The Communications Market 2012

5 Telecoms and Networks

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5.1.1 Industry metrics and summary

Figure 5.1 UK telecoms industry: key statistics

	2006	2007	2008	2009	2010	2011
Total operator-reported revenue (£bn)	40.7	42.0	42.5	41.2	40.5	39.7
Operator-reported retail revenue (£bn)	30.6	31.7	32.0	31.1	30.9	31.0
Operator-reported wholesale revenue (£bn)	10.1	10.3	10.4	10.1	9.6	8.8
Average monthly household telecoms spend (£ 2011 prices)	78.46	76.00	73.04	70.81	68.06	65.04
Fixed access and call revenues (£bn)	10.5	10.4	10.2	9.7	9.4	8.9
Fixed voice call minutes (billions)	154	149	141	132	129	116
BT share of fixed call minutes (%)	47.1	46.6	43.8	40.1	36.5	35.9
Fixed lines (millions)	34.5	34.5	34.2	33.5	33.4	33.2
Fixed internet revenues (£bn)	3.2	3.2	3.2	3.3	3.2	3.4
Fixed internet connections per 100 population	28.0	29.3	29.5	30.3	32.1	33.2
Fixed broadband connections per 100 population	21.3	24.9	27.4	28.7	30.6	32.5
Proportion of premises connected to an unbundled exchange (%)	66.6	80.2	84.2	84.5	89.0	91.9
Mobile retail revenues (£bn)	13.9	15.0	15.5	14.9	14.9	15.1
Mobile voice call minutes (billions)	88	105	115	121	125	124
Active mobile connections per 100 population	114.7	120.1	123.8	129.1	129.8	129.8

Source: Ofcom / operators

Total UK telecoms revenues declined for the third successive year in 2011, falling by £0.8bn (1.9%) to £39.7bn (Figure 5.1). Retail revenues increased by £0.1bn to £31.0bn during the year as a £0.2bn increase in fixed internet revenues (as a result of increasing broadband take-up and slowing price decreases), a similar increase in corporate data service revenues and a £0.1bn increase in retail revenues from mobile voice and data services were offset by a £0.5bn fall in fixed call and access revenues. Operator-reported wholesale revenues fell by £0.9bn (8.9%) in 2011.

Both fixed and mobile voice call volumes fell in 2011, this being the first year that mobile-originating voice call volumes had fallen. The rate of decline in mobile voice call volumes was lower than that for fixed voice call volumes; and as a result more than half of voice telephony call minutes originated on mobile networks for the first time during 2011. Section 5.1.4 below considers these shifts in more detail, along with the main drivers behind them.

The total number of mobile connections continued to increase in 2011, albeit by just 0.5% to 81.6 million, although population growth meant that the number of active connections per 100 people was unchanged at 129.8. The decline in the total number of fixed voice lines continued in 2011, down by 0.5% to 33.2 million; although, for the first time in a decade, the number of residential lines increased during the year. This increase may be linked to increasing broadband take-up, as most UK homes need a fixed line in order to be able to access fixed broadband services. However, as household fixed broadband penetration is

already high, at 72%, it is unclear whether this trend will be sustained. Average monthly household spend on telecoms services fell to £65.04 in 2011, a £3.02 a month (4.4%) fall in real terms.

The following two sections look at the telecoms sector from an industry and then from a consumer perspective. In this section we look at four market developments that are shaping the future of the industry and changing consumer behaviour. These are:

- **Availability and take-up of superfast fixed broadband services increased in 2011.** We look at the availability of fibre-to-the-cabinet and cable superfast broadband services and how take-up is increasing as use of bandwidth-hungry online services and the number of connected devices per household grows.

- **Changing patterns of mobile data use.** This key market development examines changing usage patterns regarding devices and tariffs, and examines the growth in mobile data.

- **Both fixed and mobile-originated voice call volumes fell for the first time in 2011.** We look at the main drivers behind falling voice telephony use and consider the issues posed for telecoms providers by the shift away from traditional voice services.

- **Mobile coverage investment.** This key market development describes the context around the government's announcement that it will invest up to £150m in improving mobile coverage for unserved areas and roads.

5.1.2 Fibre-to-the-cabinet roll-out, and take-up of superfast services, start to gain momentum

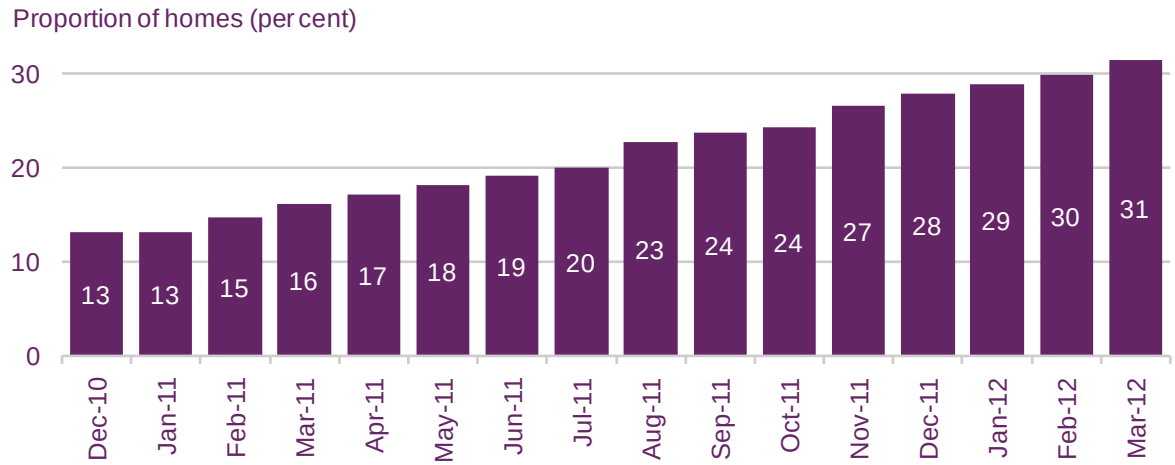
BT announces that fibre broadband target will be met a year earlier than planned

BT's roll-out of fibre broadband services gained momentum in 2011, and in October 2011 it announced that its goal of availability to two-thirds of UK premises would be achieved by the end of 2014, one year sooner than originally planned.[116] BT intends to achieve this goal using a mixture of fibre-to-the-cabinet (FTTC) and fibre-to-the-premises (FTTP) technologies. FTTC will be the predominant technology in the mix as it is significantly cheaper to deploy than FTTP (as fibre-optic cable is not laid from the street cabinet to the end user's premises), although it offers lower maximum connection speeds than FTTP.

Figure 5.2 below shows Ofcom estimates of the proportion of UK homes that are able to receive services over BT's FTTC network: by March 2012 just under a third of UK homes (8.4 million) could receive these services (we have adjusted these estimates to take into account the fact that not all cabinets in a FTTC-enabled BT local exchange area have fibre run to them). This was 15 percentage points higher than a year previously, and in May 2012 BT announced that its FTTC and FTTP services were available to ten million residential and business UK premises.[117]

[116] http://www.btplc.com/news/Articles/ShowArticle.cfm?ArticleID=D228F2B4-25FC-4095-8EC4-BD17B903CC3B
[117] http://www.btplc.com/news/Articles/ShowArticle.cfm?ArticleID=E08DEA6E-1FD7-4994-9D52-AD165F907BCE

Figure 5.2 Estimated household availability of BT's fibre-to-the-cabinet network



Source: Ofcom / BT
Note: Includes estimates where Ofcom does not receive data from operators

Sixty per cent of UK homes could receive superfast broadband services by March 2012

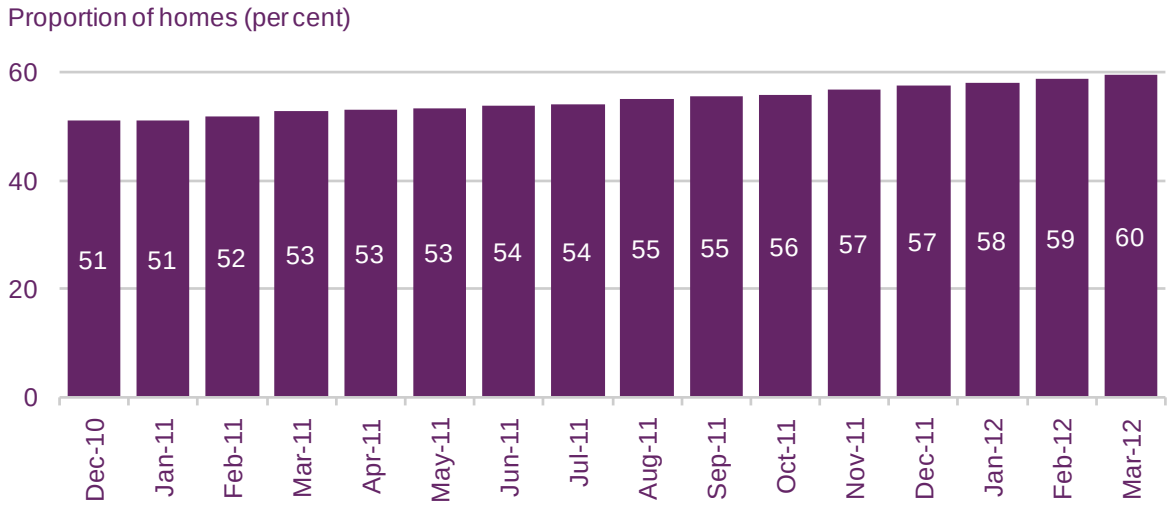
We estimate the overall proportion of UK homes that are able to receive superfast broadband (which is defined as those services with a headline speed of 30Mbit/s or more) by overlaying the footprint of BT's FTTC network onto that of Virgin Media's cable broadband network (which is capable of supporting superfast services throughout its footprint, and which passes slightly less than half of UK homes).

We estimate that by March 2012 BT and Virgin Media's superfast services were available to 60% of UK homes, an increase of seven percentage points compared to a year previously (Figure 5.3). These estimates are likely to understate the true position because they exclude BT's FTTP network (which is in the early stages of roll-out) and homes where Virgin Media is not able to provide fixed voice and pay-TV in addition to cable broadband.[118] Nor do these figures include smaller-scale fibre broadband deployments such as Digital Region in South Yorkshire (which on completion will cover over 580,000 homes and businesses)[119], seethelight (which plans to offer services to 50,000 properties at sites across the UK), Velocity1 (in Wembley Park, London), and Atlas Communications (which offers services in the Titanic Quarter development in Belfast).

While the availability of superfast services is increasing, so are the connection speeds available to those living in areas where FTTC and cable broadband services are available: in April 2012 BT doubled the maximum speeds offered over its FTTC network to 'up to' 80Mbit/s[120], while in March 2012 Virgin Media started an 18-month programme which will double the speed of most of its cable broadband connections, in doing so increasing the speed of its fastest service to 'up to' 120Mbit/s[121].

[118] While the most recent data available to Ofcom show that 44% of UK homes were able to receive triple-play cable services from Virgin Media in May 2012, data from 2010 show that in total 48% of UK homes were able to receive Virgin Media cable broadband in June of that year.
[119] http://www.digitalregion.co.uk/
[120] http://www.btplc.com/news/Articles/ShowArticle.cfm?ArticleID=8037ACC3-8B5E-4414-A146-406A48D398E6
[121] http://mediacentre.virginmedia.com/Stories/Virgin-Media-s-speed-doubling-starts-2380.aspx

Figure 5.3 Estimated household availability of superfast broadband services



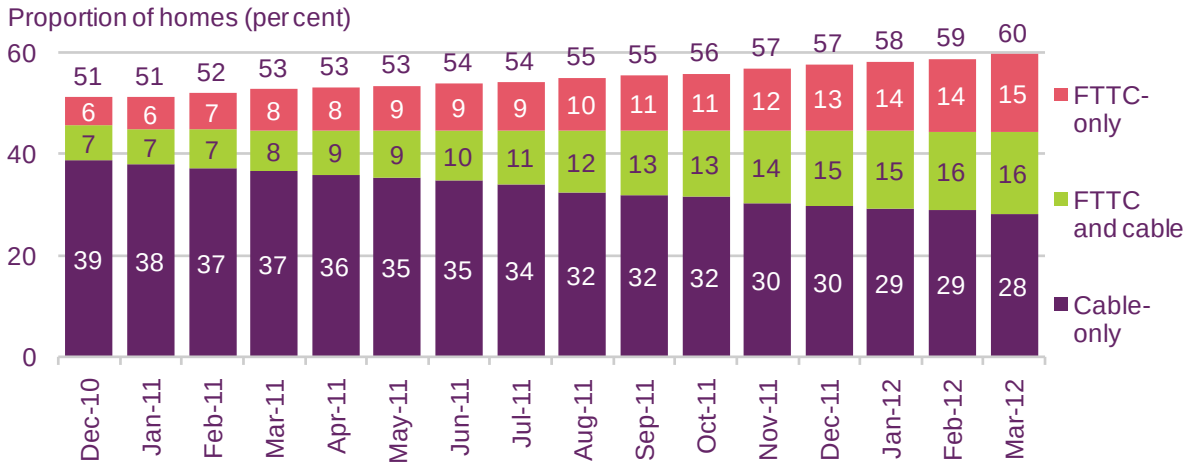
Source: Ofcom / operators

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

Almost a third of UK homes had a choice of superfast broadband provider by March 2012

We estimate that 16% of UK homes were passed by both BT's FTTC network and Virgin Media's cable broadband network by March 2012 (Figure 5.4). In addition, consumers living in FTTC areas have a choice of retail superfast broadband provider. ISPs such as TalkTalk, Sky and Plusnet (which is part of BT) also provide superfast broadband services using BT's FTTC network. Therefore in total, 31% of UK homes had a choice of superfast services available to them by the end of Q1 2012 (and as mentioned previously, this is likely to be slightly understated).

Figure 5.4 Estimated household availability of superfast services, by technology



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

Government is investing to further increase the availability of superfast services

The UK government has expressed its commitment to the UK having the best superfast broadband network in Europe by 2015[122] and wants superfast broadband networks to be available to 90% of homes and businesses, with a broadband connection of at least 2Mbit/s downstream available to the remainder. To help it realise these goals, it has allocated two sets of funding:

- Firstly, £530m has been allocated to stimulate commercial investment in superfast broadband in rural communities (first announced in the *Comprehensive Spending Review* of October 2010). In particular:
    - In May 2011 it was announced that Wiltshire, Norfolk, Devon and Somerset will receive a share of £50m.
    - Parts of Cumbria, Scotland's Highlands and Islands, North Yorkshire and Herefordshire were named as beneficiaries in 2010.
    - Eighteen further local authorities are expected to benefit.
- Secondly, £100m has been allocated for superfast broadband to create 'super-connected' cities.[123] A total of 1.9 million homes and businesses in these cities will receive broadband connections of at least 80Mbit/s downstream, and there will also be funding for public outdoor wireless connectivity in these areas. The cities are: Belfast, Birmingham, Bristol, Cardiff, Edinburgh, Leeds and Bradford, London, Manchester and Newcastle. The government has since announced an additional £50m of superfast broadband funding for as-yet unnamed cities.

Superfast services typically command a price premium of £5 to £10 a month

Figure 5.5 compares the lowest-cost current generation and superfast broadband services provided by a number of large ISPs, and shows that in March 2012 the lowest-cost superfast services were £10 a month more expensive than the lowest-cost ADSL2+ services for all of the ISPs considered except BT (whose price premium for a superfast service was lower, at £5 a month).

When comparing these services it is useful to keep in mind that the inclusive call allowance and data caps for the ISP packages included in the table may differ and the quoted costs are those when broadband is bought in a double-play bundle with a fixed line rental and calls package (Sky offers lower-cost alternatives when its broadband services are bought in a triple-play bundle with fixed voice and satellite pay-TV). In addition, the table excludes Virgin Media's ADSL2+ service as this is available only outside its cable network footprint, and therefore the two services are not substitutes for one another.

[122] Ofcom will measure the UK's progress towards this goal and will publish a comparison with other Member States each year.
[123] Ten super-connected cities announced: http://www.culture.gov.uk/news/news_stories/8931.aspx

Figure 5.5 Comparison of major ISPs' superfast and current generation broadband services

		BT	Virgin Media	TalkTalk	Sky	Plusnet
Lowest cost superfast service	Headline download speed / technology	38Mbit/s FTTC	30Mbit/s cable	40Mbit/s FTTC	FTTC	38Mbit/s FTTC
	Average actual speed, November 2011	36.0Mbit/s	31.0Mbit/s	-	-	-
	Data allowance	40GB plus unlimited WiFi	Unlimited	40GB	Unlimited	40GB plus unlimited off-peak
	Call allowance	Fixed off-peak	Virgin Media plus fixed weekend	Fixed off-peak	Fixed off-peak	Plusnet plus fixed off-peak
	Monthly cost	£18 plus line rental	£14.50 plus line rental	£16.50 plus line rental	£20 plus line rental	£16.49 plus line rental
Lowest cost current generation service	Technology / headline download speed	ADSL2+/ 16Mbit/s	n/a	ADSL2+/ 14Mbit/s	ADSL2+	ADSL2+/ 16Mbit/s
	Average actual speed, November 2011	8.7Mbit/s	n/a	8.0Mbit/s	7.5Mbit/s	8.3Mbit/s
	Data allowance	10GB plus unlimited WiFi	n/a	40GB	Unlimited	10GB plus unlimited off-peak
	Call allowance	Fixed anytime	n/a	Fixed off-peak	Fixed off-peak	Plusnet plus fixed off-peak
	Monthly cost	£13 plus line rental	n/a	£6.50 plus line rental	£10 plus line rental	£6.49 plus line rental
Additional monthly superfast cost		**£5**	**n/a**	**£10**	**£10**	**£10**

Source: Ofcom / Pure Pricing UK Broadband Pricing Briefing, March 2012

There were 1.4 million UK superfast broadband connections at the end of March 2012, 6.6% of all connections

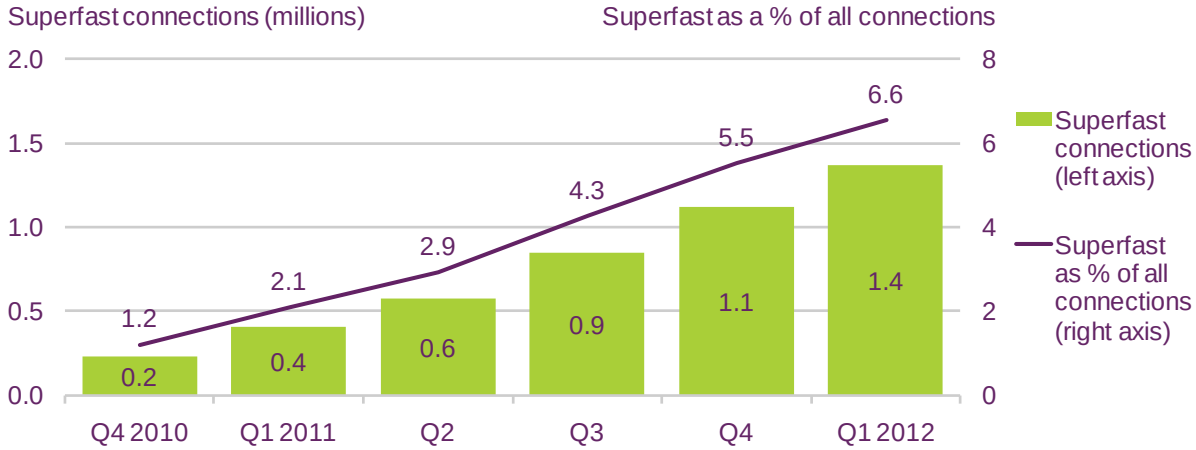
Ofcom research, conducted in November 2011, shows that the average actual speed of 'up to' 40Mbit/s FTTC services (36.0Mbit/s) was more than five times that of ADSL2+-based services (6.5Mbit/s)[124]. The faster speeds provided by superfast services, coupled with increasing availability, and the relatively low price differential between these and current generation broadband services, have led to growing take-up of superfast services, as shown in Figure 5.6. It is possible that increasing use of over-the-top (OTT) online services which require higher bandwidths (such as the video-streaming services provided by BBC iPlayer, LOVEFiLM, Netflix and Sky), and growth in the number of connected devices per household, is driving this increase in take-up.

At the end of March 2012 there were around 1.4 million residential and SME superfast broadband connections in the UK, 960,000 (162%) more than there had been a year previously. Over the same period the proportion of all non-corporate broadband connections that were superfast tripled, increasing by 4.4 percentage points to 6.6%, and we expect this figure to increase significantly over the next few years as Virgin Media upgrades its entire

[124] http://stakeholders.ofcom.org.uk/market-data-research/other/telecoms-research/broadband-speeds/bb-speeds-nov-11

cable broadband base onto superfast services, and more consumers upgrade from lower-speed services.

Figure 5.6 Take-up of superfast broadband services



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

5.1.3 New devices shape an explosion in mobile data use

2011 was characterised by several key changes in the way individuals accessed the internet on the move. Previously, the most common means of accessing the mobile internet was by using a laptop with a dongle or datacard plugged in to provide the connection to the mobile network.

Now, three new ways of accessing the internet are growing in popularity:

- Accessing the internet directly from smartphones
- Accessing the internet using a PC 'tethered' to a smartphone (typically a laptop which connects to the smartphone using WiFi or Bluetooth)
- Accessing the internet using a tablet computer (many tablets allow the insertion of a SIM that gives internet access via the mobile network)

In 2011 the previously rapid growth in mobile broadband take-up slowed significantly. Our definition of mobile broadband includes dongles, datacards, personal cellular hotspots (sometimes called MiFi), tablet computers with 3G connectivity and PCs with embedded mobile SIMs, but excludes subscribers using their mobile handsets.

Growth in dongle mobile broadband slowed, while smartphone data use accelerated

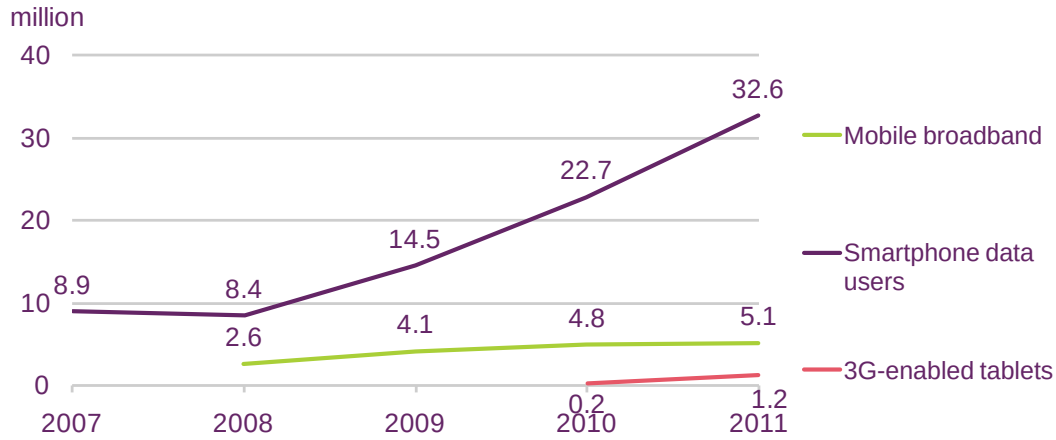
The number of active mobile broadband subscribers increased rapidly during 2009 and 2010, nearly doubling over that two-year period. But in 2011, the number increased by just 4.9%, or less than a quarter of a million. And in the fourth quarter of 2011 – usually a strong quarter for mobile services because mobile hardware is often bought as a Christmas present – the number of mobile broadband customers increased by just 0.2% compared with the third quarter, indicating a flattening of the market (see Figure 5.7). The total number of active mobile broadband subscribers was 5.056 million at the end of 2011. Ofcom defines mobile broadband as being PC-based, so these figures include dongle-based mobile broadband, but do not include smartphones.

However, accessing mobile broadband services from tablets appears to be increasing rapidly. Ofcom's estimates, based on research conducted for the *Communications Market Report,* suggest that there were over 1.2 million 3G-enabled tablets being used in the UK in the first quarter of 2012. While not all 3G-enabled tablets will be connected to an active mobile broadband service – and in households with multiple tablets, the tablets may share a mobile broadband connection – this research does demonstrate the growth in this new way in which consumers are accessing the internet. This is backed up by research released in January 2012 by Comscore, which found that 2.0% of browser-based views of web pages came from tablets (5.1% come from smartphones).

The usage of smartphones as a means of accessing the internet has also risen quickly. Ofcom estimates that in 2011, 32.6 million subscribers accessed the internet via their mobile phones, an increase of nearly 10 million since 2010. This increase has been driven largely by more subscribers choosing to own a smartphone. Smartphones make accessing the internet, and web-based applications, much quicker and easier. Some of the demand for smartphones may be attributable to the increasing use of social networking sites, commonly available pre-installed on smartphones. Three per cent of UK households now rely on a smartphone as their sole means of home internet access.

Some smartphone subscribers are using their device to provide mobile connectivity for their PCs – an activity known as tethering. They often do this because it is easier to view content on a PC-sized screen than on a smartphone screen, and because tethering removes the need to subscribe to a separate mobile broadband package. Some tariffs have been offered with tethering in mind (which might be expected to stimulate demand) but some network operators block tethering, or charge for it at more expensive rates. Based on data from YouGov's quarterly *SMIX smartphone report*[125], Ofcom estimates that 12.64% of smartphone subscribers use tethering.

Figure 5.7 Number of mobile broadband connections, 3G-enabled tablets and users accessing the internet on their mobile device



Source: Ofcom data based on submissions by operators and Ofcom market research. Consumers accessing the internet on their mobile phone and 3G-enabled tablets are estimates based on these data. Mobile broadband figures are for December of the stated year and the other two categories are for the first quarter of the following year.

[125] The SMIX (Smartphone Mobile Internet eXperience) series of reports is published quarterly by YouGov and is based on market research of smartphone users.

Mobile broadband bucked the voice trend and became more pre-pay focused

Although it seems that some consumers are substituting PC-based data for smartphone-based data,,this may not be due to dissatisfaction with mobile broadband; satisfaction levels have increased over the past three years. In 2009, 70% of mobile broadband subscribers said they were satisfied or very satisfied with their service, according to Ofcom's market research. By 2012, this had risen to 79%.

What is apparent, however, is that there are several new dynamics related to mobile broadband use. One of the most interesting is the increasing proportion of pre-pay vs post-pay connections – exactly the reverse of what is happening with handsets.

The penetration of post-pay mobile broadband fell to just 51% in 2012 (42% pre-pay), compared with 72% (19% pre-pay) in 2009, according to YouGov's *DongleTrack*[126] report (the remainder were don't-knows).

It appears that the most common driver for consumers signing up to pre-pay mobile broadband deals is that they do not use enough data to make it worthwhile signing up to a contract: 64% of respondents to YouGov's *DongleTrack* survey stated this as a reason for choosing a pre-pay deal (see Figure 5.8). The increasing use of smartphones for consuming mobile data may be contributing towards this driver.

Pre-pay mobile broadband is also appealing because many subscribers are seeking flexibility and control of their mobile broadband connections: 39% of respondents to the *DongleTrack* survey said that a dislike for signing contracts was a reason for them choosing a pre-pay tariff.

Only 46% of respondents told YouGov that mobile broadband was a permanent solution for them; 43% that said it was temporary. The temporary nature of mobile broadband take-up may be because mobile broadband tends to appeal the most to younger adults and those in rented accommodation. Approximately one in five households of 16-34 year-olds (who tend to be more geographically mobile) used mobile broadband, compared with the national average of just over one in eight, according to Ofcom's research in Q1 2012. Ten per cent of privately-rented households are mobile-broadband-only: double the national average. Both these groups tend to stay in one place for shorter periods of time, making 18- and 24-month contracts less attractive.

Nearly one in five consumers said they had decided on a pre-pay mobile broadband deal because they were unsure how much data they were going to consume. This may indicate a wish among some consumers for simple, easy-to-understand tariffs, and may help to explain the popularity of unlimited tariffs, where they are available.

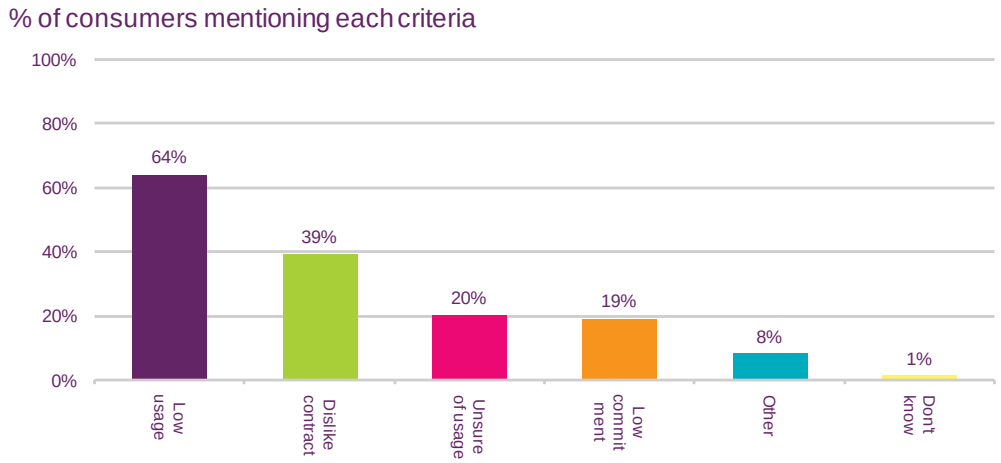
The increasing availability of a wide choice of pre-pay, flexible tariffs based on a range of time and data limits and at low price points may also be acting as a driver for the take-up of pre-pay mobile broadband. The widespread introduction of pre-pay mobile broadband tariffs comes more than a decade after the introduction of pre-pay voice tariffs, which has led to the majority of mobile subscribers using pre-pay tariffs (these numbers are only now reducing significantly).

For example, Orange and T-Mobile offer a T-Mobile-branded pre-pay deal for which subscribers can opt to pay for only those days or weeks in which they use the service (£2 per day or £7 per week). Vodafone offers a deal for tablet owners in which they can

[126] The *DongleTrack* series of reports is published quarterly by YouGov and is based on market research of dongle users of mobile broadband.

purchase 250MB at a time for whenever they want to use it (£5 per top-up). And Three offers pre-pay top-ups that cost as little as £6-£7 per gigabyte. Contract rates typically start at about £10 per month for most mobile operators, making pre-pay mobile broadband attractive to consumers who use 1GB or less per month.

Figure 5.8 Reasons for choosing pre-pay mobile broadband



Source:YouGov DongleTrack

Lower-income groups more likely to subscribe to mobile broadband only

The UK's mobile broadband networks now offer theoretical downstream speeds of up to 42Mbit/s, compared with fixed broadband theoretical downstream speeds of up to 80-100Mbit/s. For mobile, these theoretical speeds, or headline speeds as they are sometimes known, have roughly tripled in the past five years. But actual speeds experienced by subscribers are slower; Ofcom's measurement[127] of consumer connections found that the average download speed was 1.5Mbit/s in late 2010. There is evidence that some consumers feel that mobile broadband may now be fast enough, and reliable enough, to warrant having it in place of fixed broadband.

In the first calendar quarter of 2012, 13% of households used mobile broadband. Five per cent used mobile broadband *and not* fixed broadband, indicating that, nationwide, mobile broadband is more commonly used together with, rather than instead of, fixed broadband (see Figure 5.9).

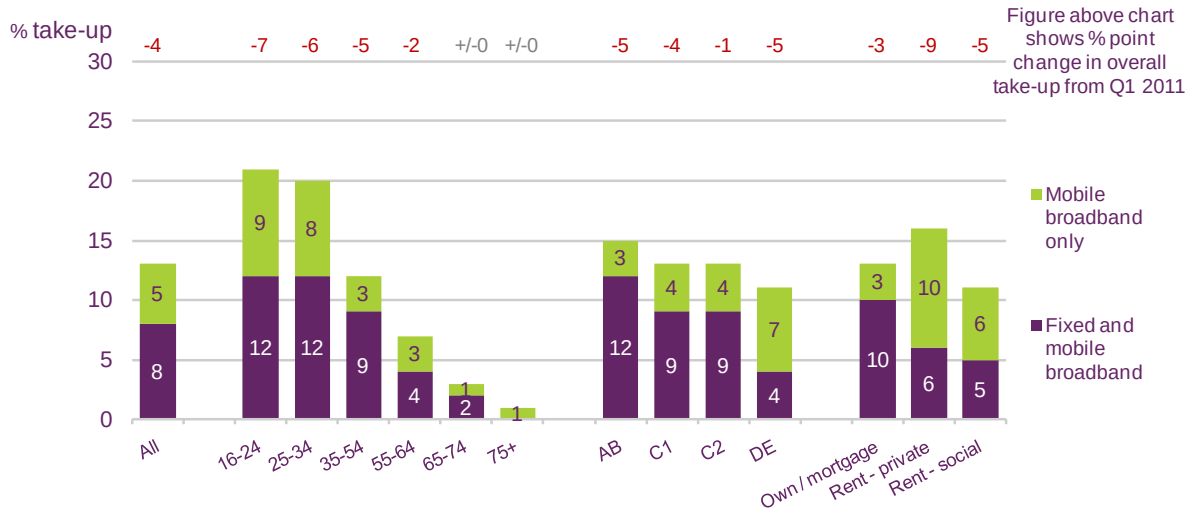
The most affluent socio-economic group, AB, and those who own a house, more commonly bought mobile broadband with fixed broadband, rather than without it. These segments of the population may be more prepared to sign fixed broadband contracts, which tend to be longer than mobile broadband contracts, and more likely to be able to afford a second broadband contract.

However, the least affluent socio-economic group, DE, and those in privately rented and social housing, more often bought mobile broadband without fixed broadband. These segments of the population may be less willing to commit to a long fixed broadband contract and may not be able to afford both services. In this group, we might expect to find students, who are typically in residence for less than the duration of most fixed broadband contracts.

[127] *Measuring Mobile Broadband in the UK*. Available at http://stakeholders.ofcom.org.uk/binaries/research/telecoms-research/bbspeeds2010/Mobile_BB_performance.pdf

Nine per cent of households in which the respondent was between 16 and 24 years old had only a mobile broadband connection, while the figure was 8% for 25-34 year-olds, 10% for those in private rented accommodation and 7% for socio-economic group DE.

Figure 5.9 Take-up of mobile broadband by socio-economic group, age and housing type of respondent



Source: Ofcom research, Q1 2012. Base: all adults aged 16+ (n=3772)

The proportion of consumers who have bought mobile broadband but not fixed broadband appears to be increasing. According to *DongleTrack*, in January 2012 just 52% of mobile broadband subscribers had fixed broadband as well; down from 60% in January 2009. In January 2012, 31% of mobile broadband subscribers bought mobile broadband but not fixed, up from 28% in 2009 and up from 21% in 2011.

Volume of data use increased significantly in 2011

Despite the changing usage dynamics, and shifts between tariffs and devices, the quantity of data consumed per subscriber continues to increase across all segments.

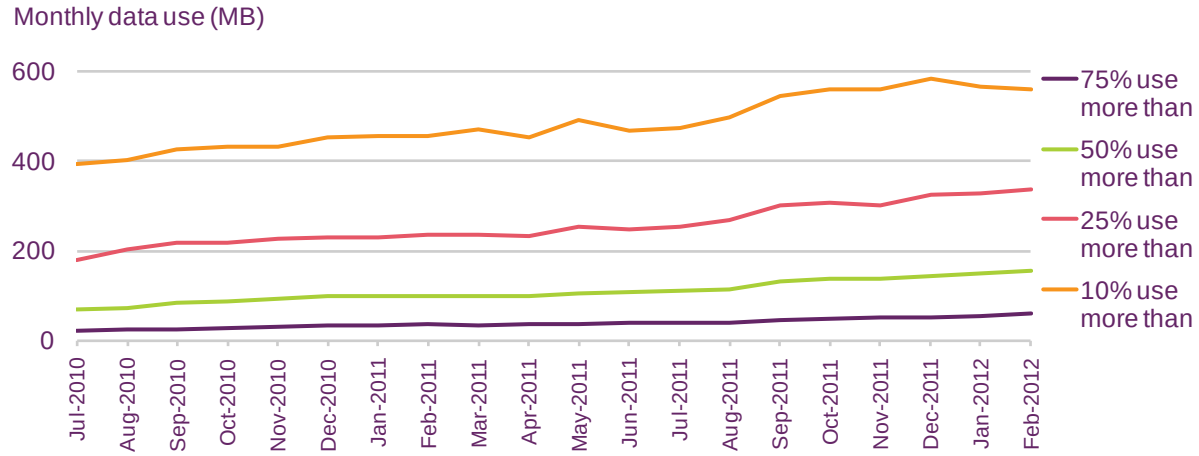
For example, Three reported that in February 2012, the average data use by its contract customers had risen four-fold since February 2011 to 800MB per month, according to Enders Analysis. Vodafone reported lower use per subscriber and lesser growth: in its annual results presentation in May 2012 it revealed that the average smartphone user on its networks in Europe consumed between 200MB and 300MB per month, and that total network traffic on its European networks had risen by approximately one-fifth year on year.

Analysis of consumer bills by BillMonitor showed that the median[128] data use by smartphone users more than doubled in the 18 months to January 2012. Usage was 154MB per month in January 2012 – up from 71MB in July 2010 and less than 100MB in January 2011 (Figure 5.10). Over one-quarter (27%) of smartphone users consumed over 250MB per month in January 2012, with more than one in ten consuming greater than 500MB per month. BillMonitor noted that growth in data traffic among the highest users was increasing at a

[128] The median is the middle value in a series of numbers sorted in numerical order. For example, the median of 2,3,4,8 and 9 is 4. The median may be below the average, particularly if there are a significant number of very high values, which is often the case with mobile data consumption. For example, the average of the five aforementioned numbers is 5.2.

slower rate than for other users, suggesting that using smartphone data is becoming a regular activity for the mass market.

Figure 5.10 Smartphone data use

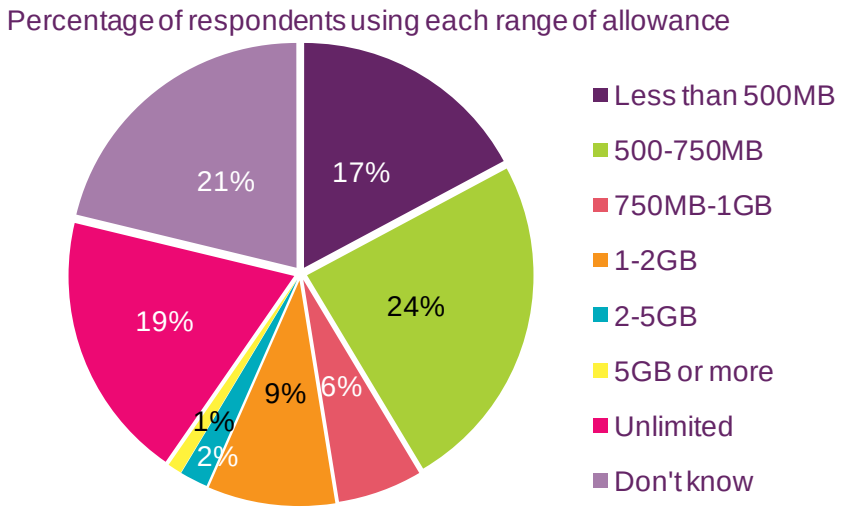


Source: BillMonitor

BillMonitor's research suggests that the majority of consumers are using only a fraction of their data allowance – perhaps this is not surprising, given the view of some of the YouGov research panel that they have little knowledge of their level of data consumption. Eighty-eight per cent of smartphone subscribers are on a monthly data allowance of at least 500MB – around eight times the number of subscribers who actually use that much data. YouGov's SMIX report in December 2011, although based on a different sampling method, largely agrees with this assertion: it shows that 17% of smartphone subscribers have a data allowance of less than 500MB – though in its sample, one in five consumers did not know their data allowance, meaning this figure may be higher among its respondents.

Nineteen per cent of YouGov respondents said they were on an 'unlimited' smartphone data tariff (Figure 5.11).

Figure 5.11 Smartphone data caps



Source: YouGov SMIX

Out-of-bundle data charges – which are charged to the subscriber on exceeding their allowance – are therefore low, Bill Monitor argues.

It is possible that the research of YouGov and Billmonitor both underestimate the proportion of subscribers on packages with lower data allowances, because involvement with either piece of research is more likely to appeal to more technically-minded consumers, who tend to be higher users of data.

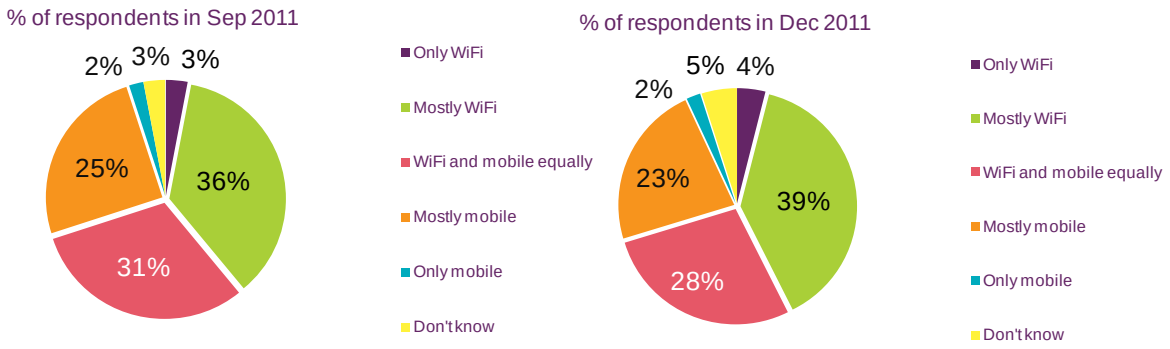
At the time of writing, unlimited data was offered on some tariffs by Orange, Three and T-Mobile. O2 and Vodafone did not, at the time of writing, offer unlimited data on smartphone tariffs: the largest bundle of data from those two MNOs was 2GB.

Smartphone users adopted WiFi to save on mobile data and to increase speed

For subscribers who are unaware of how much data they can consume before reaching their data cap, a common-used strategy is to use the WiFi connection on their smartphone instead of the mobile network. As well as not counting towards the smartphone's data allowance, this may also offer higher download speeds, where the user is able to connect to a WiFi network.

WiFi is the most common tool that subscribers employ to manage their data use, according to YouGov's *SMIX report*, and WiFi use appears to be increasing. Nineteen per cent of smartphone data users use WiFi to help them stay within their tariff's data limits, according to YouGov – this figure can be taken in the context of the statistic that nearly half of all users do nothing to manage their data use. Of those that use WiFi, 39% say they use it (as opposed to the cellular connection) most of the time when they consume data (this has risen since YouGov last asked the question in September 2011), with a further 28% saying they use WiFi and cellular networks in equal proportion for data (Figure 5.12). The frequent use of WiFi could indicate that subscribers feel they are getting closer to their tariff limits, that WiFi is more widely available, or that users are becoming more aware of the option and benefit of connecting to WiFi networks.

Figure 5.12 Use of smartphone WiFi connection relative to cellular connection



Source: YouGov SMIX

In terms of actual volumes of data, a paper published by Informa Telecoms & Media[129], stated that 81% of smartphone data traffic was carried over WiFi in January 2012. This was measured by a third-party application called Mobidia MyData Manager. If this figure, and those from BillMonitor, are representative of smartphone users, then the median smartphone data user is sending 125MB of data each month over WiFi networks (with the remaining 29MB per month being carried by the cellular network). In practice, both BillMonitor and Mobidia may overstate usage, as their tools tend to appeal to more technically-oriented users who tend to use more data than average and who may use WiFi more than average, so some caution should be applied in interpreting these figures.

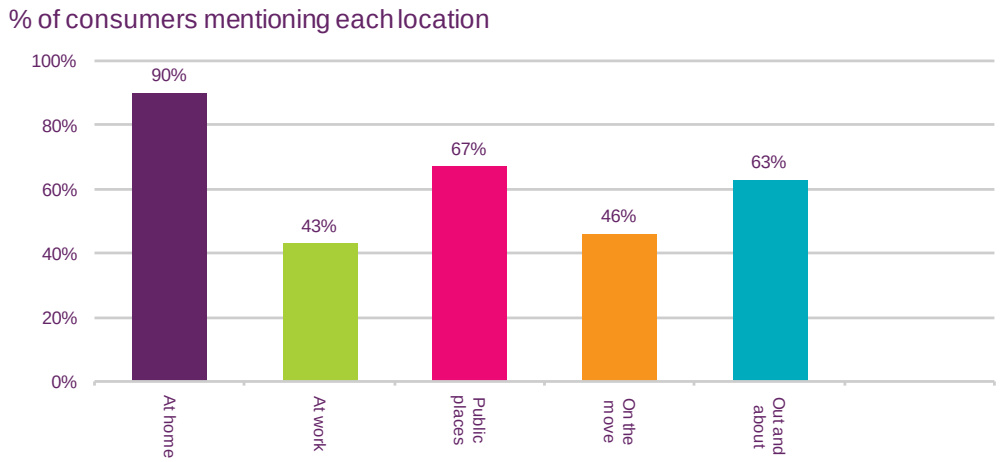
In terms of location of WiFi use, some locations are clear favourites for consumers, although usage locations will be affected by where WiFi networks are available and by how subscribers choose to use their smartphone (Figure 5.13).

By far the most popular location for smartphone WiFi use is at home, where 90% of smartphone WiFi users choose to connect to WiFi, according to YouGov's *SMIX tracker*. This is probably because access to WiFi at home is free and easy to access (because smartphones tend to store the access details).

Access in the workplace is much less frequent. Less than half (43%) of smartphone WiFi users told YouGov they accessed the mobile internet at work. This could be because some workplaces do not offer WiFi access to employees, or because IT or HR policies prohibit personal use of it.

Use is more common in public places (67%) or 'out and about' (63%). This could include WiFi in friends' houses or in coffee shops, shopping centres or on public transport. BT has a large public WiFi footprint through its *BT WiFi* proposition, whereby its fixed broadband subscribers are invited to open up their home connections to other *BT WiFi* users who are within range. Many public locations now offer WiFi access to members of the public, though only some of them offer access free of charge.

Figure 5.13 Location of WiFi use on a smartphone



Source: YouGov SMIX

Mobile network operators are keen to encourage subscribers to use WiFi access, because the radio spectrum over which cellular voice and data is carried offers finite capacity, so an alternative means of carrying data is desirable.

[129] Available at http://www.informatandm.com/wp-content/uploads/2012/02/Mobidia_final.pdf

Operators including O2, Orange and Vodafone offer WiFi hotspot access free of charge on certain tariffs, in some cases through arrangements with third-party providers of WiFi hotspots. Consumers also appear to be using WiFi proportionately more in the evening, according to the Informa paper. This ties in with YouGov's findings that most WiFi use is at home.

In December 2011, YouGov found that over half of smartphone data users (53%) use the mobile internet every day, with just 12% using it less than once a week. The most common length of time spent on the mobile internet was 'less than 10 minutes' – the response selected by 51% of users. Just 9% of users stayed online for more than 30 minutes on their mobile device, YouGov found.

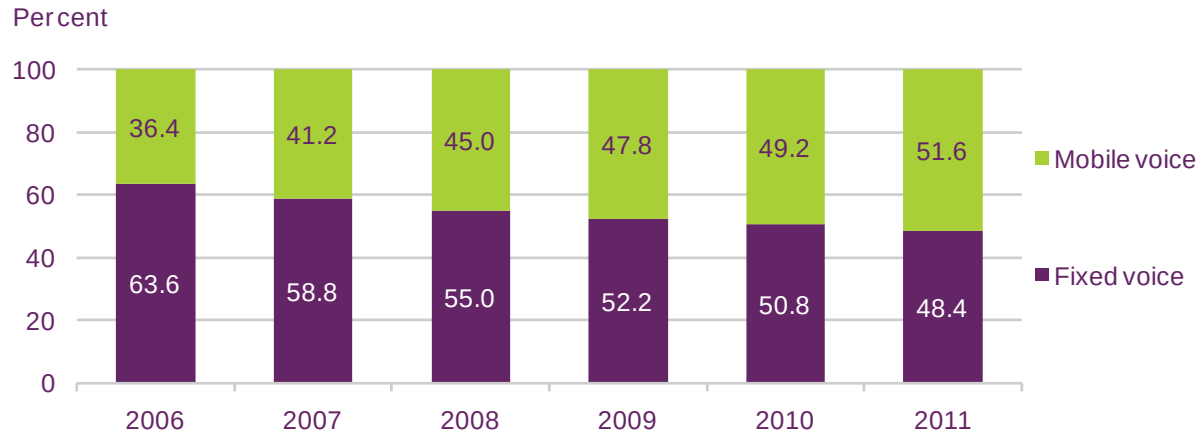
5.1.4 After fixed-to-mobile substitution are we seeing voice-to-data substitution?

Mobile voice call minutes overtook fixed in 2011

The UK voice telephony market reached two watersheds in 2011: for the first time mobile voice call minutes exceeded fixed voice call minutes, and for the first time the total volume of mobile voice call minutes declined.

In 2011, 51.6% of voice calls were mobile-originated, an increase of 2.4 percentage points compared to 2010 and 15.2 percentage points higher than in 2006 (Figure 5.14). This was largely the result of fixed-to-mobile substitution: between 2000 (when outgoing fixed voice call minutes peaked) and 2011, fixed-originated voice call volumes fell by over a third to 116 billion minutes, while over the same 11-year period the volume of mobile-originated call minutes increased by almost 250%.

Figure 5.14 Fixed and mobile share of total originating voice call volumes

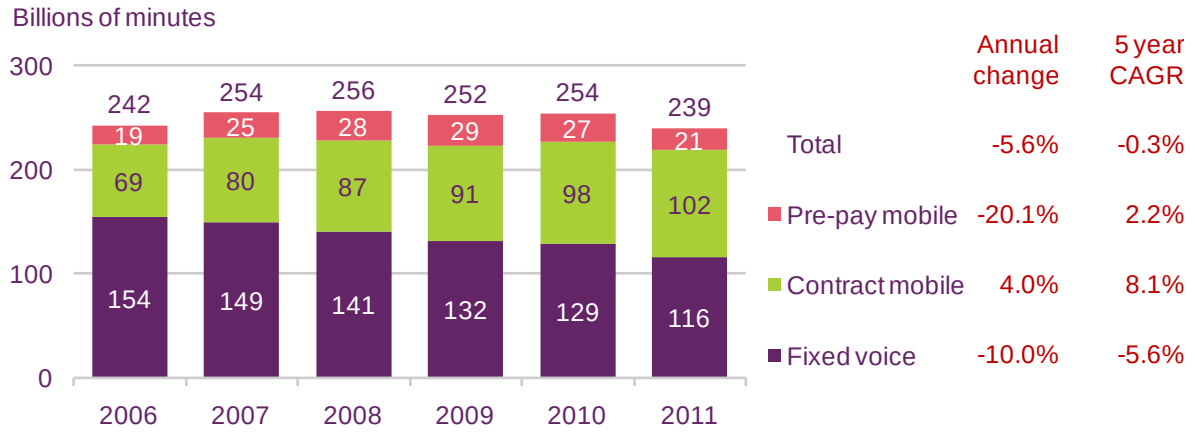


Source: Ofcom / operators
Note: Includes estimates where Ofcom does not receive data from operators

Mobile-originated voice call minutes fell for the first time in 2011

Despite increasing its share of total voice call minutes, total mobile-originated voice call volumes declined for the first time in 2011, falling by 1.1% to 124 billion minutes (Figure 5.15). This drop was as a result of pre-pay voice call volumes falling by over 20% during the year as higher-use customers migrated onto post-pay contracts (contract mobile call volumes increased by 4.0% over the same period). As a result, total fixed and mobile-originated voice call volumes fell by 14 billion minutes (5.6%) in 2011.

Figure 5.15 Total fixed and mobile voice call volumes

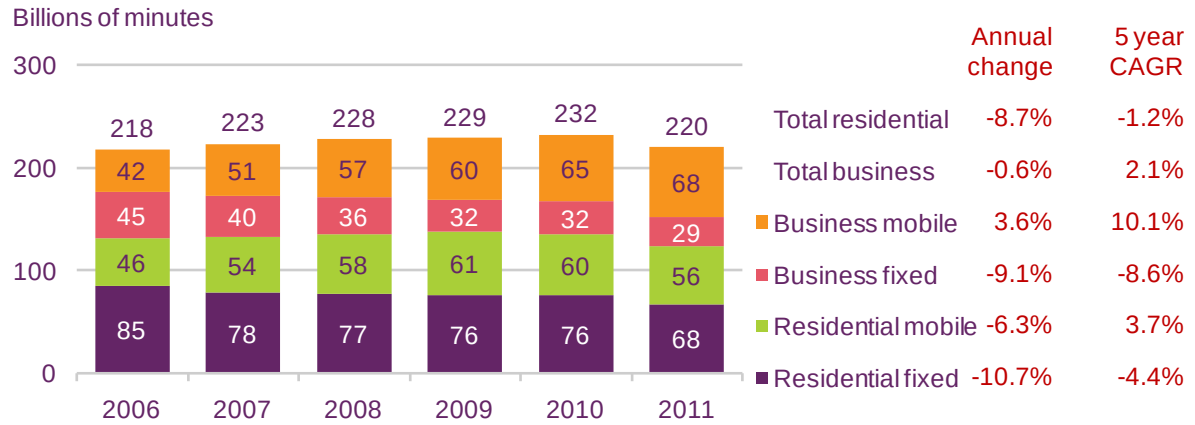


Source: Ofcom / operators
Note: Includes estimates where Ofcom does not receive data from operators

Declining residential use was behind in falling voice call volumes in 2011

Analysis of voice call volumes by customer type shows that total business voice call volumes were unchanged at 97 billion minutes in 2011 (although this was 0.6% lower than in 2010), as a 3 billion-minute (9.1%) fall in business fixed call volumes was offset by a 2 billion-minute (3.6%) increase in business mobile voice call volumes (Figure 5.16).[130] It was therefore decreasing use of voice telephony services among residential consumers that was the main driver behind declining total voice call volumes in 2011: total residential voice telephony call volumes fell by 12 billion minutes (8.7%) to 123 billion minutes during the year. Both residential fixed and mobile-originated call volumes fell during the year, with the decline in fixed calls (down 10.7% to 68 billion minutes) being greater than the 4 billion-minute (6.3%) fall in mobile-originated volumes, in both call minute and percentage terms.

Figure 5.16 Total fixed and mobile voice call volumes, by customer type



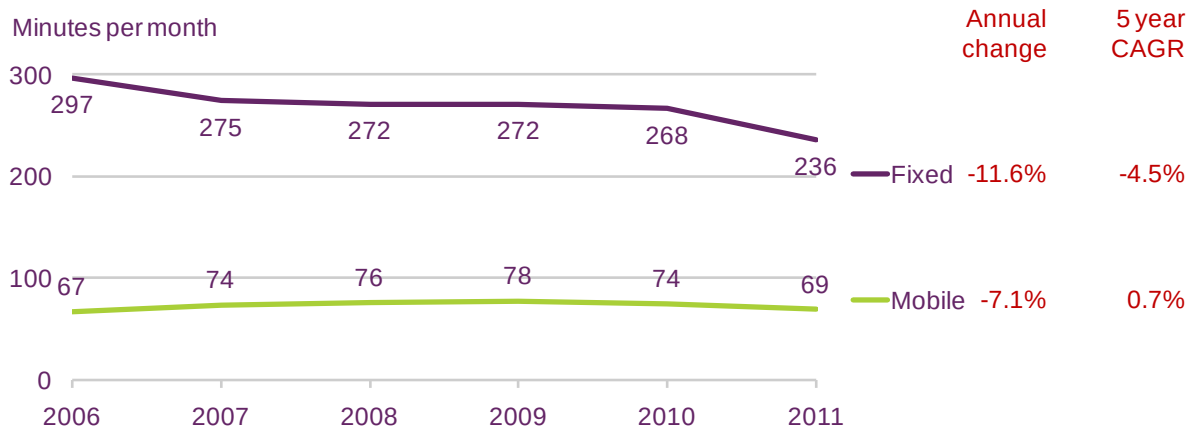
Source: Ofcom / operators
Note: Includes estimates where Ofcom does not receive data from operators; fixed call volumes exclude NTS voice calls

[130] The fixed call volumes used in this analysis exclude non-geographic voice calls as a split of these calls by customer type is not available.

Both fixed and mobile call minutes per residential connection fell in 2011

The number of residential fixed and mobile voice connections (which in the case of mobile excludes mobile broadband dongles and datacards) both increased during 2011 (by 0.5% and 1.1% respectively) meaning that average use per connection fell for both services during 2011 (Figure 5.17). On average, 236 minutes of outgoing calls were made per residential fixed line per month during the year, 31 minutes per month (11.6%) less than in 2010. Average use per mobile connection was much lower than that of a fixed line in 2011, at just 69 minutes per month, a five minute per month (7.1%) fall compared to 2010.

Figure 5.17 Average monthly call minutes per residential fixed and mobile voice connection



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

So if people are making fewer voice calls, how are they communicating?

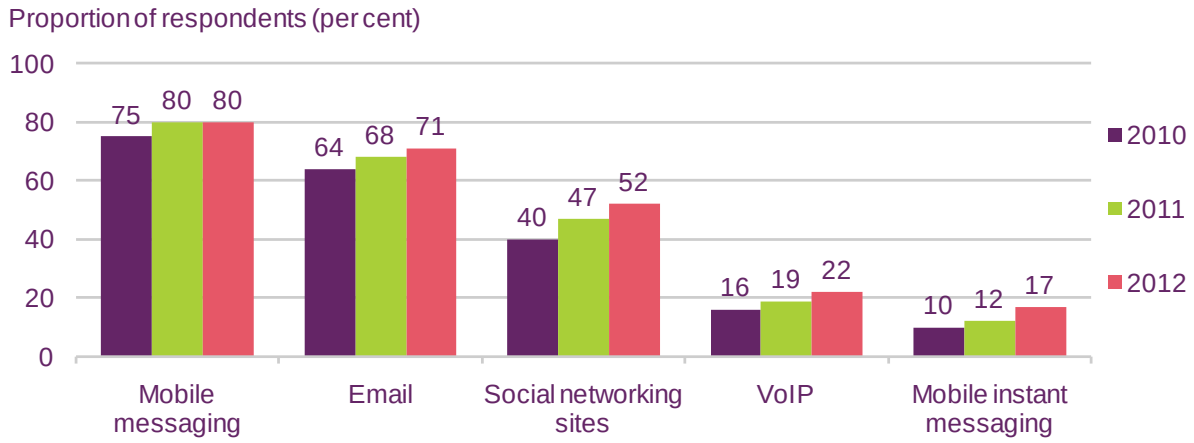
Falling voice telephony call volumes suggest that UK consumers are using voice communication services less. However, although our figures show that people are using traditional fixed and mobile voice services less, they exclude PC-originating VoIP voice calls (both PC-to-PC and breakout calls which terminate on the PSTN network). Comparable call volume figures for PC-originating VoIP calls are not available, meaning that it is not possible to definitively say whether people are using telecoms networks for voice communication less. As is shown in Figure 5.18 below, Ofcom research suggests that the proportion of adults currently using VoIP services increased from 16% to 22% between Q1 2010 and Q1 2012, so it is likely that increasing VoIP use is at least partly offsetting falling traditional voice telephony call volumes.

The other major trend over recent years has been the increasing use of other (non-voice) forms of communication, the most prevalent of which is mobile messaging. Between Q1 2010 and Q1 2012 the proportion of UK adults using SMS messaging services increased by five percentage points to 80%, and in the five years to 2011 the average number of monthly SMS text messages sent per person increased by over 20% a year, from 70 per month in 2006 to 200 in 2011. This growth has been fuelled by mobile providers including increasingly generous or ‘unlimited’ SMS allowances within both post-pay and pre-pay tariffs (SIM-only post-pay tariffs offering unlimited text messages are available from £10.50 a month from the mobile network providers, while on some networks a £10 a month pay-as-you-go top-up includes unlimited texts).

An additional factor driving increasing use of text-based forms of communication is growth in household broadband take-up (which was 76% in Q1 2011, 24 percentage points higher than it had been five years previously). According to the Ofcom Technology Tracker, the proportion of adults using email increased by seven percentage points to 71% in the two years to Q1 2012, while over half of adults (52%) said that they used social networking sites (which enable individuals to communicate by leaving posts on each other's pages and exchanging messages) in the first quarter of 2012.

Increasing take-up of smartphones (which were used by 39% of UK adults in Q1 2012) has also driven growth in the use of email and social networking sites, as these allow users to access these services while on-the-move. Instant messaging (IM) services (such as BlackBerry Messenger, iOS iMessage and the 'over-the-top' cross-platform services such as WhatsApp, Viber and Touch (all of which are accessed using a mobile app) have proved popular, with 44% of smartphone users (equivalent to of 17% of all UK adults) saying that they used IM services in Q1 2012. Smartphones can also be used to make VoIP calls; however, many mobile tariffs do not allow the use of these services, so consumers need to connect to a WiFi network to make these calls.

Figure 5.18 Use of communication methods other than traditional voice telephony



Source: Ofcom research, data as at Q1 of each year
Base: All adults 16+

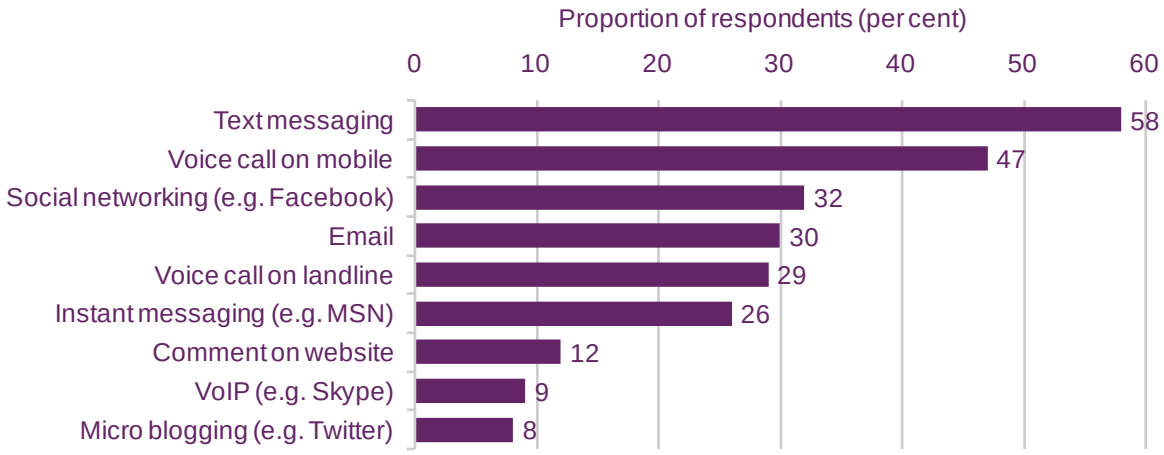
Almost a third of adults said that they used social networking sites to exchange messages with friends and family on a daily basis in Q1 2012

Ofcom research conducted in Q1 2012 asked consumers about the frequency with which they used different forms of communication to interact with friends and family, and Figure 5.19 shows the proportion of people using various services on a daily basis.

Text messaging, voice calls on a mobile and exchanging messages via social networking sites were the most frequently-cited forms of electronic communication among respondents, with 58% saying that they used text messaging to communicate with friends and family on a daily basis, 47% that they used mobile voice calls to do so and 32% that they used social networking sites to keep in touch. In contrast, less than three in ten (29%) said that they used a landline to call friends and family on a daily basis, only slightly more than said that they used IM services (26%).

It therefore appears that consumers are using newer forms of electronic communication where they would previously have made traditional voice calls.

Figure 5.19 Means of communicating with friends and family used at least once a day



Source: Ofcom research, Q1 2012
Base: All adults 16+

Are voice to data substitution and 'over-the-top' (OTT) services the next step in the use of communication services?

Even though we are unable to conclude whether consumers are using voice communication services less, it is clear that the way in which people are using telecoms networks to interact is changing, as new technologies and services emerge. Services such as email, instant messaging and social networking sites, all of which offer alternatives to voice calls originating on fixed and mobile networks, have proved popular in the UK as take-up of mobiles, smartphones and fixed broadband has become widespread.

Although use of VoIP services is increasing, VoIP use over fixed networks has not gained the same traction in the UK that it has in countries such as France and Italy. We think this reflects the widespread availability of low-cost traditional fixed and mobile telephony services in the UK, the requirement that most fixed-broadband services also need a fixed voice line, and because very few UK fixed providers offer managed VoIP services as a straightforward substitute for traditional fixed voice services. Use of VoIP over mobile networks has also been constrained because many mobile data tariffs do not permit its use (and network connections may not be sufficient to support it, either by design or as a result of the comparatively more variable quality of a mobile data connection, compared to a fixed connection).

This growth in the use of services that use data networks as a substitute for voice services presents a number of issues for conventional voice providers. These include increased competition from OTT providers, because the services do not generate additional revenue for the network provider beyond data access revenue.

Similarly, increasing use of OTT services increases the volume of traffic on data networks, in turn requiring additional investment in network capacity by infrastructure providers. While voice services themselves are not particularly data-hungry, increasing use of OTT video services (such as those provided by BBC iPlayer, LOVEFiLM, Netflix and Sky), constitute a high proportion of data use (according to Sandvine, Netflix accounted for almost a third of

peak-time fixed network downstream broadband traffic in North America in autumn 2011).[131] Video-based VoIP services can also potentially have a material effect on data traffic volumes.

Over-the-top-services

Over-the-top (OTT) services are provided over the internet rather than a managed network and are delivered directly to the end-user by the service provider, independent of the internet service provider (ISP) who owns the network over which the service is provided.

For example, managed VoIP services include those where an ISP also provides a voice service over the broadband connection. The ISP controls the provision of this voice service and the quality of service for end-to-end calls.

Unmanaged VoIP include services where a separate voice service provider (such as *Skype* or *Vonage*) provides the service on an OTT basis over a broadband connection. The provider of the broadband connection routes the traffic to the internet and there is no guarantee that they will prioritise this traffic over other types of internet traffic. Therefore, quality of service is likely to be more variable than on a managed service.

Examples of non-VoIP OTT services include *WhatsApp* and *Viber* (which provide messaging services over a smartphone's data connection) and *Netflix* and *LOVEFiLM Instant* (which stream video content over broadband).

5.1.5 Government announces investment to increase mobile coverage

Consumers in 99.7% of the UK's premises (homes and offices) can already make and receive phone calls and send and receive text messages using mobile connections from at least one operator.

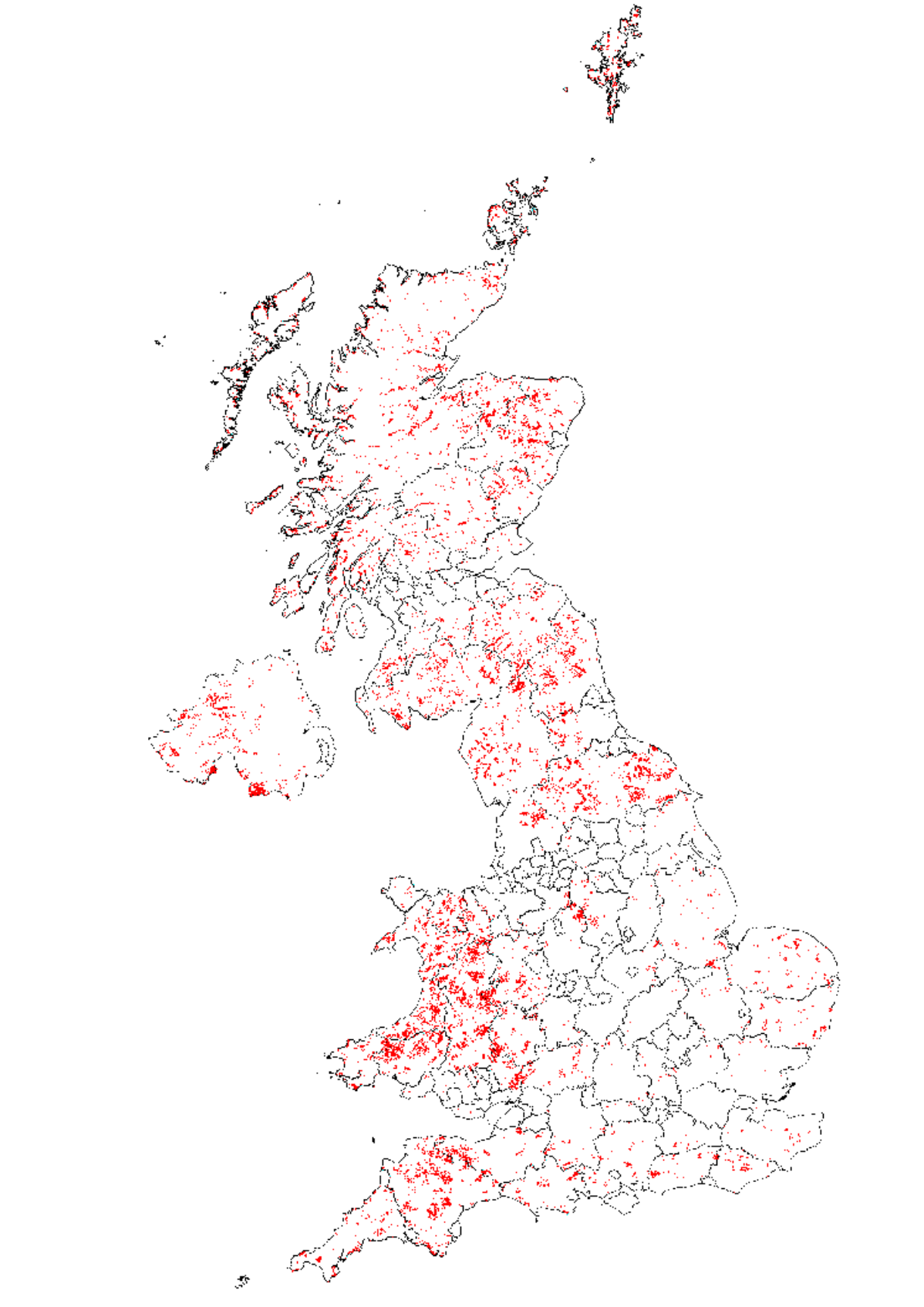
However, some premises, typically in more sparsely populated areas, still do not have outdoor[132] 2G mobile coverage from any operator. These premises are defined as being in a 'complete mobile not-spot[133]' (see Figure 5.20 for a map of complete not-spots). These complete not-spots primarily exist because it is much more expensive per premise for mobile network operators to cover these areas, due to a sparse population density and/or hilly terrain (which can cause obstructions to mobile signals, meaning signals are able to travel less far). The market on its own is unlikely to supply mobile services to all these not-spots because of the high incremental cost of building mobile infrastructure to cover these areas.

[131] http://www.sandvine.com/downloads/documents/10-26-2011_phenomena/Sandvine%20Global%20Internet%20Phenomena%20Report%20-%20Fall%202011.PDF

[132] Ofcom measures mobile coverage that can be expected outside homes and businesses. Ofcom measures outdoor coverage because mobile signals penetrate through building walls in different ways depending on the type of material the building is made of. Because buildings consist of different materials and different thicknesses of material, assessing indoor coverage is more difficult than outdoor measurements. Despite the signal loss attributable to buildings, most UK homes have good indoor coverage.

[133] To measure mobile coverage, Ofcom divides the UK's area into 200m x 200m 'pixels'. For each pixel, Ofcom counts the number of mobile operators providing coverage. Where a pixel contains at least one home or business and the signal level of all operators is poorer than -86dBm, the pixel is classified as a 'complete not-spot'.

Figure 5.20 Premises in complete mobile not-spots



Source: Ofcom

However, the government believes that providing widespread mobile phone coverage is essential to drive benefits for local economies by encouraging business growth and access to online public services. To help drive these benefits, in October 2011 George Osborne, Chancellor of the Exchequer, announced[134] that the government would invest up to £150m towards the capital expenditure costs of improving mobile coverage in what has become known as the Mobile Infrastructure Project, or MIP.

MIP is an important part of the government's National Infrastructure Plan[135], which details major commitments to improve both transport and broadband networks as well as attracting private-sector investment, which the government believes will help stimulate economic growth.

MIP aims to extend mobile voice coverage to many of the homes and businesses in complete not-spots by building new mobile sites. The Department for Culture, Media and Sport (DCMS) is in discussions with all four mobile operators to provide mobile voice services from all MIP sites.

The government is currently in the process of procuring a supplier for MIP. The supplier that wins the contract will be responsible for designing, building and operating the new infrastructure. The government expects the additional coverage to be in place by 2015, with the benefits starting to be realised from 2013.

MIP also aims to improve mobile coverage on the UK's major roads. The government has identified ten key roads that it will target – all of which have significant stretches in complete not-spots. The roads are located in all four nations: England, Northern Ireland, Scotland and Wales (see Figure 5.21). This additional road coverage may also improve mobile coverage to homes and businesses in towns and villages near these roads.

Figure 5.21 Roads targeted to benefit from the Mobile Infrastructure Project

Name of road	Nation	Start	End
A2	Northern Ireland	Derry	Newry
A29	Northern Ireland	Coleraine	Armagh
A591	England	Keswick	Sizergh
A169	England	Whitby	Norton
A57	England	Liverpool	Manchester
A470(T)	Wales	Llandudno	Cardiff
A82(T)	Scotland	Inverness	Glasgow
A360	England	Devizes	Salisbury
A143	England	Great Yarmouth	Haverhill
A352	England	Sherborne	Wareham

Source: Department for Culture, Media and Sport

Ofcom has played an important role in identifying the location of not-spots and is continuing to support the government in delivering MIP.

[134] More on the government's MIP announcements can be found on the Department of Culture, Media and Sport's website at http://www.culture.gov.uk/what_we_do/telecommunications_and_online/8757.aspx

[135] National Infrastructure Plan 2011 http://www.hm-treasury.gov.uk/national_infrastructure_plan2011.htm

5.2 The telecoms industry

5.2.1 Introduction

In this section of the report, we examine recent trends in the telecommunications market from the perspective of industry revenues, subscribers and volumes. This section is divided into four sections:

- Industry overview: top-level findings from the UK telecoms industry
- Fixed markets: this covers fixed-line telephony and fixed broadband
- Mobile markets: this covers mobile telephony, mobile messaging, mobile data, mobile broadband and machine-to-machine.
- Business markets: this covers fixed and mobile telecoms subscriber, revenue and volume figures as well as some market research, and excludes corporate figures

The key findings in the section of the report are:

- **Total operator-reported telecoms revenues fell by 1.9% in 2011 to £39.7bn.** The main factor behind this fall was wholesale services, which fell by 8.9%. Retail service revenues increased by 0.2% during the year.
- **In 2011, households spent an average of £65.04 a month on telecoms services, £3.02 less than in 2010.** This equated to 3.0% of average total household spend.
- **The average cost of making a mobile voice call fell to broadly the same level as a fixed voice call in 2011.** The average cost of a mobile-originated voice call in 2011 was 8.5 pence per minute, just 0.3 pence per minute (3.1%) more than the 8.3 pence per minute average for fixed-originated voice calls.
- **Voice revenues declined, in contrast to data revenues.** Fixed voice revenues declined by 4.9% in 2011 to £8.9bn, while mobile voice revenues fell by 0.9% to £10.5bn. Mobile messaging and handset data revenues increased 5.5% to £4.6bn. Fixed data revenues (broadband and narrowband) increased by 6.8% in 2011 to £3.4bn, with broadband contributing the vast majority. (All figures are retail.)
- **The volume of voice calls shrank for both fixed and mobile telephony, while the volume of mobile calls exceeded fixed.** The number of minutes of calls made from fixed telephones was down 10.0% in 2011, while the number of minutes of calls made from mobile phones fell for the first time: down 1.1% on 2010. For the first time, over half (52%) of all call volumes were made from a mobile.
- **People in the UK sent an average of 200 SMS and MMS messages per month in 2011.** The average number of text and picture messages sent per UK inhabitant continued to increase in 2011, growing by 17% to 200 messages per month.
- **Growth in smartphone take-up resulted in increasing use of mobile data in the year to Q1 2012.** The average time spent using mobile data services was 2.1 hours a month in 2011, 25 minutes per month (24.7%) more than in 2010, while the volume of data consumed more than doubled in the 18 months to January 2012.

- **Nearly half of all mobile subscribers are on a contract.** The migration from pre-pay to contract continues, as the proportion of active mobile subscribers on contracts increased by 3.5 percentage points to just over 49%.

- **A third of people aged 16 to 24 lived in homes where mobiles were the sole form of telephony in Q1 2012,** more than twice the 15% average across all adults. The figure among 25-34 year olds was also high, with over a quarter (26%) living in a mobile-only household.

- **The total number of UK fixed broadband connections passed 20 million for the first time in 2011.** In addition, the number of mobile broadband connections passed 5 million during the year, and by the first quarter of 2012 76% of UK homes had a broadband connection of some description, with most of these (84%) relying solely on a fixed broadband connection.

5.2.2 Industry overview

UK telecoms revenue fell for the third consecutive year in 2011

The UK telecommunications industry generated £39.7bn in service revenues in 2011. The majority of this revenue - £27.4bn – was generated by residential retail services, with £3.6bn by corporate data services[136] and £8.8bn by wholesale services.

Total revenues declined by 1.9% from 2010 to 2011; the third consecutive annual fall (see Figure 5.22). The largest percentage decline was for wholesale services – down 8.9% year on year – largely because of the reduction in mobile termination rates (MTRs)[137]. Prior to April 2011, MTRs were capped at 4.18p per minute (4.48p per minute for Three). From 1 April 2011 until 31 October 2011, MTRs were set at a maximum of 2.66p per minute[138] for all mobile network operators. From 31 October 2011 until 31 March 2012 these rates were set to 2.69p per minute.

Despite the decline in mobile wholesale revenue, the mobile sector continued to contribute a majority share of UK telecoms revenues in 2011 (52%) – mobile revenues have exceeded fixed[139] revenues since 2007. Both fixed revenues and mobile revenues decreased by about £0.5bn between 2010 and 2011.

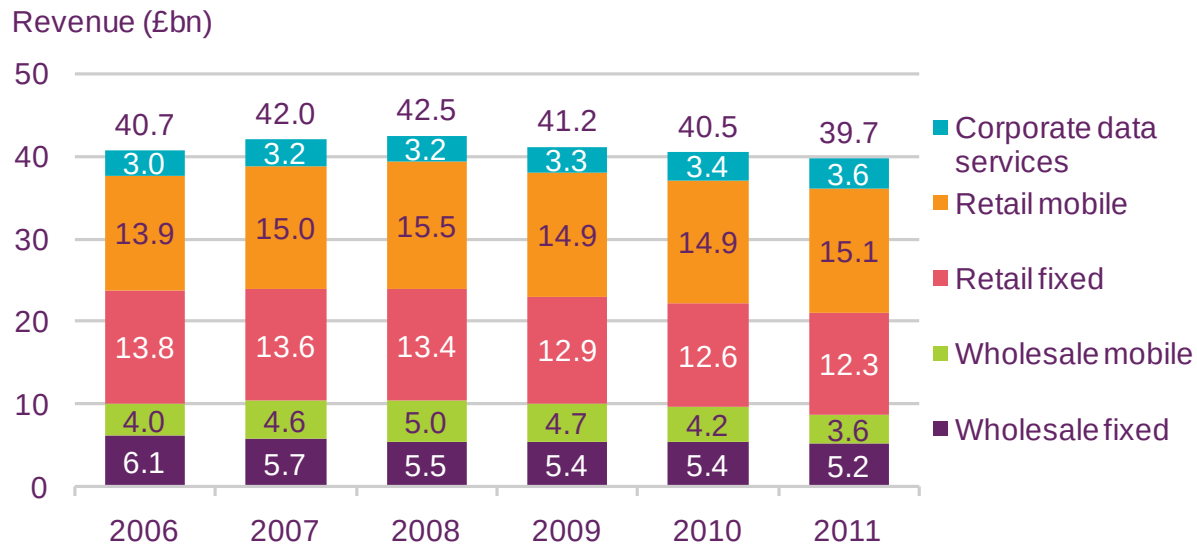
Consumer retail service revenue declined 0.3% year on year, while corporate data services revenue – driven by a growth in demand for Ethernet wide area networks and for hosting services – grew 4.9% year on year. Growth in revenue in consumer services was shown by both fixed broadband and mobile data.

These figures are significantly different to the numbers compiled by the Office of National Statistics (ONS), which calculates total telecoms turnover as £66.4bn in 2011, an increase of 1.3% on its 2010 total. The ONS' figure is different from the Ofcom figure because the ONS includes revenue from activities not regulated by Ofcom, like the sale of mobile handsets and other telecoms equipment.

[136] Wide area connectivity and web hosting services. For more details, see Figure 5.50.
[137] Mobile termination rates are fees paid to a mobile network operator for terminating a telephone call on their network. So if a customer of operator X makes a call to a mobile on operator Y's network, X pays Y the mobile termination rate.
[138] Rates are expressed in real 2008/9 prices
[139] We have excluded corporate data service revenues in this comparison because they are fixed services and we do not report directly comparable corporate mobile figures.

The retail and wholesale data were reported to Ofcom by network operators. Corporate data services figures were supplied by analyst company IDC.

Figure 5.22 UK telecoms revenue by wholesale and retail, fixed and mobile, and corporate data services



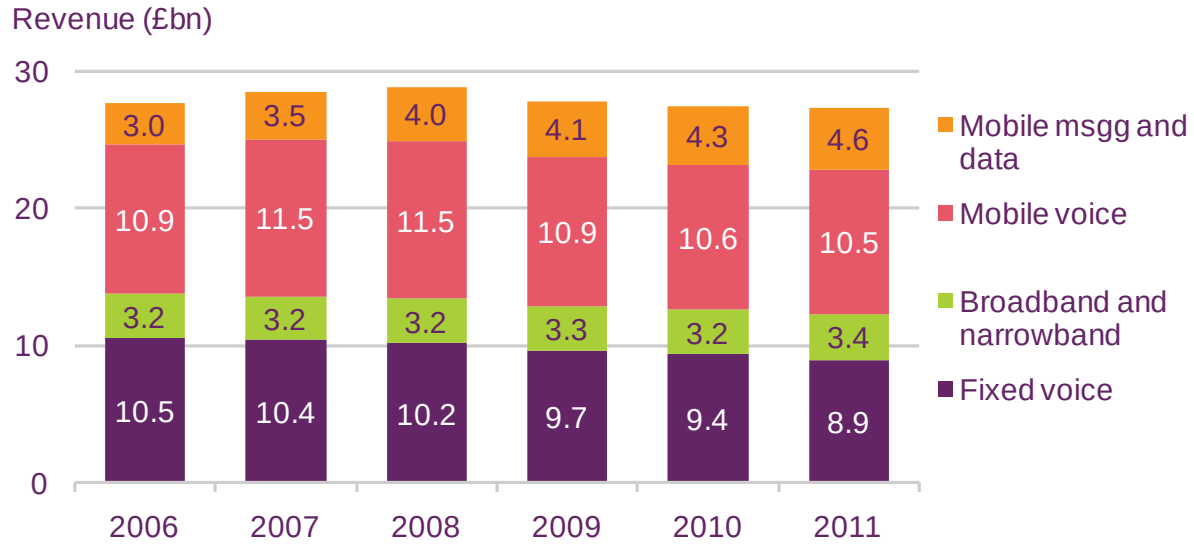
Source: Ofcom/operators (retail and wholesale data); IDC (corporate data services data)

Retail voice revenues declined but retail data and messaging revenues increased

Retail voice revenues have declined each year since 2007, with a decrease of 2.8% from 2010 to 2011 (Figure 5.23). Fixed voice faced the largest year-on-year decline to 2011, at 4.9%, while mobile voice revenues were down over the same period by 0.9%. However, at a total of £19.4bn, voice revenues still made up in excess of 70% of retail telecoms revenues in 2011.

Data services accounted for just under 30% of retail revenues, with mobile messaging and mobile handset data contributing the majority. There was over 5% growth in mobile messaging and mobile handset data in 2011, although mobile messaging showed a small decline. Fixed data revenues (primarily broadband and excluding corporate data services) increased by nearly 7%. Over the last five years, fixed data revenues have been broadly flat, while the total of mobile messaging and mobile handset data revenues has steadily increased.

Figure 5.23 Total retail revenue, by voice and data



Source: Ofcom/operators

Average revenue per user (ARPU) fell for voice but rose for data

Despite the fact that total fixed voice revenues are declining, subscribers are still spending more per person on fixed voice than on fixed broadband or mobile services. The average fixed voice subscriber, including homes and businesses, spent £22.26 per month in 2011, compared to £13.70 per month for fixed broadband services (Figure 5.24). Each mobile subscriber spent an average of £13.34 on mobile voice and messaging, with an additional £2.09 on mobile handset data. In 2011, mobile broadband subscribers spent only just over £1 per month less than fixed broadband subscribers, at £11.96. Mobile broadband includes subscribers using dongles and tablets, but not smartphones.

Fixed voice average revenue per user (ARPU) has fallen, however, over the last year – down by £1.05 per month. This has been due to falling call prices and volumes more than compensating for increasing line rental costs.

Fixed broadband ARPU increased by 19 pence per month, which may in part be due to increasing take-up of superfast services, which tend to be priced at a premium to slower services. In contrast, increasing take-up of unbundled broadband services as well as bundled services may be contributing downward pressure to broadband ARPU.

Because broadband is commonly sold as a bundled service, the separation of fixed voice and fixed broadband revenues should be treated with some caution: line rental fees are attributed to telephony, although most fixed broadband subscribers require a telephony line in order to subscribe to broadband services. The mix of the attribution of bundled fixed-line revenues to telephony or broadband is decided by the operator concerned.

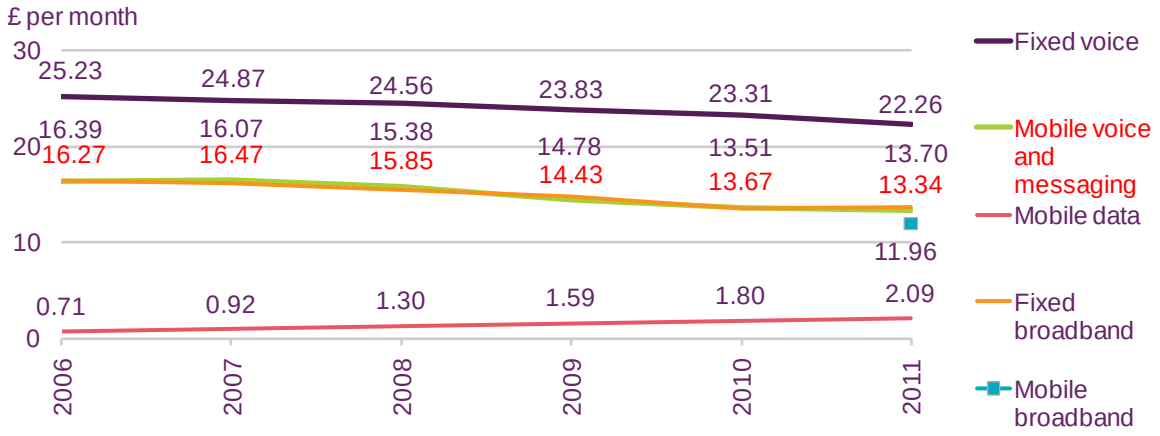
Both mobile voice and mobile messaging ARPU fell during 2011, with the average subscriber spending 33 pence per month less on those services compared with 2010, despite an overall migration of subscribers from pre-pay services – where subscribers typically spend less – to contracts, where subscribers typically spend more.

For mobile handset data, ARPU increased by 29 pence per month from 2010 to 2011. This rise was driven by increasing volumes of use per subscriber (as discussed in the Key Market Developments story on mobile data use, earlier in the Telecoms and Networks section) and

more subscribers choosing to own smartphones, which make surfing the internet much easier. Some caution should be taken in interpreting the mobile figures, for the same reason: common bundling of services that makes attribution of revenues to individual services more difficult. There are no available time-series data for mobile broadband.

Unlike fixed lines, mobile phones are generally not shared with others living at the same address, so mobile revenue per subscriber might be expected to be lower than for fixed services.

Figure 5.24 Average revenue per user (ARPU) per month, by service



Source: Ofcom/operators except for mobile broadband figure which was from YouGov DongleTrack research. In this chart, mobile data refers to handsets only and so excludes mobile broadband.

The volume of mobile call minutes exceeded the volume of fixed-line call minutes

For the first time, the volume of calls from mobile phones exceeded the volume of calls from fixed phones in 2011, comprising 52% of total voice calls (Figure 5.25). This was largely the result of a fall of 10.0% in the volume of calls from fixed phones from 2010 to 2011, following four previous years of decline.

But for the first time, mobile call volumes fell too - by a much smaller 1.1%. In previous years, declining fixed call volumes have largely been attributed to the substitution of mobile telephony for fixed telephony. However, it now appears that new factors have become important.

For example, some consumers may have swapped telephone calls for text messaging, instant messaging and social networking, which have all increased in use. The increased use of text messaging has been driven partly by tariff bundles that now often include unlimited, or large volumes, of SMS. The widespread use of some types of handsets, such as the BlackBerry, have also contributed to frequent instant messaging, while the prevalence of smartphones has made it easier to use social networking tools on the move. This trend is explored in one of the Key Market Development stories in the Telecoms and Network section.

Figure 5.25 Volumes of outgoing fixed minutes and mobile minutes

Source: Ofcom/operators

Growth in mobile and broadband connections has slowed

Mobile accounted for the majority of telecoms connections, with 81.6 million active connections at the end of 2011, a rise of 0.5% compared with December 2010. ('Active' means the connection has been used in the previous three months). However, the rate of growth of mobile connections has slowed: the 2011 growth figure compares with the compound annual growth rate from 2006 to 2011 of 3.1%. (Figure 5.26). The slowing of the rate of growth in mobile connections is likely to be a reflection of market saturation: according to Ofcom's market research, 94% of UK adults used a mobile phone in the first quarter of 2012.

Growth in the number of mobile broadband subscribers, which are included in the total of mobile subscribers, also slowed in 2011. At the end of 2011, there were 5.1 million active mobile broadband subscribers, an increase of 4.9% compared with 2010. This growth rate compares with the compound annual growth rate from 2008 to 2011 of 26%.

In terms of fixed lines, the number of PSTN[140] connections declined by 0.5% in 2011: a much smaller decrease than in many other European countries. The number of residential PSTN connections increased: this may be due to the fact that a PSTN line is necessary for households to subscribe to a DSL[141] broadband service. The number of business PSTN connections decreased amid fixed-mobile substitution.

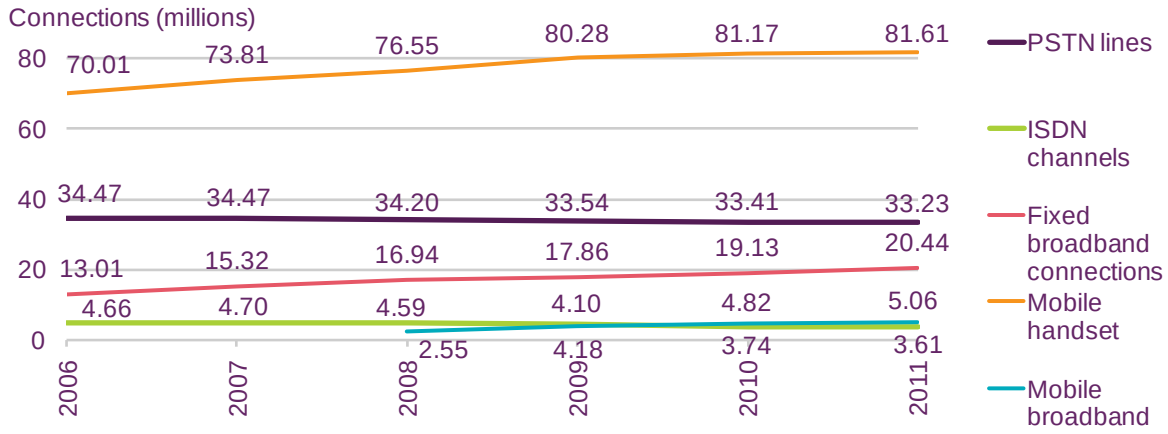
The number of ISDN[142] connections has declined every year since 2007, falling by a cumulative total of nearly 23%. ISDN connections are mainly used by businesses, which have in many cases swapped them for broadband or other voice lines, including mobile.

In contrast to fixed voice lines, the number of fixed broadband connections continued to increase: up by over 1.3 million in 2011 to a total of 20.4 million, as more households

[140] The PSTN (public-switched telephone network) is the network that manages circuit-switched fixed-line telephone systems and is the infrastructure that carries most consumers' calls.
[141] DSL (digital subscriber line) is a family of technologies capable of transforming ordinary phone lines into high-speed digital lines capable of supporting advanced services such as fast internet access. There are variants such as ADSL and VDSL. These are asymmetric technologies of which the latter tends to be faster.
[142] ISDN (integrated services digital network) is a standard developed to cover a range of voice, data and image services intended to provide end-to-end, simultaneous handling of voice and data on a single link and network.

connected to the internet and faster connections made a more attractive offering to those considering subscribing to a broadband service.

Figure 5.26 Number of connections, by service



Source: Ofcom/operators. Mobile broadband figures are also included in the total mobile figure.

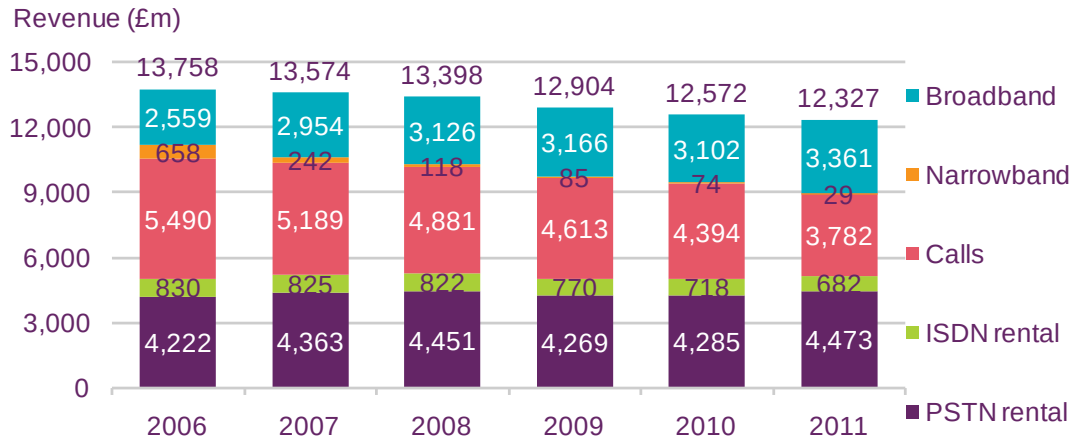
5.2.3 Fixed markets

Total fixed revenues fell, but broadband and PSTN rental revenues rose

Total revenues from fixed telecoms have fallen in each of the last five years at a compound annual growth rate (CAGR) of -2.2%. However, this overall figure masks very different trends in individual services. PSTN line rental revenue rose 4.4% from 2010 to 2011, as many line rental packages now often include unlimited calls to geographic numbers and sometimes bundled minutes to mobiles, non-geographic numbers and international numbers. However, the increase in line rental revenue has been more than offset by a decrease in metered call revenues, which were down by a CAGR of 7.2% from 2006 to 2011.

Narrowband revenues have declined to less than 5% of their 2006 value, as most consumers have migrated from dial-up internet services to broadband. Accordingly, broadband revenues have increased, with a CAGR of over 5% from 2006 to 2011, representing over one-quarter of fixed revenues at the end of 2011 (Figure 5.27).

Figure 5.27 Fixed telecoms revenues, by access technology



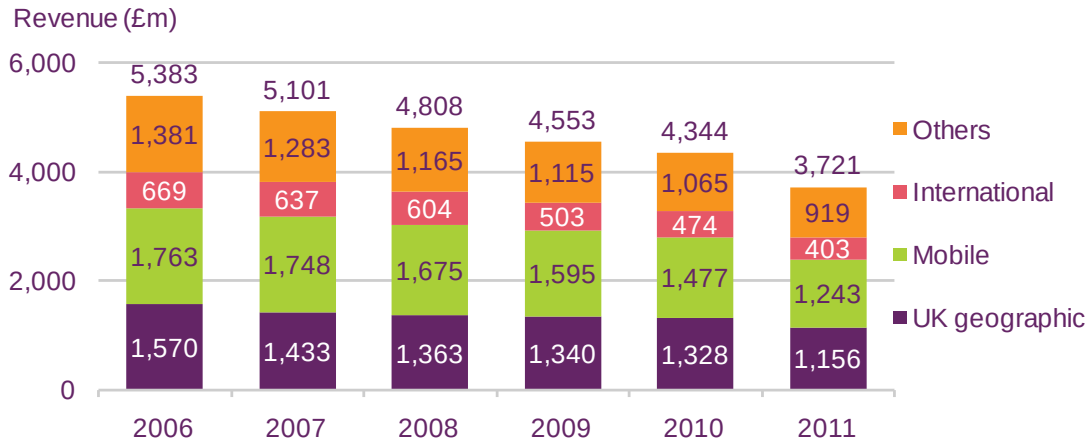
Source: Ofcom/operators

Fixed voice revenue declines accelerated in 2011

We have already discussed the fact that call revenues have fallen by one-third since 2006. The rate of decline was higher from 2010 to 2011 (14.3%) than the compound annual growth rate from 2006 to 2011 (down by 7.8%). All call types saw declines of 12-16% in 2011 (Figure 5.28).

Calls to mobiles remain the largest component of fixed-call revenues, at 33.4% of the total. Calls to geographic numbers (such as those that start with 01 and 02) contributed 31.1% of the total. Despite the presence of some growing globalisation trends, international call revenue from fixed lines fell by £71m during 2011; from 10.9% to 10.8% of the total, despite broadly level volumes (see next section). Declining international call prices may be explained by the existence of alternative VoIP telephony services, such as Skype, which offer cheap international calls. Some telecoms operators have responded to these alternatives by offering their own low-cost bundles of international calls.

Figure 5.28 Fixed voice revenues, by type of call



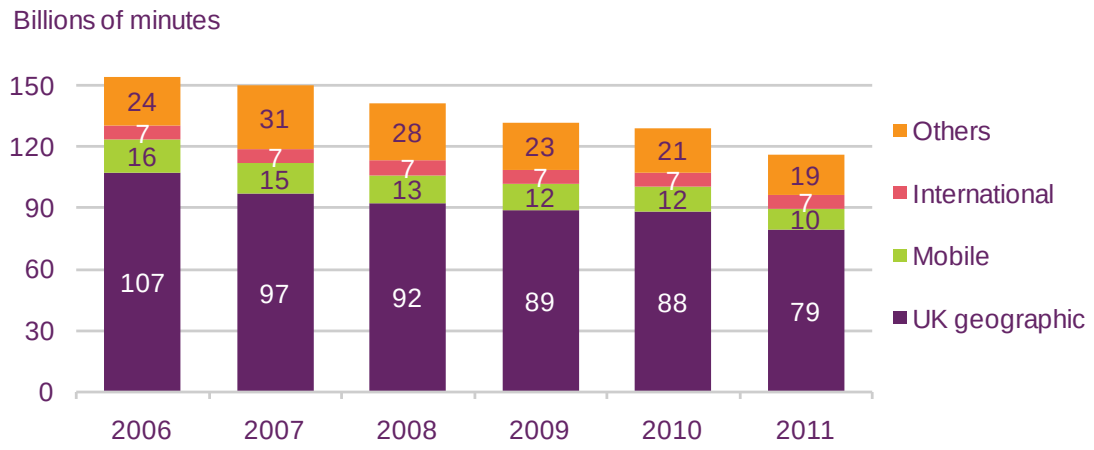
Source: Ofcom/operators

Fixed voice volume declines also accelerated

Despite the fact that calls to mobile phones contributed the majority of revenue, they accounted for less than 9% of volume. Calls to geographic numbers accounted for over two-thirds of the volume of calls from fixed lines (Figure 5.29).

Volumes of fixed telephone calls fell by a compound annual growth rate of -5.55% from 2006 to 2011 and by -10.0% year on year in 2011. Calls to mobile decreased the most – both in terms of CAGR from 2006 to 2011 (-8.21%), and year on year (-12.04%).

Figure 5.29 Fixed voice volumes, by type of call



Source: Ofcom/operators

Fixed broadband connections passed 20 million

The number of fixed broadband connections passed 20 million for the first time in 2011. Of these connections, nearly 78% were ADSL, 20% were cable and the remaining 2% were classed as 'other broadband' at the end of the year (Figure 5.30). 'Other broadband' includes fibre to the cabinet (VDSL services), fibre to the home or premises, fixed wireless and satellite broadband services. The proportion in the latter category increased during 2012 as BT upgraded lines to fibre to the cabinet (FTTC) and fibre to the home/premise (FTTH/P).

In 2011, the greatest increase in connections was on ADSL, with 930,000 net additions. Cable broadband's net additions were 90,000, though these were limited by the fact that cable is available to only half of the country's homes, and because five years ago it had the highest take-up of any broadband technology, so has less room to grow.

Figure 5.30 Fixed broadband connections

Source: Ofcom/operators

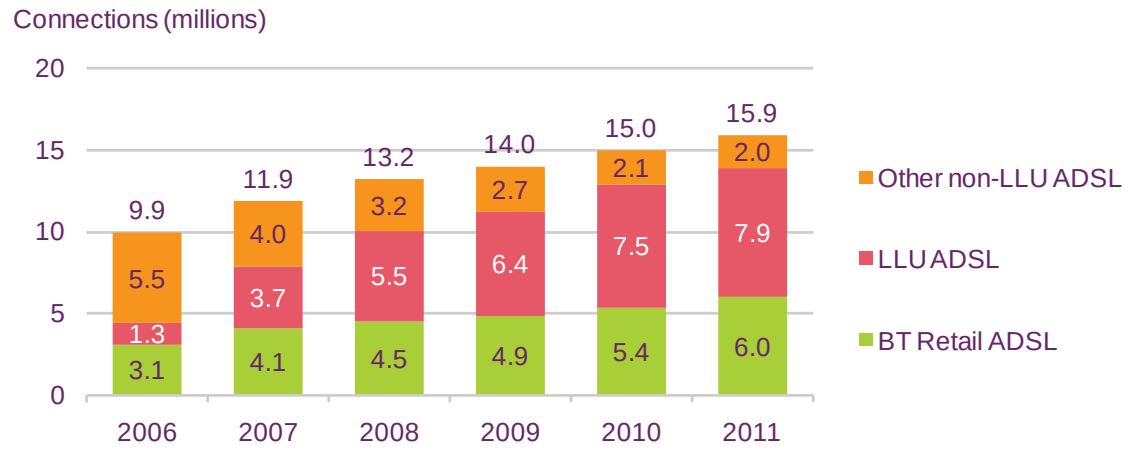
In 2011, half of ADSL connections were unbundled

In 2011, of the nearly 16 million active ADSL connections, almost exactly half were unbundled[143] – a similar figure to 2010 (Figure 5.31).

The number of unbundled lines increased from 2006 to 2011, although growth has slowed since 2008 as the market for broadband services has approached saturation. In 2006, just 1.3 million lines were unbundled, which was then 13% of all ADSL connections.

Over the same five-year period, the number of non-BT, non-unbundled lines has decreased to less than 2 million, or about one in eight ADSL connections, as the major ISPs have invested in local loop unbundling.

Figure 5.31 Local loop unbundling connections



Source: Ofcom/operators

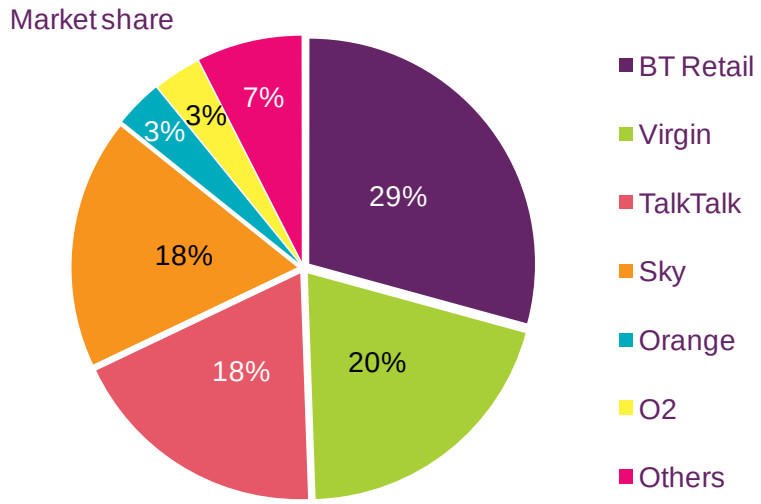
[143] Local loop unbundling is a regulated process whereby BT offers a competing internet service provider (ISP) access so that it can place equipment in a BT telephone exchange that gives the ISP control of customer's copper broadband line and the service they receive. The terms of unbundling, including the price of access, are set by Ofcom.

BT increased its fixed broadband market share in 2011

Although the number of unbundled lines has increased, BT also increased its share of retail ADSL lines, and of broadband lines as a whole. At the end of 2011, BT Retail had a fixed broadband market share of nearly 30%, up by one percentage point since 2010 (Figure 5.32).

Cable operator Virgin Media has the second-highest market share, while TalkTalk, in third place, lost ground to fourth-placed Sky. These four ISPs comprise the major fixed broadband players by subscriber numbers.

Figure 5.32 Fixed broadband market share



Source: Ofcom/operators

The number of superfast fixed broadband connections quadrupled

In the 12 months to May 2012, the proportion of fixed broadband connections that were classified as 'superfast' – that is, the headline speed was at least 30Mbit/s – increased from 2% to 8%. In the same period, the proportion of broadband connections that had a headline speed of over 10Mbit/s increased from 47% to 68%, and the proportion of connections offering a headline speed of 8Mbit/s or less decreased from 2% to 1% (Figure 5.33).

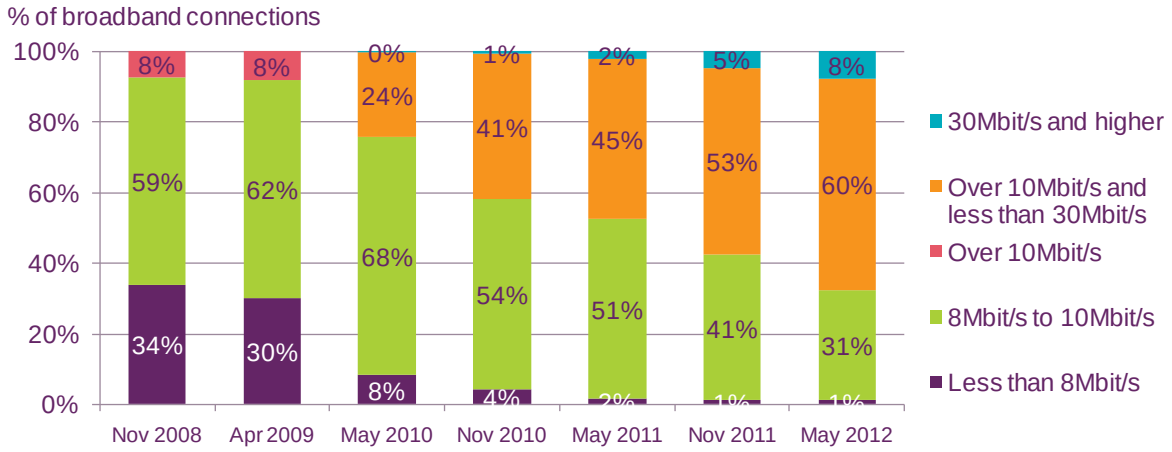
The increase in superfast broadband connections is the result of a migration of some of Virgin Media's subscribers to faster services and the increasing take-up of VDSL services, most commonly BT Infinity.

At the time of publication, the average fixed broadband speed for May 2012 was not available. However, data from November 2011 showed an increase in actual broadband speed: this had risen to 7.6Mbit/s from 6.8Mbit/s in May 2011.

Defining broadband speed

Headline speeds are the theoretical speed of the connection; these speeds have historically been used in advertisements by operators. *Actual speeds (otherwise called actual throughput)* are the speeds experienced by the subscriber. Actual speeds are slower than headline speeds because of technical factors, including distance from the exchange: the further a subscriber is from their exchange, the slower their broadband speed will be.

Figure 5.33 Fixed broadband connections by 'up to' headline speed



Source: Ofcom/operators. Excludes business connections.

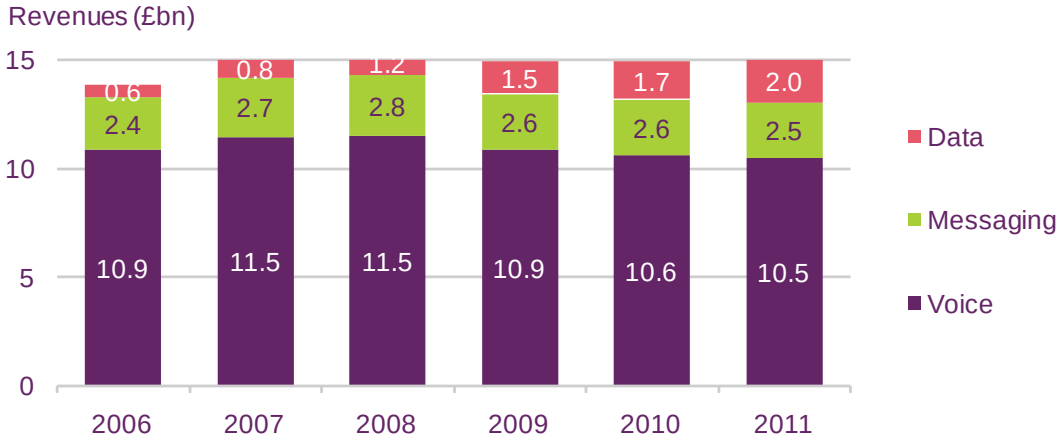
5.2.4 Mobile markets

Mobile revenues increased, driven by growth in data use

For the first time in three years, mobile retail revenue increased in 2011, going up by 1.0%. Data revenues increased by 17.7%, while messaging revenues fell by 2.6% and voice revenues by 0.9% (Figure 5.34). These figures reflect rapidly-increasing data use and falling voice use by mobile subscribers. Messaging volumes increased in 2011; the fall in messaging revenues shows a marked fall in revenue per message, which is related to the availability of tariffs that include large numbers of inclusive messages.

Voice accounted for less than 70% of mobile revenues in 2011, down from just over 78% in 2006. Data accounted for 14%, up from 4% five years previously, while messaging accounted for 17%, down from 18%. (The sum does not total 100% because of rounding).

Figure 5.34 Mobile retail revenue, by voice, messaging and data



Source: Ofcom/operators

Mobile call revenues continued to fall, but revenue from subscriptions rose

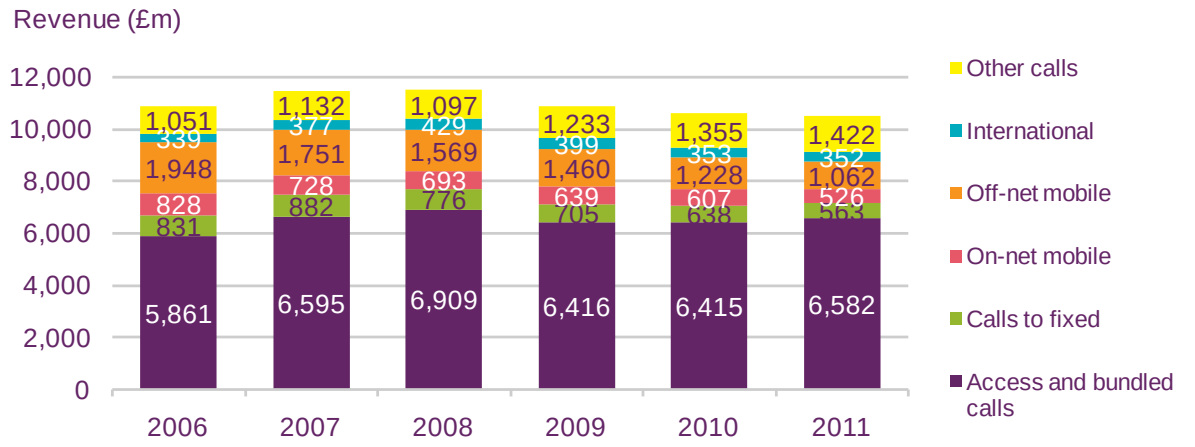
Retail voice revenues fell for three consecutive years from 2008 to 2011, as did revenue from calls to geographic numbers (such as those beginning 01 and 02), calls to on-net and off-net mobiles and revenue from international calls. For some of these categories, revenue declines had also occurred in previous years.

However, revenue from subscriptions, and the bundled minutes, messages and data that come with those subscriptions, increased in 2011 by 2.6% (Figure 5.35).

In 2011, subscriptions accounted for 63% of retail voice revenue, up from 54% in 2006. Calls to mobiles are the second largest element, at 15% (down from 26% in 2006), with calls to fixed lines worth just over 5% and international calls worth 3% of retail voice revenue.

The volume of international calls from mobile phones has increased, so the slight decrease in international call revenue may be a reflection of the reduction in international call prices from most of the mobile network operators. Furthermore, some MVNOs have widely-marketed competitive international calling rates as low as 1 penny per minute.

Figure 5.35 Mobile retail revenue, by type of call



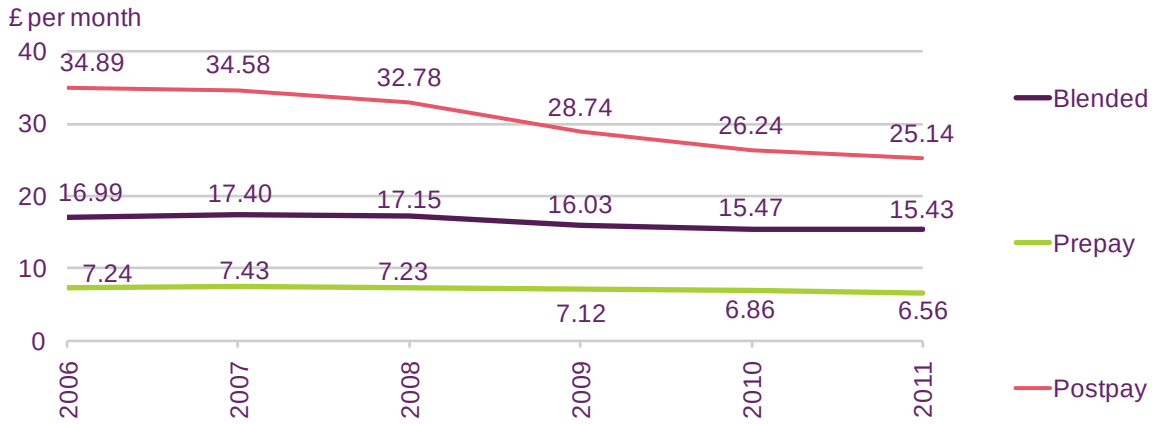
Source: Ofcom/operators

Mobile average revenue per user declined slightly amid post-pay migration

With a small increase in both retail revenue and the subscriber base during 2011, blended average revenue per user (ARPU) decreased by 4p per month to £15.43. ARPU for pre-pay subscribers and ARPU for post-pay subscribers both fell to a larger extent: down by 30p and £1.10 per month respectively (Figure 5.36).

The overall figure did not decrease as much as the pre-pay and post-pay figures, because of the migration of higher-spending pre-pay customers to lower-end post-pay tariffs.

Figure 5.36 Mobile average revenue per user



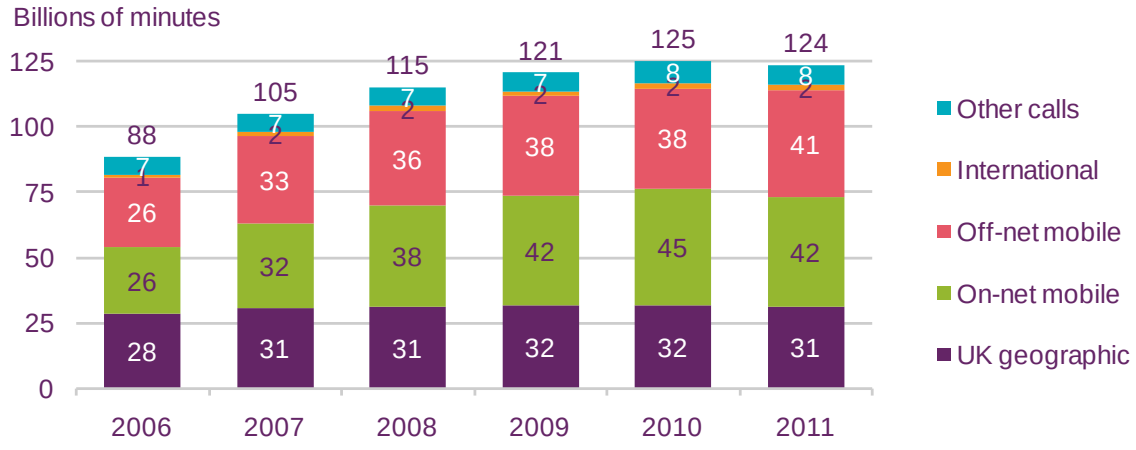
Source: Ofcom/operators. Blended refers to all subscribers – prepay and postpay.

The volume of calls dropped, but off-net and international call volumes increased

As mentioned above, the volume of outgoing mobile minutes fell by 1.1% in 2011: the first year it has declined. Calls to geographic numbers fell by 1.9% in 2011, while the volume of on-net calls (calls to the same mobile network) reduced by 6.6%. The decline in on-net calls was nearly equalled by an increase in off-net calls. The increase in the proportion of mobile calls that are off-net is a reflection of the fact that most mobile tariffs no longer offer cheaper on-net calls. International call volumes increased by 1.7% (Figure 5.37).

Despite the trend from on-net to off-net calling, the greatest proportion of outgoing mobile minutes are still to mobile phones on the same network, accounting for just over one-third of outgoing mobile calls. International calls comprise less than 2% of total outgoing mobile calls.

Figure 5.37 Outgoing mobile minutes, by type of call



Source: Ofcom/operators

Call volumes from pre-pay subscribers fell by a fifth

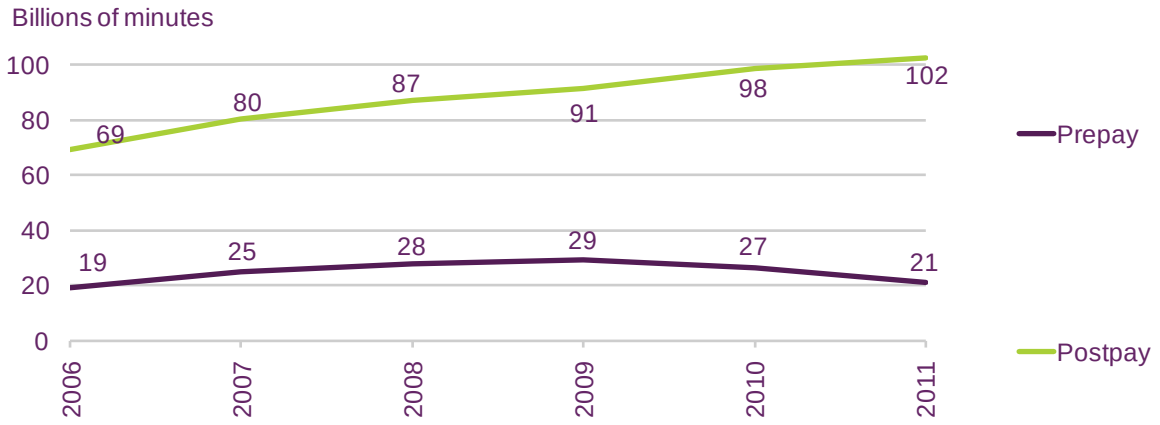
The volume of calls made by subscribers on pre-pay tariffs fell sharply in 2011; down 20.1% to 21.2 billion minutes. 2011 was the second consecutive year in which the volume of pre-

pay minutes fell, and the decline in 2011 was faster than in 2010. The number of minutes per pre-pay subscriber fell by about one-seventh during 2011 (Figure 5.38).

In contrast, during 2011 the number of minutes of calls made by subscribers on post-pay tariffs increased by 4.0%. These divergent trends are partly due to the migration of some subscribers from pre-pay to post-pay tariffs, many of whom are likely to have been among the highest pre-pay users of voice calls.

Some of the changing dynamics of the mobile voice market are discussed in a Key Market Development at the top of this section.

Figure 5.38 Volume of mobile voice minutes, by pre-pay and post-pay subscribers



Source: Ofcom/operators

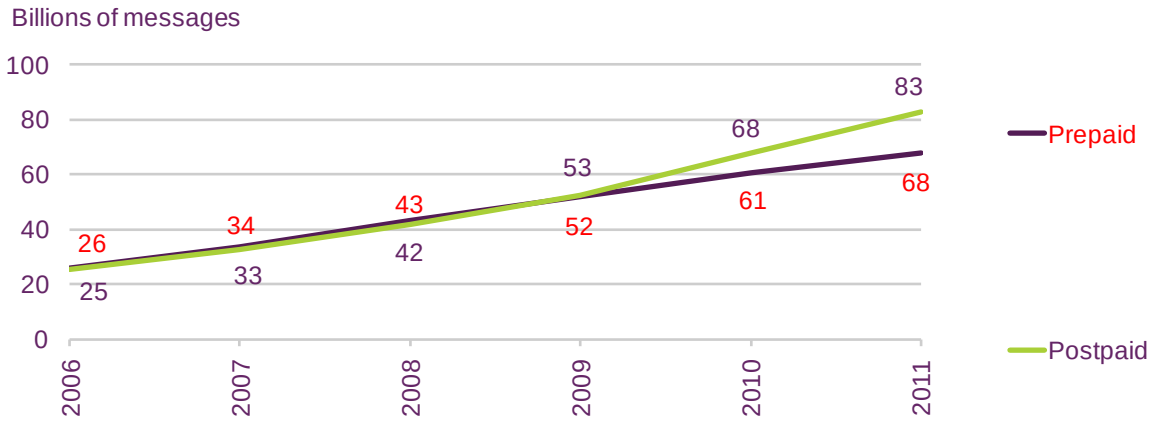
Text message volumes grew by over one-sixth in 2011

The volume of SMS messages (often known as 'text messages') sent in 2011 increased by 17.3% compared with 2010, a slight slowing on the compound annual growth rate for the period 2006-2011 of 24.1%. The total volume of SMS messages sent exceeded 150 billion in 2011 (Figure 5.39).

SMS messages sent by post-pay subscribers increased in volume by 22.3% during 2011, compared with 11.7% for pre-pay subscribers, in contrast to the trend from 2006-2009 which showed a similar proportion of increase for pre-pay and post-pay volumes. This differential is likely to be due to the migration of users from pre-pay to post-pay deals – a trend that accelerated from 2009-2011 - and also the large, or unlimited, bundles of SMSs available on many post-pay tariffs. 2009 saw the highest number of pre-pay connections and pre-pay minutes; both of which have since declined each year since then. Fifty-five per cent of SMS messages were sent by post-pay subscribers in 2011.

Other drivers for the increasing number of SMSs sent across both pre-pay and post-pay bases include the increasing penetration of smartphones, from which it is quicker to send an SMS than from a feature phone, and the apparent substitution of voice for SMS.

Figure 5.39 Volumes of SMS messages sent



Source: Ofcom/operators

Mobile data and machine-to-machine (M2M) led mobile connection growth in 2011

While growth in the number of mobile subscribers and of mobile broadband subscribers started to slow, two other mobile segments continued to grow rapidly.

Firstly, a rapidly increasing number of mobile subscribers accessed the internet via their mobile device. According to Ofcom's market research in the first quarter of 2012, 40% of mobile users said they accessed the internet via their mobile device, implying that there were 32.6 million subscribers accessing the internet on their mobile devices (Figure 5.40). The corresponding figure in the first quarter of 2009 was 11%, or 8.4 million.

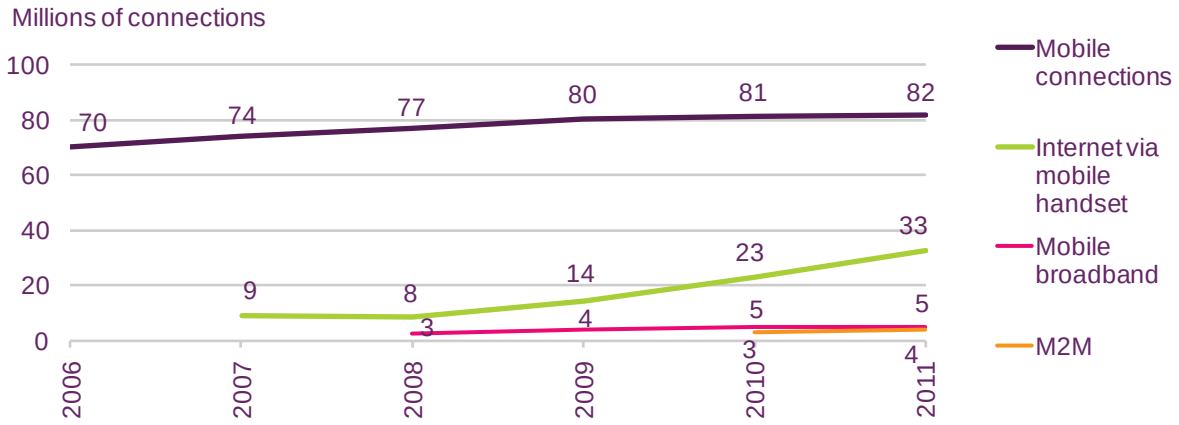
The trend of increased smartphone data use reflects the growing penetration of smartphones, faster mobile networks, more mobile-internet savvy users and more mobile-friendly websites and web-based resources.

The number of machine-to-machine (M2M) mobile connections provided by mobile operators also increased quickly, up 24% year on year according to Ofcom's figures. Mobile operator-supplied M2M was equivalent in number to 4% of the UK's mobile connections as at September 2011.

Machine-to-machine communications (M2M)

'Machine-to-machine communications' in this report refers to wireless communications between machines, rather than between people. This is a new area in the ICT industry that is growing in importance in terms of connections and revenues. It includes areas such as smart metering, connection of audio-visual and personal multimedia devices, telemetry, road traffic control, remote security monitoring, smart office equipment and the management of vehicle fleets. More details on the top M2M applications in 2011 can be found in the section with Figure 5.43.

Figure 5.40 Number of mobile connections



Source: Ofcom/operators and Ofcom market research.

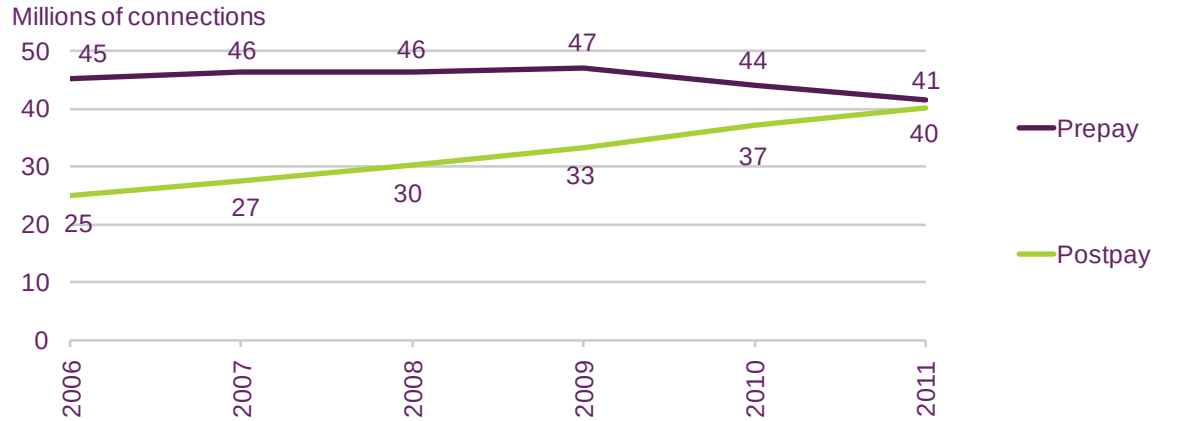
Note: 'Mobile broadband' connections and 'internet via mobile handset' connections are included in the figure for 'Mobile connections'. M2M connections are reported separately. 'Internet via mobile handset' does not count mobile users who access services such as email or social networking via their mobile device but who do not browse the web. Internet via mobile handset figures are collected in the first quarter of the following year. M2M figures are for September of the stated year.

The proportion of subscribers on post-pay tariffs increased to nearly half

Since 2006, the total number of contract subscribers, and the percentage of subscribers who are on contract tariffs (as opposed to pre-pay) has risen steadily. In 2011, nearly half of all mobile subscribers (49.2%) were on a contract – 3.0 million more than a year previously. At the same time, 2.6 million fewer subscribers were on pre-pay (Figure 5.41).

Many operators have tried to encourage migration from pre-pay to contract because contract subscribers tend to spend more than pre-pay subscribers. Offers of a free smartphone plus large quantities of bundled minutes, texts and data have persuaded many subscribers to convert to a contract tariff, while the cost of some pre-pay handsets may also have acted as a driver for this migration.

Figure 5.41 Number of mobile connections, by pre-pay and post-pay

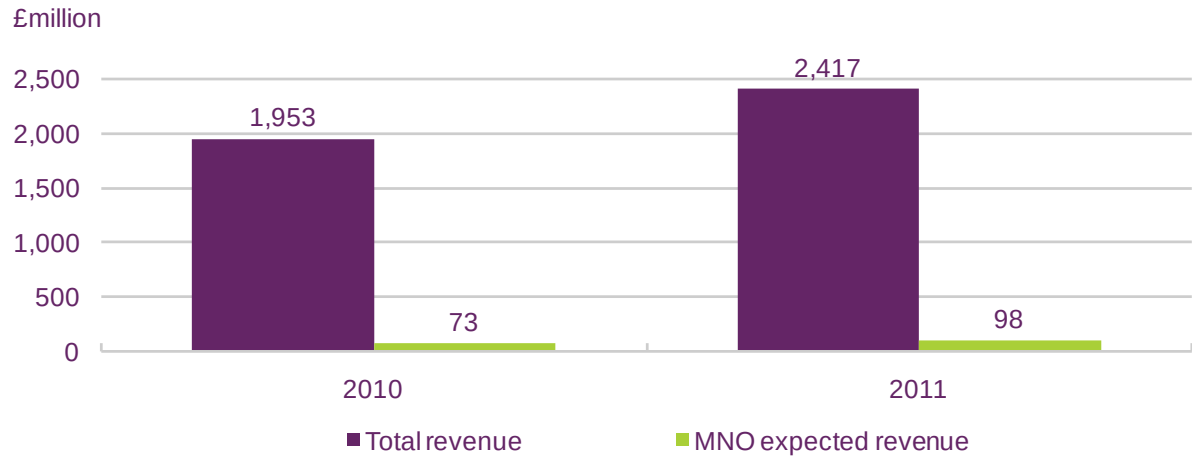


Source: Ofcom/operators

M2M revenues increased by nearly a quarter in 2011

According to industry analyst firm Machina Research, revenues from M2M exceeded £2.4bn in 2011, a 24% increase compared with 2010 (Figure 5.42). Mobile network operators (MNOs) are predicted to realise a small proportion of these revenues, according to Machina Research. The firm said that just 4% of M2M revenues were achieved by mobile network operators (MNOs) in 2011 – itself a small increase on 2010. The remaining revenues were attributable to a wide range of other types of company including product manufacturers and IT services suppliers.

Figure 5.42 Machine-to-machine (M2M) revenue



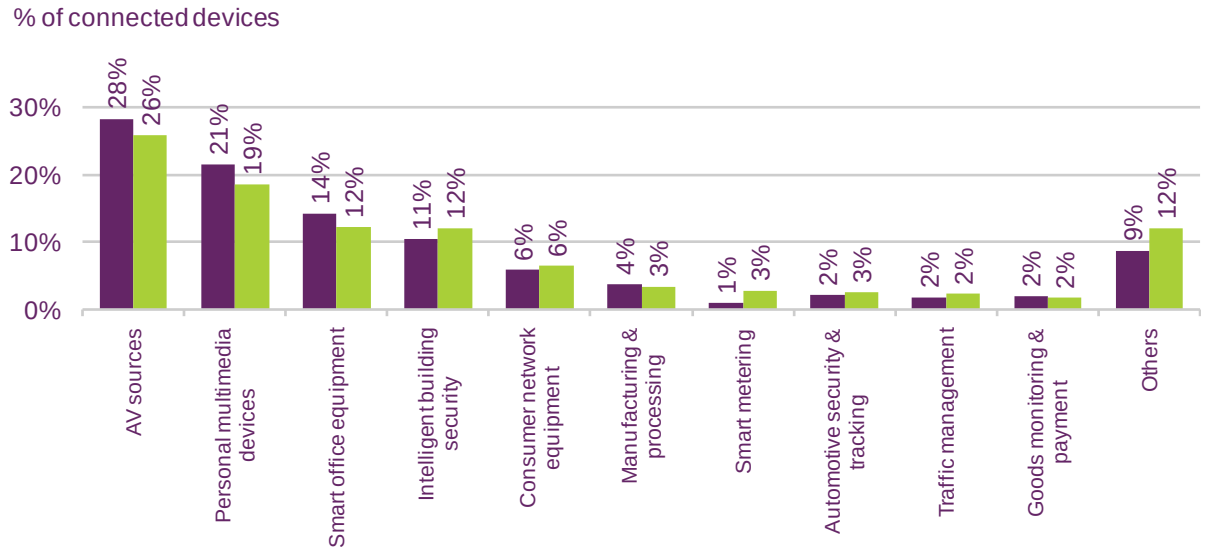
Source: Machina Research: M2M Global Forecast and Analysis

Audio-visual, personal multimedia and smart metering spurred M2M growth

The number of M2M connections increased by nearly 18% during 2011, according to Machina Research; lower than the rate of revenue growth, suggesting an increase in revenue per connection. Machina Research calculated that at the end of 2011, there were 32.6 million devices connected by M2M, up from 27.7 million at the end of 2010.

Figure 5.43 shows the top ten M2M applications in the UK. The most common application by number of connections is in consumer electronics: audio-visual sources (which accounts for over a quarter of the UK's M2M connections), followed by personal multimedia (with nearly one-fifth of connections) and smart office equipment (which includes printers and other multi-functional devices, at 12%). The fastest-growing application in the top ten is smart metering, with 244% year-on-year growth. One of the largest type of users of smart metering is energy companies, which install meters in consumers' homes to provide real-time energy readings to the supplier via the mobile network.

Figure 5.43 Machine-to-machine (M2M) connections, by application



Source: Machina Research: M2M Global Forecast and Analysis

5.2.5 Business markets

Businesses shed fixed phone lines in 2011 but signed up to broadband

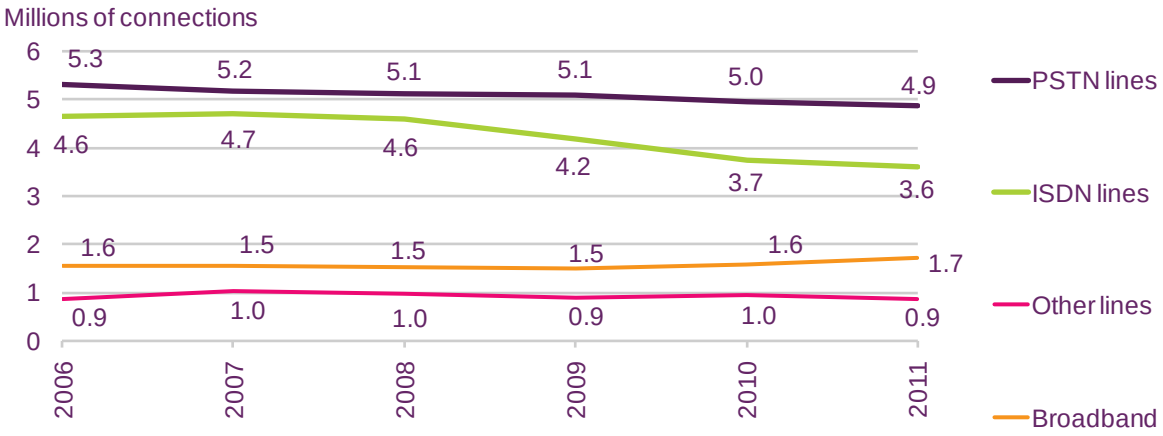
The number of business fixed lines (excluding broadband) decreased for the fourth consecutive year in 2011, falling 3.1% to 9.4 million (Figure 5.44). The total number of PSTN lines and the total of ISDN lines both fell, in contrast to the number of residential PSTN lines, which rose slightly during the year.

Three factors are likely to have contributed to the decline in the number of business fixed lines: a trend for businesses to discontinue lines for workers who work remotely or in more of a mobile environment, decreased employment levels as a result of difficult economic conditions, and the increased use of IP-based backhaul for business telephony.

Businesses subscribed to just under one-sixth of PSTN lines in 2011. The category ‘other lines’ included Centrex, which locates the business’s telephone switch in the service provider’s network.

In contrast, the number of business broadband subscriptions increased by 8.8% in 2011, taking the total to 1.7 million. Businesses subscribed to one in twelve broadband lines in 2011.

Figure 5.44 Business fixed voice and fixed broadband connections



Source: Ofcom/operators

Mobile broadband proved popular with businesses

Businesses are adopting mobile broadband in greater proportions than consumers, according to Ofcom data. At the end of 2011, businesses subscribed to an estimated 1.4 million mobile broadband connections; equivalent to 13% of business mobile connections. This compared with 3.7 million consumer mobile broadband connections, equating to 5% of consumer mobile connections. The business market share of mobile broadband connections was 27% at the end of 2011.

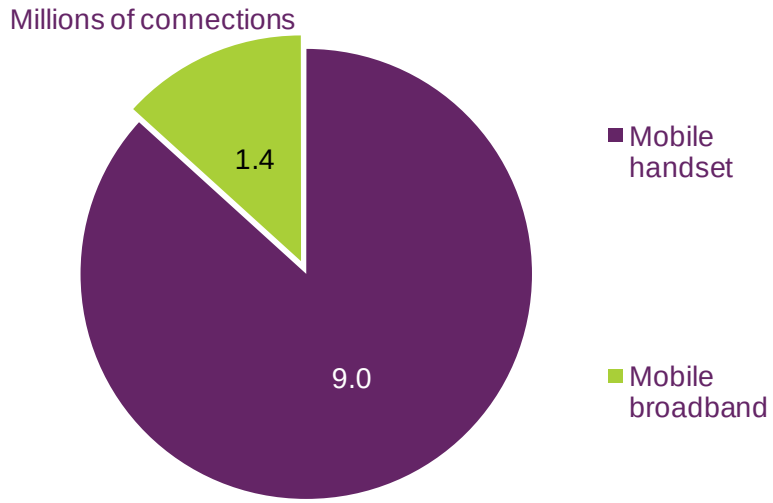
This greater usage of mobile broadband may be due to the increasing number of employees wishing to access company data services on the move and the increasing proportion of employees using a laptop.

Mobile operators are also offering a broad range of low-price mobile broadband deals for businesses. These vary considerably by contract length and size of bundle. Some tariffs are positioned to allow mobile broadband to be either a regular or back-up service, which may suit different business usage requirements.

Business tariffs start from around £10 per month, depending on the quantity of data required. Some operators are also offering business-specific roaming tariffs that are considerably cheaper than consumer offerings.

At the end of 2011, businesses subscribed to 10.4 million mobile connections, including mobile broadband – equivalent to one in eight mobile connections (Figure 5.45).

Figure 5.45 Business mobile handset and mobile broadband connections: December 2011



Source: Ofcom/operators

Consumer broadband technology was used by the majority of business customers

Over two-thirds (69%) of UK businesses use cable broadband, ADSL or mobile broadband for their telecoms connections[144], according to Ofcom's *Business Connectivity Services Review*[145]*,* carried out in the summer of 2011. These came ahead of ISDN (56%) and leased lines (42%), as shown in Figure 5.46.

Cable broadband, ADSL and mobile broadband are also in common use among consumers, in contrast to ISDN and leased lines[146], which have historically been used by businesses.

The growing use of consumer technologies by businesses is likely to be driven by their broad availability and low price, which may make them desirable for smaller businesses and those which are particularly cost-conscious. ISPs also provide business variants of these services that offer lower contention and a higher guarantee of quality, along with better support than consumer tariffs. Contract lengths are often shorter with these technologies compared to leased lines. Signing up for leased lines may also incur large up-front costs, particularly for businesses in rural areas. This is less often the case for DSL, cable and mobile broadband.

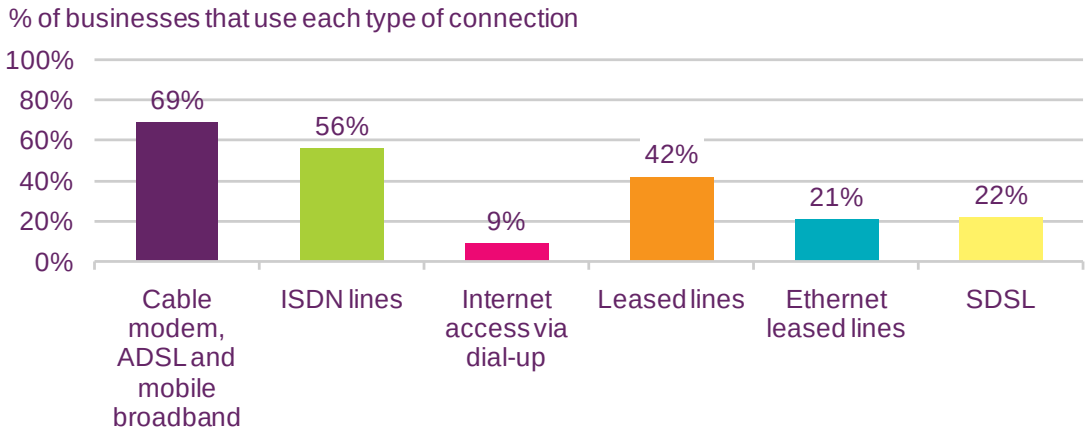
Ethernet[147] is replacing analogue as the basis for leased lines, with over one in five businesses (21%) currently having an Ethernet leased line. Ethernet is popular with some

[144] These connections are also known as Wide Area Networks, or WANs, and the purpose of them is to connect business sites to other sites within the same business and/or to the internet.
[145] Ofcom's *Business Connectivity Services Review* is published at http://stakeholders.ofcom.org.uk/binaries/consultations/business-connectivity/annexes/business-review.pdf. The business connectivity market research study interviewed 461 companies with ten or more employees.
[146] Leased lines are a symmetric telecommunications line connecting two or more locations that are paid for by monthly rent (hence the term lease). Typically, leased lines are used by businesses to connect geographically distant offices. Unlike dial-up connections, a leased line is always active.
[147] The term 'Ethernet' covers a family of network technologies that are frequently used to carry data over businesses' local area networks. However, these technologies have now been adopted to link business sites together and are sometimes favoured over competing technologies for reasons of cost and similarity to local area network technology.

businesses because of its technical similarity with local area networking – making it an appropriate technology to link different offices - and because of its ease of upgrading to the speed required.

Nearly one in ten businesses (9%) still used a dial-up internet connection. In the case of retailers, some of these connections are likely to be used for payment systems. Some businesses rely on different types of connections for different sites or for different applications.

Figure 5.46 Type of wide-area network connectivity used by businesses



Source: Ofcom Business Connectivity Services Review

Voice, internet and video traffic were the top apps carried by business connections

In terms of business connectivity use, several applications were used most frequently by the businesses interviewed for Ofcom's *Business Connectivity Services Review*. The highest levels of use over businesses' telecoms connections were for email and internet access, with 96% naming this as a use.

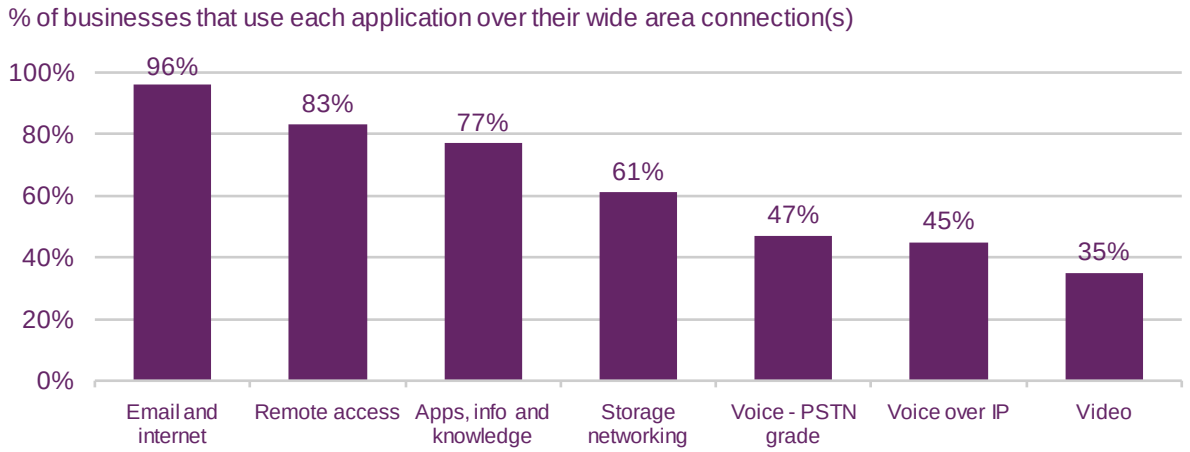
Access to enterprise applications including CRM (customer relationship management) or ERP (enterprise resource planning) or other business information sources also featured highly (77%).

Businesses were also using their connections for storage networking (61%), as opposed to making on-site back-ups. This may be driven by more cost-effective data centre services, faster connections and a greater awareness and concern with business continuity.

Video communications were also rapidly taking off among some businesses, with 35% of firms saying they used their connection for video (Figure 5.47). Applications include video conferencing and collaboration and business-to-employee broadcasts.

Voice – whether packetised (running over internet protocol) or not – was a more predictable use of businesses' telecoms connections.

Figure 5.47 Applications used over businesses' wide area network connections



Source: Ofcom Business Connectivity Services Review

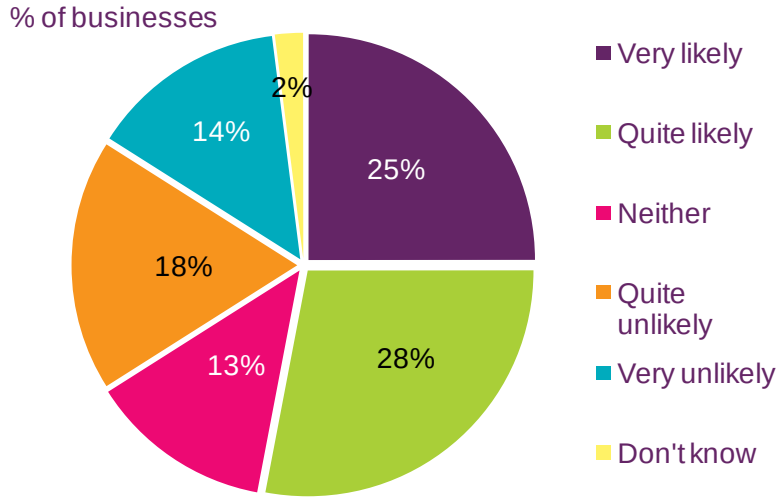
Businesses considered swapping traditional connections for superfast broadband

Ofcom asked in the research for its *Business Connectivity Services Review* if respondents would consider swapping their current connection for a superfast broadband connection, such as VDSL, fibre to the premises or superfast cable broadband. These technologies are also in widespread use by consumers.

Consumer superfast broadband connections are faster than some business connections and sometimes also cheaper, although they may offer lesser guarantees of performance in terms of uptime, throughput or delay, even in their business variants.

Businesses were not asked about the timeframe over which they would be willing to switch or given information on the possible impacts on other service features of changing from their current connection type. But with faster broadband speeds becoming available, over half (53%) of businesses said they were either very or quite likely to consider switching, with around one in seven (14%) stating switching was 'very unlikely' (Figure 5.48).

Figure 5.48 Likelihood that superfast broadband will prompt switching from current services



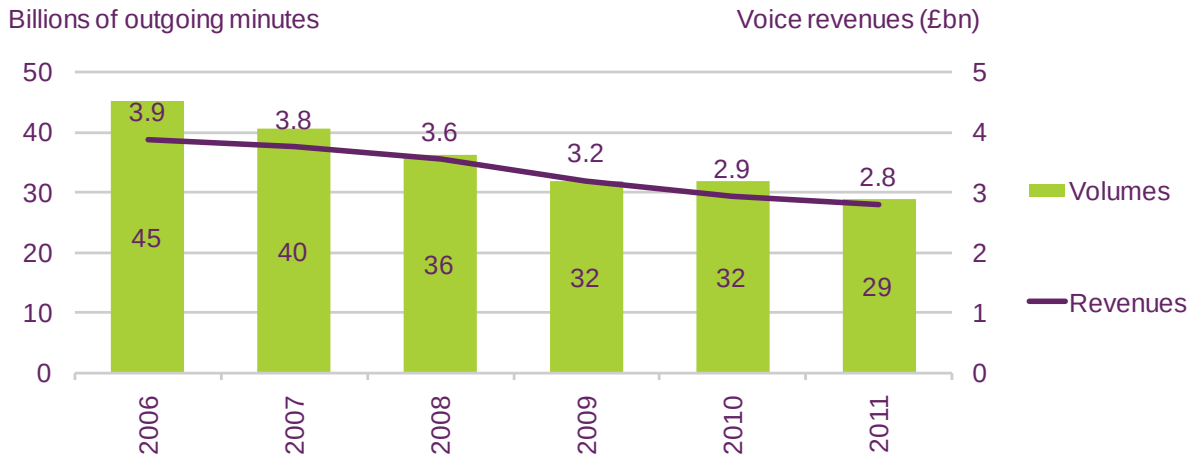
Source: Ofcom Business Connectivity Services Review

Businesses cut back on making fixed phone calls in 2011

The volume of business fixed voice calls decreased sharply in 2011; down 9.1% to just under 29 billion minutes (Figure 5.49). This is a much faster rate of reduction than the decline in the number of business PSTN lines, which was down by 1.7%, which indicates that use per business line is also rapidly decreasing. The number of outgoing voice minutes per business line was 253 minutes per month in 2011, little than the 236 minutes per month for residential PSTN lines.

Revenues from business fixed voice fell by 4.8% during 2011 and by a cumulative 28% between 2006 and 2011.

Figure 5.49 Business fixed voice volumes and revenues



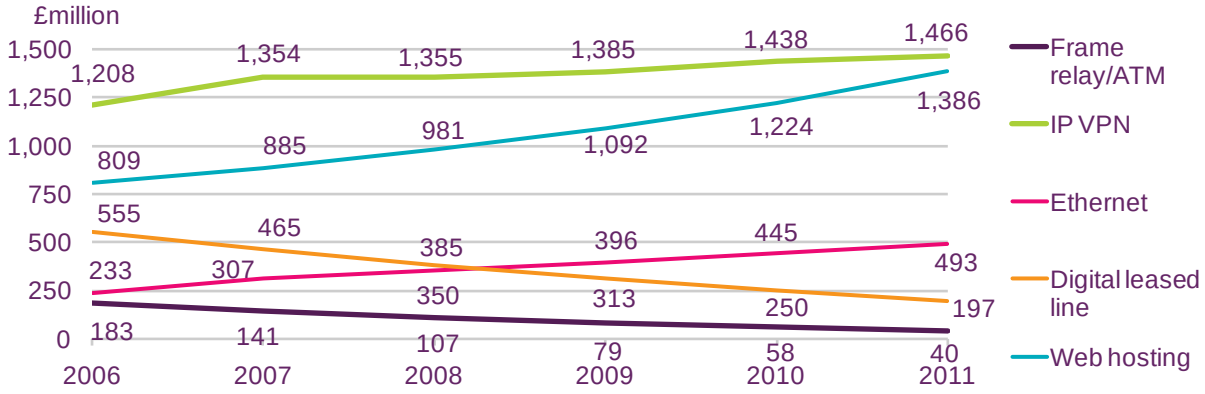
Source: Ofcom/operators. Excludes NTS.

Next-generation data services attracted greater expenditure

The revenue story is very different for business data services; being split between declining legacy services like frame relay[148], ATM[149] and older leased-line technologies, and newer services on which more is being spent by businesses, such as Ethernet, IP VPNs[150] and web hosting[151] services. The net effect on our total of business data services revenue was an increase during 2011 of 4.9%, taking the total to £3.6bn (Figure 5.50).

[148] Frame relay is a packet-switched technology that was widely used to carry data across networks that connect business sites. It was commonly used over ISDN networks.
[149] ATM, or Asynchronous Transfer Mode is a cell-based switching technique that was designed for high-throughput real-time wide area networks connecting business sites.
[150] An IP VPN is a service using internet protocol provided on a public telecommunications network that provides businesses with secure inter-site connections emulating those of a private network.
[151] Web hosting services refer to the hosting of data in data centres by providers, including dedicated data centre operators and telecommunications operators and managed services related to this hosting.

Figure 5.50 Corporate data services revenue, by type of connectivity



Source: IDC

Businesses invested in web conferencing to drive greater worker collaboration

Spending on conferencing products and services was also one of the growth business telecoms markets, with UK businesses spending £324m in 2011 (Figure 5.51). This figure increased by 5.3% compared with 2010, according to analyst firm Ovum. Conferencing divides into three categories:

- Audio conferencing (a phone call between two or more people made through an external bridge)
- Web conferencing (a real-time internet-based activity where two or more people share information and are able to speak to each other – popular examples include Cisco Webex and Microsoft LiveMeeting)
- Video conferencing (a video call between two or more people and sites made through an external bridge)

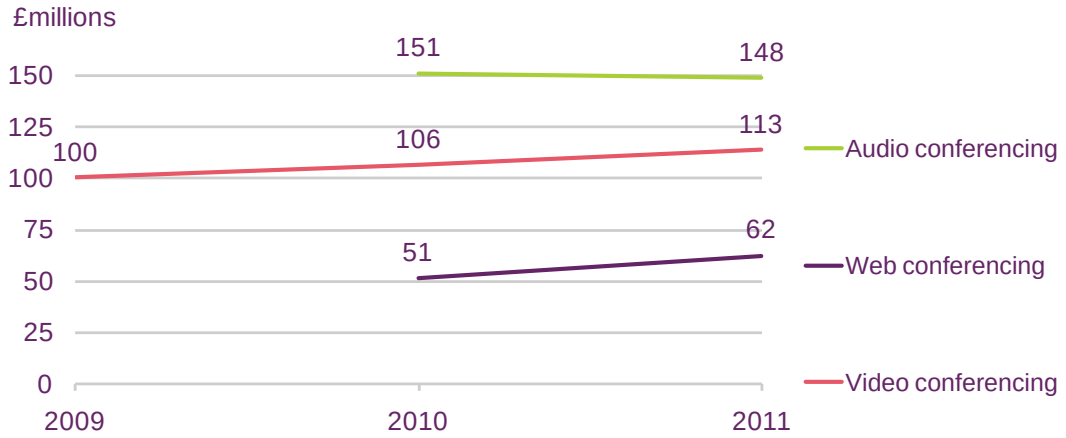
All of these categories saw additional use because of greater remote and mobile working, according to Ovum. Improving technology and greater awareness of collaboration and conferencing technologies have also attracted more businesses to these services, the analyst firm reported.

Most expenditure was on audio conferencing[152], but this fell by 1.5% during 2011 amid price reductions. As the newest technology to be invented, web conferencing[153] was the fastest-growing area of the three, with revenues up 22% in 2011. Video conferencing[154] grew by 6.8%, driven largely by corporate spending on a high-end technology called telepresence[155],

[152] The audio conferencing figures from Ovum are based on calls in managed and automated audio conferences.
[153] The web conferencing figures from Ovum are based on licences and per-minute charges.
[154] The video conferencing figures from Ovum include the price of video calls, where they are chargeable, the cost of video conferencing hardware and video conferencing services.
[155] Telepresence is a set of high-end video conferencing technologies that are intended to give meeting participants the impression that they are in the same room as the participants at the other site(s). Telepresence usually involves the provision of a room dedicated to video conferencing, life-size or near life-size images, close eye contact and high quality audio and video. The term telepresence is used by Ovum to apply to the technology and not the products of specific suppliers.

and also by managed video services, which are provided to businesses by telecoms operators, among other suppliers.

Figure 5.51 Audio, web and video conferencing revenue



Source: Ovum: Audio and Web Conferencing Services, Volume and Revenue Forecast and Ovum: Enterprise Business Video Forecast.

5.3 The telecoms user

5.3.1 Introduction

In this section we look at the major consumer trends in the use of telecoms services over the past six years. The analysis in this section is based on data received from telecoms providers as part of our regular data collection programme, our own consumer research, and third-party suppliers, and focuses solely on the residential sector.

The section is split into four main areas: the first provides an overview of the general trends in take-up and spend on telecoms services, while the second and third focus on developments in fixed voice and fixed broadband services. The final part looks at trends in the use of mobile voice and data services on mobile handsets, as well as the use of mobile broadband services.

The key findings of this section are as follows:

- **Average monthly household spend on telecoms services fell by 4.4% in 2011.** UK households spent an average of £65.04 a month on telecoms services, £3.02 less than in 2010. This equated to 3.0% of average total household spend, down from 3.2% in the previous year (page 331).

- **A third of people aged 16 to 24 lived in homes where mobiles were the sole form of telephony in Q1 2012.** This proportion was more than twice the 15% average across all adults, and the figure among 25-34 year olds was also high, with over a quarter (26%) living in a mobile-only household (page 350).

- **More than three-quarters of UK homes had a broadband connection in Q1 2012.** Seventy-six per cent of UK homes had a fixed or mobile broadband connection in Q1 2012, with most of these (84%) relying solely on fixed broadband, an increase of six percentage points compared to Q1 2011 (page 332).

- **The average monthly time spent using a PC/laptop to access the internet at home increased by 1.3% to 13.9 hours per month in the year to March 2012.** Slowing growth in home PC/laptop internet use is likely to be a result of the increasing use of tablets and smartphones to access the web (page 335).

- **The cost of a basket of residential fixed voice services fell by 2.3% in 2011.** The real monthly cost of a basket of residential fixed voice services (comprised of a fixed line and call usage at average 2011 levels) fell by 2.3% to £21.65 in 2011 (page 336).

- **The average cost of making a mobile voice call fell to broadly the same level as a fixed voice call in 2011.** The average cost of a mobile-originated voice call in 2011 was 8.5 pence per minute, just 0.3 pence per minute (3.1%) more than the 8.3 pence per minute average for fixed-originated voice calls (page 332).

- **Household fixed broadband take-up growth is being driven by younger and older consumers.** Ofcom research indicates that the main drivers behind the growth in the proportion of UK households with a fixed broadband connection, to 72% in the year to Q1 2012, was increased take-up among the 16-24 and the 65-74 age groups (page 342).

- **Average mobile-originated voice call volumes per person fell for the first time in 2011.** An average of 164 minutes of mobile-originated calls were made per person per month in the UK, three minutes less than in 2010. This was the first time that per-capita mobile voice use in the UK had fallen (page 351).

- **Growth in smartphone take-up resulted in increasing use of mobile data services in the year to Q1 2012.** The average time spent using mobile data services was 2.1 hours a month in 2011, 25 minutes per month (24.7%) more than in 2010 (page 354).

- **People in the UK sent an average of 200 SMS and MMS messages per month in 2011.** The average number of text and picture messages sent per UK inhabitant continued to increase in 2011, growing by 17% to 200 messages per month (page 352).

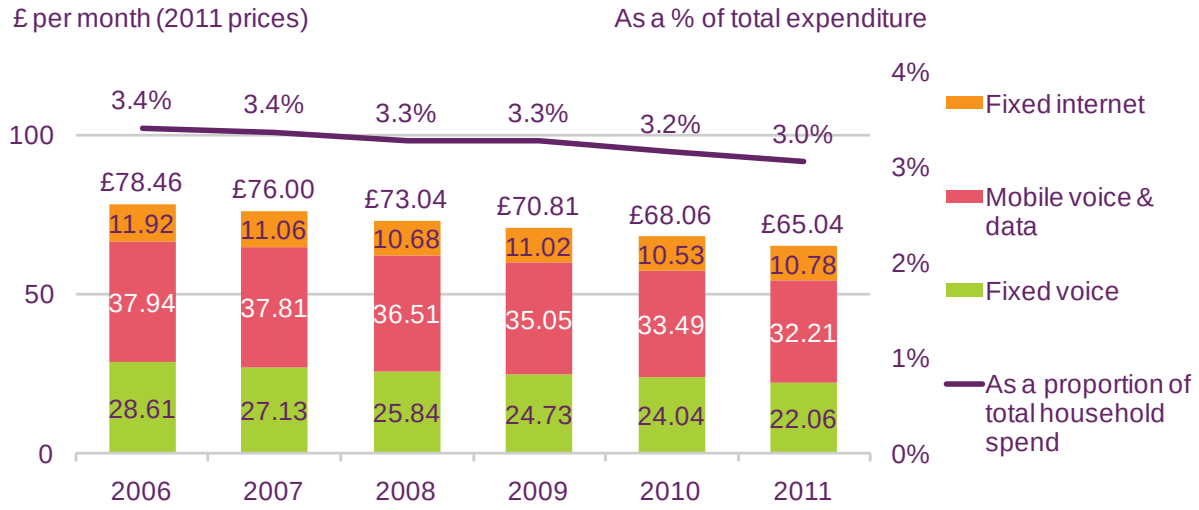
- **Almost half of new mobile contracts were for less than £20 a month in Q1 2012.** In the first quarter of 2012, 49% of new mobile contracts had a monthly rental fee of less than £20, 12 percentage points more than a year previously and 43 percentage points more than five years earlier (Q1 2007) (page 349).

Average monthly household spend on telecoms services fell by 4.4% in 2011

In 2011 UK households spent an average of £65.04 a month on telecoms services, £3.02 (4.4%) less than in 2010 (Figure 5.52). This equated to 3.0% of average total household spend, down from 3.2% in the previous year. The largest decline in average household spend in 2011 was a £1.98 (8.2%) a month fall in fixed voice spend, to £22.06, which was as a result of falling average call volumes per line and came despite a 120,000 increase in the number of residential lines.

Average monthly household spend on mobile services fell by £1.28 (3.8%) to £32.21 in 2011 as a result of declining prices and falling call volumes per connection. Average household spend on fixed internet services increased by 24 pence (2.3%) to £10.78 a month during the year, as a result of continued growth in the number of residential broadband connections and the slowing rate at which the average cost per connection is falling, as consumers switch to higher-speed services (see Figure 5.64).

Figure 5.52 Average household spend on telecoms services



Source: Ofcom / operators / ONS
Notes: Includes estimates where Ofcom does not receive data from operators; adjusted to RPI; includes VAT.

There was little difference between the average cost of fixed and mobile voice call minutes in 2011

The average cost of a mobile-originated voice call in 2011 was 8.5 pence per minute, just 0.3 pence per minute (3.1%) more than the 8.3 pence per minute average for fixed-originated voice calls (Figure 5.53). In comparison, five years previously the average mobile-originated voice call minute had cost 12.3 pence per minute, 5.3 pence per minute (76.6%) more than the average fixed-originated voice call minute.

The average cost of both fixed and mobile voice call minutes increased in 2011, with the average cost of a fixed-originated voice call minute increasing by 7.0% (0.5 pence per minute). The increase in the average cost of a mobile-originated voice call minute was much smaller than that of a fixed-originated minute, at 0.3% (less than 0.1 pence per minute), and was in part due to increasing pre-pay prices as providers attempted to migrate customers onto monthly contracts in order to increase average spend and reduce churn.

Figure 5.53 Comparison of average fixed and mobile voice call charges

Source: Ofcom / operators

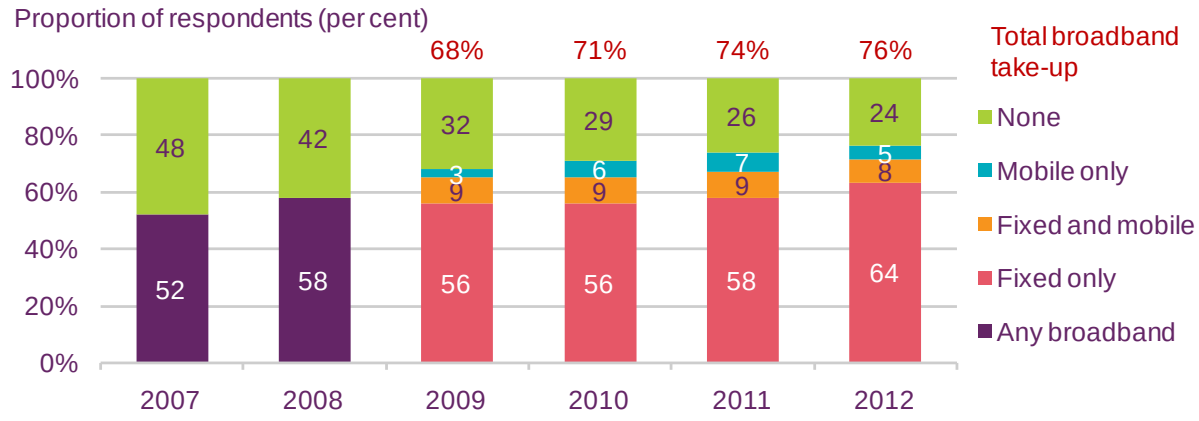
Note: Includes estimates where Ofcom does not receive data from operators; fixed calculation excludes non-geographic voice calls.

More than three-quarters of UK homes had a broadband connection in Q1 2012

Ofcom research suggests that overall household broadband take-up (which includes both fixed and mobile connections) was 76% in Q1 2012, in line with the figure for Q1 2011 (Figure 5.54). Five per cent of respondents said that they lived in a home where mobile broadband was the sole broadband connection in Q1 2012, down from 7% a year previously. This may reflect increased use of bandwidth-hungry services such as *BBC iPlayer*, as the lower data caps and average speeds provided by mobile broadband services are, in many cases, not conducive to the use of these services.

Most homes (64%) relied solely on fixed broadband, an increase of six percentage points since Q1 2011, while the proportion of respondents who said they lived in a home which used both fixed and mobile broadband was unchanged over the period, at 8%.

Figure 5.54 Household penetration of fixed and mobile broadband



Source: Ofcom research, data as at Q1 of each year
Base: All adults aged 16+

Fixed broadband take-up increased in the year to Q1 2012

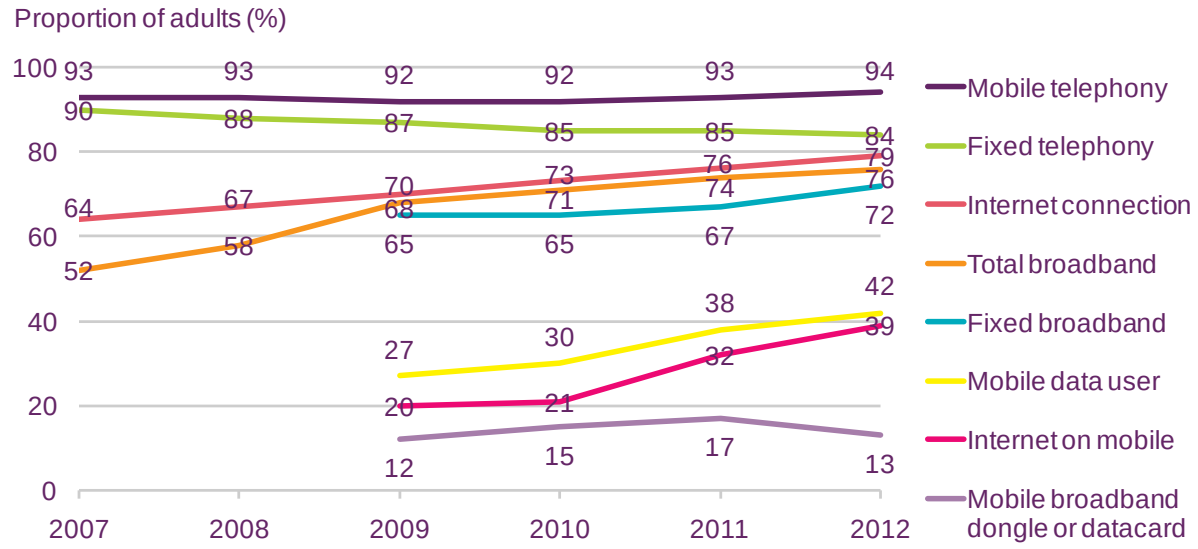
As mentioned previously, our research shows that 76% of UK homes had either a fixed or a mobile broadband connection, or both, in Q1 2012, in line with the figure recorded in Q1 2011 (Figure 5.55). This was a result of the five percentage point increase in take-up of fixed broadband services, to 72%, being offset by a four percentage point fall in the proportion of adults who said that that they, or someone in their home, used mobile broadband services via a datacard or dongle (which here excludes access via a smartphone) to 13% over the same period.

The fall in mobile broadband take-up recorded in Q1 2012 may be due to sampling errors, as figures collected from the mobile providers show continued growth in the number of residential mobile broadband connections, albeit at a greatly reduced rate.

Overall broadband take-up was three percentage points lower than household internet take-up (79%) in Q1 2012, the difference being due to homes which solely used a mobile handset and/or narrowband dial-up services to connect to the internet (39% of respondents said that they, or someone in their house, used a mobile handset to access the internet in Q1 2012, an increase of seven percentage points compared to a year previously). Overall, 42% of respondents said that they, or someone in their house, used a mobile network to access the internet (either through a mobile handset or a mobile broadband dongle or datacard), up from 38% in Q1 2011).

Levels of household take-up of fixed and mobile telephony were unchanged in the year to Q1 2012, at 84% and 94% respectively.

Figure 5.55 Household penetration of key telecoms technologies

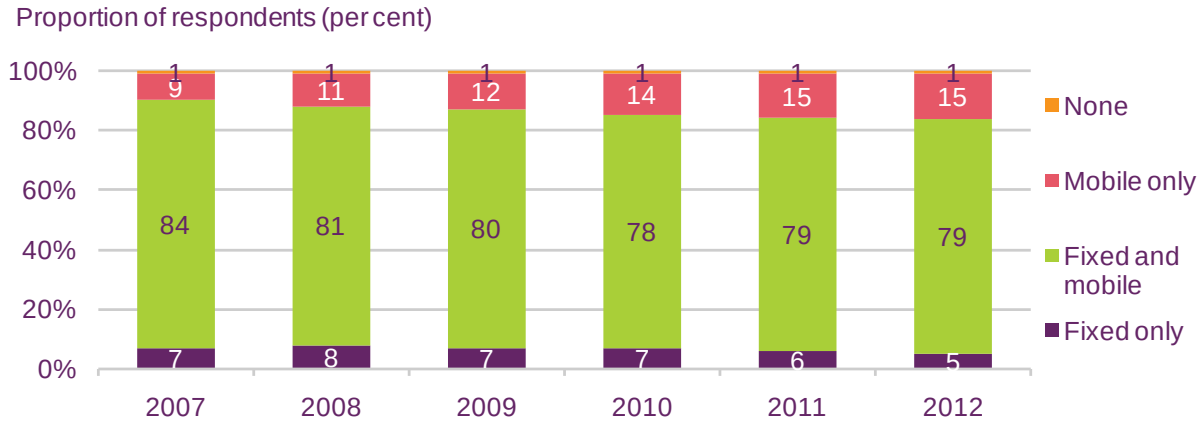


QE1: Does your household have a PC or laptop computer? / QE2: Do you or does anyone in your household have access to the internet/world wide web at home (via any device, e.g. PC, mobile phone etc)? / QE6: Which of these methods does your household use to connect to the internet at home?
Source: Ofcom research, data as at Q1 of each year
Base: All adults aged 16+

Fifteen per cent of UK homes used mobiles as their sole form of telephony in Q1 2012

Ofcom research indicates that most homes (79%) used both fixed and mobile telephony in Q1 2012, unchanged from a year previously (Figure 5.56). The proportion of people who said that they lived in a home where there was no landline, and where mobiles were the sole form of telephony, was also unchanged over the period at 15%, and was higher among the younger age groups (see Figure 5.76). Prior to Q1 2012, the proportion of homes that were mobile-only had been increasing slowly, and the end to this trend in 2012 may be related to falling mobile broadband use, and because most UK homes need a landline in order to be able to access fixed broadband services. Five per cent of respondents said that they lived in a fixed-only household in Q1 2012, while 1% lived in a home without either a fixed line or a mobile phone.

Figure 5.56 Household penetration of fixed and mobile telephony



Source: Ofcom research, data as at Q1 of each year
Base: All adults aged 16+

Consumers spent more time using text-based communications services than making voice calls in 2011

In 2011 the average time spent per person making and receiving fixed and mobile voice calls was 10.5 hours per month, 23% less than the 13.7 hours total for average use of mobile messaging, mobile internet services and accessing email and member communities on a PC/laptop (Figure 5.57).

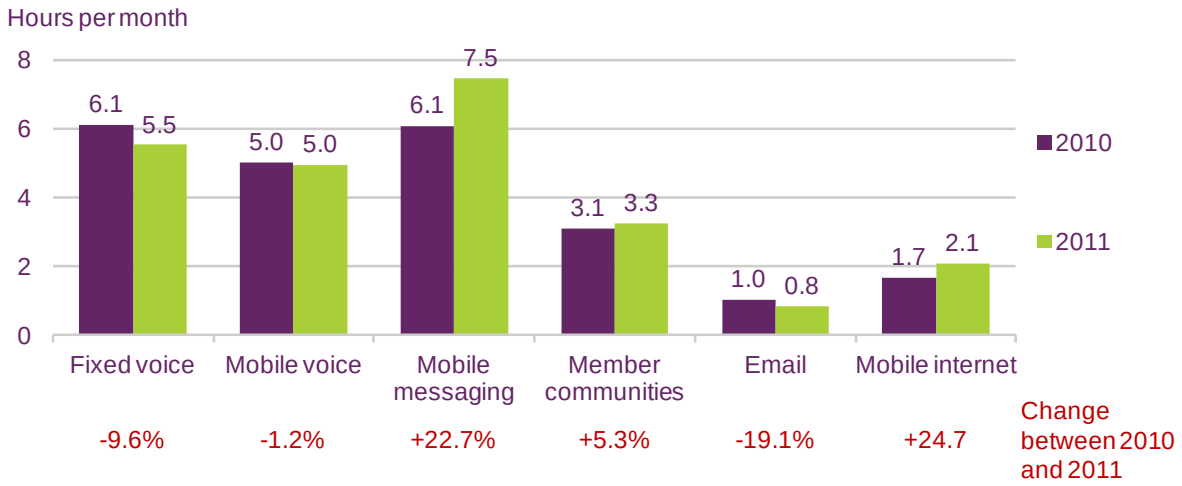
Average use of both fixed and mobile voice services fell in 2011, with the average time spent using fixed voice services falling by 9.6% (35 minutes) to 5.5 hours per person per month, and the average time spent using mobile voice services declining by 1.2% (four minutes) to 5.0 hours a month in 2011. Overall time spent on voice services has declines by 5.8%. These figures include both incoming and outgoing calls, so average fixed line use was higher than mobile use (Figure 5.25 shows that mobile-originated voice call minutes were higher than fixed-originated voice call minutes in 2011).

The average monthly time spent using mobile messaging services (which here include SMS, MMS and IM) increased by 1.4 hours per person (22.7%) to 7.5 hours per month in 2011. This was largely due to pay-monthly and pre-pay mobile tariffs including increasingly generous SMS allowances, and growth in the use of IM services (as is shown in Figure 5.82, Ofcom research suggests that 19% of mobile data users used IM services in Q1 2012, up from 13% a year previously). This was not, however, the highest percentage growth among the services included in the analysis below: the average time spent per person accessing the internet using a mobile network increased by 24.7% (25 minutes) to 2.1 hours per month in

2011, a result of rapid growth in smartphone take-up, which, according to Ofcom research, increased by 12 percentage points to 39% of adults in the year to Q1 2012.

While the average monthly time spent per person accessing member communities (e.g. Facebook, Blogger and Twitter), on a PC/laptop increased by 5.3% (10 minutes) to 3.3 hours per month in the year to March 2011, the average time spent using email on a PC/laptop fell by 12 minutes to 0.8 hours per month. Again, this decline is likely to be a result of increasing smartphone take-up, along with growth in the use of other web-enabled devices such as tablet computers.

Figure 5.57 Average monthly time spent per person using telecoms services



Source: Ofcom / operators / Nielsen / UKOM / comScore / Strategy Analytics
Note: Includes estimates where Ofcom does not receive data from operators; fixed voice call figures include NTS voice calls; mobile messaging figures are Ofcom estimates based on message volume data and Ofcom Digital Day research conducted in 2010; Ofcom estimate of member communities and email use per person is based on Nielsen's data on the average monthly time spent using these services at home and work on a PC/laptop including the use of applications in March of each year.

5.3.2 Fixed voice services

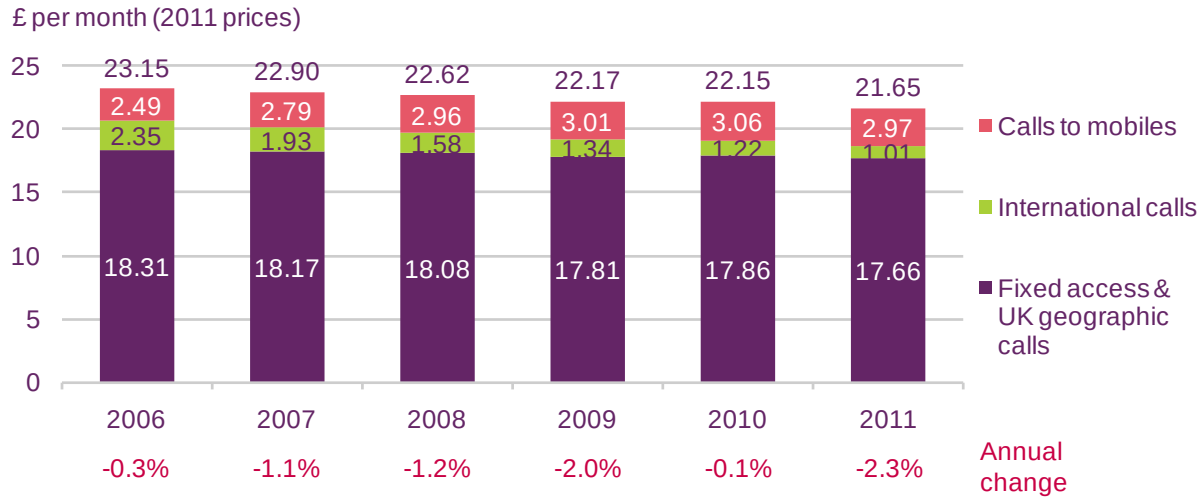
The cost of a basket of residential fixed voice services fell by 2.3% in 2011

In real terms (i.e. adjusted for inflation), our data finds that the monthly cost of a basket of residential fixed voice services (comprising a fixed line and UK geographic, international and calls to mobiles call minutes at average 2011 levels) fell by 2.3% (50 pence per month) to £21.65 during 2011 (Figure 5.58).

The largest fall, both in absolute and percentage terms, was a decrease of 21 pence per month (17.4%) in the cost of fulfilling the 16 minutes of international calls required by the basket, likely to be a result of falling prices as traditional telecoms providers complete with low-cost calling card and Voice over Internet Protocol (VoIP)-based services, and as heavier users of international calls purchase bolt-ons which provide either bundled international call minutes or reduce the cost of these calls.

Meanwhile, the real monthly cost of the fixed line rental and 204 minutes of UK geographic calls required by the basket fell by 20 pence (1.1%) to £17.66 and that of the 16 minutes of calls to mobiles element of the basket by nine pence a month (3.0%) to £2.97. The fall in the cost of the calls to mobile part of the basket will be partly due to reductions in mobile termination rates.

Figure 5.58 Real cost of a basket of residential fixed voice services



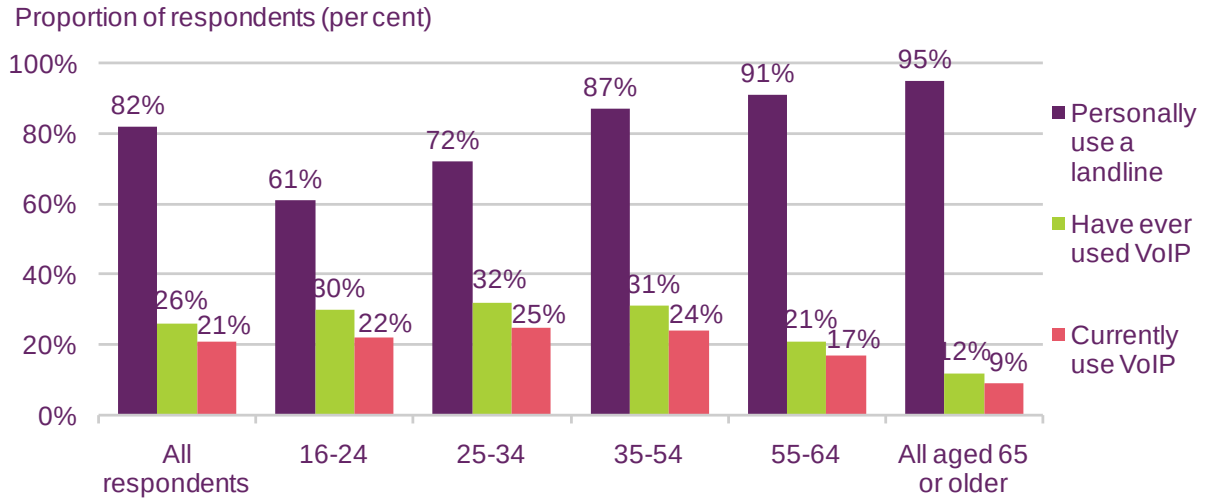
Source: Ofcom / operators
Note: Includes estimates where Ofcom does not receive data from operators; excludes non-geographic voice calls; adjusted for RPI; includes VAT

The highest reported levels of Voice over Internet Protocol (VoIP) use were among 25-34 year-olds in Q1 2012

Ofcom research in Q1 2012 indicates that levels of landline use within the home were lower among those aged 16 to 34 than the 82% average for all adults, and higher than average among those aged 35 and older. As shown in Figure 5.59, the highest level of use was among the 65+ age group, where 95% of respondents said that they personally used a landline at home, and lowest among the 16-24 age group, at 61%. Younger consumers appear to be relying on mobile services and using fixed services less as a result (see Figure 5.76).

Similarly, the proportion of respondents who reported that they had ever used Voice over Internet Protocol (VoIP) to make a phone call within the home was higher than average among the 25-34 age group, at 32%, and was lowest among the older age groups. The proportion of those aged 55+ who had ever used VoIP services was 12%, less than half the 26% average across all adults, and the proportion aged 65 and older who currently used VoIP (9%) was less than half the 21% average across all age groups. Lower VoIP use levels among of older consumers are consistent with lower levels of PC ownership and broadband take-up.

Figure 5.59 Use of fixed voice communication services in the home

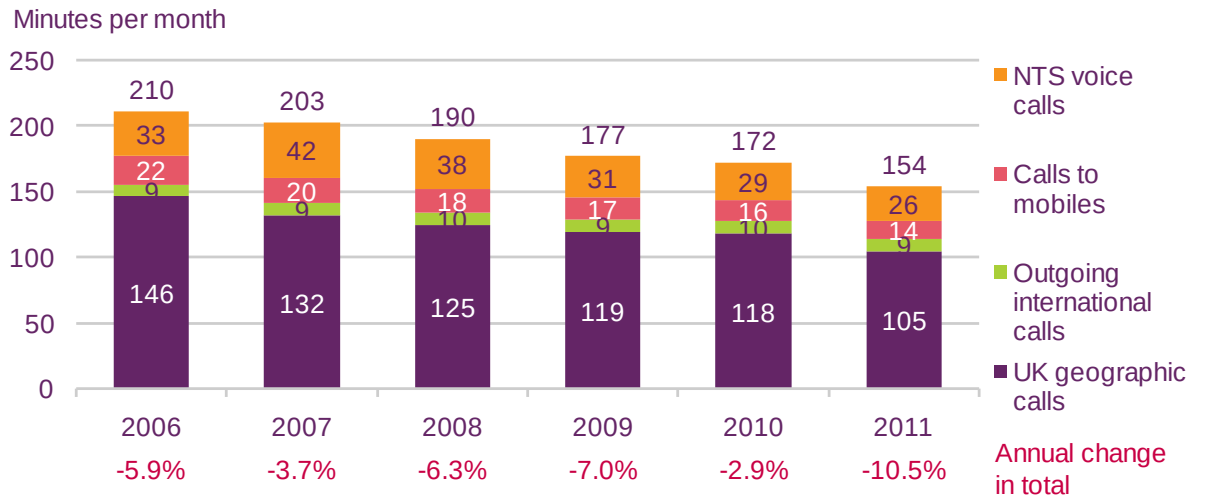


Source: Ofcom research, Q1 2012
Base: All adults aged 16+

The rate of decline in average fixed voice call use accelerated in 2011

The average volume of outgoing fixed calls per person per month fell by 18 minutes (10.5%) to 154 minutes in the UK in 2011 (Figure 5.60). The volume of average calls per person fell for all non-NTS call types in 2011, with the rate of decline being lowest for international calls at 5.1%, and highest for calls to mobiles at 12.5%. The high rate of decline of calls to mobiles (and declining mobile-to-mobile call volumes) are partly attributable to increasing use of non-voice forms of communication: SMS text message volumes continued to increase in 2011 (up by 17%) and the growing take-up of smartphones enables more mobile users to use email and instant messaging services to communicate with each other (see section 5.1.4 for more details).

Figure 5.60 Average monthly outbound fixed voice call volumes, per person



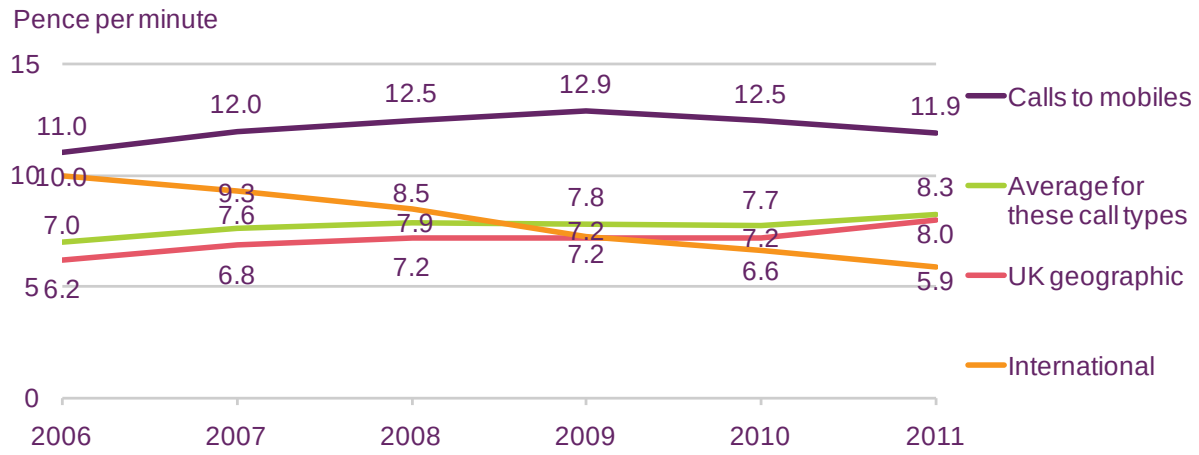
Source: Ofcom / operators
Note: Includes estimates where Ofcom does not receive data from operators

Increasing line rental charges drove increasing fixed voice costs in 2011

As mentioned previously, the average cost of a fixed voice call minute (excluding NTS voice calls) increased to 8.3 pence in 2011. As is shown in Figure 5.61 below, the driver behind this increase was increasing average charges for UK geographic calls (up from 7.2 pence per minute to 8.0 pence per minute) as the average cost of calls to mobiles and outgoing international calls both fell during the year.

Separate analysis shows that the average cost of a UK geographic call, calculated excluding the line rental fee, was unchanged at 1.5 pence per minute in 2011, meaning that the increasing line rental fee was the cause of the increase in the average cost of a fixed-originated call minute. Line rental fees increasingly include bundled call minutes and call bolt-ons, which can reduce the cost of international calls and calls to mobiles, so for heavy users, increasing line rental charges are likely to have a downward effect on average per-minute call costs.

Figure 5.61 Average per-minute fixed voice call charges



Source: Ofcom / operators
Note: Includes estimates where Ofcom does not receive data from operators; UK geographic calls calculation includes line rental revenues

Line rental pre-payment tariffs allow consumers to make significant savings

A significant development in fixed-line pricing in the last few years has been the introduction of line rental pre-payment tariffs, which are now available from three of the UK's largest residential fixed line providers: BT, TalkTalk and Sky (among others). As shown in Figure 5.62 below, stand-alone fixed telephony line rental prices continued to increase in the year to March 2012, as providers tried to maintain revenue levels in a market characterised by falling lines and call volumes, and the average price increase across the tariffs listed below was 7% in nominal terms during the period.

Against this background, line rental pre-payment tariffs (which involve a customer paying twelve months' line rental in advance) enable those consumers who are able to do so to make significant savings compared to paying on a monthly basis[156], and the average saving for the BT and TalkTalk tariffs below was over 20% in March 2012.

[156] Where they continue to take the service for the full minimum period of the contract.

Figure 5.62 Analysis of stand-alone fixed-line tariffs

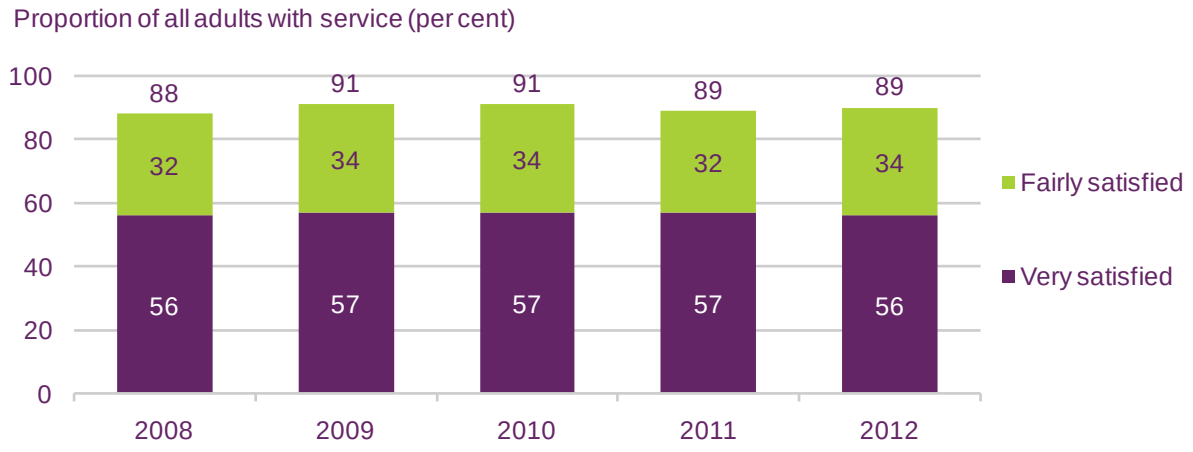
Provider	2011			2012		
	With weekend calls	With evening and weekend calls	With anytime calls	With weekend calls	With evening and weekend calls	With anytime calls
BT	£13.60 (£10.00)	-	£18.60 (£15.00)	£14.60 (£10.75)	£17.75 (£13.90)	£19.50 (£15.65)
TalkTalk	-	£15.91[1]	£18.51	-	£17.41[1] (£13.11)[1]	£20.01 (£15.71)
Virgin	-	£16.99[2]	£20.99[2]	-	£18.50[2]	£21.90[2]

Source: Pure Pricing UK Broadband Pricing Briefing, March 2011 and March 2012
Notes: All tariffs exclude activation charges and promotional discounts and include VAT; all tariffs are the lowest price available; contract lengths vary; figures in brackets require prepayment of twelve month's line rental; [1] also includes anytime calls to TalkTalk landlines; [2] also includes calls to Virgin Mobile mobiles

Satisfaction with fixed-line services remained high in Q1 2012

Overall levels of satisfaction with UK fixed-line services remained high in the year to Q1 2012, with Ofcom research suggesting that 89% of consumers with a fixed line at home were either 'very' or 'fairly' satisfied with their service in Q1 2012, unchanged from a year previously (Figure 5.63).

Figure 5.63 Overall consumer satisfaction with residential fixed-line services



Source: Ofcom research, data as at Q1 of each year
Base: All adults aged 16+ with a fixed line phone
Note: Includes only those who expressed an opinion

5.3.3 Fixed broadband services

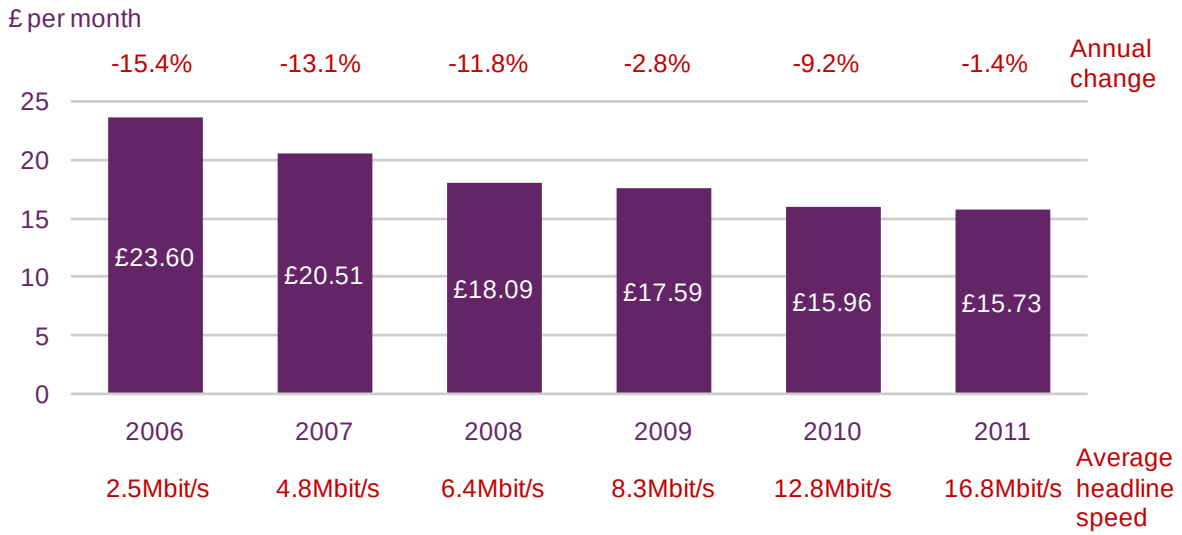
The average cost of a fixed broadband connection stabilised in 2011

The average monthly cost of a UK residential fixed broadband connection fell by 1.4% to £15.73 during 2011, a significant slowing in the rate at which broadband prices had been declining, given that the average fall over the previous four years had been over 9% (Figure 5.64). Over the past few years the main driver behind the falling average cost of a residential fixed broadband connection has been increasing take-up of low-cost bundled LLU-based

DSL services (in the five years to 2011 the proportion of all fixed broadband connections that were provided using LLU increased from 10% to almost 40%).

While the average cost of a residential fixed broadband connection fell in 2011, the average headline speed increased by 4.0Mbit/s (32%) to 16.8Mbit/s, as consumers moved onto higher-speed packages, including superfast services (those with a headline speed of 'up to' 30Mbit/s or more). Ofcom research shows that the average actual UK residential broadband speed in November 2011 was 7.6Mbit/s, up from 6.2Mbit/s in November/December 2010, an increase of 1.4Mbit/s (22%).[157]

Figure 5.64 Estimated average monthly cost of a residential fixed broadband connection



Source: Ofcom / operators
Note: Data are based on operator allocations of revenues for bundled services and should be treated with some caution; includes estimates where Ofcom does not receive data from operators

Few providers offer fixed broadband as a standalone service

Figure 5.65 summarises the lowest-cost residential fixed broadband services available from eight of the UK's largest residential broadband providers in March 2012. Of these ISPs, only Virgin Media offered a fixed broadband service which did not require the consumer to purchase line rental separately, and AOL Broadband and O2 were the only providers which offered broadband services that could be purchased on a stand-alone basis (i.e. without the requirement to also take fixed voice services from the same supplier), although a BT landline was required to use these services.

[157] http://stakeholders.ofcom.org.uk/market-data-research/other/telecoms-research/broadband-speeds/?a=0

Figure 5.65 Lowest-cost fixed broadband options from major suppliers, March 2012

Provider	Fixed broadband only	Fixed broadband and calls	Fixed broadband and fixed line	Fixed broadband and mobile	Fixed broadband and pay-TV	Fixed broadband, fixed line and mobile	Fixed broadband, fixed line and pay-TV
AOL	£15.31[1]	10.20[1]	£20.30	-	-	-	-
BT	-	-	£28.60 (£24.75)	-	-	-	£28.60 (£24.75)
O2	£13.50[1]	-	£26.50	£8.50[1,2]	-	£21.50[2]	-
Orange	-	-	£23.50	-	-	£18.50[2]	-
Plusnet	-	£6.49[1]	£19.48 (£15.98)	-	-	-	-
Sky	-	-	£22.25 (£19.95)	-	-	-	£32.25 (£29.95)
TalkTalk	-	-	£20.30 (£16.00)	-	-	-	-
Virgin Media	£22.50	-	£28.40	£22.50[2]	£36.50	£28.40[2]	£33.90

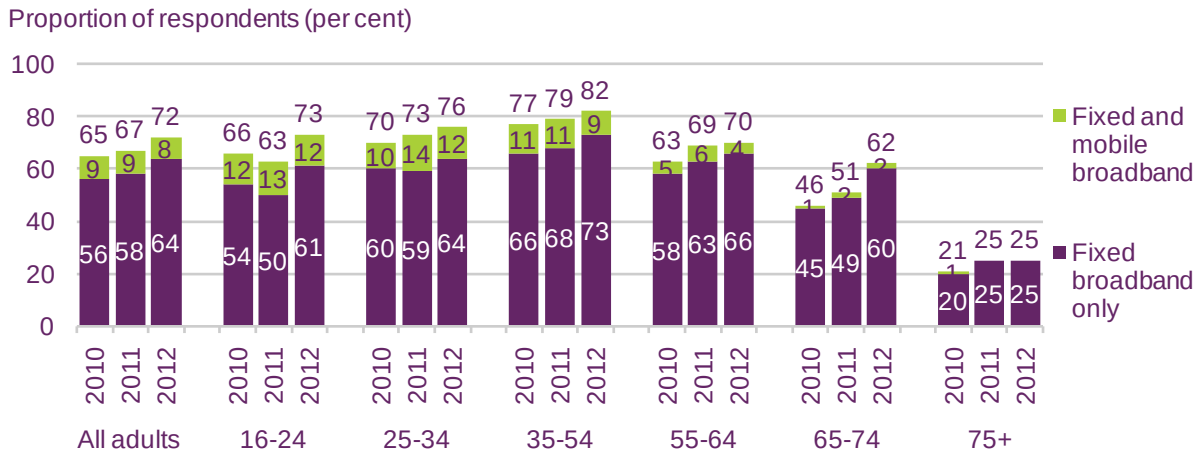
Source: Pure Pricing UK Broadband Pricing Briefing, March 2012
Notes: All tariffs exclude activation charges and promotional discounts and include VAT; all tariffs are the lowest price available, contract lengths vary; allowances for fixed-line and mobile calls, plus availability of TV channels included within packages may differ by operator and option; figures in brackets require pre-payment of twelve month's line rental; [1] also requires BT fixed line rental at £14.60 a month / £129 pre-payment for a year; [2] plus cost of mobile tariff.

Household fixed broadband take-up growth is being driven by younger and older households

Ofcom research indicates that the main drivers behind growth in the proportion of UK households with a fixed broadband connection (which increased to 72% in the year to Q1 2012) were increased take-up among the 16-24 and 65-74 age groups (Figure 5.66).

While overall household fixed broadband take-up increased by five percentage points over this period, the increases among 16-24 year olds and 65-74 year olds were ten and nine percentage points respectively. The highest take-up levels in Q1 2012 were in the 35-54 age group, where an average of 82% of respondents had a fixed broadband connection, in line with the figure reported in Q1 2011.

Figure 5.66 Household take-up of fixed broadband, by age

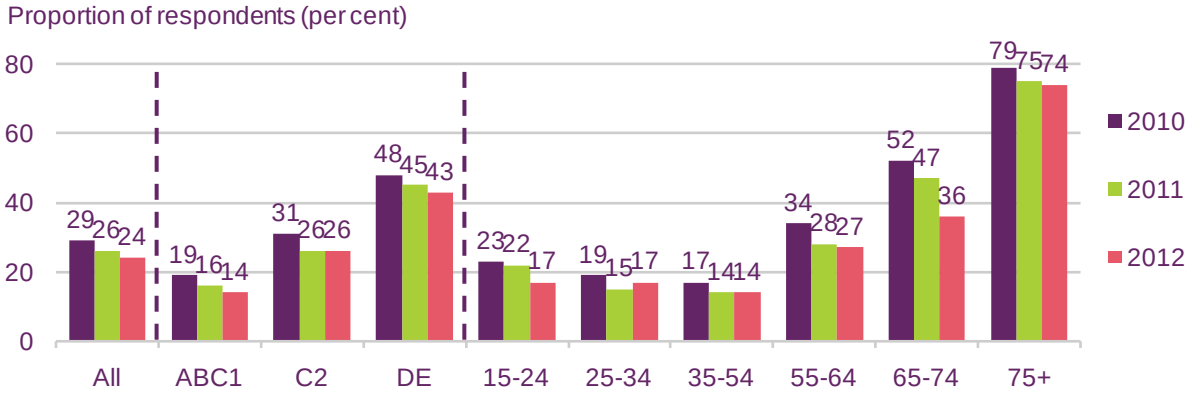


Source: Ofcom research, data as at Q1 of each year
Base: All adults aged 16+

Older and less affluent consumers were less likely to have a home broadband connection in Q1 2012

Figure 5.67 shows the proportion of people who said that they did not have a broadband connection of any description (i.e. either fixed or mobile), split by socio-economic profile and age group. This shows that levels of non-ownership of broadband services were higher than average among the older age groups and in less affluent homes (43% of respondents in DE homes said that they did not have a broadband connection in Q1 2012, compared to the UK average of 24%). It was only among those aged 65-74 that the proportion without broadband fell in the year to Q1 2012, from 47% to 36%.

Figure 5.67 Non-ownership of broadband, by socio-economic group and age



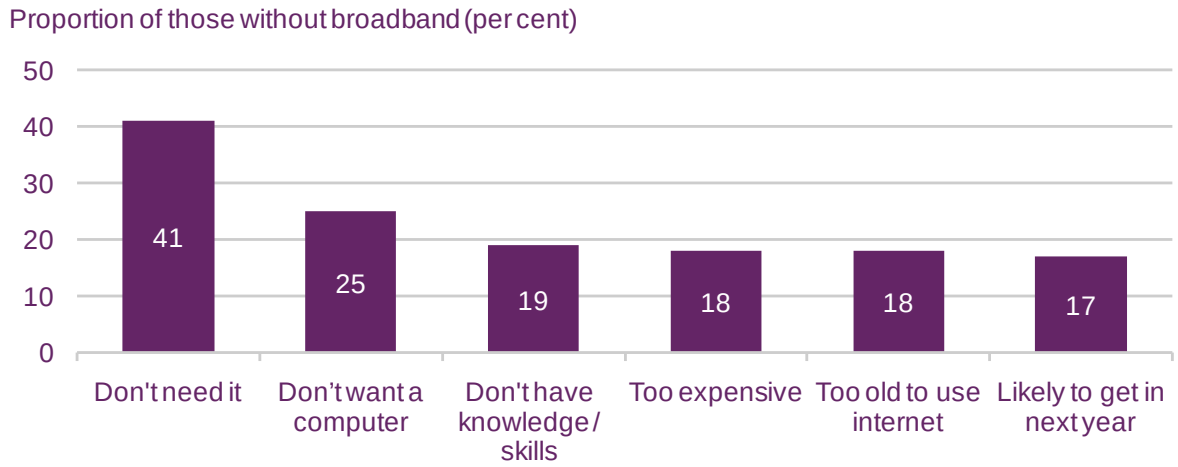
Source: Ofcom research, data as at Q1 of each year
Base: All adults 16+

Over 40% of people without a home broadband connection do not see the need for it

In Q1 2012 the most commonly-cited reason for not having a home broadband connection (mentioned by 41% of those without the service) was that they did not see the need for one (Figure 5.68). The second most frequently-mentioned reason (by a quarter of those in non-broadband households) was that they did not want to own a computer.

Nineteen per cent of respondents without home broadband said that they did not have the skills or knowledge to use the internet, while 18% said that a broadband connection was too expensive (the same proportion who said that they were too old to use the internet). Seventeen per cent of those without home broadband said that they were likely to purchase the service in the next twelve months.

Figure 5.68 Main reasons for not having a home broadband connection

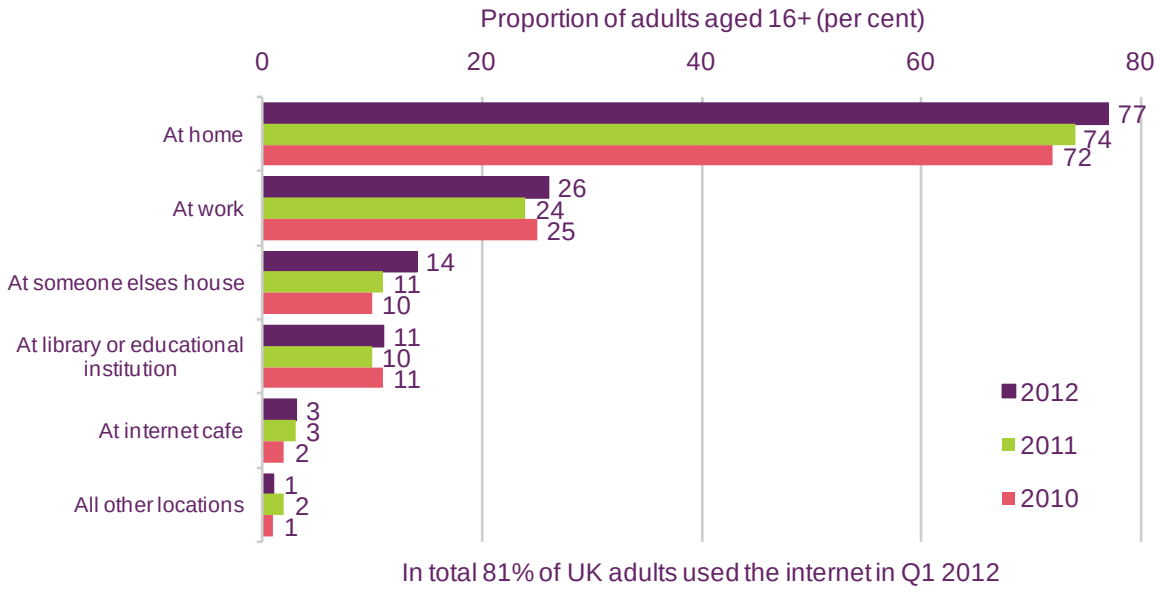


Source: Ofcom research, Q1 2012
Note: 6% of people without the internet did not know what their main reason was or provided an 'other' reason
Base: All adults without the internet aged 16+

Eighty-one per cent of UK adults said that they used the internet in Q1 2012

Ofcom research conducted in the first quarter of 2012 suggested that 81% of adults were internet users (Figure 5.69). This was four percentage points higher than the proportion of people who said that they accessed the internet at home (77%) as some consumers, including those without a home internet connection, access the web only outside the home. Among those adults who used the internet, over a quarter (26%) accessed it at work, while 14% did so at someone else's house. The proportion of internet users who said that they used internet cafes was low, at just 3%, unsurprising since over three-quarters of homes now have a broadband connection and 39% of adults have a smartphone from which they can access the web.

Figure 5.69 Location of internet access



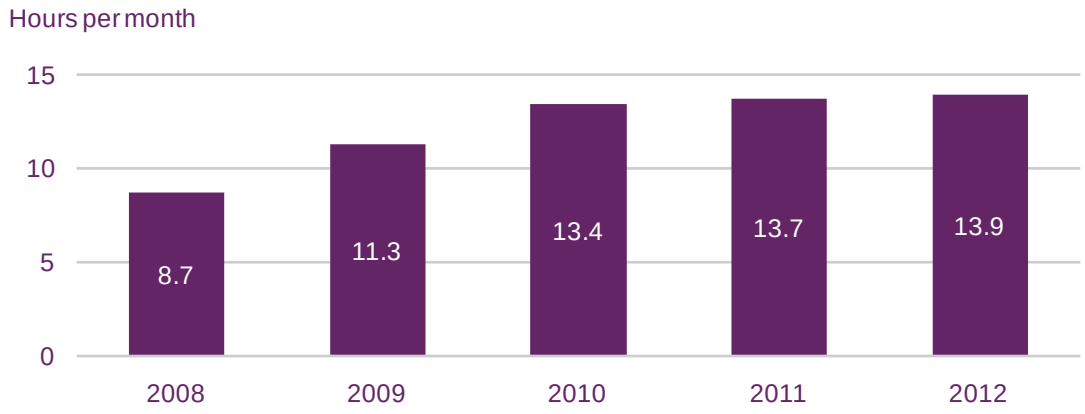
Source: Ofcom research, data as at Q1 of each year
Base: All internet users aged 16

The average amount of time spent using a PC/laptop to access the internet at home grew by just 1.3% in the year to March 2012

Ofcom estimates based on data compiled by Nielsen/UKOM show that the average monthly time spent using a PC/laptop to access the internet at home increased by just 11 minutes per month (1.3%) to 13.9 hours per person in the UK in the year to March 2012 (Figure 5.70).

These figures do not capture internet use on devices other than PCs and laptops (Ofcom research suggests that between Q1 2011 and Q1 2012 the proportion of adults who used a smartphone grew from 27% to 39% and household take-up of tablet computers increased from 2% to 11%). Therefore, slowing growth in the time spent using PCs and laptops to access the internet is likely to be a result of consumers' increasing use of devices such as tablets and smartphones as substitutes for PC/laptops when accessing the internet at home.

Figure 5.70 Average time per person spent online using a PC/laptop at home

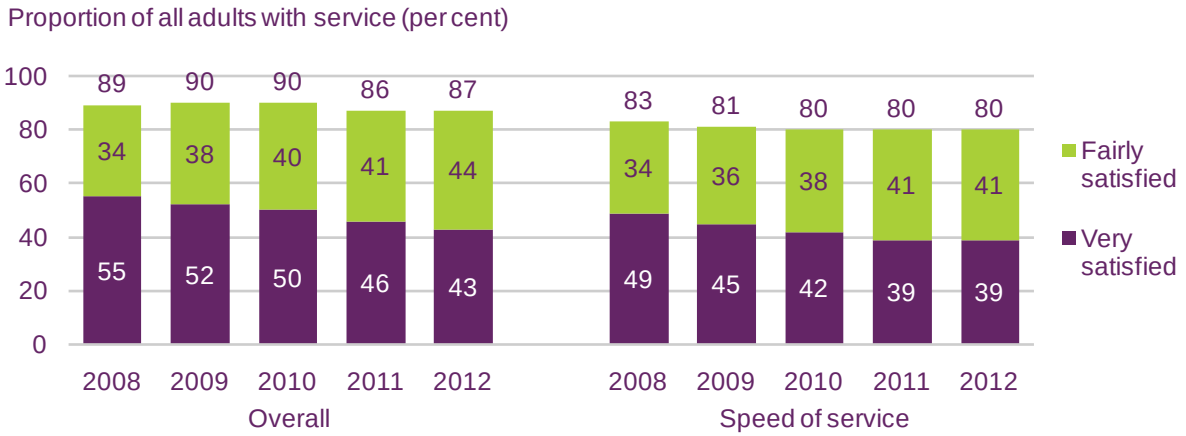


Source: Ofcom / Nielsen / UKOM
Note: Ofcom estimate of fixed internet use per person is based on Nielsen's data on the average monthly time spent online at home including the use of applications across the online population only; data are for March of each year

Satisfaction with fixed broadband services was unchanged in the year to Q1 2012

The proportion of respondents with a fixed broadband connection who were either 'very' or 'fairly' satisfied with their overall fixed broadband service was unchanged in the year to Q1 2012, at 87% (Figure 5.71). The proportion of consumers who were satisfied with the speed of their fixed broadband connection was also unchanged during the period, at 80%, despite increasing average broadband speeds (Ofcom research shows that the average UK residential fixed broadband speed increased from 6.2Mbit/s to 7.6Mbit/s between November/December 2010 and November 2011).[158]

Figure 5.71 Residential consumer satisfaction with aspects of fixed broadband service



Source: Ofcom research, data as at Q1 of each year
Base: All adults aged 16+ with a fixed broadband connection
Note: Includes only those who expressed an opinion

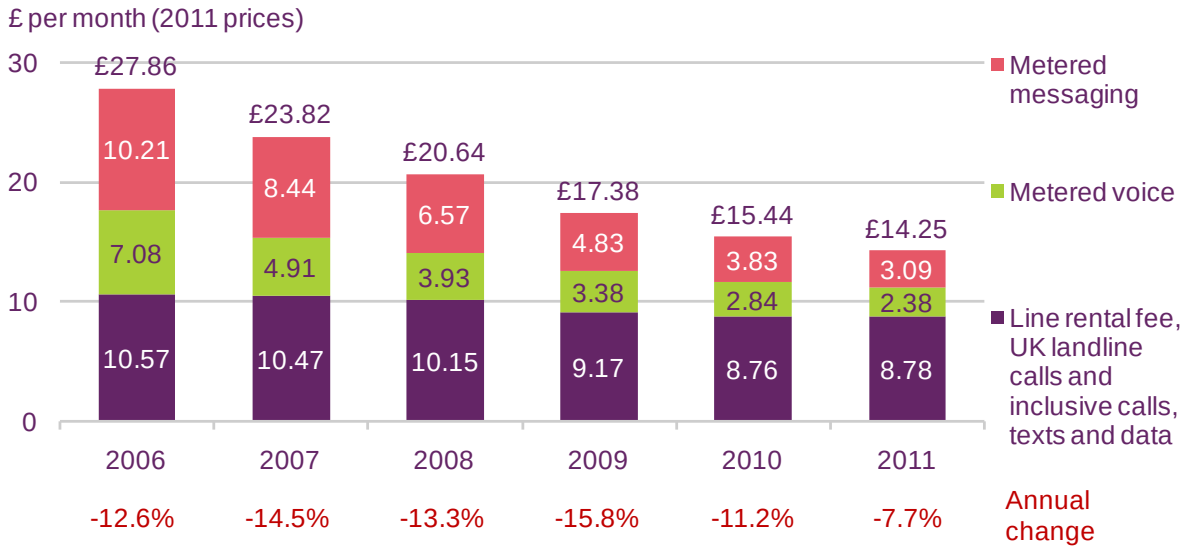
[158] http://stakeholders.ofcom.org.uk/market-data-research/other/telecoms-research/broadband-speeds/?a=0

5.3.4 Mobile voice and messaging services

The cost of a basket of mobile telephony services[159] continued to decline in 2011, falling by £1.18 a month (7.7%) to £14.25 a month in real terms (Figure 5.72). More than half of this fall (74 pence per month) was in the monthly cost of metered messages, a reflection of the fact that pay-monthly mobile tariffs and pre-pay top-ups now frequently include large numbers of bundled SMS messages.

In the basket, the total cost of mobile line rental (including any bundled voice, messaging and data services) and calls to UK landlines increased for the first time in 2011, albeit by just 0.2% or two pence per month. It is likely that the main driver behind this is increasing line rental fees: growth in smartphone take-up will result in increases in line rental fees (as these devices are more expensive than more basic handsets, and this increased cost will typically be passed onto the user in the form of higher line rental fees) and more than one mobile provider introduced contract price increases in 2011.

Figure 5.72 Real cost of a basket of mobile services



Source: Ofcom / operators
Note: Includes estimates where Ofcom does not receive data from operators; excludes non-geographic voice calls; adjusted for RPI; includes VAT

Pre-pay and post-pay mobile voice call costs continued to converge in 2011

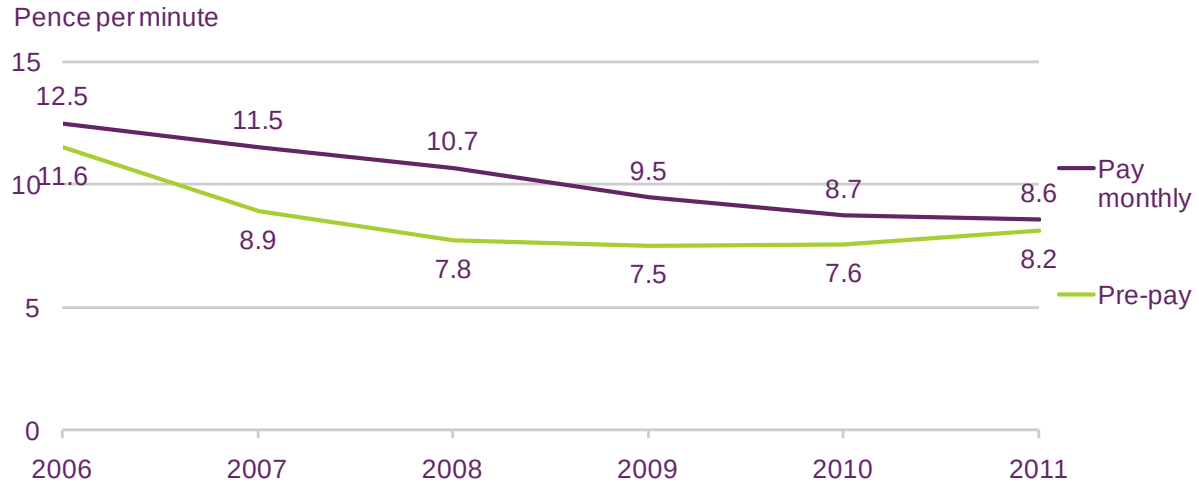
In 2011 the average cost of a post-pay contract voice call minute was 8.6 pence per minute, just 0.4 pence per minute (4.9%) higher than the 8.2 pence per minute average cost of a pre-pay call (Figure 5.73). In comparison, three years previously, in 2008, the difference between the average cost of a contract and pre-pay voice call minute (10.7 pence per minute and 7.8 pence per minute respectively) had been had been almost three pence per minute (37.5%).

While the average cost of a pay-monthly voice call minute has been falling over the past few years, the average cost of a pre-pay voice call minute has been increasing since 2009. One reason behind this is slowing growth in subscriber numbers in a mature market, which has prompted mobile providers to try to migrate pre-pay customers onto post-pay monthly contracts, as post-pay customers are typically higher spenders and are less likely to churn

[159] Comprising UK geographic calls, on-net and off-net calls to other mobiles, outgoing international calls and text messages at average usage levels in 2011.

as they are tied into minimum term contracts. Pay-monthly per-minute costs will be overstated in this analysis, as line rental fees frequently include bundled data and messaging services as well as an element of the handset subsidy.

Figure 5.73 Average cost per mobile voice call minute, by customer type



Source: Ofcom / operators
Note: Includes estimates where Ofcom does not receive data from operators; contract calculation includes rental element which will often includes a number of inclusive messages and data allowance; calculations use actual minutes of use

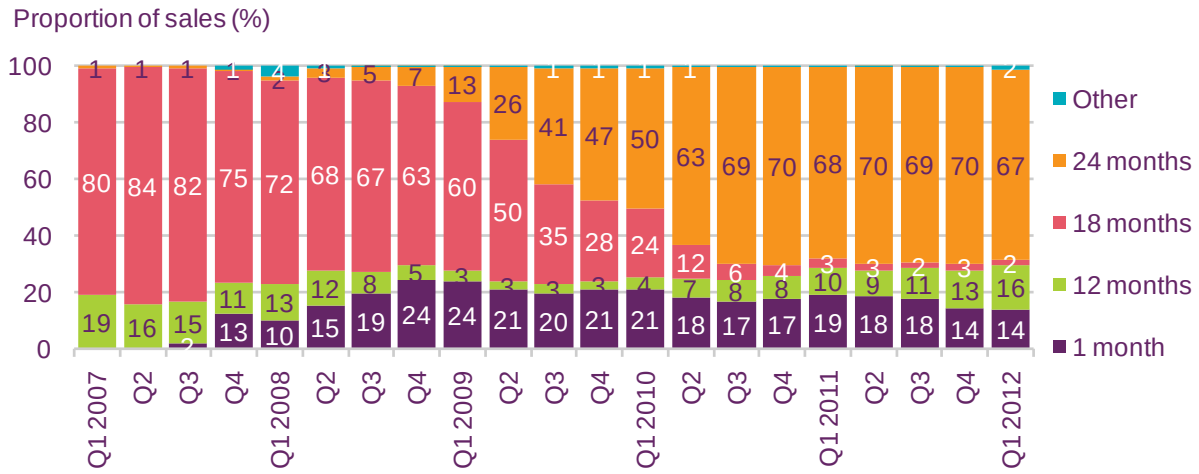
More than two-thirds of new mobile contracts had a minimum term of two years in Q1 2012

As is shown in Figure 5.74 below, the average length of new mobile contracts has increased in recent years, and in Q1 2012 more than two-thirds of new contracts had a minimum term of two years, compared to five years previously when this was the case for just 1% of contracts and 80% had a minimum term of 18 months. Similarly, in Q1 2012 31% of new mobile post-pay contracts had a minimum term of 18 months or less, compared to 99% five years previously.

The main driver behind this has been mobile operators changing their strategies in reaction to slowing growth in total mobile subscriber numbers: whereas previously they had concentrated on growing their customer bases, the emphasis has now switched to protecting their revenues and existing bases. By persuading consumers to take longer mobile contracts (by offering lower monthly fees for these services), the operators are tying their customers in for longer, and reducing customer churn.

The switch to smartphones appears also to have contributed to increasing average mobile contract lengths. Smartphone handsets are typically more expensive than those with fewer features, and by offering smartphones over longer minimum terms the mobile providers enable consumers to spread the cost of the handset over a longer period, in doing so keeping monthly rental costs down. While average contract lengths are increasing, the proportion of contracts with a minimum term of 12 months or less has also increased, from 19% in Q1 2007 to 30% in Q1 2011, as a result of growing take-up of SIM-only tariffs and EU law mandating providers to offer 12-month contracts from May 2011 (at the same time banning those with initial commitment periods that exceed 24 months). All of the one-month minimum term contracts and some of the 12-month contracts will be SIM-only.

Figure 5.74 Contract lengths for new post-pay mobile connections



Source: GfK Retail and Technology UK Ltd, Contract Length Sales of new Mobile Connections, Q1 2007 to Q1 2012.
Notes: England, Scotland and Wales only (excludes Northern Ireland); based on GfK's coverage of 94% of the consumer market; based on new post-pay connections; excludes contract renewals; only represents sales through consumer channels (i.e. most business connections are excluded).

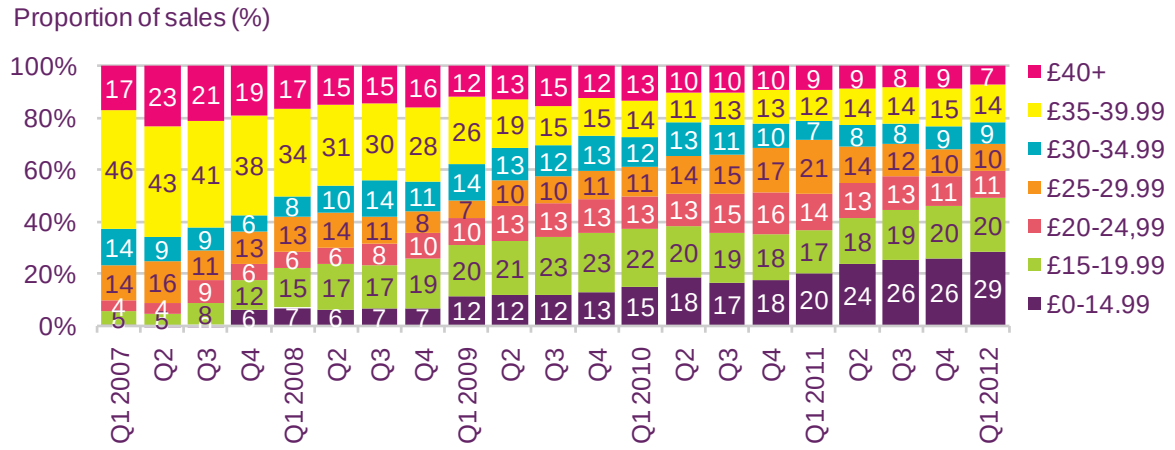
Almost half of new mobile contracts were for less than £20 a month in Q1 2012

GfK data, showing the split of new post-pay contract mobile sales by monthly cost, indicate that consumers are increasingly choosing tariffs with lower fixed charges (Figure 5.75). In the first quarter of 2012 49% of new mobile contracts had a monthly rental fee of less than £20, 12 percentage points more than a year previously and 43 percentage points more than five years earlier in Q1 2007, when just 6% of new mobile tariffs fell into this price bracket.

There are a number of reasons for the fall in the average cost of new mobile contracts. The first of these is falling prices for mobile services, as competition between providers has resulted in increases in the volumes of call minutes, messages and data that are available for a defined monthly spend. Secondly, consumers are keeping their handsets for longer. The average length of a new mobile contract has increased significantly over the past few years, and many consumers are electing to keep their existing handset after the end of their contract and switch to SIM-only plans. Shorter contracts that include a new handset typically have higher line rental fees than longer mobile contracts and SIM-only plans, so a shift towards these services will result in downward movement in average contract values.

Thirdly, many pre-pay customers have migrated to monthly contracts in recent years (at the end of 2011 49% of mobile connections were post-pay, 10 percentage points higher than three years previously). As pre-pay customers' use of mobile services is typically much lower than that of post-pay customers (as shown in Figure 5.78 and Figure 5.80), average voice call use per contract customer has fallen, which in turn will contribute to the falling contract values seen in Figure 5.74. Finally, many consumers may be consciously limiting their mobile use in order to reduce costs, as a result of the current economic climate.

Figure 5.75 Monthly line rental prices for new post-pay mobile connections



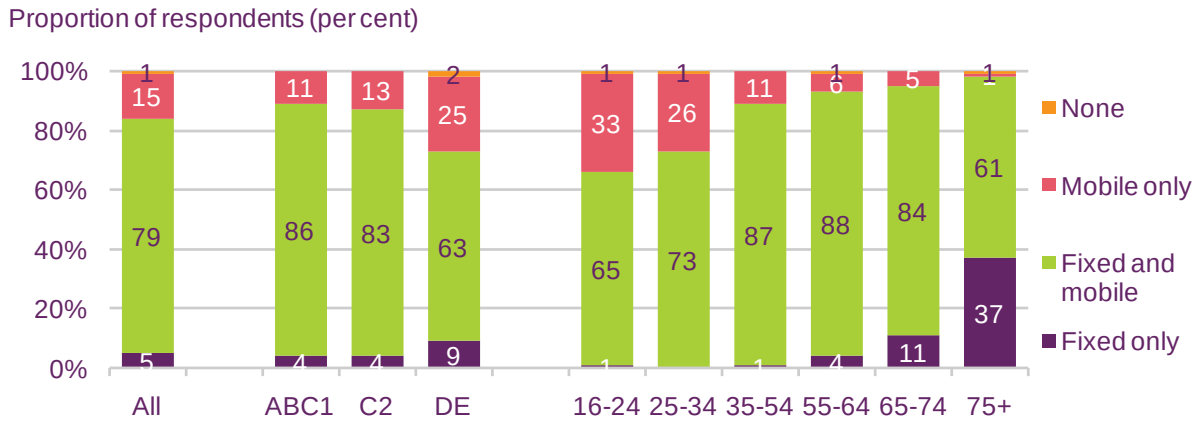
Source: GfK Retail and Technology UK Ltd, Contract Handset Acquisitions: price segments.
Notes: England, Scotland and Wales only (excludes Northern Ireland); based on GfK's coverage of 94% of the consumer market; based on new post-pay connections; excludes contract renewals; only represents sales through consumer channels (i.e. most business connections are excluded).

A third of 16-24 year olds lived in a mobile-only household in Q1 2012

Ofcom research suggests that a third of 16-24 year olds (33%) lived in a household that used mobiles as its sole form of telephony in Q1 2012, more than twice the 15% average recorded across all adults during the period (Figure 5.76). This is likely to be a result of higher levels of mobile adoption and use among younger consumers, younger people frequently living in shared rented accommodation and mobiles being an individual purchase while a fixed line is a household purchase. The figure among 25-34 year olds was also high, with over a quarter (26%) living in a mobile-only household.

Similarly, the proportion of respondents living in mobile-only homes was higher among the DE socio-economic group than among other grades, with a quarter (25%) of DE homes being mobile-only. This is possibly a result of lower-income households not wanting to commit to lengthy minimum-term fixed-line contracts, having trouble passing the credit checks that some providers require, or seeking to control their telephony spend by using pre-pay mobiles as an alternative to fixed telephony.

Figure 5.76 Household penetration of fixed and mobile telephony, by socio-economic group and age



Source: Ofcom research, Q1 2012 data
Base: All adults aged 16+

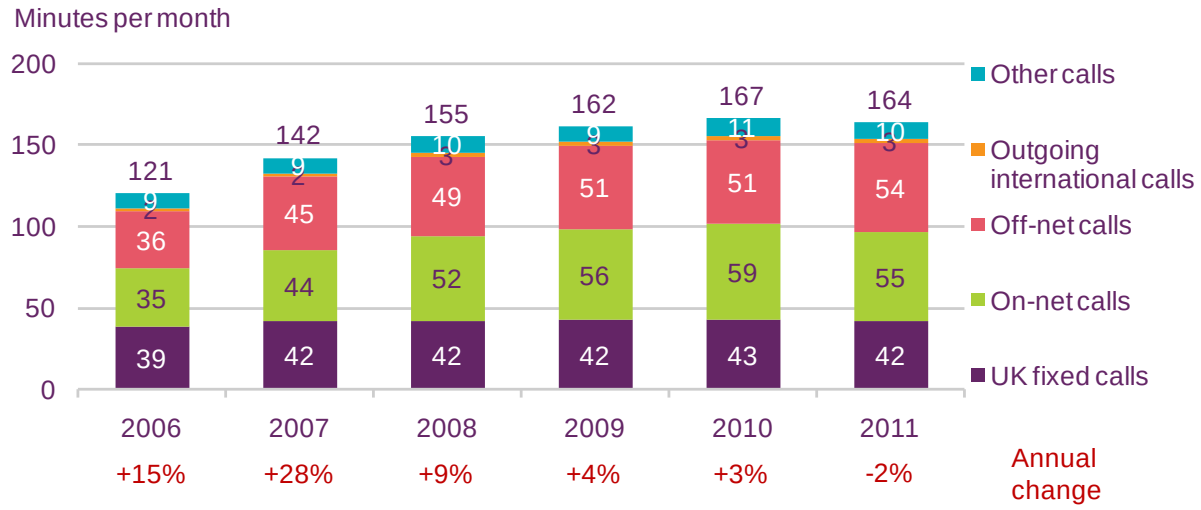
Average mobile-originated voice call volumes per person fell for the first time in 2011

In 2011 an average of 164 minutes of mobile-originated calls were made per person per month in the UK, three minutes (1.7%) less than had been the case in 2010 (Figure 5.77). This is the first year that per-capita mobile voice use has fallen, and signifies a major shift in usage patterns, as mobile users shift away from voice call services.

There are two main trends which are likely to be contributing to the decline in average mobile voice call use. The first of these is continued growth in text messaging, where volumes increased by over 17% in 2011 (see Section 5.2.4). The second is growth in the use of alternative forms of communication which use a smartphone's data connection to provide services (such as email and instant messaging) and which can be used as substitutes for traditional voice and text services (Section 5.1.4 considers changing use of communications services in greater depth).

Most smartphone handsets come with these services as standard, and third-party 'over-the-top (OTT) services are increasingly available to consumers by downloading the associated app. Examples of these include *Skype* (which has iOS, Android and Windows Phone apps that allow users to make VoIP voice and video calls over their smartphone's WiFi data connection) and *WhatsApp* (which provides instant messaging services over a smartphone's data connections and is available on the same three platforms), among others.

Figure 5.77 Average monthly outbound mobile voice call volumes per person



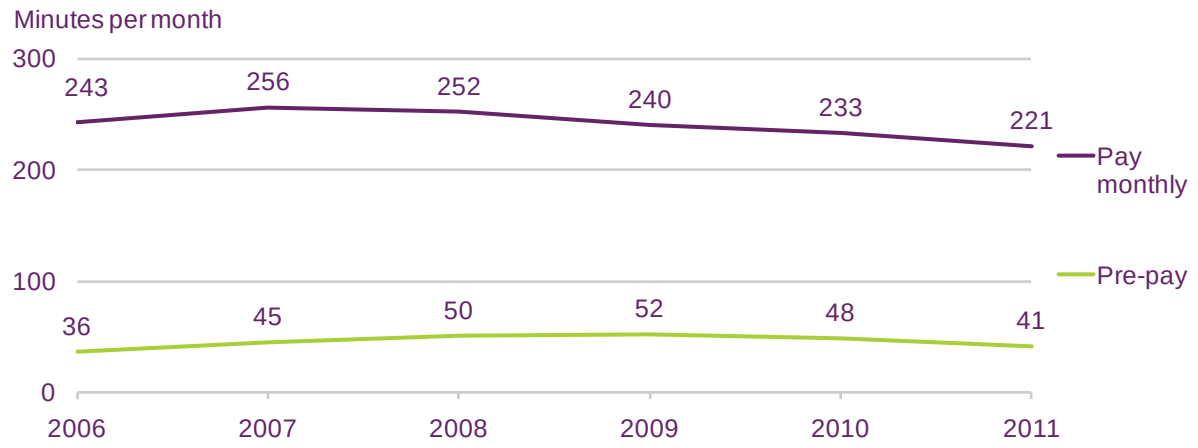
Source: Ofcom / operators
Note: Includes estimates where Ofcom does not receive data from operators; calculation excludes mobile broadband connections

Average voice call volumes fell for both pre-pay and post-pay customers in 2011

On average, post-pay contract mobile subscribers made 221 minutes of outgoing calls in 2011, more than five times the 41 minutes per month recorded for pre-pay customers (Figure 5.78). As in 2010, average voice call use per connection declined for both post-pay contracts and pre-pay connections in 2011, when the rate of decline was higher for pre-pay customers (14.9%) than for post-pay customers (5.3%). However, lower levels of use among pre-pay users meant that the average monthly call volume decline was higher for post-pay connections (12 minutes) that pre-pay connections (seven minutes).

The rate of decline in calls per connection increased for both post-pay and pre-pay connections in 2011, due to increasing use of non-voice services (see section 5.1.4) and the migration of pre-pay users onto monthly contracts. Customers who migrate from pre-pay to pay-monthly contracts are likely to have higher than average pre-pay use, but lower than average post-pay use, so the average use for both connection types will fall as they make this switch.

Figure 5.78 Average monthly outbound mobile call minutes per connection, by subscription type

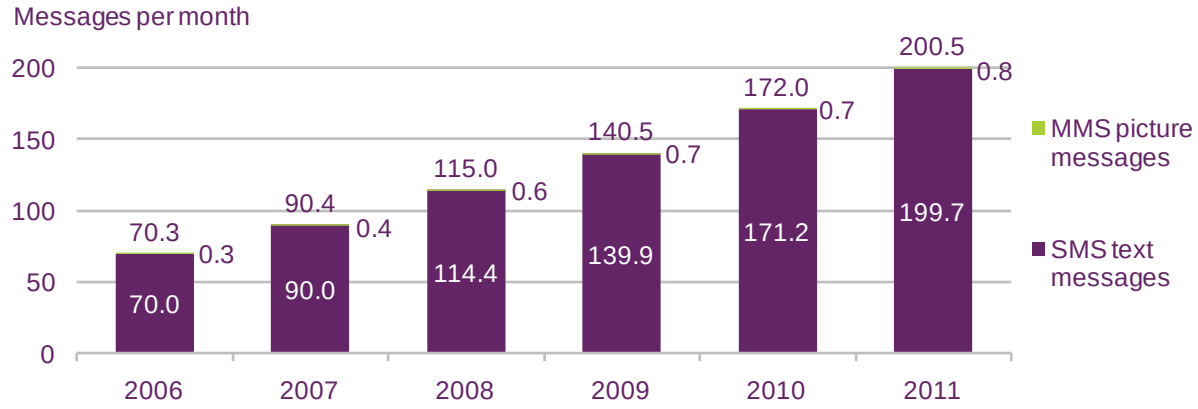


Source: Ofcom / operators
Note: Includes estimates where Ofcom does not receive data from operators; calculation excludes mobile broadband connections.

The average person sent 200 text messages per month in 2011

The average volume of text and picture messages continued to increase in 2011, up by 16.6% to just over 200 messages per month (Figure 5.79). This growth was mainly as a result of mobile providers including generous SMS message allowances with pay-monthly contracts and pre-pay top-ups, and came despite increasing smartphone take-up, meaning that a larger proportion of mobile users are able to access substitute text-based services such as email and instant messaging services, including OTT services which use their handset's data connection. Use of MMS services remained low, with the average person sending 0.8 MMS messages per month, less than 0.5% of total SMS and MMS use.

Figure 5.79 Average monthly mobile messaging volumes per person



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

Average SMS use is increasing for both post-pay and pre-pay users

Average use per mobile connection is lower than average use per person (as shown in the previous chart) as many people use more than one mobile, often having one for work use and another for personal use. Figure 5.80 shows that there were increases in mobile

messaging use across both pay-monthly and pre-pay users in 2011, with average monthly use per pay-monthly connection growing by 18 messages (11.3%) to 179 per month, and average pre-pay use growing by 21 messages per month (19.0%) to 132 messages per month during the year.

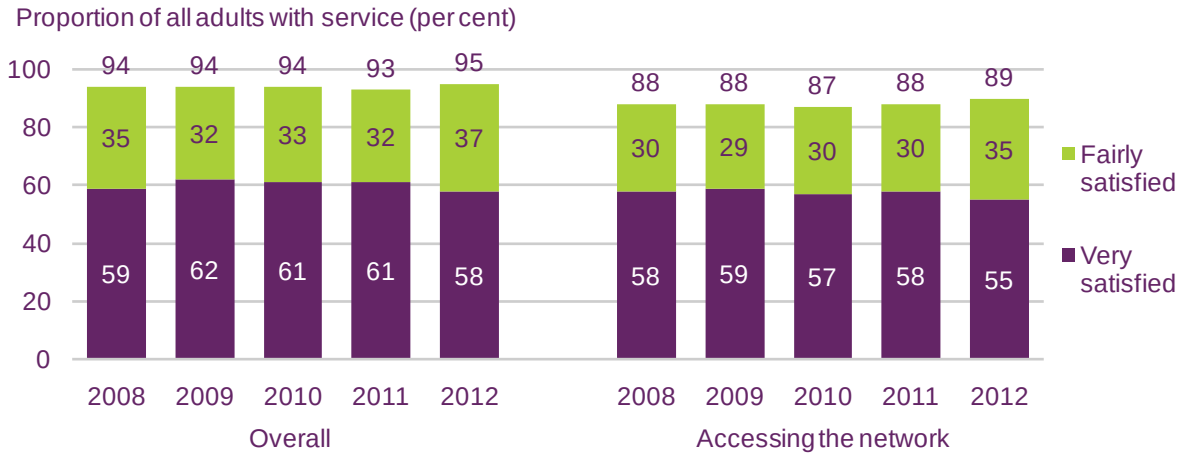
Figure 5.80 Average monthly messaging volumes per connection, by subscription type

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

Ninety-five per cent of mobile users were satisfied with their service in Q1 2012

Satisfaction levels with mobile services remained high in Q1 2012, with 95% of users saying that they were 'very' or 'fairly' satisfied with their mobile service, unchanged from Q1 2011 (Figure 5.81). Satisfaction with the ease with which mobile users could access their network was slightly lower, with 89% saying that they were 'very' or 'fairly' satisfied (in line with the Q1 2010 figure), suggesting that more than one in ten suffer from mobile reception problems. While satisfaction levels for overall mobile services, and for the ability to access a mobile network, remained high, the proportion of mobile users who were 'fairly' rather than 'very' satisfied increased during the year.

Figure 5.81 Residential consumer satisfaction with aspects of mobile service



Source: Ofcom research, data as at Q1 of each year
Base: All adults aged 16+ with a mobile phone
Note: Includes only those who expressed an opinion

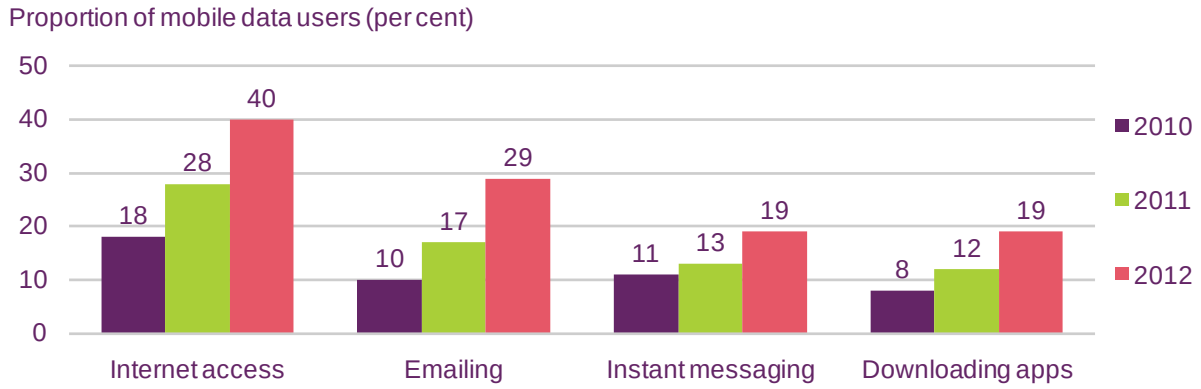
5.3.5 Internet access on a mobile handset

Growth in smartphone take-up resulted in increasing use of mobile data services in the year to Q1 2012

The proportion of mobile users who accessed websites, downloaded apps, used email and used instant messaging services on their handsets all increased in the year to Q1 2012, largely as a result of growth in smartphone take-up. The largest increases were in the use of mobiles to browse the internet and access email, with the proportion of mobile users doing each activity increasing by 12 percentage points, to 40% and 29% respectively (Figure 5.82).

Growth in the use of instant messaging services such as BlackBerry Messenger, iOS iMessage and multi-platform service *WhatsApp* was also evident, with 19% of mobile users saying that they used instant messaging on their mobile, the same proportion who said that they downloaded apps to their mobile phone. Use of both of these services also increased in the year to Q1 2012.

Figure 5.82 Use of data services on mobile handsets



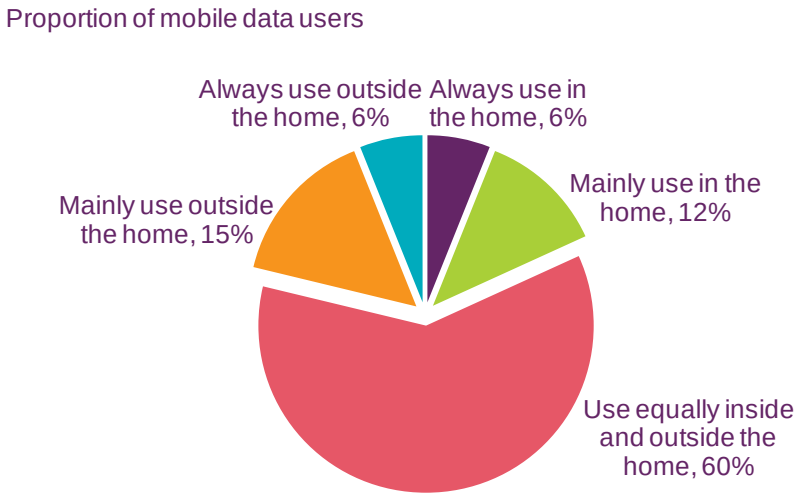
QD9A: Which if any of the following activities, other than making and receiving voice calls, do you use your mobile for?
Source: Ofcom research, data as at Q1 of each year
Base: All mobile users aged 16+

Ninety-four per cent of those who accessed the internet on their mobile said they did so in the home in Q1 2012

Ofcom research suggests that there was a fairly even split of internet use on mobile phones by location in Q1 2012, with 94% of those who accessed the web on their mobile handset saying that they did so at home and the same proportion that they do this outside the home (Figure 5.83). The majority of respondents (60%) said that they accessed the web on their mobile equally inside and outside the home.

When considering the relatively high use of mobile internet at home, it is important to note that many mobile handsets will connect to a WiFi network when in the home (according to Ofcom research, 61% of UK homes had a WiFi router in Q1 2012). When in the home, those with a WiFi connected mobile phone are able to access the web without having to boot up a PC/laptop, and usually without the reception issues which may arise when connecting to a mobile data network.

Figure 5.83 Location of internet access using a mobile handset



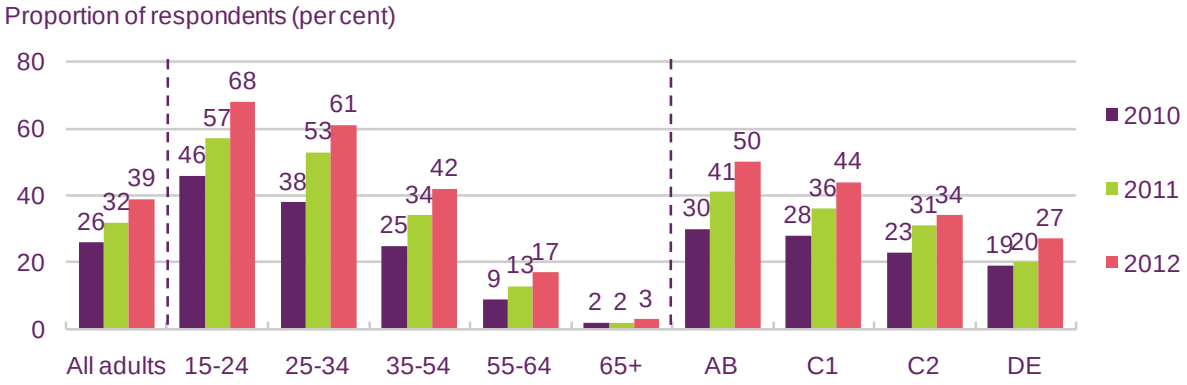
Source: Ofcom research, Q1 2012
Base: All adults aged 16+who access the internet on their mobile phone

Growth in internet use on a mobile phone was concentrated among younger age groups in the year to Q1 2012

Ofcom research suggests that the increasing use of internet services on a mobile handset was concentrated among younger consumers in the year to Q1 2012 (Figure 5.84). While the proportion of consumers using a mobile handset to access the internet was unchanged in the 55-64 year-old and 65+ age groups in the year to Q1 2010 (at 17% and 3% respectively), it increased among all other age groups, the largest percentage point growth being among 16-24 year olds, where take-up increased from 57% to 68%.

Increasing use of mobile handsets to access the internet was also evident across most socio-demographic profiles in the year to Q1 2012, with the C2 group being the only one for which there was not a statistically significant increase over the period.

Figure 5.84 Use of the internet on mobile phones, by socio-economic group



QD28A: Which if any, of the following activities, other than making and receiving voice calls, do you use your mobile for?
Source: Ofcom research, data as at Q1 of each year
Base: All adults 16+
Note: Web/data access includes accessing the internet, downloading and streaming content, connecting using WiFi and using VoIP.

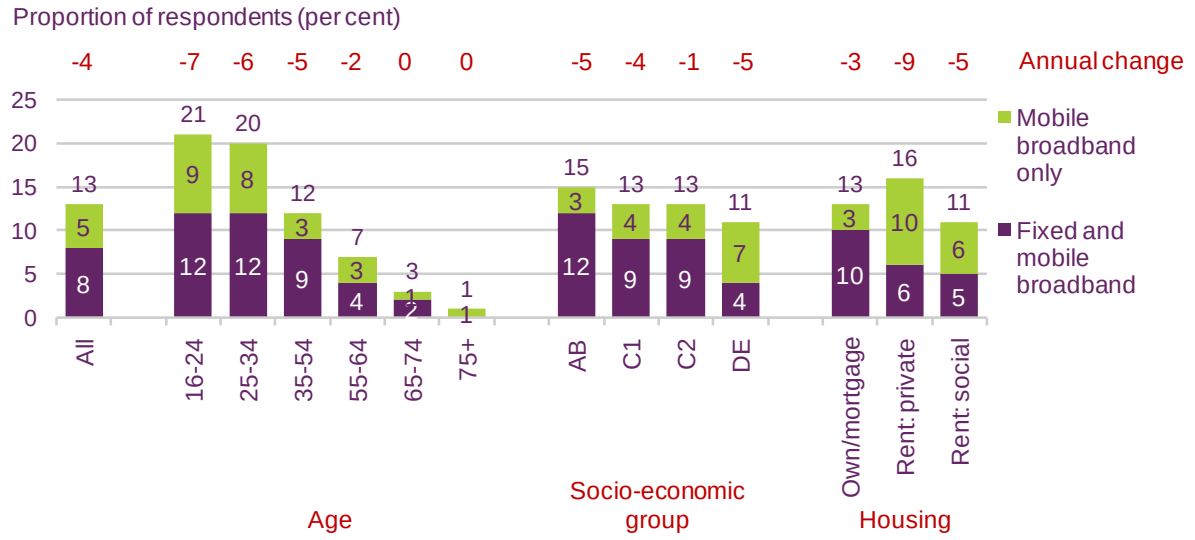
5.3.6 Mobile broadband services

Thirteen per cent of adults said that they used mobile broadband via a datacard or dongle in Q1 2012

According to Ofcom research, 13% of UK adults had a mobile broadband connection in their household in Q1 2012 (Figure 5.85). This represents a fall of four percentage points compared to the 17% figure recorded in Q1 2011. However, this data point should be treated with some caution, as figures collected from mobile operators show that the number of mobile broadband connections continued to increase over the period (see Figure 5.26).

The patterns of take-up of mobile broadband services by age were similar to those for mobile voice services, with take-up tending to be higher among the younger age groups and lower among older people. Again, this may be related to mobile broadband being an individual purchase, while fixed broadband is a household purchase. As shown in Figure 5.76, while average levels of mobile broadband use among 35-54 year olds (12%) were in line with the UK average, they were higher than average among those under 35 and lower than average among those aged 55 and older. There were no statistically significant differences in the proportion of adults using mobile broadband services across socio-demographic profiles or by housing types.

Figure 5.85 Take-up of mobile broadband, by socio-economic group



Source: Ofcom research, Q1 2012
Base: All adults aged 16+

The most frequently-mentioned time that mobile broadband is used outside the home is when travelling

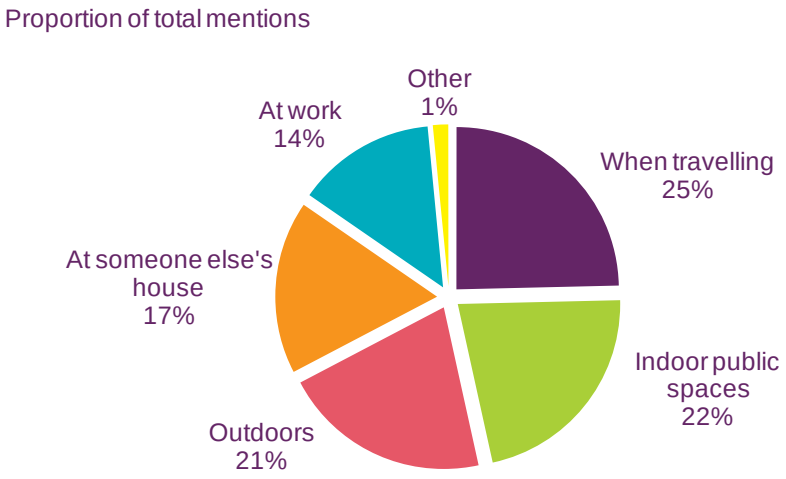
As part of our consumer research we asked those who said they used mobile broadband to access the internet while outside the home *where* they did so (according to our research, while the majority of mobile broadband users use the service outside the home, 22% use it only in the home).

As shown in Figure 5.86 below, the most frequently-mentioned location for using mobile broadband outside the home was when travelling (e.g. on a train or in a car). This had a quarter (25%) of total mentions, followed by indoor public spaces (e.g. a pub, restaurant, theatre or shopping centre) with 22% of total mentions. Twenty-one per cent of total mentions for the location where mobile broadband was used outside the home were for

'outdoors', while 17% were for use at someone else's house and 14% for use of the service when at work.

More information on the use of mobile data services can be found in Section 5.1.3.

Figure 5.86 Location of mobile broadband use outside the home



Source: Ofcom research, Q1 2012
Base: All adults aged 16+ who use mobile broadband outside the home

Mobile broadband services are available from £3 a month

Figure 5.87 shows the lowest-cost stand-alone mobile broadband tariffs available from UK providers in March 2010, 2011 and 2012. This shows that while there was little change in the cost of the cheapest mobile broadband services available from T-Mobile, Orange, 3UK and Virgin Mobile in the year to March 2011, the same was not true of Vodafone and O2.

The price of Vodafone's cheapest mobile broadband product fell to £3 a month during the period, as it introduced a new tariff aimed at occasional users, which provides 250MB of mobile data a month and no WiFi use (with additional data charged at £2 per 250MB per day). Conversely, the price of O2's lowest-cost mobile broadband service increased to £10.21 a month in the year to March 2011, as it withdrew its £5.11 a month tariff offering 500MB of mobile data and unlimited WiFi (which had been introduced in the previous year), making a service offering 1GB of mobile data and unlimited WiFi the cheapest that it offered.

Figure 5.87 Lowest-cost standalone mobile broadband contracts, by provider

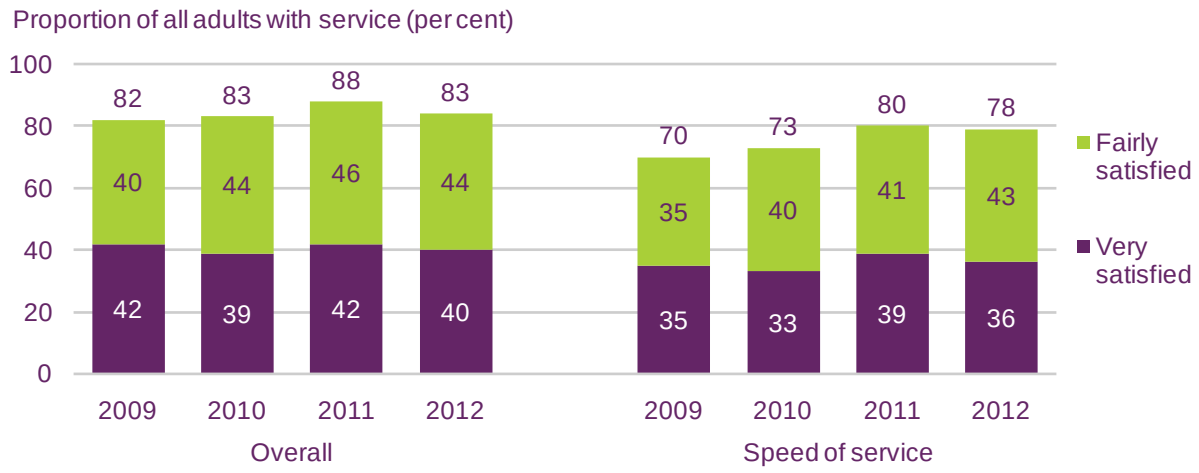
Provider		Monthly charge	Data allowance	Minimum contract length	Charges above allowance	WiFi hotspot use
Vodafone	2011	£7.50	500MB	1 month	£15/GB	1GB
	2012	£3.00	250MB	1 month	£2/250MB/day	Not included
O2	2011	£5.11	500MB	1 month	2.4p/MB	Unlimited
	2012	£10.21	1GB	1 month	£5.11/500MB or £10.21/GB	Unlimited
T-Mobile	2011	£10.00	1GB fair use	18 months	n/a	Not included
	2012	£10.00	1GB fair use	18 months	n/a	Not included
Orange	2011	£10.00	500MB	1 month	5.1p/MB	Not included
	2012	£10.00	500MB	1 month	5.1p/MB	Not included
3UK	2011	£7.89	1GB	18 months	10p/MB	Not included
	2012	£7.87	1GB	18 months	10.2p/MB	Not included
Virgin Mobile	2011	£10.21	1GB	2 months	1.46p/MB	Not included
	2012	£10.21	1GB	2 months	1.46p/MB	Not included

Source: Pure Pricing UK Broadband Pricing Briefings
Note: Data as at March of each year

The proportion of mobile broadband users who were satisfied with their service fell slightly in the year to Q1 2012

Ofcom research indicates that 83% of mobile broadband users were satisfied with their service in Q1 2012, and although the corresponding figure for Q1 2011 was 88%, this difference was not statistically significant (Figure 5.88). The change in satisfaction with the speed of mobile broadband services between Q1 2011 and Q1 2012 (when 78% of mobile broadband users saying they were 'very' or 'fairly' satisfied with the speeds provided by their service) was also within the error margins of the survey.

Figure 5.88 Residential consumer satisfaction with aspects of mobile broadband service



Source: Ofcom research
Base: All adults aged 16+ with a mobile broadband connection
Note: Includes only those who expressed an opinion