

The Communications Market 2016

4 Telecoms and networks

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4.1 Key market developments in telecoms and networks

4.1.1 Sector overview

Total UK telecoms revenue grew in 2015, up by £0.2bn (0.5%) to £37.5bn (Figure 4.1). This was due to a £0.5bn (4.2%) increase in retail fixed revenue during the year, which resulted from a 12.6% rise in fixed internet revenues⁵⁰ (up by £0.6bn to £5.1bn) and was partially offset by falls in other categories of revenue of between 0.4% (for retail mobile revenues) and 4.2% (for wholesale services). Revenue from corporate data services also continued to fall in 2015, declining by 1.0%, to £2.6bn. Average monthly household spend on telecoms services increased by £2.52 (3.2%) to £82.17 in real terms in 2015. This represented 3.5% of total household spend, the same proportion as in 2014.

The total number of fixed voice lines decreased by 0.3 million (1.0%) to 33.2 million in 2015, while the total number of mobile subscriptions, including handset, dedicated mobile data and machine-to-machine (M2M) connections, increased by 1.6 million (1.8%) to 91.5 million during the year.

Fixed-to-mobile substitution in voice calls continued in 2015, when fixed voice call minutes fell by seven billion minutes (9.2%) to 74 billion minutes in 2015⁵¹ and mobile voice call minutes increased by five billion minutes (2.0%) to 143 billion minutes. Falling mobile voice prices are likely to have contributed to these trends, as well as the increasing prevalence of mobile tariffs offering unlimited voice minutes, and the convenience of smartphones. In February 2015, Ofcom varied the licences of the UK's four mobile networks to commit the operators to providing 90% geographic coverage for voice calls by the end of 2017⁵².

The total number of outgoing SMS and MMS messages continued to fall in 2015, down by eight billion messages (7.6%) to 101 billion messages, although this was a smaller fall than in either 2013 or 2014. While traditional mobile messaging volumes have declined over recent years, the use of instant messaging services as a substitute (in particular OTT services such as Facebook Messenger and WhatsApp) has increased. Our Digital Day research indicates that there has been substantial growth since 2014 in the number of people using instant messaging services. See section 1.4 for more information.

A key development in telecoms over the past decade has been the launch smartphones, and the accompanying growth in the use of mobile data services. This, as well as advancements in the capabilities of mobile devices and the launch of 4G services, has led to data usage increasing significantly. In the UK, the growth of 4G has been rapid; in Q4 2015 4G accounted for almost half of all mobile subscriptions (46%), and 4G take-up increased across all ages, genders and socio-economic groups in 2016. The availability of 4G mobile services has also increased, with the UK having 97.8% outdoor premises coverage by at least one operator in May 2016. The number of M2M connections has also been growing (up 7% to 6.7 million in 2015), as Internet of Things (IoT) devices begin to enter the market.

As technologies develop and become embedded, new uses and consumer behaviours emerge. We expect that the introduction of a new generation of network and device

⁵⁰ Including dial-up revenues

⁵¹ Fixed voice minutes shown here are likely to be understated as they do not fully capture the use of VoIP services

⁵² <http://media.ofcom.org.uk/news/2015/mno-variations/>

technologies will lead to further changes in how we communicate and interact as a society. A report published by Nokia Bell Labs⁵³ has predicted that by 2020 daily global demand for mobile data will be between 30 and 45 times that in 2015 (and in Western Europe usage will be 21 to 31 times 2005 levels).⁵⁴

The total number of fixed broadband connections increased by 0.9 million (3.9%) to 24.7 million in 2015, while the number of superfast broadband connections (i.e. connections providing actual speeds of at least 30Mbit/s) rose by 2.0 million (28.7%) to 9.2 million during the year, equivalent to 37.1% of all connections (a year-on-year increase of seven percentage points). This has led to average actual speed increases, from 22.8Mbit/s in November 2014 to 28.9Mbit/s in November 2015, and the increase in fixed broadband revenues noted previously.

There are a range of initiatives aimed at improving fixed broadband coverage overall. The Government recently announced plans to introduce a universal service obligation (USO) for broadband services.⁵⁵ This USO would give everyone in the UK the right to request a broadband connection at their residence providing actual download speeds of 10Mbit/s. Ofcom believes that a connection speed of 10Mbit/s is required to deliver an acceptable broadband user experience for a typical household.

Fixed broadband technology is also advancing. For example, BT announced plans for the roll-out of G.fast technology (which can provide speeds of up to 330Mbit/s over fibre-to-the-cabinet networks) and an increase in the footprint of its fibre-to-the-premise (FTTP) network (which can provide speeds of 1Gbit/s) to make 'ultrafast' broadband more widely available. Virgin Media announced investment of £3bn in early 2015⁵⁶ to roll out FTTP and cable connections to areas previously not connected to its network, while BT announced investments of £6bn across Openreach and EE.⁵⁷ Sky and TalkTalk have been trialling their 'ultra fibre-optic' service in York, offering speeds of more than 900Mbit/s over FTTP (which is also used to provide connections with headline speeds of 1Gbit/s by a number of 'alt-net' providers throughout the country).

These data are discussed in greater detail in the second and third sections of this chapter: *The Telecoms Industry* and *The Telecoms User*, which look at the telecoms sector from an industry and a consumer perspective respectively.

⁵³ <https://pages.nokia.com/1503.bell-labs-mobility-report.html>

⁵⁴ Made up of Andorra, Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Liechtenstein, Luxembourg, Malta, Monaco, Netherlands, Norway, Portugal, San Marino, Spain, Sweden, Switzerland, United Kingdom

⁵⁵ <https://www.gov.uk/government/news/government-plans-to-make-sure-no-one-is-left-behind-on-broadband-access>

⁵⁶ <http://about.virginmedia.com/press-release/9467/virgin-media-and-liberty-global-announce-largest-investment-in-uks-internet-infrastructure-for-more-than-a-decade>

⁵⁷ <http://www.btplc.com/News/#/pressreleases/bt-to-invest-billions-more-on-fibre-4g-and-customer-service-1394948>

4.1.2 Industry metrics and summary

Figure 4.1 UK telecoms industry: key statistics

UK Telecoms Industry	2010	2011	2012	2013	2014	2015
Total operator-reported revenue (£bn)	40.6	39.5	39.4	38.2	37.3	37.5
Operator-reported retail revenue (£bn) (excl. CDS)	27.8	27.9	28.3	28.1	28.2	28.7
Operator-reported wholesale revenue (£bn)	10.1	8.9	8.3	7.5	6.5	6.2
Average monthly household telecoms spend (£, 2015 prices)	86.06	84.13	83.16	80.43	79.65	82.17
Fixed access and call revenue (£bn)	9.3	9.0	8.7	8.7	8.4	8.4
Fixed internet revenue (£bn)	3.3	3.5	3.7	4.0	4.6	5.1
Fixed lines (millions)	33.4	33.3	33.4	33.4	33.5	33.2
Fixed broadband connections (millions)	19.6	20.7	21.8	22.8	23.7	24.7
Superfast broadband connections (≥30Mbit/s, millions)	0.2	1.0	3.1	5.3	7.1	9.2
Fixed voice call minutes (billions)	123	111	102	93	82	74
Average actual residential fixed broadband download speeds (Mbit/s)	6.2	7.6	12.0	17.8	22.8	28.9
UK Superfast broadband premises coverage (%)	-	-	-	-	75	83
Mobile retail revenues (£bn)	15.1	15.4	15.9	15.5	15.2	15.2
Mobile voice call minutes (billions)	131	131	132	134	137	142.8
SMS & MMS messages sent (billions)	129	150	151	129	110	101.3
Mobile data volumes (PB)	-	-	-	283	533	873
Active mobile subscribers (millions)	81.5	82.2	83.2	82.7	83.7	84.8
4G subscribers (millions)	-	-	-	2.7	23.6	39.5
4G UK outdoor premises coverage, by at least one operator (%)	-	-	-	-	-	90.5
M2M subscribers (millions)	3.2	4.1	5.0	5.7	6.3	6.7

Source: Ofcom / operators

Notes: CDS refers to corporate data services; connection figures are at year-end; all revenue data excludes VAT and is in nominal terms except for average monthly household spend; fixed voice minutes shown here are likely to be understated as they do not fully capture the use of VoIP services.

4.1.3 The use of promotional discounts in the pricing of communications services

An emerging trend in the pricing of dual- and triple-play communications services is the increasingly sophisticated use of promotional discounting to attract new customers and retain existing ones.

In the past three years, the difference between ‘standard’ and ‘promoted’ prices⁵⁸ for dual- and triple-play bundled services has increased, as operators have offered large discounts in order to attract new customers. In many cases, ‘loyalty’ or ‘retention’ discounts are also available to customers who renegotiate tariffs on completion of their minimum contractual term, or are looking to switch to a competing provider. In this section, we concentrate on

⁵⁸ The standard price is the monthly ‘list’ price of the package excluding any discount offers, while promoted prices include all discounts and special offers.

discounts offered to new customers; we have limited visibility into loyalty/retention discounts, as these are typically tailored to individual customers, and are not promoted or advertised.

The type and value of promotional discounts varies by operator – some offer one-time shopping vouchers while others offer discounts on monthly subscription fees for a set number of months (or, increasingly, over the entire minimum contractual term).

Promotional discounts tend to target customers purchasing bundled services, with the discount most frequently applied to the overall bundle price or the fixed broadband or TV elements of the bundle. Based on figures from Ofcom's Technology Tracker, household adoption of bundled services has increased; in 2016, 68% of households subscribed to bundled services, an eight percentage point increase compared to three years previously.

In contrast, fixed voice prices are rarely discounted in this way, and while almost all bundles that include fixed broadband and pay-TV offer promotional discounts to new subscribers, few such offers are available to consumers buying fixed voice services on a stand-alone basis. Nevertheless, certain other forms of discount are available such as line rental saver pre-payment tariffs.

With promotional discounting, providers can increase standard prices while keeping the price of the plan low to attract new customers. Promotions incentivise new consumers and those shopping around to switch provider, however, they also mean that consumers who are unengaged and do not switch provider or renegotiate prices after their minimum contractual period (i.e. out-of-contract customers) may end up paying more each month than those who are within their contract term.

Some recent examples of different service plans that highlight the trend of promotional discounts aimed at new customers include BT's Unlimited ADSL broadband plan: this has a standard price of £38.99 per month (£20 headline price plus £18.99 line rental⁵⁹) in July 2016 but new customers receive a £7 per month promotional discount during the entire minimum contractual term, paying an effective price of £31.99 per month.

Similarly, in July 2016 TalkTalk's SimplyBroadband⁶⁰ package has a standard price of £25.20 (£7.50 headline price plus £17.70 line rental) but new customers pay a discounted price of £21.45 per month during the entire minimum contractual term. During the same time, Sky's customers of BB Unlimited⁶¹ package pay £22.40 per month for the entire minimum contractual term, a discount of 18%, after which the standard price increases to £27.40. Further, Virgin Media's SuperFibre 50 and calls⁶² package costs £36.99 in July 2016, but new customers pay £31.74 per month during the minimum contract period, a discount of 14%.

⁵⁹ Prices for BT Unlimited Broadband with weekend calls as on 19 July 2016 from Pure Pricing UK Broadband Update, July 2016

⁶⁰ Prices for TalkTalk's SimplyBroadband from Pure Pricing UK Broadband Update, July 2016

⁶¹ Prices for Sky's BB Unlimited + Free Weekend Calls from Pure Pricing UK Broadband Update, July 2016

⁶² Prices for Virgin Media's SuperFibre 50 and calls from Pure Pricing UK Broadband Update, July 2016

Figure 4.2 Examples of different promotional tariffs from BT, Sky, Virgin Media and TalkTalk for July 2016

Service provider	Plan	Tariff per month (£)		Discount received by new customers (%)
		Standard	Including promotion	
BT	Unlimited ADSL broadband + Free Weekend Calls	38.99	31.99	18.0%
Sky	Sky BB Unlimited	27.40	22.40	18.2%
TalkTalk	SimplyBroadband	25.20	21.45	14.9%
Virgin Media	SuperFibre 50 and calls	36.99	31.74	14.2%

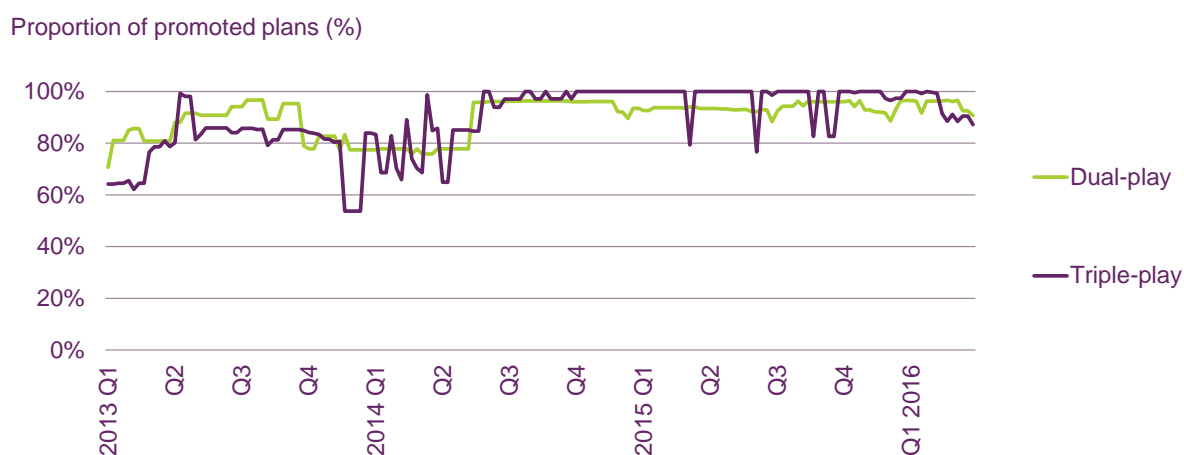
Source: Ofcom, Pure Pricing UK Broadband Updates

Note: Tariff including promotional discounts are calculated across each service's minimum contractual term

The prevalence and depth of promotional discounts is increasing

On average, 94% of all dual-play plans and 98% of triple-play plans offered by the UK's four largest residential fixed telecoms providers (BT, Sky, TalkTalk and Virgin Media) had some element of discounts in 2015, compared to 86% of dual-play and 79% of triple-play plans offered in 2013. Between Q4 2014 and Q4 2015, there have been periods where all triple-play plans offered by these providers had some element of promotional discounting.

Figure 4.3 Plans with promotions as percentage of total plans for dual/triple-play services

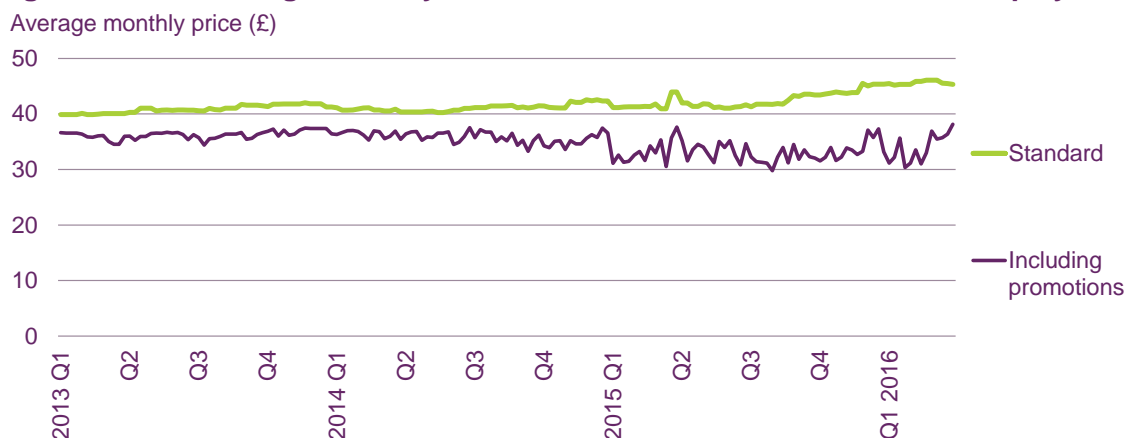


Source: Simplify Digital

Note: Includes tariffs for the four largest providers – BT, Sky, Virgin Media and TalkTalk.

The increasing prevalence and depth of promotional discounts is also demonstrated by the fact that while the average monthly dual-play (voice and broadband) standard prices offered by BT, Sky, Virgin Media and TalkTalk increased by 14% in the three years to Q1 2016, the monthly price including promotions fell by 6%.

Figure 4.4 Average monthly standard and discounted tariffs for dual-play bundles

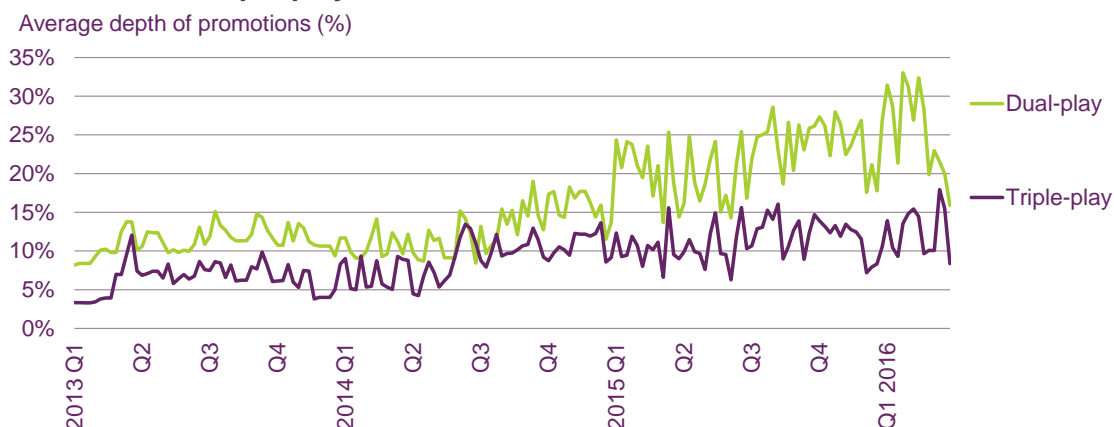


Source: Simplify Digital

Note: The average monthly cost is calculated across each service's minimum contractual term. Includes tariffs for the four largest providers – BT, Sky, Virgin Media and TalkTalk.

The average depth of promotions, i.e. the value of the promotion as a proportion of the total price of the service over its minimum contractual term, has continued to increase over the past three years, gathering pace in 2015. Recently, some plans have offered discounts worth over 60% of the monthly price of the package. Based on the plans offered by BT, Sky, TalkTalk and Virgin Media, the average promotional depth for dual-play bundles (i.e. fixed voice and broadband) increased from 10% in Q1 2013 to 26% in Q1 2016. Over the same period, average promotional depth for triple-play (fixed voice, broadband and pay-TV) increased from 5% to 13%.

Figure 4.5 Promotions as a proportion of total monthly price for dual-play and triple-play bundles



Source: Simplify Digital

Note: The average monthly price is calculated across each service's minimum contractual term; includes tariffs offered by the UK's four largest residential fixed telecoms providers – BT, Sky, Virgin Media and TalkTalk.

In Ofcom's Annual Plan 2016/17, we committed to monitor price increases, provide advice and information on pricing, and make sure all consumers receive value from their communications providers, including protecting consumers who are not engaged with the market.⁶³ Understanding the implications of the increased use of price discounting is an important part of this and we are planning to publish a study on pricing trends in the market later this year.

⁶³ <http://www.ofcom.org.uk/content/about/annual-reports-plans/ann-plans/1560620/Annual-Plan-2016-17.pdf>

4.2 The telecoms industry

4.2.1 Introduction

In this section of the report, we examine recent trends in the telecommunications market with regard to industry revenues, subscribers and volumes. This section is divided into five sections:

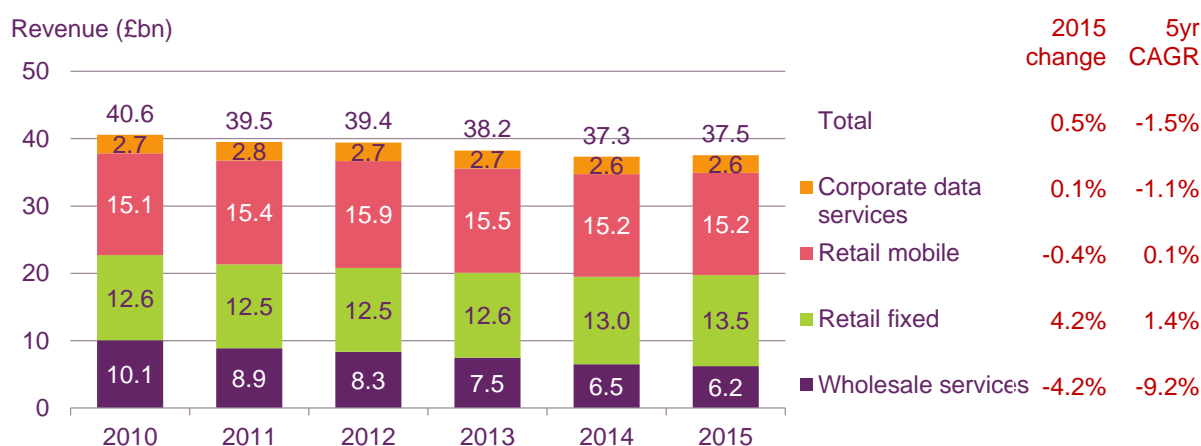
- Market overview: top-level findings from the UK telecoms industry
- Fixed voice: covers the fixed-line telephony market
- Fixed data: covers the fixed broadband market
- Mobile voice and data: covers mobile voice telephony, mobile messaging, mobile data, mobile broadband and machine-to-machine communications.
- Business markets: covers mobile and fixed voice and broadband business services.

4.2.2 Market overview

Total telecoms revenues rose by 0.5% to £37.5bn in 2015

In total, UK telecoms services generated £37.5bn in revenues in 2015, a £0.2bn (0.5%) nominal rise compared to 2014 and £3.0bn (7.5%) less than in 2010. The largest decline in 2015 was a £0.3bn (4.2%) fall in wholesale revenues, which was largely due to falling mobile call termination rates. Retail fixed telecoms revenues rose by £0.5bn (4.2%) to £13.5bn during the year as a result of a £0.6bn increase in fixed internet revenues (driven primarily by increasing superfast broadband take-up). Revenue from corporate data services rose by 0.1% to £2.6bn in 2015.

Figure 4.6 Summary of UK telecoms revenues



Source: Ofcom / operators, with the exception of corporate data services, sourced from IDC.

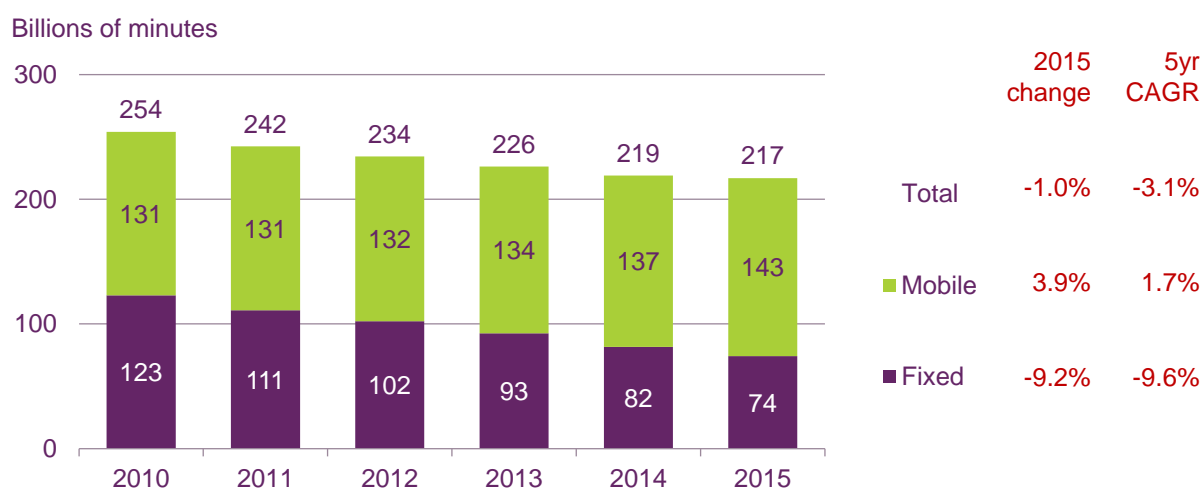
Notes: 'Corporate data services' comprises web hosting, Ethernet, IP VPN, digital leased line, corporate VoIP and frame relay/ATM services; wholesale mobile comprises wholesale mobile voice, messaging and data services, mobile voice and SMS termination revenue and wholesale inbound roaming revenue (i.e. revenue from overseas operators when their subscribers use UK networks).

Total voice call volumes fell by one per cent to 217 billion minutes in 2015

The substitution of voice calls for text-based forms of communication (such as email, messaging through social media websites and instant messaging) continued in 2015, partly due to growing levels of smartphone use. This resulted in the continued decline in total voice call volumes, as a fall in fixed-originated call volumes was partly offset by increasing mobile-originated call volumes.

Fixed-originated voice call volumes fell by 9.2% to 74 billion minutes during the year, a slightly slower rate of decline than the 11.8% fall recorded in 2014. The 3.9% increase in mobile-originated call volumes in 2015 (to 143 billion minutes) was higher than the growth recorded in 2014 and, overall, total voice call volumes fell by 1.0% to 217 billion minutes in 2015. This was a lower rate of decline than the 3.1% average annual fall recorded between 2010 and 2015, and the proportion of total voice calls that were mobile-originated increased from 62.7% to 65.8% during the year.

Figure 4.7 Outgoing fixed and mobile voice call volumes



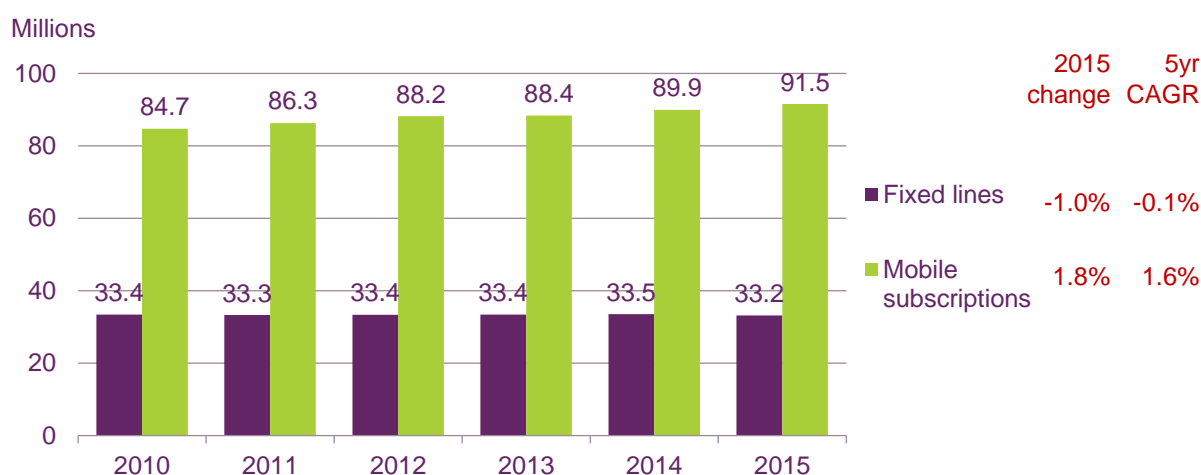
Source: Ofcom / operators

UK mobile subscriptions rose 2% to 91.5 million in 2015

At the end of 2015 there were 91.5 million UK mobile subscriptions, including handset subscriptions, dedicated mobile broadband data connections and M2M connections. This was an increase of 1.6 million connections (1.8%) compared to the previous year, mainly due to a 0.8 million increase in the number of mobile voice connections (the number of M2M and dedicated mobile broadband connections both increased by 0.4 million - see section 4.2.5 for more details).

Despite rapidly declining fixed voice call volumes, there has been relatively little change in the number of UK fixed lines (including PSTN lines and ISDN channels) over the past few years, and at the end of 2015 there were 33.2 million such lines, a small (1.0%) decline since the end of 2014.

Figure 4.8 Fixed lines and mobile subscriptions



Source: Ofcom / operators

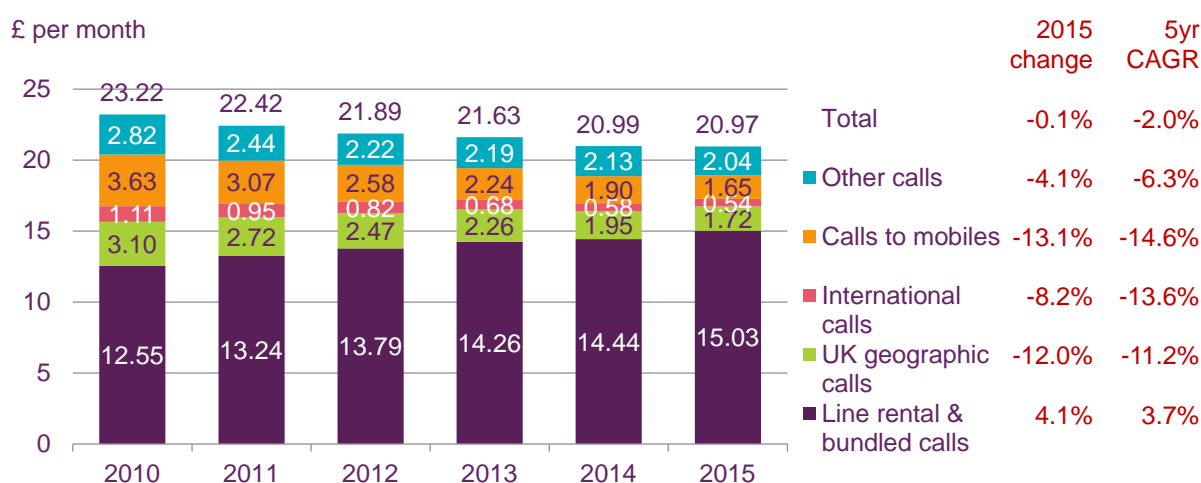
Note: Mobile subscriptions include M2M

4.2.3 Fixed voice services

Average revenue per fixed voice connection fell by 0.1% to £20.97 per month in 2015

Average revenue per fixed line fell by two pence per month (0.1%) in 2015, to £20.97. This decline was lower than the 8.3% fall in average fixed voice call volumes per line in 2015 (see Figure 4.10), indicating that fixed voice prices increased during the year. As is shown in Figure 4.9, the largest increase in average spend per line was in line rental and bundled calls, which partly reflects continued increases in line rental prices; for example at the end of 2015 BT's standard line rental (including VAT) was £17.99 per month, a 35% increase compared to the £13.29 fee five years previously.

Figure 4.9 Average monthly retail voice revenue per fixed line



Source: Ofcom / operators

Note: Figures exclude VAT

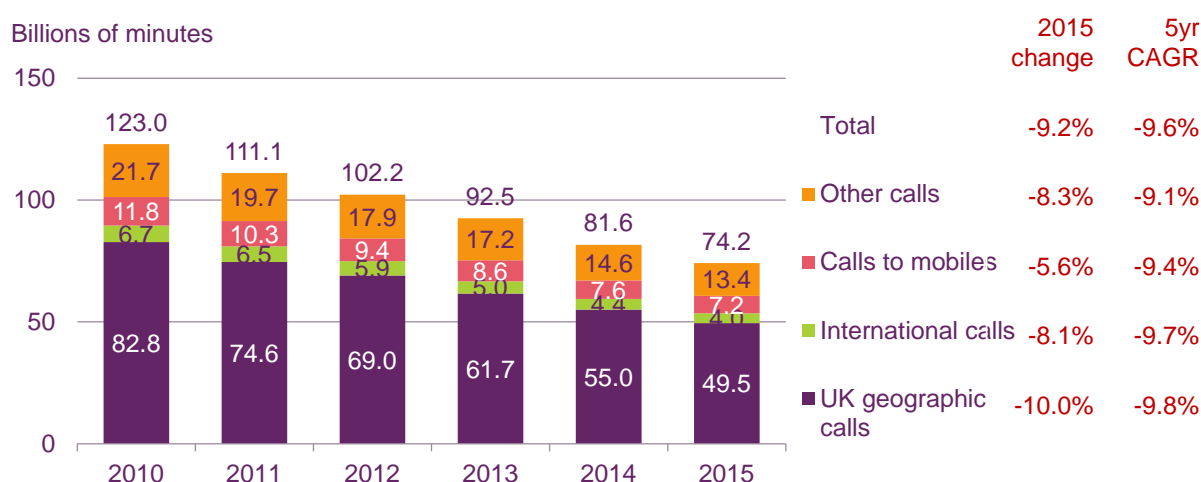
Fixed-originated voice call volumes declined by 9.2% in 2015

Fixed voice call volumes fell in 2015, despite the number of lines remaining relatively static during the year (see Figure 4.11). This decline was driven by increasing fixed-to-mobile call substitution, as shown in Figure 4.7, and increasing used of text-based forms of

communication, such as email and instant messaging, including those services provided by social networking sites, which is partly the result of growing smartphone use.

The decline in fixed voice call volumes slowed in 2015, with total outgoing call minutes falling by 7.5 billion minutes (9.2%) to 74.2 billion minutes during the year. This fall was lower than the annual average change in the five years to 2015 (a 9.6% fall). Volumes fell for all of the call types outlined below, with rates of declines ranging from a 10.0% fall in calls to UK geographic call minutes to a 5.6% fall in calls to mobiles. As was the case in previous years, calls to UK geographic numbers accounted for the majority (67%) of total fixed call volumes in 2015.

Figure 4.10 Fixed voice call volumes, by type of call



Source: Ofcom / operators

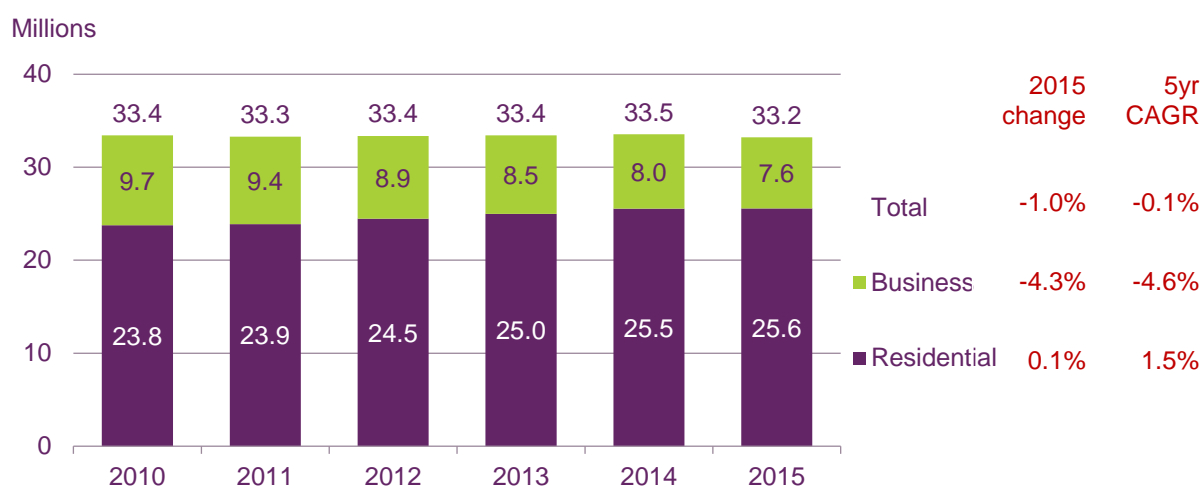
Note: VoIP call volumes are not fully captured in this chart and so totals may be understated

In contrast to fixed call volumes, the number of fixed lines continues to be resilient

The total number of fixed lines has remained relatively stable over the last few years, despite fixed-originated voice call volumes having declined significantly (Figure 4.10). At the end of 2015 there were 33.2 million UK PSTN lines and ISDN channels, a fall of 0.3 million (1.0%) compared to 2015. In the five years to 2015, a decline in the number of business lines (down by 2.0 million) has been partly offset by a 1.8 million increase in the number of residential connections.

As shown in section 4.2.7, the fall in the number of business lines is due to the declining use of PTSN and ISDN (down 4.0% and 4.7% respectively) and increasing take-up of VoIP calls as an alternative to traditional fixed voice calls (VoIP connections are not fully captured here). Conversely, growth in the number of residential lines is the result of increasing fixed broadband take-up (as most UK homes need a fixed voice line in order to be able to receive fixed broadband services), along with growth in the number of households. Ofcom market research conducted in 2016 suggests that 73% of those with a landline phone at home said that they used it for internet access, with 45% stating that internet access was the most important reason for having a landline, compared to 15% of who said that making/receiving calls was the most important use.

Figure 4.11 Number of fixed lines



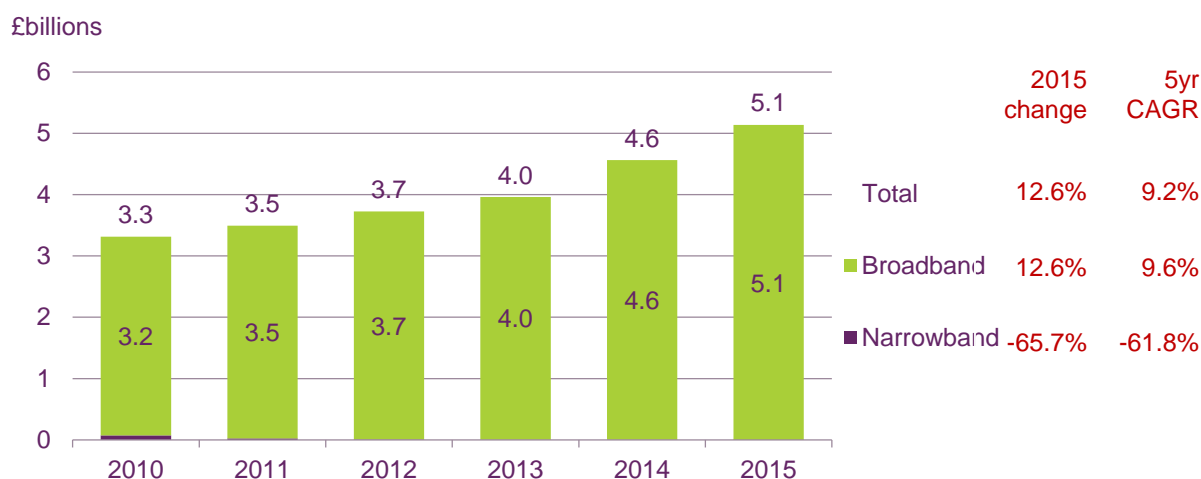
Source: Ofcom / operators

4.2.4 Fixed data services

Fixed internet revenue growth continues due to increased fibre take-up

Non-corporate internet revenues (i.e. those generated by residential and SME users) totalled £5.1bn in 2015, a £0.6bn (12.6%) increase compared to 2014. Almost all of this revenue was generated by fixed broadband services, as estimated narrowband revenues were less than £1m in 2015. The main reason for the increase in total residential and SME fixed broadband revenues in 2015, as was the case in 2014, was the continued migration of UK consumers onto superfast services, which typically cost around £10 per month more than standard broadband services.

Figure 4.12 Retail residential and SME fixed internet revenues



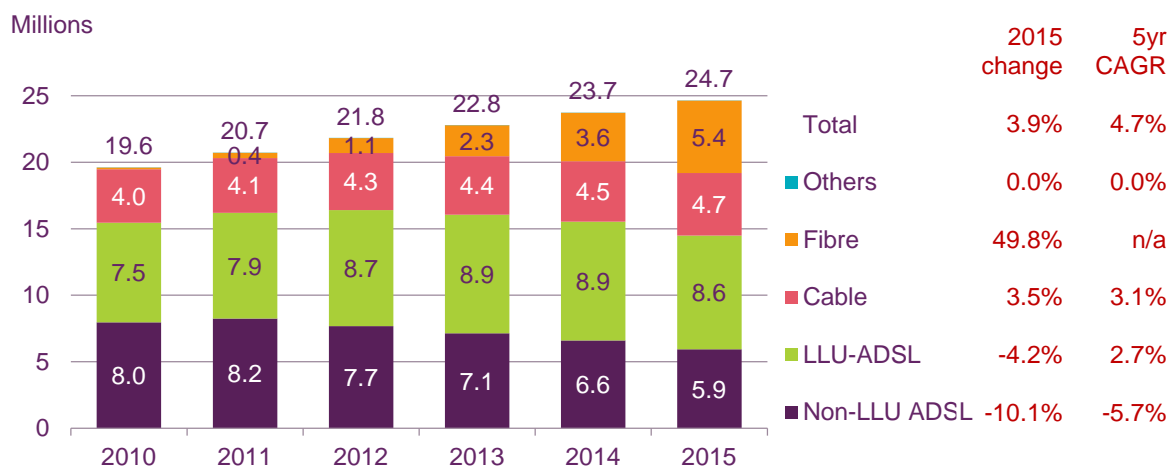
Source: Ofcom / operator data

The number of broadband connections delivered over NGA technology increased by two million in 2015

At the end of 2015 there were 24.7 million residential and SME UK fixed broadband lines, representing a 0.9 million (3.9%) increase since 2015. The total number of non-LLU ADSL

lines fell by 10.1% to 5.9 million during the year, while the number of LLU ADSL lines fell for the first time by 4.2%, to 8.6 million.⁶⁴ The main reason for the decline in ADSL lines is consumers migrating onto next generation access (NGA)⁶⁵ broadband services: the number of fibre-based fixed broadband lines grew by 49.8% during the year, up from 3.6 million to 5.4 million, while the number of cable broadband lines continued to show steady growth, increasing by 0.2 million (3.5%) to 4.7 million. BT, the largest provider of retail broadband reported that 48% of its customers were on fibre products in Q4 2015.⁶⁶ Although these services are generally more expensive than ADSL, for many consumers the higher connection speeds and better user experience that they offer justifies this increase in price.

Figure 4.13 Retail fixed broadband lines



Source: Ofcom / operator data

The proportion of connections with a headline speed of ‘up to’ 30Mbit/s or higher rose by nine percentage points to 42% in 2015

The proportion of residential broadband lines that were fibre or cable connections with an advertised speed of ‘up to’ 30Mbit/s or higher was 42% in November 2015, a nine percentage point increase compared to a year previously. This growth is the result of consumer demand for greater bandwidth, as multiple users in the home share bandwidth, using multiple devices to access a growing number of web-based services including video streaming and online games.

Both BT and Virgin Media have invested significantly in network upgrades, increasing the speeds that are available to consumers and enabling more homes to access superfast services. In total, connections advertised as ‘up to’ 10Mbit/s or higher accounted for 93% of residential connections in November 2015. The proportion of residential broadband lines with an advertised headline speed of ‘up to’ 8Mbit/s or less was less than 1% at the end of 2015.

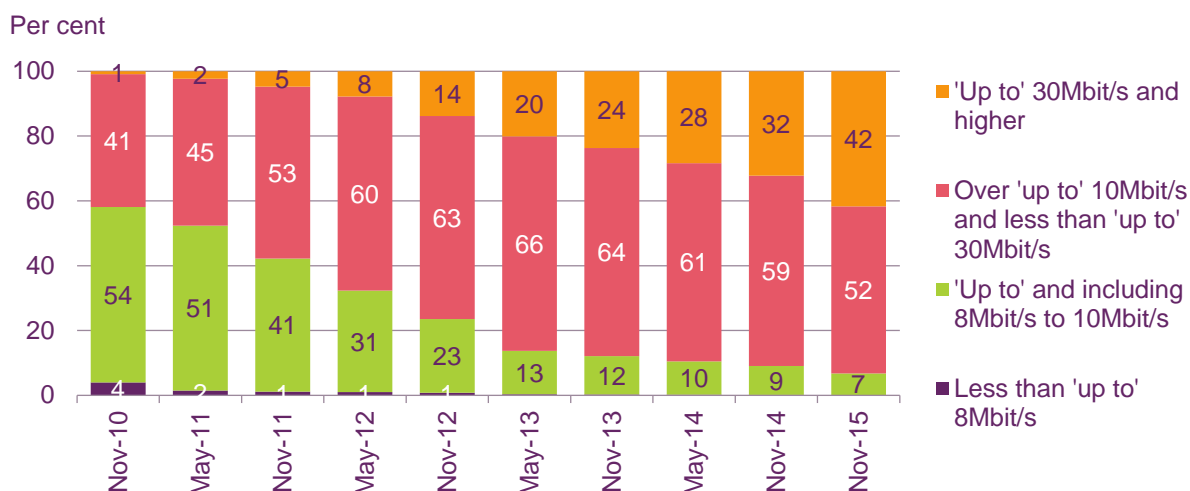
⁶⁴ The number of LLU-ADSL connections shown above is lower than the total number of LLU lines shown in Figure 1.32 as some LLU lines are used to provide fibre broadband services rather than ADSL.

⁶⁵ Lines using fibre and cable access technology that are technologically capable of providing superfast speeds but may not always provide these. Around 12% of FTTC connections will not provide superfast speeds.

⁶⁶ <http://www.btplc.com/Sharesandperformance/Quarterlyresults/Investormetingpack.pdf>, slide 61

However, actual speeds are frequently lower than advertised speeds, and data from Ofcom's Connected Nations 2015 report⁶⁷ show that 2.4 million households were unable to receive access line speeds of 10Mbit/s or more in June 2015. This may be due to long line lengths, old wiring or a variety of other factors. Alternative technologies and solutions are being investigated as part of the Government-announced broadband USO, which aims to provide a right to connectivity with download speeds of at least 10Mbit/s.

Figure 4.14 UK residential broadband lines, by headline speed



Source: Ofcom, based on data provided by the UK's largest ISPs by retail market share (representing over 90% of the total market).

Note: The above 'up to' 10Mbit/s and less than 'up to' 30Mbit/s category includes ADSL2+ lines which are not marketed using a connection speed.

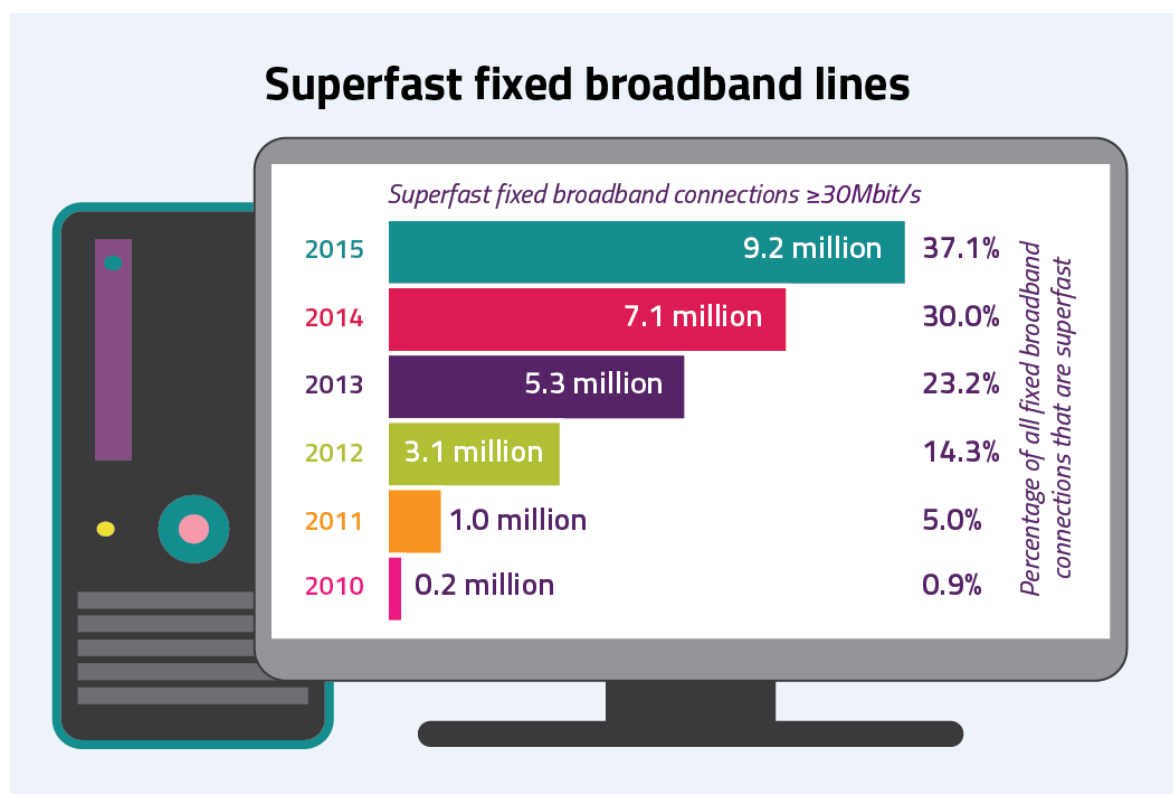
Over a third of all fixed broadband lines were providing superfast ($\geq 30\text{Mbit/s}$) speeds at the end of 2015

At the end of 2015, 37.1% of fixed-line broadband connections were providing actual speeds of 30Mbit/s or more (9.2 million connections). This was a year-on-year increase of 2.0 million (23.9%) and has increased from 0.2 million connections in 2010. These speeds are only available over fibre or cable connections.

Superfast speeds will enable a greater number of concurrent users on a single broadband connection to access the internet, as well as enabling users to carry out tasks that are difficult on slower connections, such as UHD video streaming and downloading large files.

⁶⁷ <http://stakeholders.ofcom.org.uk/market-data-research/market-data/infrastructure/connected-nations-2015/>

Figure 4.15 Superfast fixed broadband lines



Source: Ofcom / operators

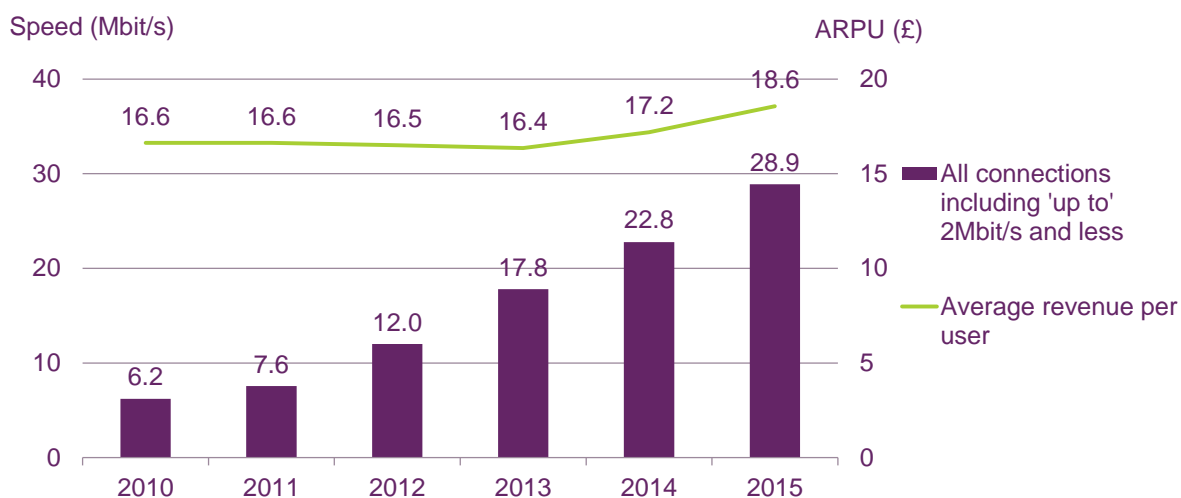
Notes: Includes estimates where Ofcom does not receive data from operators; includes Ofcom adjustment to exclude FTTC connections delivering less than 30Mbit/s.

The average actual speed of a residential UK fixed broadband connection was 28.9Mbit/s in November 2015

The average speed of a UK fixed broadband connection in November 2015 was 28.9Mbit/s. This had increased from 22.8Mbit/s (up by 26.9%) in November 2014, and from 6.2Mbit/s in the five years to November 2015 (an average increase of 36.0% year on year). While there has been a very large increase in the UK average residential fixed-line download speed, many households do not have access to services with high speeds. The USO will look to provide a right to broadband with speeds capable of enabling most day-to-day tasks that an average family household will carry out on the internet.

Fixed broadband ARPU has also increased between 2010 and 2015, up 11.7% in real terms to £18.57 in 2015. The increase in ARPU since 2013 has been proportionally lower than the average actual speed increases over the same period. The main factors behind the rises in average fixed broadband speed are, the investment of operators in network infrastructure, the increasing availability of higher speed connections, growing demand for access to higher-speed connections and the increased residential take-up of superfast connections.

Figure 4.16 Average actual residential fixed broadband download speeds and real average revenue per connection



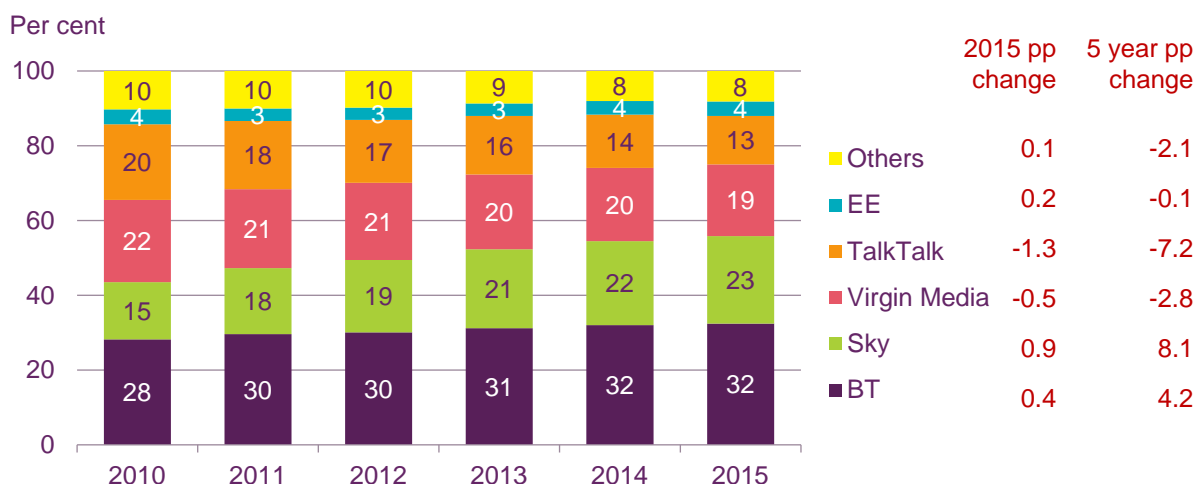
Source: Ofcom, using data provided by SamKnows

Note: November 2010 data are for Nov/Dec 2010; average speed data are for November of each year; average revenue per user includes VAT and is adjusted for CPI

BT continued to be the UK's largest fixed broadband provider in 2015

BT maintained its position as the UK's largest provider of residential and SME fixed broadband services in 2015, with a market share of 32%. Sky's market share continued to grow, reaching 23%, as it continued to migrate its pay-TV customers onto triple-play bundles, including landline and fixed broadband services. Virgin Media's market share fell by one percentage point to 19%, despite growth in the number of connections, while TalkTalk experienced a drop of one percentage point to 13% in 2015.

Figure 4.17 Retail fixed broadband market shares



Source: Ofcom / operator data

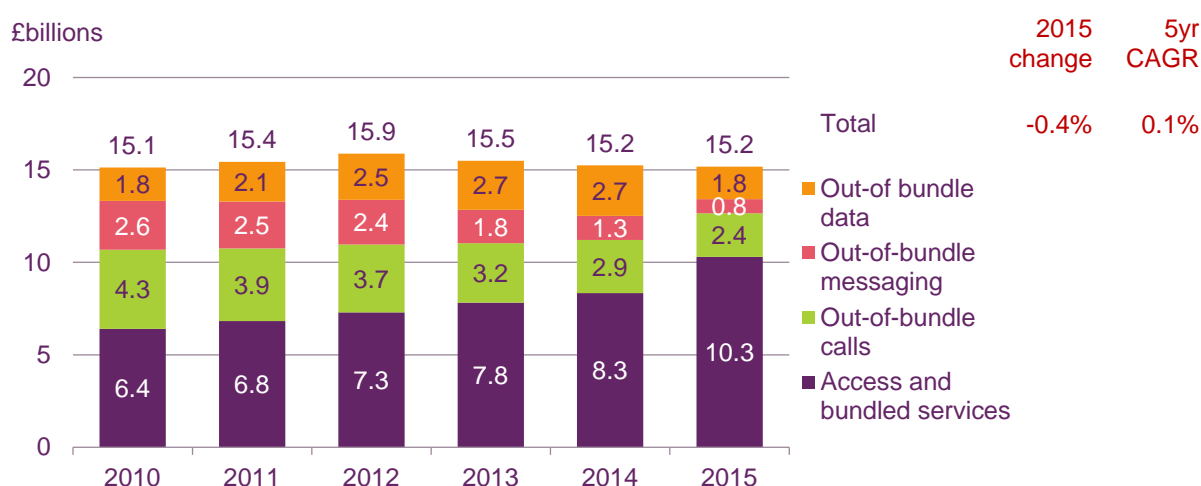
Note: BT and EE are shown separately, as the merger between these two organisations was not completed until 2016

4.2.5 Mobile voice and data services

Falling out-of-bundle revenues were offset by a rise in access and bundled services revenue in 2015

Total mobile retail revenue fell by £63.9m (0.4%) in 2015, in contrast to the 0.1% average annual growth rate over the five years to 2015. One of the main operators redefined how it reports bundled and out-of-bundle revenues in 2015, meaning that it is not possible to maintain exact like-for-like comparisons between 2015 and previous years within the individual revenue categories.

Figure 4.18 Mobile retail revenue, by service



Source: Ofcom / operators

Average monthly retail revenue per mobile subscription fell by 2.6% in 2015

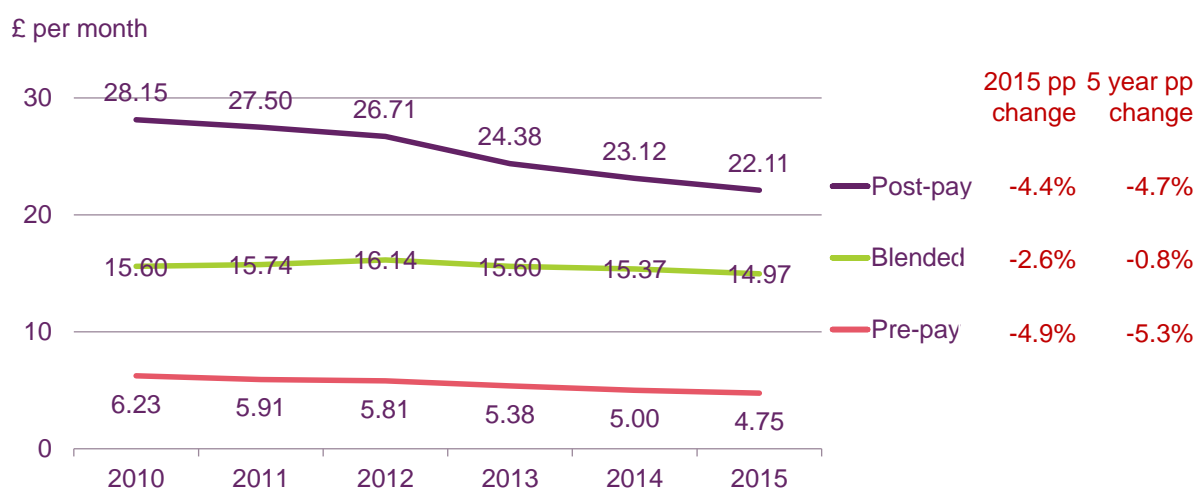
Average monthly retail revenue per mobile subscription fell by £0.40 (2.6%) to £14.97 in 2015. This reflected falling average revenues per user for both post-pay and pre-pay subscriptions in the year, when the percentage decline in average revenue per pre-pay user (down 4.9% to £4.75 per month) was greater than that for post-pay subscriptions (down 4.4% to £22.11 per month).

Along with falling prices and declining SMS and MMS use, a key reason for falling average revenues was the migration of higher-use pre-pay customers onto post-pay services during the year (see Figure 4.20 for more details). While average retail revenue per mobile subscription has dropped, data use on mobiles increased rapidly; in 2015 total UK mobile data use was 873PB, a 63.7% increase compared to 533PB in 2014,⁶⁸ largely as a result of growing smartphone use.

The ways in which consumers purchase mobile phone services has evolved as the underlying tariffs have changed, blurring the division between pre-pay and post-pay. Historically, pre-pay and post-pay reflected the limitations of different billing platforms and became established as two separate consumer segments. But as consumer demands have changed and billing platforms have evolved, the clear division between pre- and post-pay no longer exists. There are now rolling post-pay contracts, that can be amended or cancelled each month with no penalty, as well as pre-pay bundles that have the option to be auto-renewable.

⁶⁸ One petabyte (PB) is made up of 1,000,000 gigabytes (GB)

Figure 4.19 Average monthly retail revenue per mobile subscription



Source: Ofcom / operators

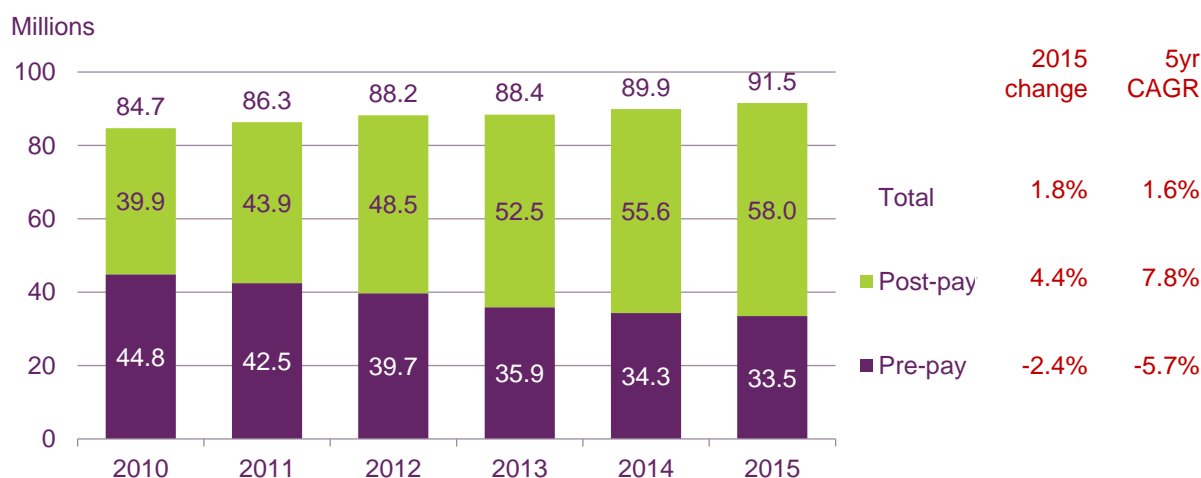
Note: Mobile voice revenues include revenues from bundled messaging and data services; In Q1 2015, one MNO changed reporting to include SMS and data revenues in bundles; this was previously split into the relevant voice/SMS/data sections.

All figures are nominal.

The proportion of mobile subscriptions that were post-pay increased by 1.6 percentage points to 63.4% in 2015

At the end of 2015, 63.4% of UK mobile connections were post-pay, a 1.6 percentage point increase compared to the 61.8% recorded in 2014. The proportion of post-pay consumers has increased over recent years, partly because mobile operators have made post-pay tariffs more attractive than pre-paid as, on average, post-pay subscribers spend more than pre-pay subscribers. Increasing smartphone take-up is also likely to be a contributing factor, as consumers can spread the cost of the smartphone devices over the length of their post-pay contract. As mobile data volumes increase, the proportion of connections that are post-pay may also increase, as it is typically expensive to consume larger quantities of data on pre-pay tariffs.

Figure 4.20 Mobile subscriptions, by pre-pay and post-pay



Source: Ofcom / operators

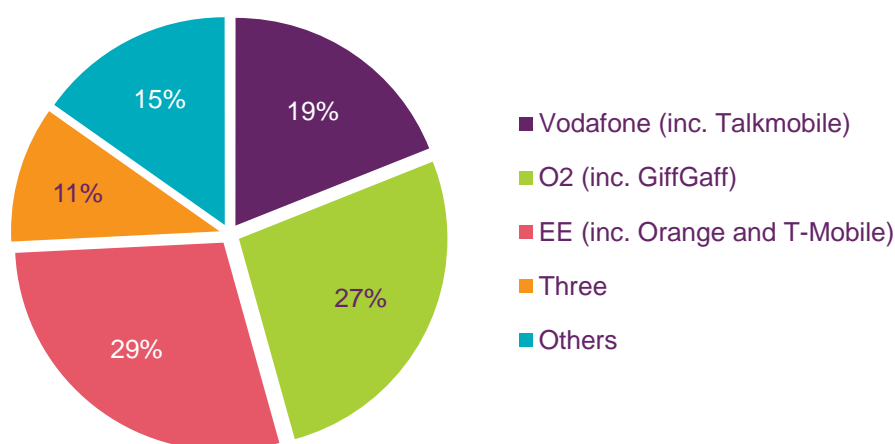
Note: Includes M2M

EE was the largest provider in terms of retail mobile subscriptions at the end of 2015

Including its legacy Orange, and T-Mobile brands, EE was the largest UK mobile provider in terms of retail subscriptions⁶⁹ at the end of 2015, with a market share of 29% (Figure 1.21). The second and third largest providers were O2 (with a 27% retail subscription share) and Vodafone (at 19%), in both cases including customers using their wholly-owned MVNO services (GiffGaff in the case of O2 and Talkmobile for Vodafone). Three's retail subscription market share was 11% at the end of the year.

Mobile Virtual Network Operators (MVNOs) and resellers, who all use the one or more of four main UK providers' network infrastructure to offer services to end users, had a combined market share of 15% at the end of 2015. The operators included in this category include Tesco Mobile, Virgin Mobile, Lycamobile and Lebara.

Figure 4.21 Retail mobile subscription shares, by provider: Q4 2015



Source: Ofcom / operators

Note: Excludes M2M subscriptions

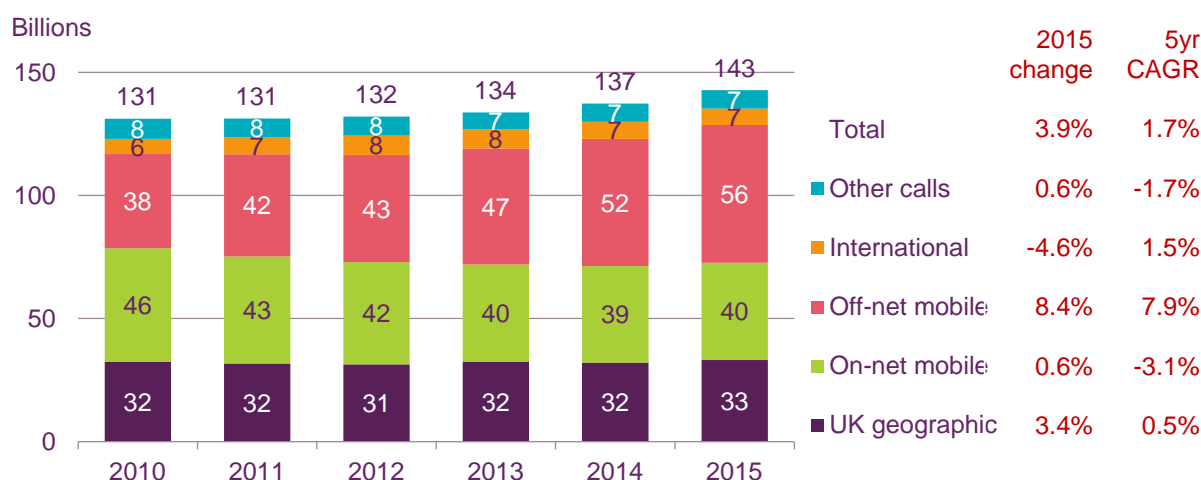
Total outgoing mobile call minutes increased by 3.9% in 2015

Data provided to Ofcom by the UK's mobile operators show that outgoing mobile call volumes increased by five billion minutes (3.9%) to 143 billion minutes in 2015. Calls to mobiles continued to account for the majority of outgoing mobile calls during the year (67% of the total, up from 66% in 2014), with the proportion of these calls that were to mobiles on the same network falling from 43% to 41% during the year.

Call volumes to UK geographic numbers increased by 3.4% to 33 billion minutes in 2015, while call volumes to international destinations fell by 4.6% during the year. The biggest increase was in call volumes to off-net mobiles, which increased by 8.4% to 56 billion minutes during the year.

⁶⁹ Excluding M2M connections.

Figure 4.22 Outgoing mobile call minutes, by type of call

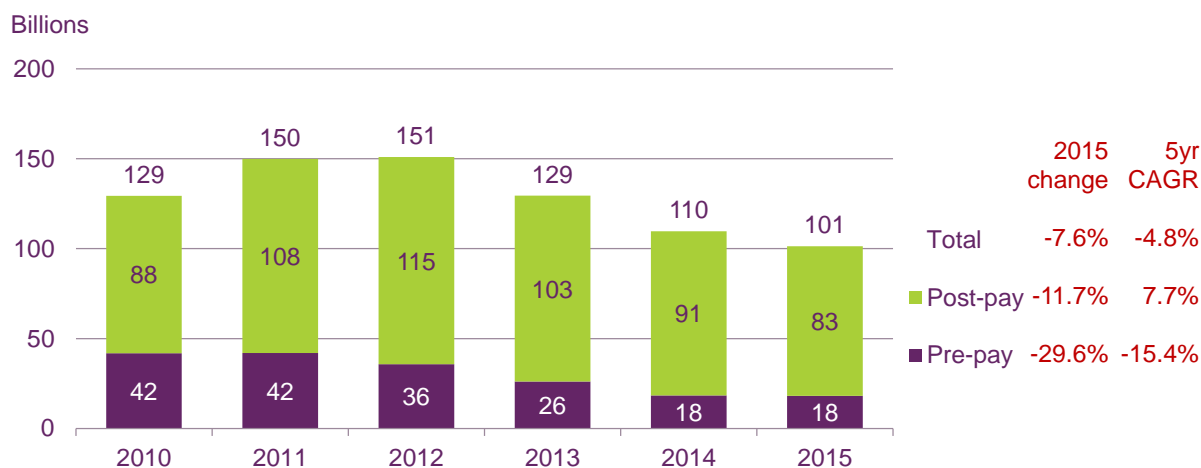


Source: Ofcom / operators

Traditional mobile messaging use fell for the third consecutive year in 2015

The total volume of outgoing SMS and MMS messages fell by eight billion messages (7.6%) to 101 billion messages in 2015, a smaller drop to those recorded in 2013 and 2014. The main reason for declining message volumes is increasing smartphone take-up, as more sophisticated handsets enable mobile users to access alternative communication methods such as email, instant messaging, including messaging services provided by handset makers and social networking sites (Figure 1.17).

Figure 4.23 Outgoing SMS and MMS messages: 2010-2015



Source: Ofcom / operators

The total number of mobile subscriptions passed 90 million for the first time in 2015

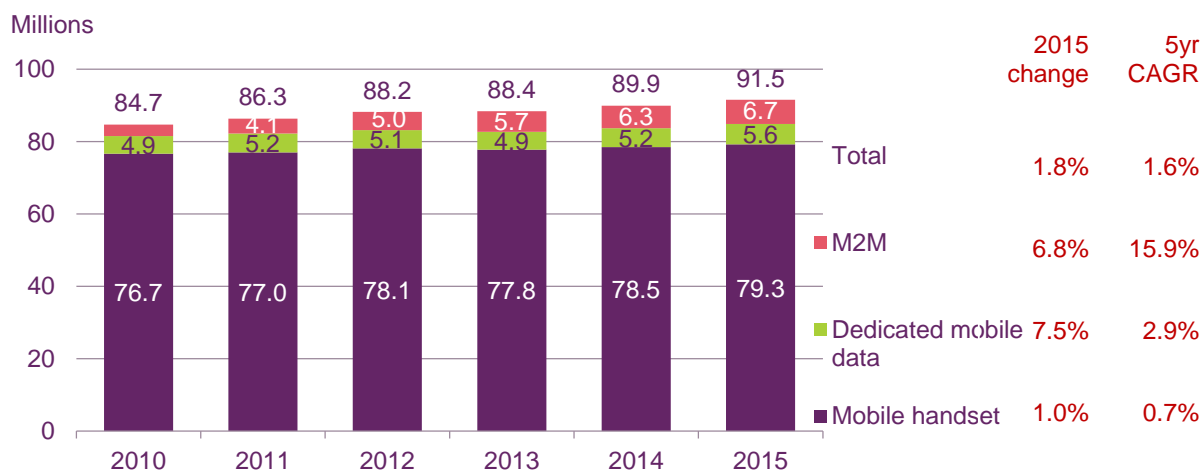
At the end of 2015 there was a total of 91.5 million active mobile handsets, dedicated mobile data connections (such as mobile broadband dongles and data-only SIMs) and M2M connections, a 1.6 million (1.8%) increase on the previous year. While there were 79.3 million mobile handset subscriptions in 2015, not all of these are used to access mobile data services. We estimate that 67% of mobile phones (53.1 million) were used to access the internet in 2015, up from 61% in 2014 (47.9 million).

M2M and the Internet of Things

M2M stands for 'machine-to-machine'. The general definition of a M2M connection is a connection between devices, often wireless, where human input is not necessarily required. Commonly used examples of M2M are in smart metering (where the meter reports energy use back to a central billing database) or a burglar alarm, which may contain a SIM card to enable communication with monitoring offices. Vending machines are another common example, as some may use M2M technology to keep a central computer up to date with stock levels.

The Internet of Things (IoT) describes the creation of new and innovative services by the interconnection of everyday devices, often using M2M connections. Over the coming decade, the IoT is expected to grow to hundreds of millions of devices in the UK alone, bringing benefits to consumers across a number of sectors including transport, healthcare and energy.

Figure 4.24 Mobile subscriptions, by connection type: 2010-2015



Source: Ofcom / operators

4.2.6 4G mobile services

4th generation (4G) mobile communications standard

4G stands for 4th generation, and relates to the 4th generation mobile communications standard, which allows internet access at higher speeds than previous standards. All premium smartphones can use 4G services while still being compatible with the previous standards, 2G and 3G.

The first commercial 4G service was launched in the UK in October 2012 by EE after it was granted a licence modification that allowed it to use its existing 1800MHz spectrum for 4G. The auction for 4G spectrum concluded in February 2013, with EE, Telefonica (O2), Vodafone, Three and Niche Spectrum Ventures Ltd (a BT Group subsidiary) receiving licences. Vodafone and Telefonica launched their 4G services in August 2013, and Three followed with a London-based release in December 2013, followed by national roll-out in March 2014.

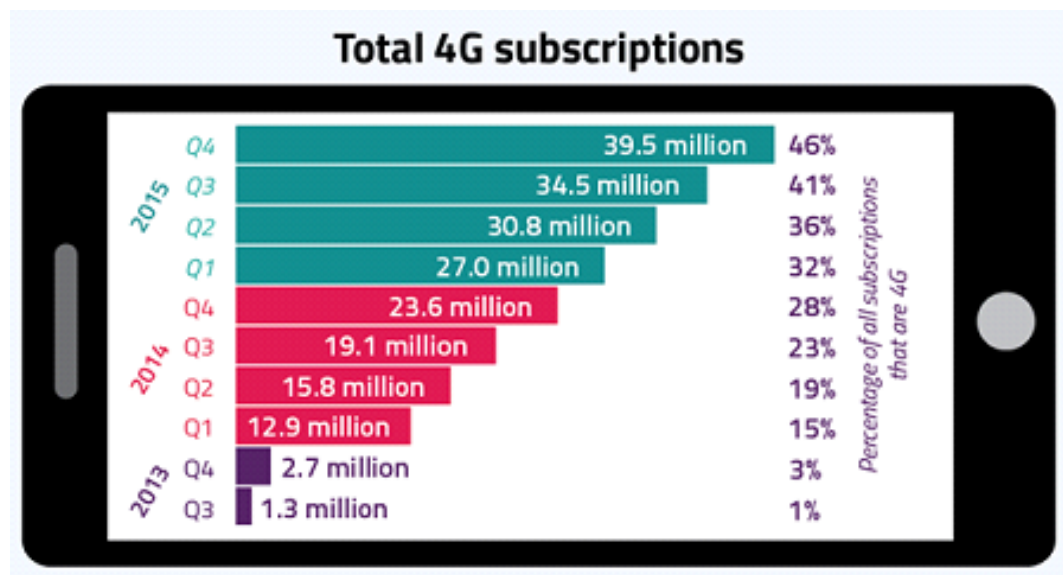
More than 45% of mobile connections were a 4G service in Q4 2015

By the end of 2015, 39.5 million mobile connections could access 4G services, an increase of 15.9 million (67.3%) compared to the year previously. This was equivalent to 46% of all

UK mobile connections (excluding M2M connections), an 18 percentage point increase. The proportion of connections that were 4G tripled between Q1 2014 and Q4 2015, illustrating the high levels of consumer demand for mobile data services in the UK.

The figures above are likely to overstate 4G mobile use as they include all consumers whose tariff allows them to access 4G mobile services, regardless of whether they have a 4G-enabled device or are in an area where their provider has 4G coverage.

Figure 4.25 Total 4G subscription numbers



Source: Operator data

Note: Includes all consumers whose tariff allows them to access 4G mobile services, even those without a 4G-enabled device or in areas where their provider has no 4G coverage.

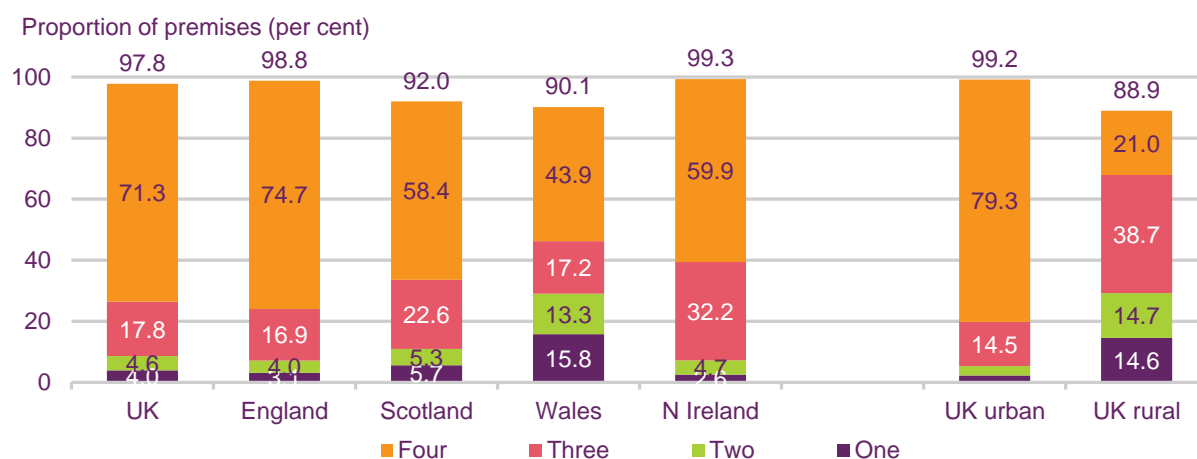
Over 70% of premises had outdoor 4G coverage from all four mobile operators

By May 2016, 97.8% of UK premises were in areas with outdoor 4G coverage in May 2016 in total, with 71.3% benefitting from similar coverage from all four mobile network operators and fewer than 10% of premises being covered by one or two operators.

Coverage varied significantly between urban and rural areas of the UK, with 99.2 % of premises in urban UK areas having outdoor 4G coverage, and 79.3% covered by all four operators compared to 88.9% of rural premises having outdoor 4G coverage from at least one operator, and just 21.0% having coverage from all four operators.

Ofcom maintains a mobile coverage checker at <http://maps.ofcom.org.uk/check-coverage> which can be used to check mobile coverage of 2G, 3G and 4G by postcode and by operator.

Figure 4.26 Outdoor 4G premises mobile coverage, by number of operators



Source: Ofcom / operators, May 2016 data

Note: Coverage is based on 100m² pixels covering the UK

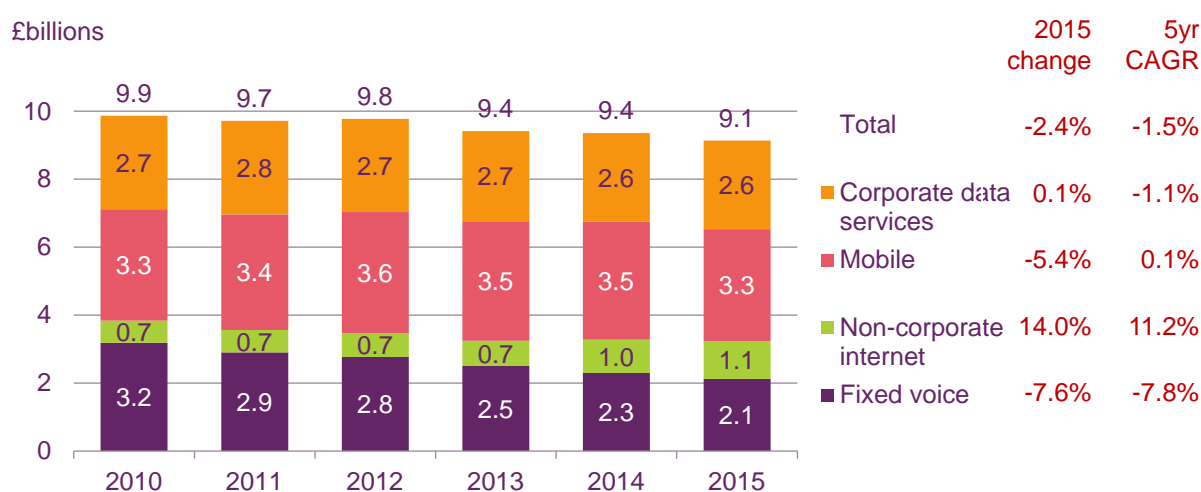
4.2.7 Business markets

Business markets generated £9.1bn in revenue in 2015, a year-on-year decrease of 2.4%

Total UK business telecoms revenues fell by £0.2bn (2.4%) to £9.1bn in 2015. This was driven by a £0.2bn (7.6%) decrease in fixed voice revenues and a £0.2bn (5.4%) fall in mobile revenues, partly offset by a £0.1bn (14.0%) increase in non-corporate internet services.

Business mobile revenues fell by 5.4% in 2015, in contrast to the 0.1% compound annual growth rate recorded in the five years to 2015. Fixed voice service revenues fell by £0.2bn (2.4%) in 2015, continuing the trend of falling average annual fixed voice business revenues (shown by the negative 1.5% five-year CAGR), although these revenues are likely to be understated as VoIP usage is not fully captured. Overall, business retail telecoms revenues accounted for 24.3% of total UK retail telecoms revenues in 2015, a 0.7 percentage point decrease since 2014.

Figure 4.27 Retail business telecoms revenues, by service

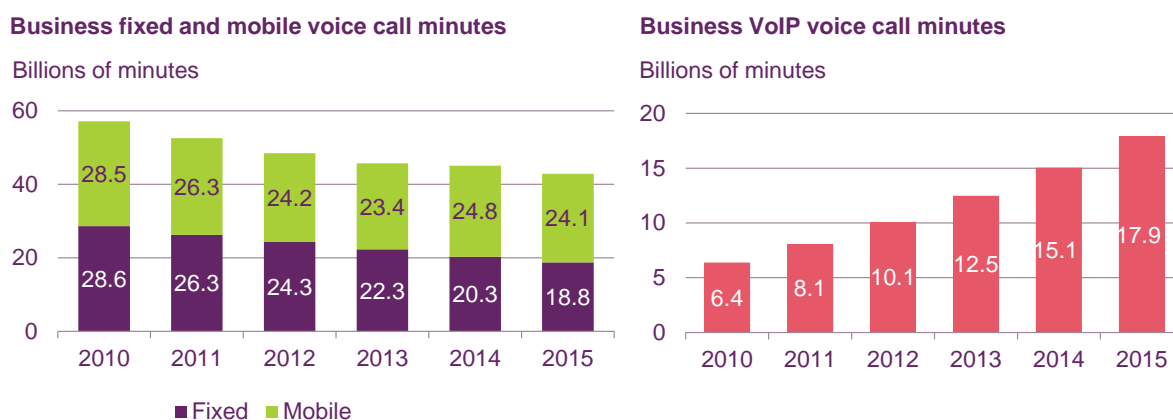


Source: Ofcom / operator data, with the exception of corporate data services, sourced from IDC
 Note: Fixed voice figures exclude revenues from non-geographic voice calls; corporate data services comprises web hosting, Ethernet, IP VPN, digital leased line and frame relay/ATM services.
 Business VoIP call volumes increased 19.1% year on year, while fixed and mobile call volumes fell in 2015

The proportion of business calls that originated on mobile networks was 56.2% in 2015, representing a 1.2 percentage point increase on 2014. Total business call volumes fell by 2.2 billion minutes (4.9%) in 2015, driven by a fall of 1.5 billion (7.5%) fixed business minutes and 0.7 billion (2.9%) mobile business minutes, although it is important to note that the fixed voice minutes shown here are likely to be understated as they do not fully capture the use of VoIP services.

Data provided to Ofcom by IDC suggest that UK businesses made 17.9 billion minutes of outgoing VoIP calls in 2015, a 19.1% increase on 2014. This increase was in line with the average year-on-year increase of 23.0%, observed since 2010, and suggests that Ofcom's operator data are likely to overstate the decline in business fixed voice call minutes.

Figure 4.28 Business voice call minutes

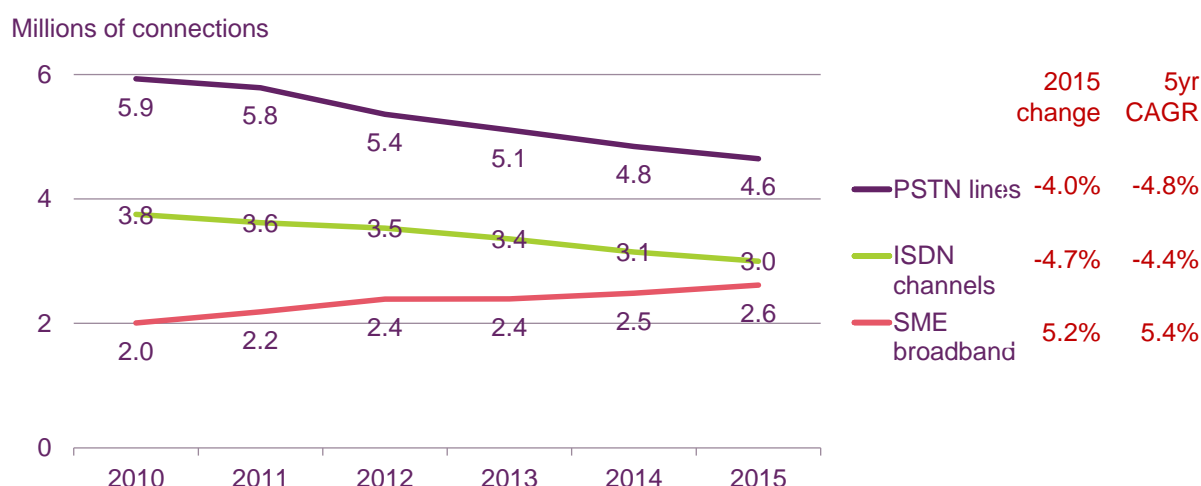


Source: Ofcom / operator data / IDC for VoIP data only
 Note: VoIP volumes are not fully captured in the business fixed and mobile voice call minutes chart. It is not possible to sum the totals of both charts to calculate total business call volumes as some VoIP minutes may be included in the business fixed and mobile voice call minutes data.

The total number of business fixed lines fell by 0.3 million in 2015

At the end of 2015 there were 7.6 million business fixed lines and ISDN channels, a year-on-year fall of 0.3 million (4.3%), and 2.0 million (21.0%) fewer than there had been at the end of 2010. During the year, the decline in the number of ISDN channels was higher than that of PTSN lines, at 4.7% compared to 4.0%. VoIP connections are not included in the business fixed-line figures, as the fragmented nature of the business VoIP market means that gaining accurate data on this sector is difficult. It is therefore likely that the total number of business fixed lines is understated. The number of SME broadband lines increased by 0.1 million (5.2%) in 2015. Between 2010 and 2015 SME broadband lines increased by 0.6 million (a five-year CAGR of 5.4%).

Figure 4.29 Business fixed voice and SME fixed broadband lines



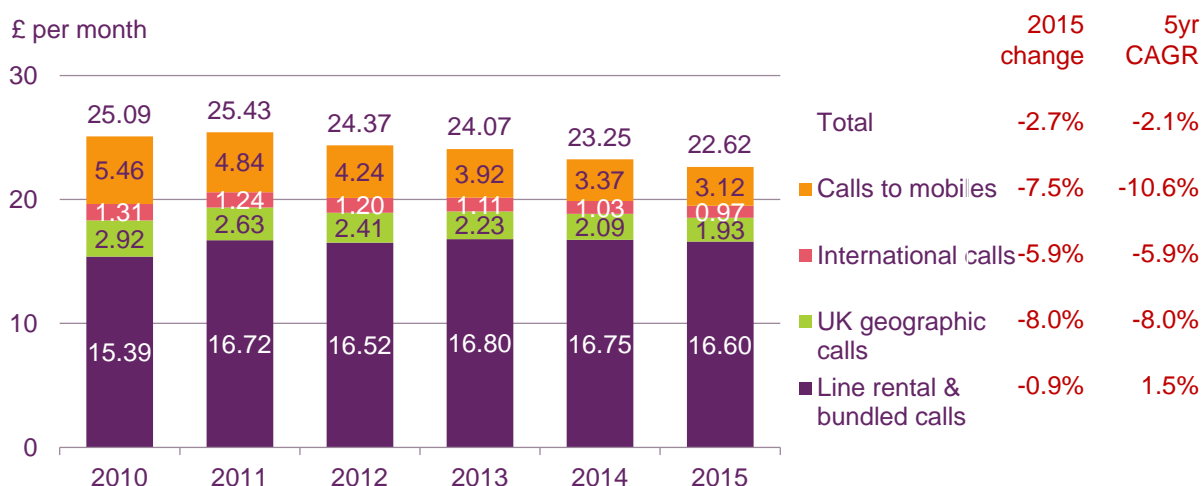
Source: Ofcom / operator data

Note: Mobile voice revenues include revenues from bundled messaging and data services.

Average monthly retail revenue per business line fell by 2.7% in 2015

The decline in business monthly retail revenue per fixed line was due to falls in out-of-bundle UK geographic (8.0%), international (5.9%), line rental and bundled calls (0.9%) and to-mobile calls (7.5%) leading to a 2.7% decrease in overall retail revenues per business fixed line to £22.62. This was the second year running in which there was a fall in average business rental and bundled calls revenue per line. The proportion of monthly retail business revenue per fixed line that is accounted for by line rental and bundled calls has risen from 61.4% in 2010 to 73.4% in 2015; a 12.0 percentage point increase.

Figure 4.30 Average monthly retail revenue per business fixed line



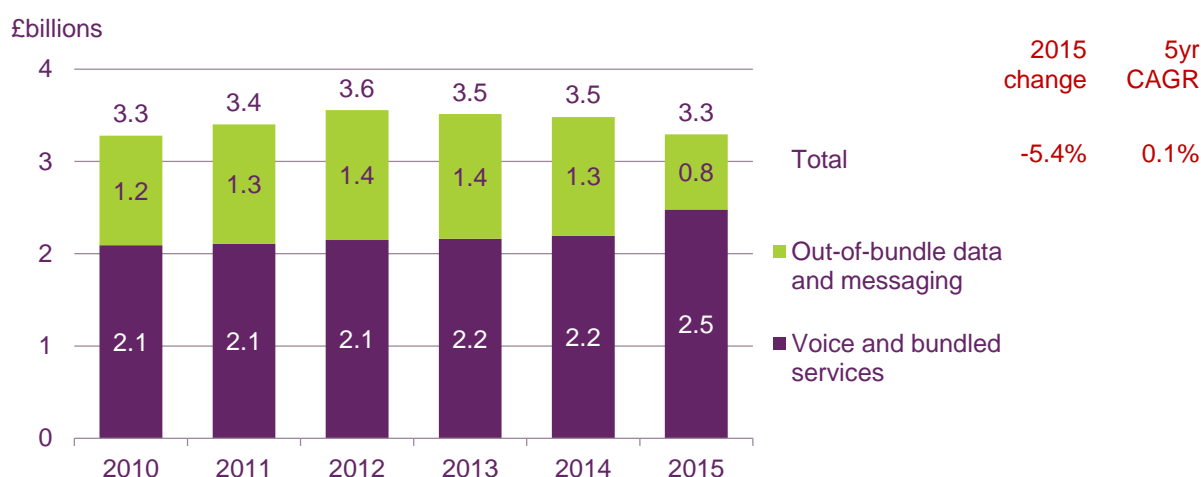
Source: Ofcom / operators

Note: Excludes revenues from non-geographic voice calls.

Business mobile revenues fell by 5.4% to £3.3bn in 2015

Retail business mobile revenues totalled £3.3bn in 2015, a 5.4% decline compared to 2014. The in- and out-of-bundle revenue figures for 2015 cannot be directly compared to previous years, as one mobile operator changed its definitions relating to apportioning revenues into bundled or out-of-bundle categories.

Figure 4.31 Breakdown of business mobile revenues

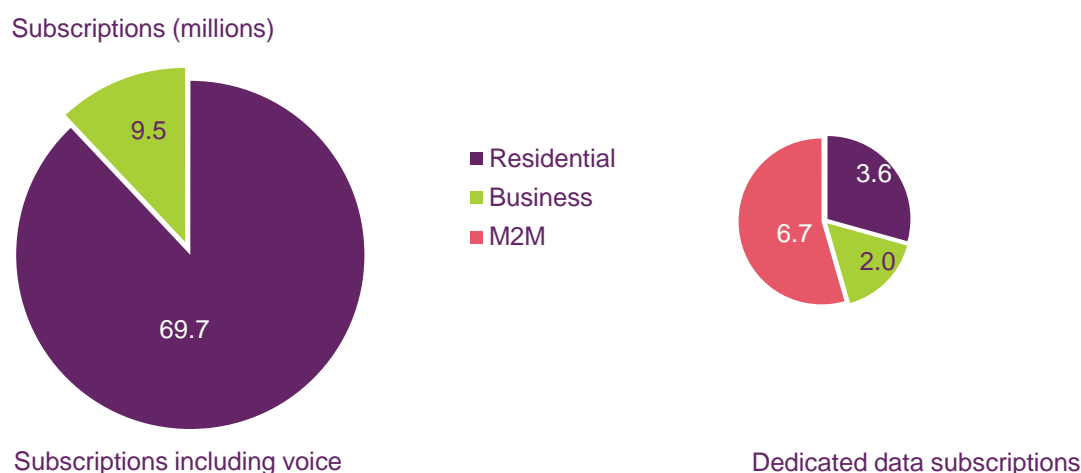


Source: Ofcom / operators

Businesses accounted for 13% of all mobile connections at the end of 2015

At the end of 2015 there were 9.5 million business mobile connections (excluding the 6.7 million M2M connections shown in Figure 4.31), equivalent to 13% of all such connections. Businesses accounted for a higher proportion of all dedicated data subscriptions (16%) than of subscriptions including voice services (12%) in 2015, while more than three-quarters (77%) of businesses' dedicated data subscriptions were M2M connections.

Figure 4.32 Business mobile voice and dedicated mobile data connections



Source: Ofcom / operators

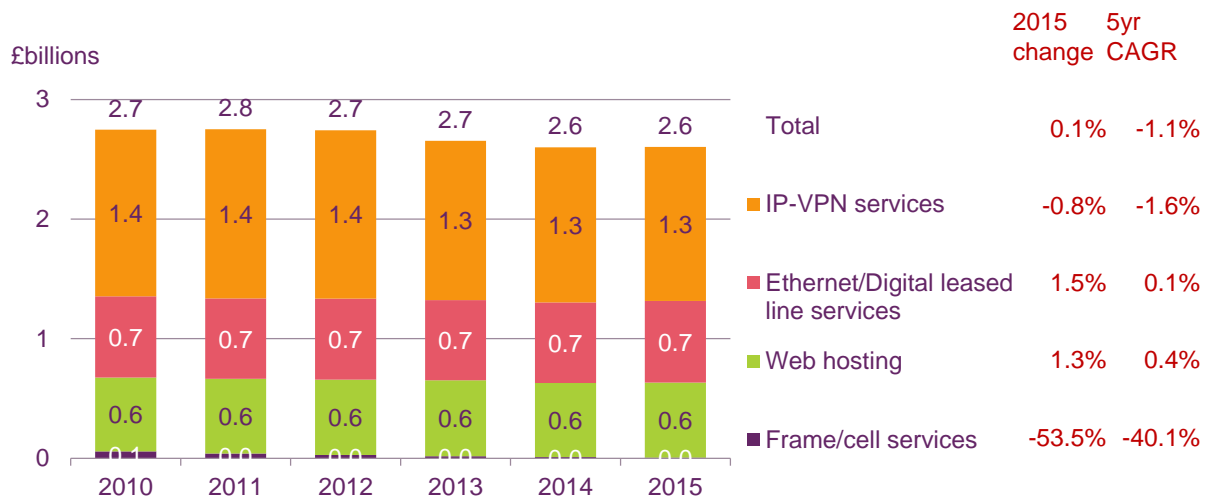
Note: Mobile broadband excludes smartphone data use.

Corporate data services' revenues remained broadly flat in 2015

Data provided to Ofcom by IDC show that total UK corporate data services revenue (i.e. spend on services that connect business sites to each other, and web hosting) increased by 0.1% (£26.7m) to £2.6bn in 2015. This increase was partly due to increases in web hosting and Ethernet/digital leased-line services, of 1.3% and 1.5% respectively. A small percentage fall in IP-VPN services revenue (0.8%) offset most of the increases in other areas, as this service generates the most revenue of all the corporate data services. There was also a minor fall in frame/cell services revenue of £5.1m (53.5%) to £4.4m.

Revenues from these services are related to connectivity revenues only (i.e. they exclude revenues relating to managed services).

Figure 4.33 Breakdown of corporate data services' revenues



Source: IDC

4.3 The telecoms user

4.3.1 Introduction

In this section we look at the major consumer trends in the use of residential telecoms services during the five years to 2015. The analysis in this section is based on data provided by telecoms providers to Ofcom as part of its regular data collection programmes, Ofcom's consumer research, and data obtained from third-party suppliers.

The section is split into four main areas:

- Market overview: general trends in take-up and spend on fixed and mobile telephony services
- Fixed voice services: fixed voice usage trends and customer experience
- Fixed broadband services: developments in fixed broadband use and the customer experience
- Mobile voice and data services: mobile voice and data usage trends, price of voice services and customer experience, developments in mobile broadband services.

4.3.2 Overview

The proportion of household spend on telecoms services remained stable at 3.5% in 2015

Average UK household spend on telecoms services (which is calculated by dividing residential telecoms service revenues by the number of UK households) was £82.17 per month in 2015. This was a £2.52 per month (3.2%) increase compared to 2014, and represented 3.5% of the average total household spend in 2015, a similar proportion to that in 2013 and 2014.

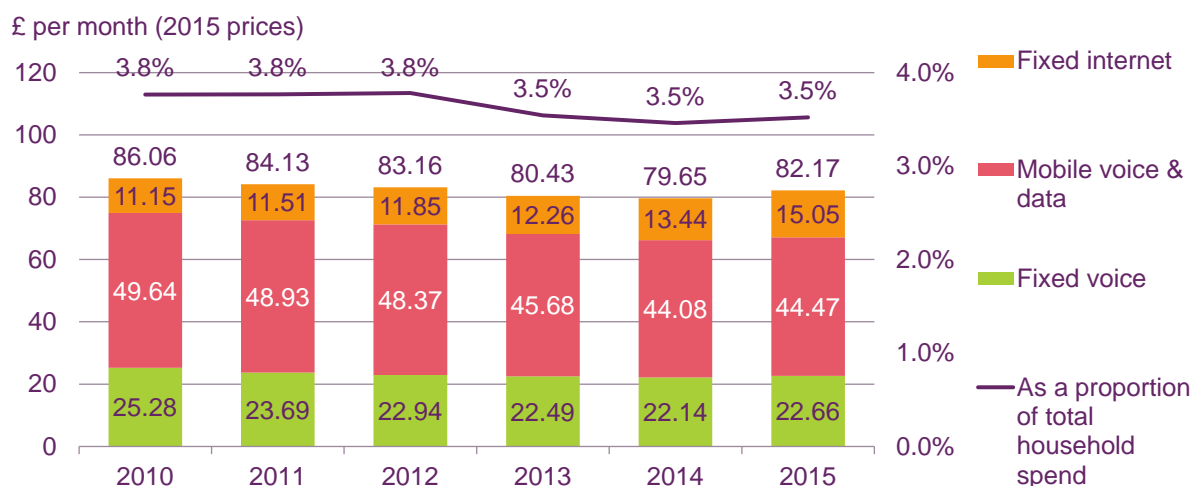
Most of the increase in average spend in 2015 was due to a £1.61 per month (12.0%) increase in average fixed internet spend, which was mainly due to consumers migrating to superfast broadband services. These services typically cost around £10 per month more than standard broadband services, and in the year to November 2015 the proportion of residential fixed broadband connections that had an advertised speed of 'up to' 30Mbit/s increased by nine percentage points to 42%.⁷⁰

There were also smaller increases in average spend on fixed voice and mobile services during the year. Average household spend on fixed voice services increased by 52 pence per month (2.3%) to £22.66 in 2015. This was due to increasing prices (in particular line rental) and came despite a 1% fall in the number of residential fixed lines and a 10% decline in outgoing call volumes from these lines. Average spend on mobile voice and data services increased by 39 pence per month (0.9%) to £44.47 in 2015, mainly due to increasing use of mobile data services, including 4G.

⁷⁰ Ofcom *UK Home broadband performance report*

(<http://stakeholders.ofcom.org.uk/binaries/research/broadband-research/nov2015/fixed-bb-speeds-nov15-report.pdf>)

Figure 4.34 Average household spend on telecoms services



Source: Ofcom / operators / ONS

Notes: Includes estimates where Ofcom does not receive data from operators; adjusted to CPI; includes VAT.

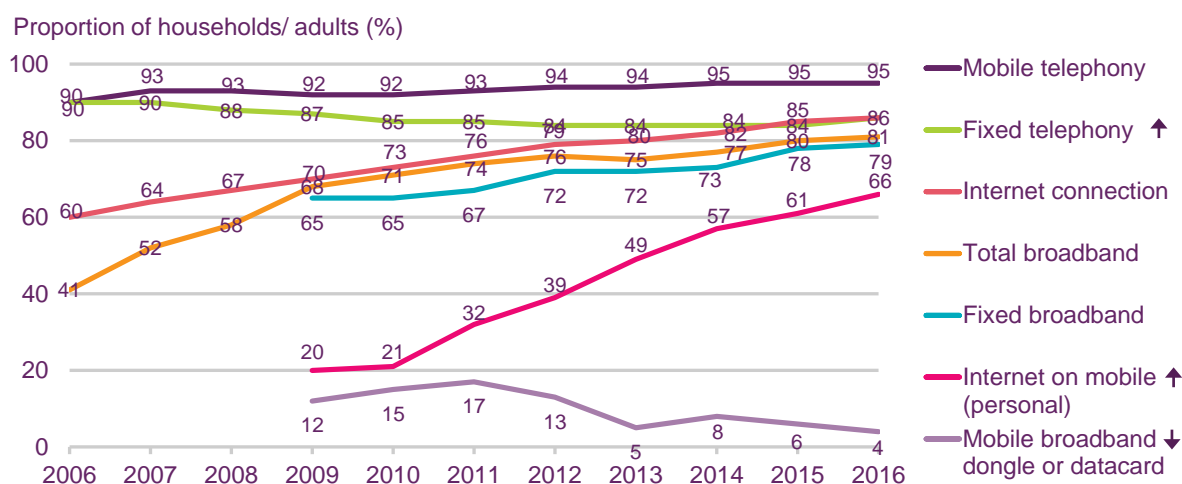
The proportion of respondents with access to the internet on their mobile increased from 61% to 66% in 2016

As is shown in Figure 4.34 below, there were some statistically significant changes in the take-up of telecoms services in 2016.

Two of these are likely to be related to the increasing popularity of smartphones: there was a five percentage point increase (to 66%) in the proportion of respondents who used a mobile phone to access the internet and a two percentage point decline in the proportion of respondents with access the internet through a mobile broadband dongle or datacard. It is likely that some of the decline in the use of dedicated mobile data services is due to smartphone users choosing to access the internet on their mobile device, or to use the mobile data connection on their smartphone on another device (known as tethering) rather than paying for a separate dedicated mobile data service. More information on smartphone take-up can be found in section 5.2.2 of this report.

The only other significant change in 2016 was the proportion of respondents with access to a landline phone, which increased by two percentage points to 86%. This may be indicative of the increase in take-up of fixed broadband which, in most cases, requires a landline.

Figure 4.35 Take-up of key telecoms technologies



Source: Ofcom Technology Tracker. Data from Q1 of each year 2007-2014, then H1 2015-2016.

Base: All adults aged 16+ (2016 n=3737).

Significance testing: Arrows indicate any significant differences at the 95% confidence level between UK 2015 and UK 2016.

QC1: Is there a landline phone in your home that can be used to make and receive calls? QE1: Does your household have a PC or laptop computer? / QE2: Do you or does anyone in your household have access to the internet at home (via any device, e.g. PC, laptop, mobile phone etc.)? / QE9: Which of these methods does your household use to connect to the internet at home?

Note: Use of internet on mobile is personal take-up measure, whereas the other data relate to household take-up.

The average 4G download speed in 2015 was 17Mbit/s, almost three times faster than 3G (6Mbit/s)

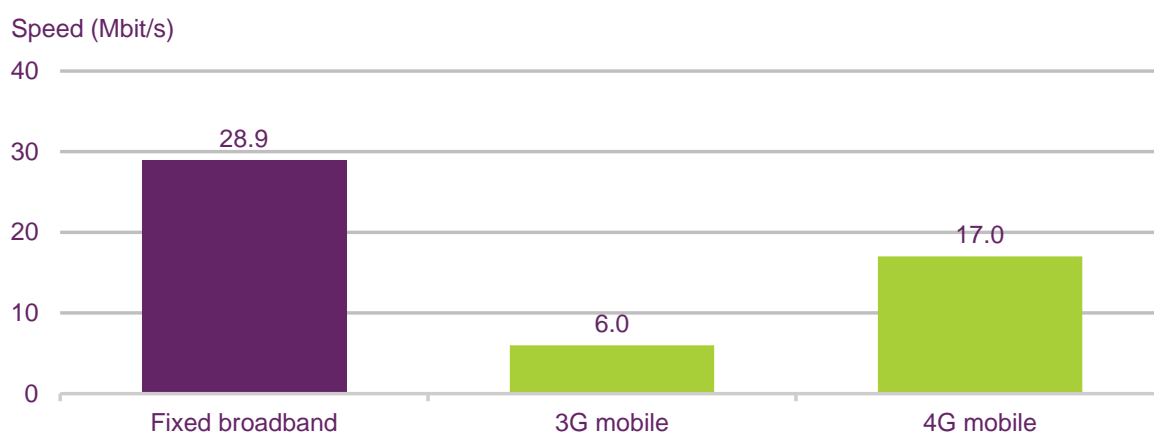
The average 4G download speed across the five cities measured in Ofcom's *Smartphone Cities* research in 2015⁷¹ (Cardiff, Edinburgh, Liverpool, London and Norwich) was 17.0Mbit/s. This was almost three times the average over 3G (6.0Mbit/s). London had the slowest average 4G download speed across all operators, across the five cities (12Mbit/s), while the highest average speed among the cities included in the research was in Norwich and Edinburgh, at 16Mbit/s for both.

By way of comparison, the average UK fixed broadband download speed was 28.9Mbit/s in November 2015, up from 22.8Mbit/s in November 2014.⁷²

⁷¹ http://stakeholders.ofcom.org.uk/binaries/research/broadband-research/smartphone-cities/smartphone_cities.pdf

⁷² <http://stakeholders.ofcom.org.uk/market-data-research/other/telecoms-research/broadband-speeds/UK-home-broadband-performance-Nov-15/>

Figure 4.36 Average actual fixed and mobile data speeds: 2015



Source Ofcom: *UK fixed-line broadband performance, November 2015* (<http://stakeholders.ofcom.org.uk/market-data-research/other/telecoms-research/broadband-speeds/UK-home-broadband-performance-Nov-15/>) and *Smartphone Cities, fieldwork in November and December 2015* (<http://stakeholders.ofcom.org.uk/binaries/research/broadband-research/smartphone-cities/chartpack.pdf>)

Use of non-traditional communications services increased in 2016

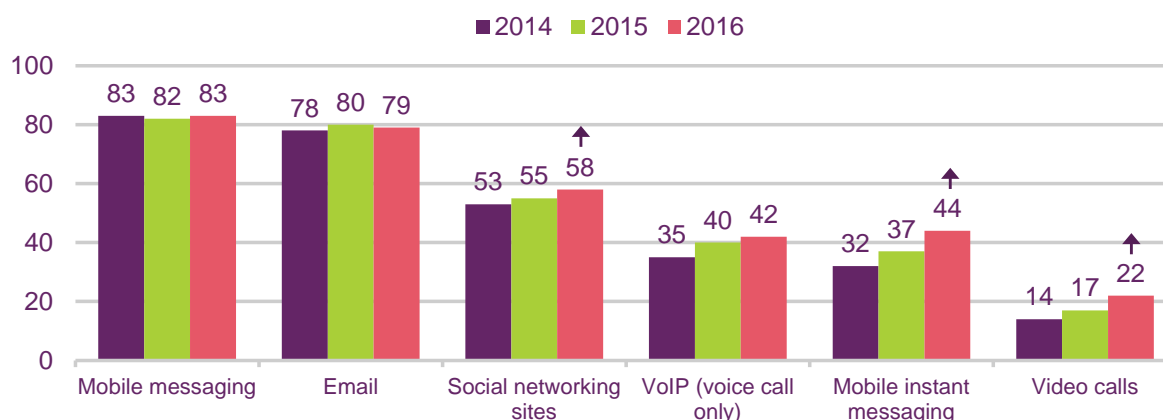
According to Ofcom research, more than four in five adults (83%) used traditional mobile messaging services (SMS and MMS) in 2016, with email the second most frequently used service, at 79%.⁷³ Three in five people (58%) said they were users of social networking sites; an increase of three percentage points compared to Q1 2015.

Significant changes emerged in the use of mobile instant messaging services (e.g. WhatsApp and Facebook Messenger), up by seven percentage points to 44%, and video calls (e.g. Skype or Apple Facetime), up by five percentage points to 22%. The drivers behind the increased use of non-traditional communication services are likely to be the wider choice of platforms and services, the ability to send text, pictures, videos and voice recordings within one application, and the increasing take-up of smartphones and tablets.

⁷³ Differences between Technology Tracker data and that of Ofcom's Digital Day research is due to differences in the survey methodology, such as collection methodology and measurement period length.

Figure 4.37 Use of methods of communication other than traditional voice telephony

Proportion of respondents (%)



Source: Ofcom Technology Tracker. Data from Q1 2014, then H1 2015-2016

Base: All adults 16+ (2016=3737)

Significance testing: Arrows indicate any significant differences at the 95% confidence level between UK 2015 and UK 2016.

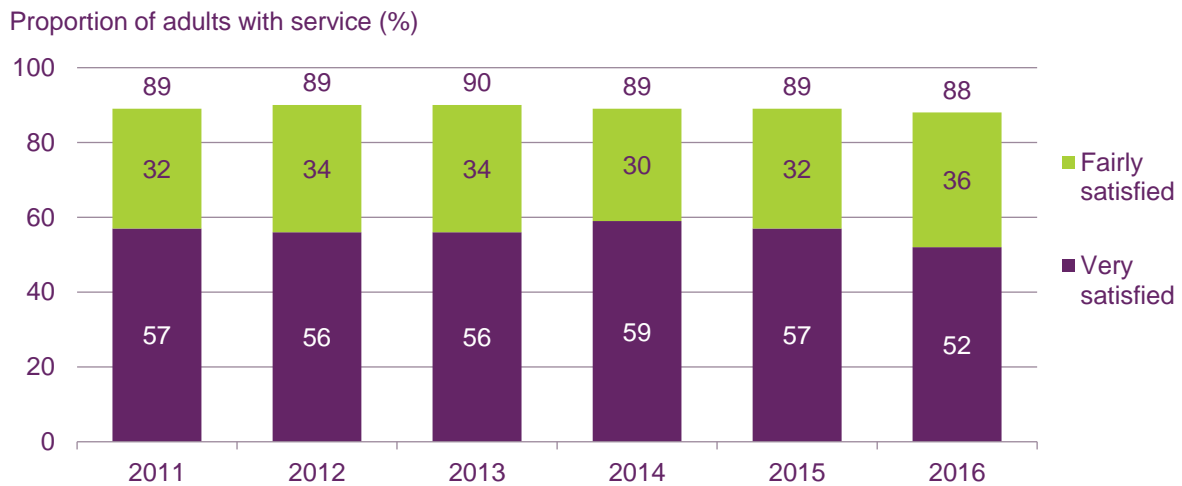
QD28A: Which, if any, of the following activities, other than making and receiving voice calls, do you use your mobile for? / QE5A: Which, if any, of these do you use the internet for? / QE30: Have you or anyone in your household ever used one of these services to make voice calls using the internet at home? (answers used relate to current use)

4.3.3 Fixed voice services

Consumer satisfaction with fixed voice services remains high (88%) with 6% stating they are dissatisfied

Around nine in ten (88%) residential fixed voice users were either 'very' or 'fairly' satisfied with their service in 2016, in line with figures recorded over recent years. Six per cent of respondents with fixed voice services said that they were neither satisfied nor dissatisfied with the overall service, while 4% were fairly dissatisfied and 2% were very dissatisfied. Some potential drivers of dissatisfaction include noise on the line, faults and poor customer service.

Figure 4.38 Overall satisfaction with residential fixed voice services



Source: Ofcom Technology Tracker. Data from Q1 2011-2014, then H1 2015-2016

Note: Shows the proportion of users with each service, includes only those who expressed an opinion.

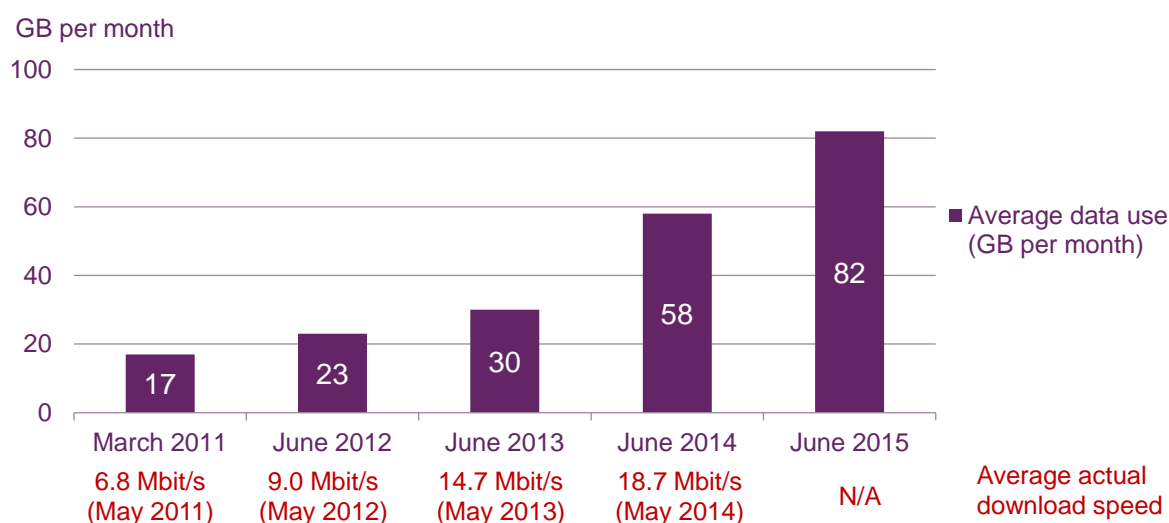
Thinking about your home phone service only, please use this card to say how satisfied you are with the overall service provided by (main supplier)?

4.3.4 Fixed data services

Average fixed broadband data use increases as more consumers take up superfast services

In 2015, the average fixed broadband line used 82GB of data per month. This represents a 41% increase compared to the 58GB per month recorded in June 2014. This growth in use is partly due to the growing popularity of data-heavy video-on-demand services, such as BBC iPlayer, Netflix and Amazon Prime Instant Video, as well as faster connection speeds which allow more members of a household to be online simultaneously. As our Digital Day research showed, average time spent watching paid on-demand TV services grew by 19 minutes in 2016 versus 2014 to 1hr 2m a day on average among users of these services, while the weekly reach of paid on-demand TV services increased by 8pp to 26% over the same time period.

Figure 4.39 Average fixed broadband data use per month



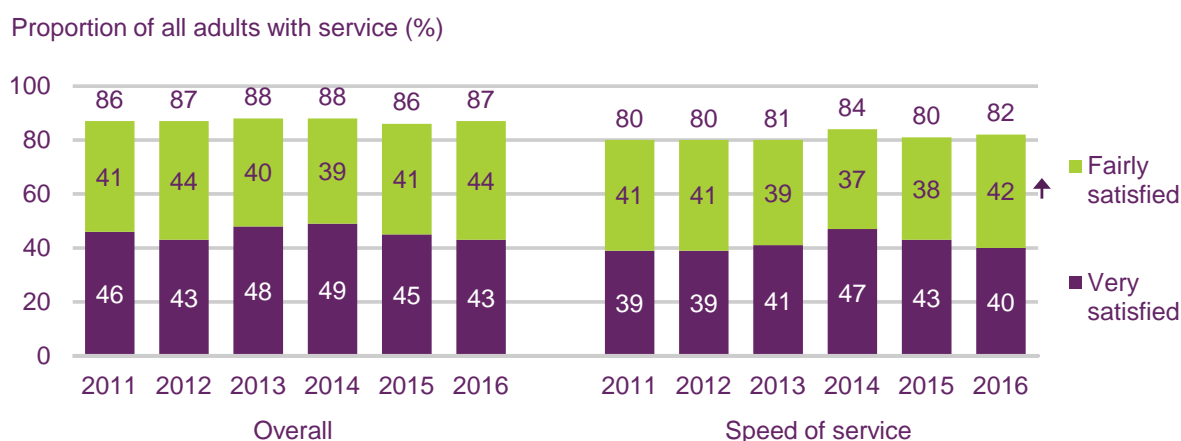
Source: Ofcom Infrastructure Reports 2011-2015, Connected Nations report 2015, Fixed-line broadband performance report 2011-2014.

Note: No speed data were available for May 2015.

Satisfaction with fixed broadband was unchanged

The number of respondents claiming to be ‘very’ or ‘fairly’ satisfied with their overall fixed broadband services remained mostly stable in 2016, at 87%. The proportion of fixed broadband users who said they were ‘very’ or ‘fairly’ satisfied with the speed of their fixed broadband service also remained stable during this period (82%). However, there has been an increase in the number of respondents who are ‘fairly’ satisfied with the speed of their fixed broadband service (up by 4% compared to Q1 2015). Dissatisfaction with the overall service was 7% overall, with 5% of respondents fairly dissatisfied and 3% very dissatisfied. Dissatisfaction with the speed of the service was 11% overall, with 6% fairly and 5% very dissatisfied.

Figure 4.40 Satisfaction with aspects of fixed broadband service



Source: Ofcom Technology Tracker. Data from Q1 2009-2014, then H1 2015-2016

Base: All adults aged 16+ with a fixed broadband connection (2016=2774)

Note: Includes only those who expressed an opinion.

Significance testing: Arrows indicate any significant differences at the 95% confidence level between UK 2015 and UK 2016.

QE8A/B: Thinking about your fixed broadband internet service, please use this card to say how satisfied you are with your main supplier for... The overall service/ The speed of your service while online (not just the connection) provided by [main provider]?

There were a number of respondents that chose 'neither', they have been excluded from the chart

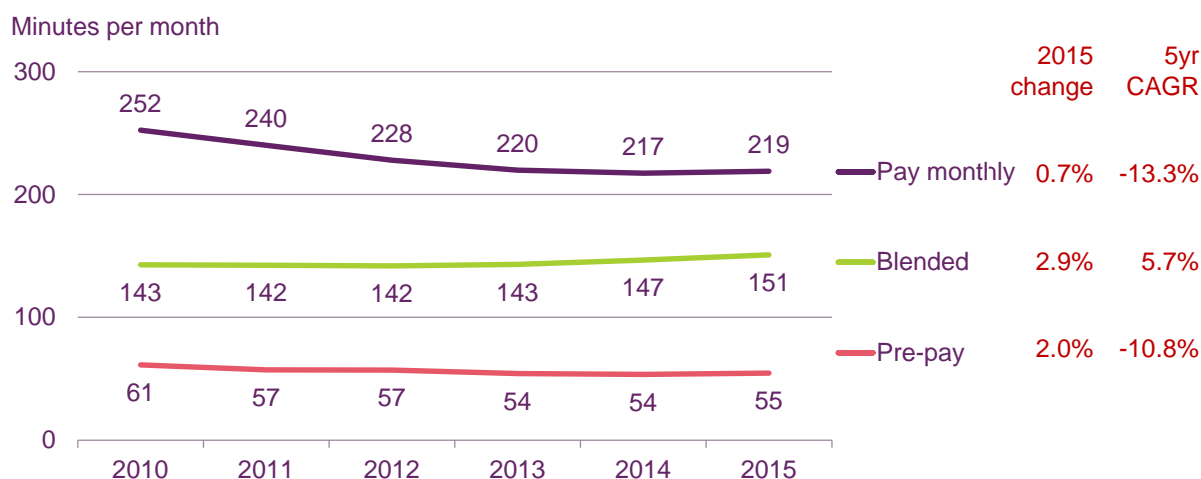
4.3.5 Mobile voice and data services

After a period of decline, average monthly outgoing mobile call minutes increased in 2015

On average, post-pay customers made 219 minutes of outgoing calls per month in 2015, around four times the average for pre-pay customers (55 minutes). After a period of decline, average monthly outbound mobile call minutes slightly increased for both pre-pay and post-pay customers, up by 2.0% and 0.7% respectively. The overall monthly average (including both post-pay and pre-pay) increased by four minutes (2.9%) to 151 outbound call minutes in 2015.

Average pre-pay and post-pay outgoing minutes were both lower than in 2010 (decreasing by 10.8% and 13.3% respectively), although the overall monthly average increased by 5.7% (8 minutes per month) over the same period. This is mainly due to the greater proportion of consumers moving to post-pay packages over the period, which typically have higher average call use as a result of the availability of inclusive call bundles.

Figure 4.41 Average monthly outbound mobile call minutes, by subscription type⁷⁴



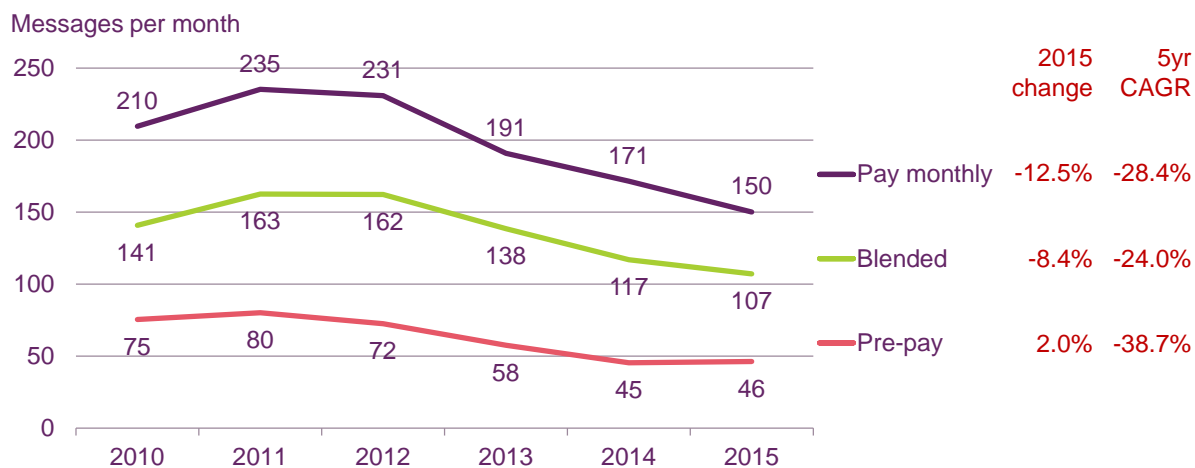
Source: Ofcom / operators

Note: Includes estimates where Ofcom does not receive data from operators.

Average monthly mobile messages continued to fall in 2015

Average monthly outbound mobile messages decreased for both pre-pay and post-pay customers in 2015. On average, post-pay customers sent 150 mobile messages (including SMS and MMS) per month during the year, over three times the average number for pre-pay customers (46 messages per month). While there was a decrease in the average number of messages sent by post-pay subscribers (down by 12.5%), pre-pay customers sent 2.0% more messages than in the previous year.

Figure 4.42 Average monthly outbound mobile messages per subscriber, by subscription type



Source: Ofcom / operators

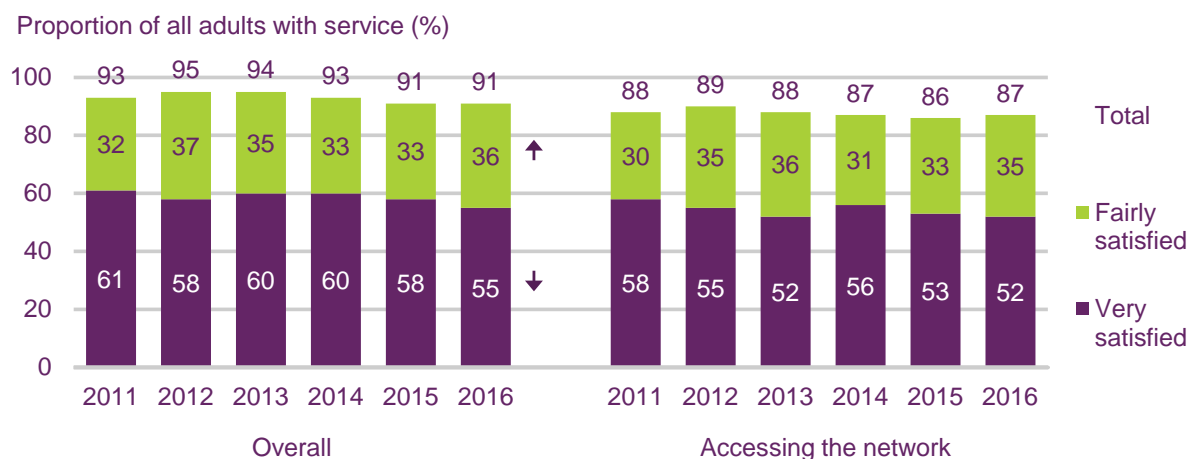
Note: Includes estimates where Ofcom does not receive data from operators.

⁷⁴ Blended average is the total average including both pre-pay and post-pay calls.

Overall satisfaction with mobile services remained fairly stable in 2016

Overall satisfaction levels with mobile services remained stable in 2016, with 91% of mobile users saying that they were 'very' or 'fairly' satisfied with their mobile service. Compared to a year previously, more respondents said they were 'fairly' satisfied (rather than 'very'). Satisfaction with accessing the network was similar to overall satisfaction, at 87%, in line with the figure recorded the previous year. Overall dissatisfaction figures were 4%, with 2% of respondents both 'fairly' and 'very' dissatisfied. In terms of accessing the network, 4% of respondents were 'fairly' dissatisfied and 3% 'very'.

Figure 4.43 Satisfaction with aspects of mobile service



Source: Ofcom Technology Tracker. Data from Q1 2009-2014, then H1 2015-2016

Base: All adults aged 16+ with a mobile phone (2016=3425)

Note: Includes only those who expressed an opinion.

Significance testing: Arrows indicate any significant differences at the 95% confidence level between UK 2015 and UK 2016.

QD21A/J: Thinking about your mobile phone service, please use this card to say how satisfied you are with your main supplier for... The overall service/ Reception/ accessing network provided by [main provider]?

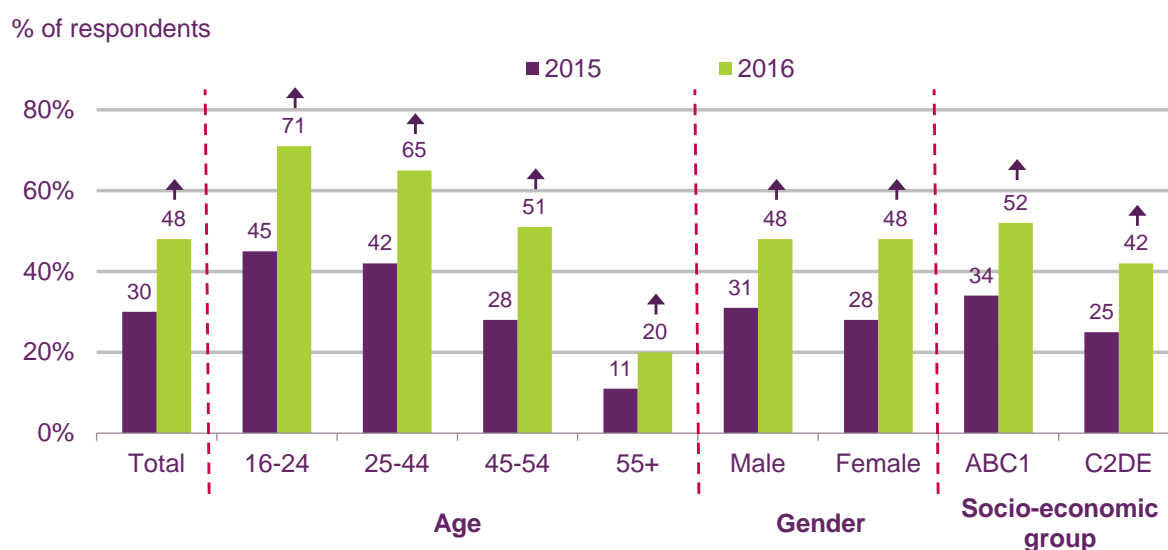
A number of respondents chose 'neither'; they have been excluded from the chart

4G take-up significantly increased across all ages, genders and socio-economic groups in 2016

Consumer research conducted by Ofcom in 2016 shows that 48% of adults (16+) had a 4G mobile service. Take-up was higher for those 16-24s (71%) and 25-44s (65%). The 55+ age group had lower take-up, at 20%. Take-up between males and females was equal at 48%. There was 52% take-up in the ABC1 socio-economic group compared to 42% in the C2DE group.

The largest increase between 2015 and 2016 was among 16-24s: a 26 percentage point year-on-year increase. The lowest increase was in the over-55 group, with a nine percentage point increase over the year. The increased take-up of 4G services across all demographics was probably due to consumers wanting to use services such as video streaming, which require faster speeds, as well as the increased availability of 4G services, as it increasingly becomes a standard service instead of the premium option. Some operators are also beginning to offer tariffs that offer 4G exclusively, which will lead to increases in take-up.

Figure 4.44 4G take-up overall, by age, gender and socio-economic group



Source: Ofcom Technology Tracker. Data from H1 2015-2016

Base: UK adults 16+ 2016 (3737), 16-24 (519), 25-44 (1206), 44-54 (570), 55+ (1442), male (1790), female (1947), ABC1 (1919), C2DE (1813)

Significance testing: Arrows indicate any significant differences at the 95% confidence level between UK 2015 and UK 2016, between each age group in 2015 and 2016, between each gender in 2015 and 2016 and between each socio-economic group in 2015 and 2016.

QD41: Do you have a 4G service?

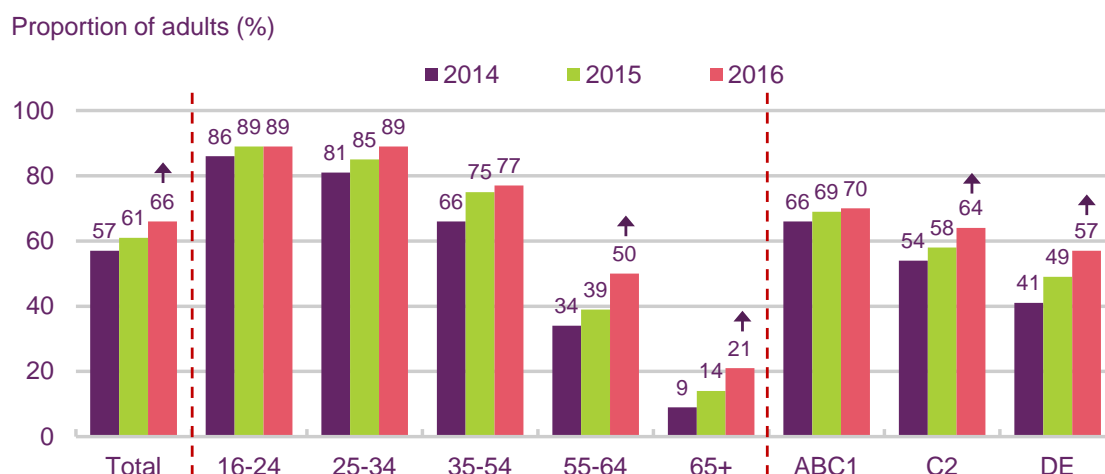
A number of respondents chose 'neither'; they have been excluded from the chart

Two-thirds of adults used mobile data services in 2016

Ofcom research shows that 66% of adults claimed to use data services on a mobile phone in 2016, a five percentage point increase on the previous year. The younger age groups were the most likely to be doing this: 89% of 16-24s and 25-34s accessed data services on a mobile handset. However, the only significant increase since 2015 in people accessing data services on a mobile phone was among the older age group (55-64 and 65+).

The proportion of data users was higher among more affluent socio-economic groups (70% of ABC1s), although there has been a significant increase in the C2 and DE groups. The main driver of increasing internet use on mobile handsets is the growth in smartphone take-up.

Figure 4.45 Use of data services on mobile phones, by age and socio-economic group



Source: Ofcom Technology Tracker. Data from Q1 2014, then H1 2015-2016

Base: All adults aged 16+ (2016 n=3737)

Note: Internet use includes accessing the internet, downloading and streaming content, connecting using Wi-Fi and using VoIP.

Significance testing: Arrows indicate any significant differences at the 95% confidence level between UK 2015 and UK 2016, between each age group in 2015 and 2016 and between each socio-economic group in 2015 and 2016.

QD28A: Which if any, of the following activities, other than making and receiving voice calls, do you use your mobile for?

Six in ten mobile users browsed the internet on their mobile in 2016, up five percentage points from 2015

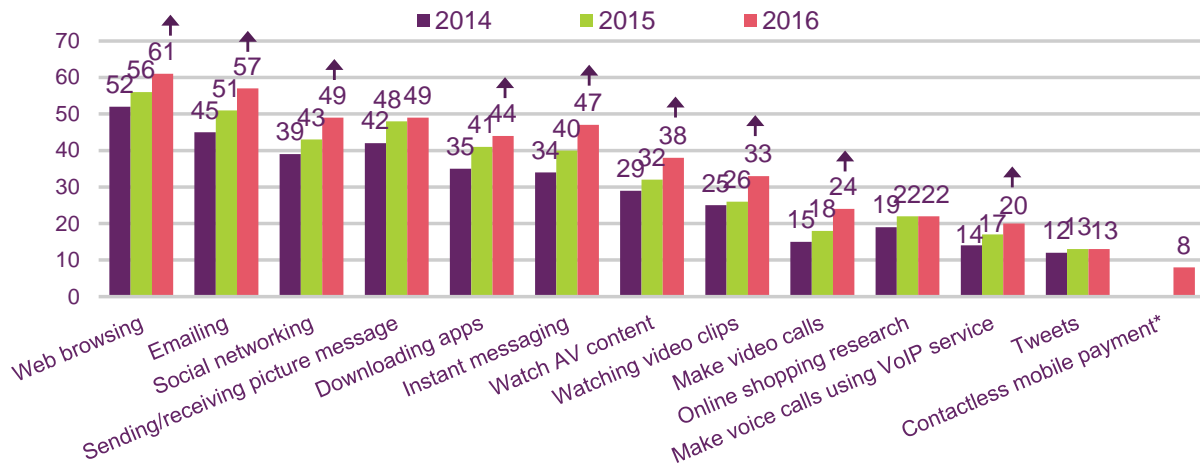
Ofcom research shows that there was an increase in the proportions of mobile users who used various mobile data services (including web browsing, email services, social networking, downloading apps, instant messaging and watching AV content and video clips) in the year to 2016. The driver of these increases is the likely to be the growth in smartphone take-up

Six in ten mobile users (61%) said that they browsed the internet on their mobile phone in 2016, a five percentage point increase on 2015; over half of mobile users (57%) sent or received email; and just under half (49%) used social networking sites/apps.

The proportions of mobile users who accessed email and social networks, and watched AV content, all increased by six percentage points since 2015, while the proportion of those using instant messaging and watching video clips increased by seven percentage points. The increase in the proportion of mobile users who downloaded apps slowed in 2016 (up by three percentage points, compared to a 6pp increase in 2015).

Figure 4.46 Use of mobile data services among mobile users

Proportion of mobile users using service (%)



Source: Ofcom Technology Tracker. Data from Q1 2014, then H1 2015-2016

Base: All mobile users aged 16+ (2016 = 3425)

Significance testing: Arrows indicate any significant differences at the 95% confidence level between UK 2015 and UK 2016.

QD28A: Which if any of the following activities, other than making and receiving voice calls, do you use your mobile for?

* New code for 2016

