costs in the UK is toward more data at lower prices, with the cost per GB steadily decreasing as 5G networks grow. Unlimited data plans and bundled services are becoming more affordable, while prepaid plans are declining in popularity. Roaming

charges are making a comeback post-Brexit, but discounts and multi-line offers keep mobile plan costs competitive. The trend in mobile plan costs in the UK is influenced by several factors, including 5G adoption, increased data demand, competitive pricing strategies, and bundled services.

Summary Table of Current Mobile Plan Costs:

Plan Type	Average Monthly Cost (2023)	Data Allowance	Trend
Unlimited Data (5G)	£20 to £40	Unlimited	Increasing affordability; more common with 5G (www.ofcom.org.uk)
Postpaid (4G/5G)	£15 to £30	30 GB to 100 GB	Focus on large data bundles, bundled services growing (GlobalData)
Prepaid (4G)	£10 to £20	10 GB to 20 GB	Declining popularity, smaller data allowances(www.ofcom.org.uk)
Family Plans	Discounts of 10% to 20%	Varies per user	Discounts for multiple lines, commonly used for families (www.ofcom.org.uk)
Roaming Plans (EU)	£2 to £5 per day	Varies (or included)	Roaming charges reintroduced post-Brexit(www.ofcom.org.uk)

Drivers of Cost Trends:

Declining Cost per GB of Data:

Data prices are declining as mobile networks expand their 5G infrastructure and introduce unlimited data plans. According to reports, the cost per GB of mobile data has fallen significantly as operators move to data-centric plans.0

This is particularly evident in postpaid plans, where users get access to large or unlimited data allowances at competitive rates.

On average, UK mobile operators charge less per GB compared to other European countries, with increased competition pushing down prices further.

Shift to Unlimited Data Plans:

As 5G adoption increases, unlimited data plans are becoming more common and more affordable. Operators like EE, Vodafone, and Three UK have launched unlimited data plans to meet rising demand from streaming, gaming, and remote work.

Price ranges for unlimited data plans vary, starting at around £20 to £40 per month, depending on the operator and included perks (e.g., streaming services, international roaming).

Impact of 5G Rollout:

5G plans are generally more expensive than 4G plans, but prices are becoming more competitive as 5G networks expand. The price premium for 5G services is gradually shrinking as all major operators push for widespread 5G coverage by 2025.

5G-enabled plans often come with additional perks, such as access to higher speeds, exclusive content (e.g., video streaming packages), and priority network access.

Bundling and Convergence:
Bundled services are becoming increasingly popular, where mobile plans are offered alongside other services like broadband, TV, and landlines. Operators like Virgin Media O2 and BT/EE are offering fixed-mobile convergence (FMC) bundles, often providing discounts when users subscribe to multiple services.

These bundles can provide good value, with discounts that range from 10% to 25% for combining mobile, TV, and broadband services under one plan

Price Stability and Discounts:
Although inflation and macroeconomic factors could pressure prices upward, operators are holding prices steady for now, using promotional discounts and offers to attract and retain customers. Family plans, multi-line discounts, and loyalty programs have helped to keep prices more affordable.

Promotional deals and seasonal offers, such as discounts on handsets or free months of service, are common, especially around product launches (e.g., new iPhone releases) or holidays.

Prepaid Plans:
Prepaid plan costs remain relatively low, although they offer smaller data allowances. Prepaid SIM-only plans start at around £10 to £20 per month for 10 GB to 20 GB of data, but these are declining in popularity as users shift towards postpaid options with more attractive data offers and flexible contracts.

International Roaming:
After Brexit, many UK operators have reintroduced roaming charges for travel within the EU, although some still offer roaming at no extra cost as part of their premium plans. Roaming charges can increase the total cost of mobile plans for those who travel frequently

Australia and UK

The Australian and UK mobile markets share key similarities, such as their oligopolistic market structure, with a few dominant operators controlling the majority share. In both countries, major players like Telstra, Optus, and TPG Telecom in Australia, and Virgin Media O2, BT/EE, Vodafone, and Three UK in the UK, lead the market. Both markets are also experiencing rapid 5G expansion and a shift towards data-centric services, with increasing postpaid subscriptions driven by bundled offerings and device financing options.

However, there are notable differences: the UK has advanced further in implementing 5G network slicing technology, while Australia focuses more on coverage expansion.[22] Additionally,

[22] Australia is actively employing 5G network slicing, primarily through Telstra in partnership with Ericsson. Telstra has developed a proof-of-value engine for 5G slicing, which enables them to offer customized virtual networks with different performance characteristics to meet the needs of enterprise customers. This allows them to

Australia's mobile subscription penetration rate is higher, expected to reach 196.8% by 2028, compared to the UK's projected 164.8% by 2027. The emphasis on M2M/IoT connections is also more significant in Australia, with projections indicating faster growth than in the UK. Moreover, revenue trends show that the UK market is larger and more mature, with higher data revenue projections.

Key Similarities

Market Structure:

Both Australia and the UK have oligopolistic market structures dominated by a small number of major players.

In Australia, the market is led by Telstra, Optus, and TPG Telecom, which together control about 89% of the market share.

In the UK, the market is dominated by Virgin Media O2, BT/EE, Vodafone, and Three UK, with consolidation strengthening the oligopoly.

5G Expansion:

Both markets are aggressively expanding their 5G networks.

Telstra aims to cover 95% of the Australian population by 2025, while BT/EE plans to reach 90% of the UK's landmass by 2028.

Data Usage Growth:

Both countries are experiencing rapid growth in data usage, driven by 5G adoption, video streaming, gaming, and IoT applications.

Average monthly mobile data usage is expected to rise significantly in both markets by 2027, indicating a similar shift towards data-centric services.

Shift Toward Postpaid Services:

Both markets are witnessing a growing dominance of postpaid subscriptions, with bundled offers, data-heavy plans, and device financing options fuelling this trend.

In the UK, postpaid subscriptions are expected to grow from 77.8% in 2022 to 84.4% by 2027. In Australia, postpaid accounts for 76.6% of total subscriptions in 2023, projected to grow further .

Differences:

Mobile Subscription Penetration:

Australia has a higher mobile subscription penetration rate, expected to grow from 157.7% in 2023 to 196.8% by 2028, driven by 5G adoption and smartphone use.

In contrast, the UK's mobile subscription penetration is expected to reach 164.8% by 2027, indicating slower growth.

commit to specific performance levels for different use cases, and they can measure, and charge customers based on the delivered service performance, See: https://www.telstra.com.au/aboutus/media/media-releases/telstra-5g-slicing-world-first

5G Network Slicing and Technology:
The UK is further ahead in adopting 5G network slicing technology, with operators like BT/EE, Vodafone, and Three UK actively trialling it for various use cases such as healthcare, smart cities, and enterprise applications.

Australia's 5G adoption is focused more on expanding network coverage and improving speeds rather than network slicing.

M2M/IoT Subscriptions:
Australia has a more significant emphasis on M2M/IoT connections, expected to grow from 12 million in 2023 to 23.5 million by 2028.

In the UK, M2M/IoT subscriptions are growing but are not as prominently featured in overall market expansion.

Revenue Trends:
In Australia, mobile data revenue is projected to grow from $7.5 billion in 2023 to $10 billion by 2028.

In the UK, mobile data revenue is expected to grow from $13.9 billion in 2022 to $20 billion by 2027, indicating a larger and more mature market.

Market Concentration:
The UK market has a slightly more competitive environment with multiple MVNOs, while Australia is more concentrated, with MVNOs holding only an 11% share.

Comparison of key mobile market indicators in UK and Australia

Indicator	UK	Australia	Similarities	Differences
Mobile Market Structure	Oligopolistic, dominated by Virgin Media O2, BT/EE, Vodafone, and Three UK.	Highly concentrated, dominated by Telstra, Optus, and TPG Telecom.	Both markets are oligopolistic, with a few dominant players.	The UK market has more active MVNOs, while Australia's MVNOs have an 11% share.
5G Network Expansion	Extensive 5G rollout, with BT/EE aiming to cover 90% of the UK's landmass by 2028.	Telstra's 5G covers 85% of the population, aiming for 95% by 2025.	Both countries are rapidly expanding 5G coverage.	The UK is more advanced in deploying 5G slicing technology, while Australia's focus is on coverage.
Mobile Subscription Penetration	149.5% in 2022, expected to reach 164.8% by 2027.	157.7% in 2023, expected to reach 196.8% by 2028.	Both markets are experiencing rising	Australia's penetration rate is projected to be

			subscription penetration.	much higher than the UK's.
M2M/IoT Subscriptions	Growing but not as significant as in Australia.	12 million in 2023, growing to 23.5 million by 2028.	Both countries are seeing growth in M2M/IoT subscriptions.	Australia has a larger focus and growth in M2M/IoT connections.
Mobile Data Usage	5.8 GB per month in 2022, expected to rise to 16.1 GB by 2027.	14 GB per month in 2023, rising to 27.7 GB by 2028.	Both countries are seeing rising data consumption.	Australia's data usage is higher and growing faster than in the UK.
Mobile Voice Usage	Declining, with a shift to data-based communication apps.	Also declining as users switch to OTT services.	Both markets are experiencing a decline in traditional voice usage.	Similar trends, but voice usage decline is slightly faster in the UK.
Revenue Trends (Mobile Data)	$13.9 billion in 2022, expected to grow to $20 billion by 2027.	$7.5 billion in 2023, rising to $10 billion by 2028.	Both markets show strong growth in mobile data revenue.	The UK has a larger data revenue market with a higher CAGR than Australia.
Revenue Trends (Mobile Voice)	$5.9 billion in 2022, expected to decline to $4.5 billion by 2027.	$1.6 billion in 2023, declining to $1.5 billion by 2028.	Both countries are experiencing a decline in voice revenue.	The decline is more pronounced in the UK, with a steeper drop.
Postpaid vs. Prepaid Subscriptions	Postpaid accounts for 77.8% in 2022, projected to reach 84.4% by 2027.	Postpaid dominates with a 76.6% share in 2023, expected to grow.	Postpaid subscriptions dominate in both markets.	Australia's prepaid promotions are more aggressive than those in the UK.
Mobile ARPU	£16.92 in 2022, expected to increase to £18.35 by 2027.	Expected to decline slightly due to competitive pricing and bundling.	ARPU is relatively stable in both markets.	UK ARPU is expected to rise, while Australia's ARPU might slightly decrease.

Mobile Market Structure in UK

The UK mobile phone market is highly concentrated and functions as an oligopoly, with a small number of dominant operators controlling most of the market share, influencing pricing, and competing primarily on service differentiation rather than price alone. The market structure is characterized by a small number of dominant firms that control most of the market share. The growth in 5G adoption and postpaid plans will continue to drive subscriber growth, while MVNOs maintain a niche but stable role in the market.

The market has high barriers to entry due to the capital-intensive nature of setting up mobile networks, purchasing spectrum, and maintaining infrastructure. This makes it difficult for new firms to enter and compete on a large scale.

Mobile Virtual Network Operators (MVNOs) like Tesco Mobile and Giffgaff lease network access from the big MNOs, but they are relatively small players and dependent on the major network operators.

These dominant operators have significant market power, allowing them to influence pricing, service packages, and the rollout of new technologies like 5G.

Despite intense competition, they can maintain profitability by differentiating their services, offering exclusive bundles (e.g., fixed-mobile convergence plans), and leveraging 5G rollouts.

While there is competition among the few major firms, the small number of competitors means that they often avoid extreme price wars. Instead, they compete on factors such as network coverage, data speeds, bundling services (e.g., mobile, broadband, and pay-tv), and customer experience.

The market has seen consolidation over time, with major mergers such as Vodafone UK and Three UK in June 2023. This further reinforces the oligopolistic nature of the market, as fewer large players control an even greater share of subscribers and services.

Market share

market share (in terms of subscribers) and the trends in subscribers for the UK mobile phone market:

Operator	Market Share (2022)	Prepaid Market Share (2022)	Postpaid Market Share (2022)	Trends
Virgin Media O2	33.6%	23.5%	35.6%	- Leading position, supported by **FMC bundles** and **5G expansion**. - Data-centric offerings driving growth.
BT/EE	21.3%	19.5%	33.0%	- Focus on expanding **5G** and **M2M/IoT** solutions. - Projected 100% 5G coverage by 2028.
Vodafone UK	18.6%	8.1%	18.4%	- Merged with Three UK in 2023. - Significant 5G investments

				and expected subscriber growth through **synergies**.
Three UK	10.6%	11.3%	9.0%	- Merged with Vodafone UK. - Focus on **unlimited data plans** and 5G network expansion.
Tesco Mobile	5.2%	N/A	N/A	- Operates as an **MVNO** with stable customer base. - Competitive pricing and loyalty programs help retain users.
Others (MVNOs)	10.7%	16.4% (MVNO share)	N/A	- MVNO share expected to slightly decline to 16% by 2027. - New MVNO entries possible but challenged by **MNOs**.

Subscriber Growth Trends:

Metric	2022	2027 (Projection)	Trend
Total Mobile Subscriptions	100.7 million	112.8 million	2.3% CAGR growth in total mobile subscriptions.
Unique Mobile User Penetration	91.5%	93.9%	Slight growth in unique user penetration.
Postpaid Share	77.8%	84.4%	Increasing dominance of postpaid plans.
Prepaid Share	22.2%	15.6%	Gradual decline in prepaid subscriptions.
5G Subscription Share	20%	69.6%	Rapid growth in 5G adoption as major investments continue.
Churn Rate	1.8%	1.5%	Decline in churn due to loyalty programs and improved customer retention.

This table summarizes the current market structure and the expected trends in the UK mobile phone market.

Revenue trends

The overall trend in the UK mobile market indicates **growth in mobile revenue**, primarily driven by increased **mobile data consumption** and the expansion of **5G services**. While **voice revenues** are declining, **data revenues** are rising significantly, which supports the increase in total mobile service revenue despite some shifts in usage behavior.

Summary Table of Revenue Trends:

Metric	2022	2027 (Projection)	Trend
Total Mobile Service Revenue	$19.8 billion	$24.5 billion	Driven by increasing data usage and 5G adoption. CAGR for the total mobile service revenue in the UK forecast to approx. 4.35% between 2022 and 2027.
Mobile Data Revenue	$13.9 billion	$20 billion	7.6% CAGR, reflecting rising data consumption.
Mobile Voice Revenue	$5.9 billion	$4.5 billion	Declining as users shift to data-based communications.
Aggregate ARPU	$16.92	$18.35	Gradual increase due to 5G plans.
Postpaid ARPU	$19.42	$20.14	Driven by high value 5G subscriptions.
Prepaid ARPU	$8.13	$9.06	Modest growth despite declining prepaid share.

Overall Mobile Service Revenue:

Total mobile service revenue in the UK is expected to grow from $19.8 billion in 2022 to $24.5 billion by 2027, driven largely by the increase in mobile data usage and the shift to 5G services. CAGR for the total mobile service revenue in the UK forecast to approx. 4.35% between 2022 and 2027.

Mobile Data Revenue:

Mobile data service revenue will experience the most significant growth, increasing from $13.9 billion in 2022 to $20 billion by 2027, at a 7.6% Compound Annual Growth Rate (CAGR). This growth is fueled by the rising demand for data-intensive applications such as video streaming, online gaming, and M2M/IoT solutions.

Mobile Voice Revenue:

Mobile voice service revenue is expected to decline from $5.9 billion in 2022 to $4.5 billion by 2027, reflecting the ongoing shift away from voice calls toward data-based communication platforms (e.g., WhatsApp, Messenger).

Average Revenue Per User (ARPU):

Aggregate ARPU (Average Revenue Per User) for mobile services is expected to remain relatively stable, from $16.92 in 2022 to $18.35 by 2027.

Postpaid ARPU will slightly increase from $19.42 in 2022 to $20.14 by 2027, reflecting the growth in high value 5G subscriptions.

Prepaid ARPU is expected to increase modestly from $8.13 in 2022 to $9.06 by 2027, despite the shrinking share of prepaid customers.

Monthly mobile data usage

The monthly mobile data usage trend is on a steep upward trajectory, primarily fueled by the expansion of 5G, the rise in high-data applications like video streaming, gaming, and social media, and mobile operators' data-centric plans. Average monthly data usage is expected to nearly triple from 5.8 GB in 2022 to 16.1 GB in 2027.

Summary of Monthly Mobile Data Usage Trends:

Year	Average Monthly Mobile Data Usage (GB)	Trend
2021	5.0 GB	Data usage driven by 4G and early 5G adoption.
2022	5.8 GB	Steady growth with increased demand for video streaming and mobile gaming.
2023	7.1 GB	Further growth as 5G coverage expands and high-speed services become more accessible.
2024	9.0 GB	Uptake of 5G continues, fueling higher data consumption.
2025	11.1 GB	Continued increase in data usage due to high-definition video, gaming, and IoT devices.
2026	13.5 GB	Adoption of advanced applications such as VR/AR and cloud services accelerates.
2027	16.1 GB	Significant rise driven by widespread 5G availability and high-bandwidth services.

Growth Drivers:

5G Networks: With expanding 5G coverage, consumers will have access to faster, low-latency services, encouraging greater data usage.

Video Streaming: By 2027, video content will account for 79% of all mobile data traffic, as consumers continue to stream high-definition content. The demand for video will push data consumption to three times the total amount of all other categories combined.

Cloud Gaming and VR: Gaming data usage is expected to grow at a 21% CAGR from 2022 to 2027, and virtual reality (VR) will see a 43% CAGR, contributing to rising data consumption.

Mobile operators are increasingly offering large data plans or unlimited data bundles to meet the growing demand. For instance, some operators are offering 150 GB plans with add-ons such as zero-rated access to streaming services like YouTube Premium and Amazon Prime Video.

Consumers are relying more on mobile devices for internet access, especially with the rise in remote working, mobile streaming, and gaming.

Subscriber trends in mobile subscription penetration

The subscriber trends in mobile subscription penetration in the UK highlight steady growth, driven by increasing smartphone usage, rising demand for data services, and the rapid rollout of 5G networks.

The UK mobile subscription market is characterized by high penetration rates and steady growth in 5G adoption, reflecting increasing data consumption and multiple device ownership. The market is transitioning toward postpaid services, with prepaid shares shrinking, while M2M/IoT devices are emerging as a key growth area.

Subscriber trends in mobile subscription penetration in the UK

Metric	2022	2027 (Projection)	Trend
Mobile Subscription Penetration	149.5%	164.8%	Rising due to multiple devices per user and increasing M2M/IoT connections.

Unique Mobile User Penetration	91.5%	93.9%	Near-saturation, but additional growth through multi-device subscriptions.
5G Subscription Share	20%	69.6%	Rapid growth as 5G becomes the dominant mobile technology.
Prepaid Share	22.2%	15.6%	Declining as users shift to postpaid plans offering better data packages.
Postpaid Share	77.8%	84.4%	Increasing dominance as bundled and high-data plans attract more users.
M2M/IoT Connections	Growing	Significant by 2027	Contributing to the overall increase in mobile subscriptions.

This table provides a clear picture of the trends in mobile subscription penetration in the UK, highlighting the shift towards **5G adoption**, the dominance of **postpaid services**, and the growing influence of **M2M/IoT connections**.

Key Trends:

Overall Mobile Subscription Penetration:

The UK had a mobile subscription penetration rate of 149.5% in 2022, meaning there were more subscriptions than the population, reflecting the presence of multiple devices per user (e.g., smartphones, tablets, IoT devices).

By 2027, the penetration rate is expected to rise to 164.8%, as users continue to adopt more devices and mobile services

Unique Mobile User Penetration:

Unique mobile user penetration in 2022 stood at 91.5%, which accounts for individual users rather than total subscriptions.

By 2027, this figure is projected to reach 93.9%, indicating near-saturation in mobile phone ownership but with further growth in multiple device subscriptions per use

5G Subscription Growth:

The shift to 5G is driving subscription trends, with 20% of subscriptions in 2022 being 5G-enabled. This share is projected to rise to 69.6% by 2027, as operators invest heavily in 5G infrastructure

4G subscriptions are declining in favour of 5G, as new 5G smartphones become more affordable and accessible.

Prepaid vs. Postpaid:

Postpaid subscriptions dominate the UK market, accounting for 77.8% of total subscriptions in 2022, and are expected to grow to 84.4% by 2027, driven by bundled offers and data-heavy plans.

Prepaid subscriptions, on the other hand, are declining, with a projected share of 15.6% by 2027, as users prefer the benefits of postpaid plans like larger data allowances and device financing options

Machine-to-Machine (M2M) and IoT Devices:
The M2M/IoT segment is growing, contributing to the rise in total mobile subscriptions. By 2027, M2M/IoT connections will represent a significant portion of mobile subscriptions as industries adopt smart technologies.

Future Trends in Network Coverage

The UK has strong network coverage overall, with 4G covering most of the population and 5G expanding rapidly, especially in urban areas. Efforts are underway to close coverage gaps in rural and remote regions, and initiatives like the Shared Rural Network and Project Gigabit are expected to boost connectivity further by the mid-2020s.

5G Coverage:

5G networks are expanding rapidly across the UK, with all major mobile network operators (MNOs) – BT/EE, Vodafone, Virgin Media O2, and Three UK – actively investing in nationwide 5G rollouts.

As of 2023, 5G coverage is available in most large cities and towns, and coverage is expected to reach 75% of the UK population by 2027.

BT/EE has the most extensive 5G coverage, with ambitions to cover 90% of the UK's landmass by 2028.

4G and 3G Networks:

4G remains the most widely available mobile technology in the UK, covering 99% of the population and 87% of the UK's geographic area.

3G networks are being gradually phased out, with operators such as BT/EE planning to switch off 3G services by 2024 to focus on expanding 4G and 5G.

Rural and Remote Areas:

Network coverage in rural areas is a key challenge, with gaps still present in some remote regions, particularly in northern Scotland and Wales.

The Shared Rural Network (SRN) initiative, a collaboration between the UK government and mobile operators, aims to improve rural coverage, ensuring 95% geographic coverage by 2025

Investments in Fixed Wireless Access (FWA) solutions are helping extend high-speed internet to rural locations.

Broadband and Fiber Coverage:

Full-fibre broadband coverage is also increasing, with around 40% of UK homes having access to gigabit-capable broadband by 2023, a figure expected to reach 85% by 2025.

The government's Project Gigabit aims to connect more rural and underserved areas with full fibre broadband.

Spectrum and Technology:

Ofcom, the UK's telecom regulator, continues to auction spectrum to enable mobile operators to expand 5G networks. Recent auctions include spectrum in the 700 MHz and 3.6-3.8 GHz bands, vital for 5G.

Operators are also focusing on deploying mmWave spectrum to boost capacity in urban centres, ensuring fast speeds and low latency for 5G services.

Technological Enhancements:

Network Slicing:

5G network slicing is an emerging technology in the UK that promises to revolutionize industries by providing tailored connectivity solutions. While still in its early stages, operators are actively deploying and testing network slicing to offer more resilient, efficient, and reliable 5G services.

5G network slicing enables operators to partition their physical network into customized virtual slices that can cater to different types of users or industries. Each slice is optimized for specific performance needs, such as ultra-low latency for autonomous vehicles, high bandwidth for HD video streaming, or enhanced reliability for critical infrastructure like healthcare and emergency services.

As 5G standalone networks become more widespread in the UK over the next few years, network slicing will play a pivotal role in enabling ultra-reliable low-latency communications (URLLC), massive IoT deployments, and enhanced mobile broadband (eMBB) applications. This will lead to innovative services across various sectors, with greater flexibility and customized network capabilities for enterprises and public services.

BT/EE, Vodafone UK, and Three UK are all experimenting with network slicing as they roll out their 5G networks:

BT/EE: Has been trialing network slicing technology to offer bespoke connectivity services for businesses, particularly in the industrial sector. BT has explored the use of slices for IoT devices and manufacturing processes that require low latency and high reliability.

Vodafone UK: Has conducted trials of network slicing for businesses, focusing on sectors like media, healthcare, and logistics. Vodafone's 5G network slicing allows it to provide unique connectivity features for enterprises, giving them dedicated bandwidth and isolated network performance.

Three UK: Has been working on deploying 5G standalone (SA) architecture, which is a key enabler for fully implementing network slicing technology. Three UK is focusing on offering specialized 5G services for industries like gaming, where low latency is essential.

Use Cases and Applications:

Private Networks for Enterprises:

One of the most promising applications of network slicing is the creation of private 5G networks for businesses. Companies can purchase dedicated slices to run specific applications (e.g., IoT management in factories, logistics tracking in warehouses) with guaranteed performance.

Smart Cities and Public Services:

Network slicing can also support smart city infrastructure, where different slices can be allocated for public safety (e.g., police and fire services), traffic management, and utility services. This ensures that critical services get priority connectivity without being affected by public usage.

Healthcare and Remote Surgery:
Slices can be tailored to provide ultra-reliable, low-latency connections for telemedicine and remote surgery applications, ensuring critical data is transmitted with minimal delay.

Challenges and Future Prospects:

Complexity of Deployment: While 5G network slicing holds great potential, it requires substantial infrastructure upgrades, particularly the transition to 5G standalone (SA) networks. Currently, much of the UK's 5G infrastructure operates on non-standalone (NSA) networks, which still rely on 4G cores. As operators like BT/EE and Vodafone accelerate their shift to SA networks, slicing technology will become more widely available.

Security and Management: Network slicing introduces new challenges in terms of security and network management. Each slice must be isolated to prevent interference and data breaches, which requires advanced orchestration and cybersecurity solutions.

Industry Collaboration: Telecom operators in the UK are partnering with industry stakeholders and tech companies to refine the use of network slicing in real-world applications. This includes collaborations with manufacturers, hospitals, and media companies to trial the technology in live environments

Mobile Plan Costs (2023-2028):

The overall trend in mobile plan costs in the UK is toward more data at lower prices, with the cost per GB steadily decreasing as 5G networks grow. Unlimited data plans and bundled services are becoming more affordable, while prepaid plans are declining in popularity. Roaming charges are making a comeback post-Brexit, but discounts and multi-line offers keep mobile plan costs competitive. The trend in mobile plan costs in the UK is influenced by several factors, including 5G adoption, increased data demand, competitive pricing strategies, and bundled services.

Summary Table of Current Mobile Plan Costs:

Plan Type	Average Monthly Cost (2023)	Data Allowance	Trend
Unlimited Data (5G)	£20 to £40	Unlimited	Increasing affordability; more common with 5G(www.ofcom.org.uk).
Postpaid (4G/5G)	£15 to £30	30 GB to 100 GB	Focus on large data bundles, bundled services growing(GlobalData).
Prepaid (4G)	£10 to £20	10 GB to 20 GB	Declining popularity, smaller data allowances(www.ofcom.org.uk).
Family Plans	Discounts of 10% to 20%	Varies per user	Discounts for multiple lines, commonly used for families(www.ofcom.org.uk).

Roaming Plans (EU)	£2 to £5 per day	Varies (or included)	Roaming charges reintroduced post-Brexit(www.ofcom.org.uk).

Drivers of Cost Trends:

Declining Cost per GB of Data:

Data prices are declining as mobile networks expand their 5G infrastructure and introduce unlimited data plans. According to reports, the cost per GB of mobile data has fallen significantly as operators move to data-centric plans.0

This is particularly evident in postpaid plans, where users get access to large or unlimited data allowances at competitive rates.

On average, UK mobile operators charge less per GB compared to other European countries, with increased competition pushing down prices further.

Shift to Unlimited Data Plans:

As 5G adoption increases, unlimited data plans are becoming more common and more affordable. Operators like EE, Vodafone, and Three UK have launched unlimited data plans to meet rising demand from streaming, gaming, and remote work.

Price ranges for unlimited data plans vary, starting at around £20 to £40 per month, depending on the operator and included perks (e.g., streaming services, international roaming).

Impact of 5G Rollout:

5G plans are generally more expensive than 4G plans, but prices are becoming more competitive as 5G networks expand. The price premium for 5G services is gradually shrinking as all major operators push for widespread 5G coverage by 2025.

5G-enabled plans often come with additional perks, such as access to higher speeds, exclusive content (e.g., video streaming packages), and priority network access.

Bundling and Convergence:

Bundled services are becoming increasingly popular, where mobile plans are offered alongside other services like broadband, TV, and landlines. Operators like Virgin Media O2 and BT/EE are offering fixed-mobile convergence (FMC) bundles, often providing discounts when users subscribe to multiple services.

These bundles can provide good value, with discounts that range from 10% to 25% for combining mobile, TV, and broadband services under one plan

Price Stability and Discounts:

Although inflation and macroeconomic factors could pressure prices upward, operators are holding prices steady for now, using promotional discounts and offers to attract and retain customers. Family plans, multi-line discounts, and loyalty programs have helped to keep prices more affordable.

Promotional deals and seasonal offers, such as discounts on handsets or free months of service, are common, especially around product launches (e.g., new iPhone releases) or holidays.

Prepaid Plans:

Prepaid plan costs remain relatively low, although they offer smaller data allowances. Prepaid SIM-only plans start at around £10 to £20 per month for 10 GB to 20 GB of data, but these are declining in popularity as users shift towards postpaid options with more attractive data offers and flexible contracts.

International Roaming:

After Brexit, many UK operators have reintroduced roaming charges for travel within the EU, although some still offer roaming at no extra cost as part of their premium plans. Roaming charges can increase the total cost of mobile plans for those who travel frequently