Commission for
Communications Regulation

Irish Communications Market

Quarterly Key Data Report

Data as of Q4 2017

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Corrigendum to Q3 2017 QKDR

Three operators informed ComReg about incorrect historically provided information:

Note 1: Fixed line retail revenues were revised from Q1 2017 to Q3 2017 inclusive following revisions by Virgin Media Business Limited with such with revisions ranging from -€5,069K to -€5,306K. Market shares (by revenue) were impacted accordingly.

Note 2: Fixed line wholesale revenues were revised from Q1 2017 to Q3 2017 inclusive following revisions by BT Communications Ireland Limited with such with revisions ranging from +€41 to +€64K. Market shares (by revenue) were impacted accordingly.

Note 3: Fixed broadband speed data were revised from Q2 2016 to Q3 2017 inclusive following revisions by Eircom Limited with such revisions resulting in increases on the proportion of the '10Mbps to 29.99Mbps' speed category by 1.59% to 1.88% with decreases in the '2Mbps to 9.99Mbps' speed category of the same magnitude.

Note 4: Historical population and number of household data was amended due the CSO's completion of historical revisions based on the Census of Population 2016[1]. This in turn impacted the calculation of fixed broadband penetration rates (per capita and by household) as well as mobile penetration rates (per capita). Figures 3.5.1a, 3.5.1b and 4.1.3 have been revised accordingly for historical quarters.

[1] For further details see:
http://www.cso.ie/en/releasesandpublications/in/lfs/informationnotice-labourforcesurveyquarter32017/

Summary

Overall industry retail revenues for Q4 2017 totalled €881.5 million. There were 1,401,356 fixed broadband subscriptions this quarter which was an increase of 0.7% from Q3 2017 and an increase of 3.0% compared to Q3 2016. Overall voice traffic volumes increased by 1.3% this quarter. Presented below is a tabular summary of the data presented throughout this Quarterly Key Data Report (QKDR).

Irish Quarterly Communications Market Data Q4 2017				
	Q4 2017	**Q3 2017**	**Quarterly Change**	**Annual change**
Total Retail Market Revenues[2]	€881,544,843	€757,198,164	n/c[3]	n/c
Fixed Line Retail Revenues[4]	€344,567,264	€336,187,118	2.5%	-1.1%
Mobile Retail Revenues	€398,624,557	€387,646,215	2.8%	-1.4%
Broadcasting Retail Revenues[5]	€138,353,022	€33,364,831	n/c	n/c
Fixed Line Wholesale Revenues[6]	€137,227,501	€136,705,875	0.4%	-1.9%
Mobile Wholesale Revenues	€46,885,883	€50,166,701	-6.5%	-5.6%
Total Voice Traffic (Minutes)	4,055,524,294	4,004,298,419	1.3%	-2.2%
Fixed Voice Traffic (Minutes)	894,720,875	901,866,579	-0.8%	-12.5%
Mobile Voice Traffic (Minutes)	3,160,803,419	3,102,431,840	1.9%	1.1%
Fixed Broadband Subscriptions	1,401,356	1,390,722	0.8%	3.0%
Fixed Subscriptions[7]	2,305,101	1,796,917	n/c	n/c
Fixed Voice Subscriptions	1,468,548	1,474,792	-0.4%	-0.5%
Total Mobile Subscriptions	6,020,694	5,971,752	0.8%	2.2%
Machine to Machine Subscriptions	828,780	788,953	5.0%	23.6%
Mobile Broadband Subscriptions	293,042	301,493	-2.8%	-15.5%
Mobile Voice Subscriptions (exc. MBB and M2M)	4,898,872	4,881,306	0.4%	0.5%

[2] Mobile and fixed line wholesale revenues are excluded from this figure. Total retail market revenues were revised from Q1 2017 to Q3 2017 due to revisions to fixed line retail revenues. See note 1 in the corrigendum.

[3] Metrics containing 'n/c' denote not comparable due to changes in methodology. See notes 5 and 7 below.

[4] Fixed line retail revenues were revised from Q1 2017 to Q3 2017. See note 1 within the corrigendum.

[5] From Q4 2017 broadcasting revenues now include data provided by Sky Ireland. Prior to this data had not been included in previous QKDRs. Data prior to Q4 2017 has not been made available. Comparisons with revenues from Q4 2017 are therefore not valid.

[6] Fixed line wholesale revenues were revised from Q1 2017 to Q3 2017. See note 2 within the corrigendum.

[7] From Q4 2017 total fixed subscriptions now include actual TV subscription data from Sky Ireland. Prior to this, actual data had not been included. For data prior to Q4 2017 ComReg estimated Sky Ireland's TV subscriber data when sold in bundles, with this estimation based on extrapolations from market survey data. Comparisons with fixed subscription data prior to Q4 2017 are therefore not valid.

- Overall electronic communications network and service retail revenues at the end of December 2017 were over €881 million for the quarter.
- At the end of December 2017 there were 1,468,548 fixed voice subscriptions, a decrease of 0.4% since last quarter and a decrease of 0.5% since Q4 2016.
- Total voice traffic minutes increased by 1.3% this quarter but were 2.2% lower than in Q4 2016. Mobile minutes form the majority of voice minutes at 77.9%, with fixed minutes representing the remaining 22.1%. Mobile voice minutes increased by 1.9% while fixed voice minutes decreased by 0.8% this quarter.
- Fixed broadband subscriptions increased by 0.8% this quarter and were up by 3.0% compared to Q4 2016. VDSL[8] (up by 2.8%), cable (up by 0.5%), FTTP[9] (up by 39.0%) and FWA subscriptions (up by 1.9%) increased this quarter while DSL[10] (down by 5.0%), satellite (down by 0.5%) and mobile broadband (down by 2.8%) all fell this quarter.
- The estimated fixed broadband household penetration rate[11] was 68.4% in Q4 2017. The fixed broadband per capita penetration rate was 29.2%. The broadband per capita penetration rate (including mobile broadband) was 35.3%.
- Average fixed broadband speeds continue to increase. In Q4 2017 approximately 84.3% of all fixed broadband subscriptions were equal to or greater than 10Mbps up from 79.8% in Q4 2016[12]. 72.1% of all fixed broadband subscriptions were equal to or greater than 30Mbps, up from 64.9% in Q4 2016[13].
- At the end of December 2017 there were 6,020,694 mobile subscriptions (including mobile broadband and M2M) in Ireland, an increase of 0.8% since the last quarter. The mobile penetration rate was 125.3% including mobile broadband and M2M subscriptions and 101.9% excluding mobile broadband and M2M subscriptions[14].

[8] VDSL refers to very-high-bit-rate digital subscriber line. These lines are typically utilised in the provision of next generation broadband services.

[9] FTTP (fibre to the premises) refers to a range of fibre access installations such as fibre to the home (FTTH), fibre to the premises (FTTP) and fibre to the curb.

[10] DSL refers to a digital subscriber line, the means by which broadband speeds (i.e. in excess of 144k downstream) are delivered over the copper telecoms network.

[11] This estimate excludes business subscriptions and mobile broadband subscriptions. Fixed broadband household penetration rates were impacted by CSO historical revisions. See note 4 within the corrigendum.

[12] Note: The method employed for calculating broadband speeds changed in Q2 2016 and was applied retrospectively.

[13] Fixed broadband speeds were revised from Q2 2016 to Q3 2017. See note 3 within the corrigendum.

[14] Mobile penetration rates were impacted by CSO historical revisions. See note 4 within the corrigendum.

- The number of voice and data subscribers using 3G/4G networks increased to 4,562,408, up by 0.7% from Q3 2017 and up by 3.3% compared to Q4 2016.
- There were 506,241 gross additions in the number of mobile subscriptions in Q4 2017. Of these, 107,494 were subscriptions with ported phone numbers. On average, there were 103,923 mobile numbers ported and 515,433 total gross additions per quarter over the last 12 months.
- In Q4 2017 prepaid mobile ARPU (exc. mobile broadband and M2M) was €14.05 per month while post-paid mobile voice ARPU was €38.84 per month.

Notes to data:

A. Data published in previous QKDRs may have been amended since their publication. Amendments to Q3 2017 QKDR are noted in the corrigendum notice on page 5 of this report.

B. Extracts of data used in this report can be downloaded at http://www.comreg.ie/industry/electronic-communications/data-portal

C. Further explanations and descriptions of data supplied in this report can be found in the accompanying explanatory memorandum 18/20a.

D. While quarter on quarter comparisons are made in the report, definitive conclusions with regard to trends cannot be drawn from this and year on year comparisons are used to improve the reliability of the analysis.

E. In most cases data has been rounded to one decimal place in this report. Not all charts in this report may sum exactly to 100% due to rounding.

F. A number of external sources are used for international comparisons. These include the CSO, Eurostat and Strategy Analytics (Teligen).

G. Irish population estimates of 4,805,900 and an estimated household number of 1,813,300 are used in this report. These statistics are obtained from the Central Statistics Office (CSO) Labour Force Survey (LFS) for Q3 2017. [15] Since publication of the Q3 2017 QKDR the CSO have revised their methodologies for estimating number of households and population with this taking effect in CSO data from Q3 2017 used in this QKDR. Information related to these metrics from the period Q3 2017 is therefore not strictly comparable with data prior to this period. In addition, as referred to in note 4 of the corrigendum, the CSO's

[15] Latest available data.

historical population and number of households data was amended due the CSO's completion of historical revisions based on the Census of Population 2016[16].

H. As of Q4 2016 FTTP and satellite subscriptions have been broken out from the previously reported 'Other' category. Additional subscriptions for FTTP (fibre to the premises, including fibre to the home (FTTH) and fibre to the curb) are included from Q3 2016.

I. As of Q3 2017 two additional fixed operators have been included in the QKDR, Siro and Host Ireland, with associated broadband and leased line data included. Information on these metrics is therefore not strictly comparable with data published in previous periods.

J. Cable broadband traffic reported from Q3 2015 to Q4 2017 is based on estimates from Virgin Media Ireland Limited due to issues with reporting accurate data for this metric.

K. From Q4 2017 broadcasting revenue now includes data provided by Sky Ireland. Prior to this data had not been included in previous QKDRs. Data prior to Q4 2017 has not been made available. Comparisons with revenues from Q4 2017 are therefore not valid. This impacts total retail market revenues and broadcasting revenues presented on page 6 as well as figure 1.1.1.

L. From Q4 2017 total fixed subscriptions now include actual TV subscription data provided by Sky Ireland. Prior to this, actual data had not been included. For data prior to Q4 2017 ComReg estimated Sky Ireland's TV subscriber data when sold in bundles, with this estimation based on extrapolations from market survey data. Comparisons with fixed subscription data prior to Q4 2017 are therefore not valid. This impacts total fixed subscriptions presented on page 6 as well as figures 1.4.1 and 2.2.4.

[16] For further details see:
http://www.cso.ie/en/releasesandpublications/in/lfs/informationnotice-labourforcesurveyquarter32017/

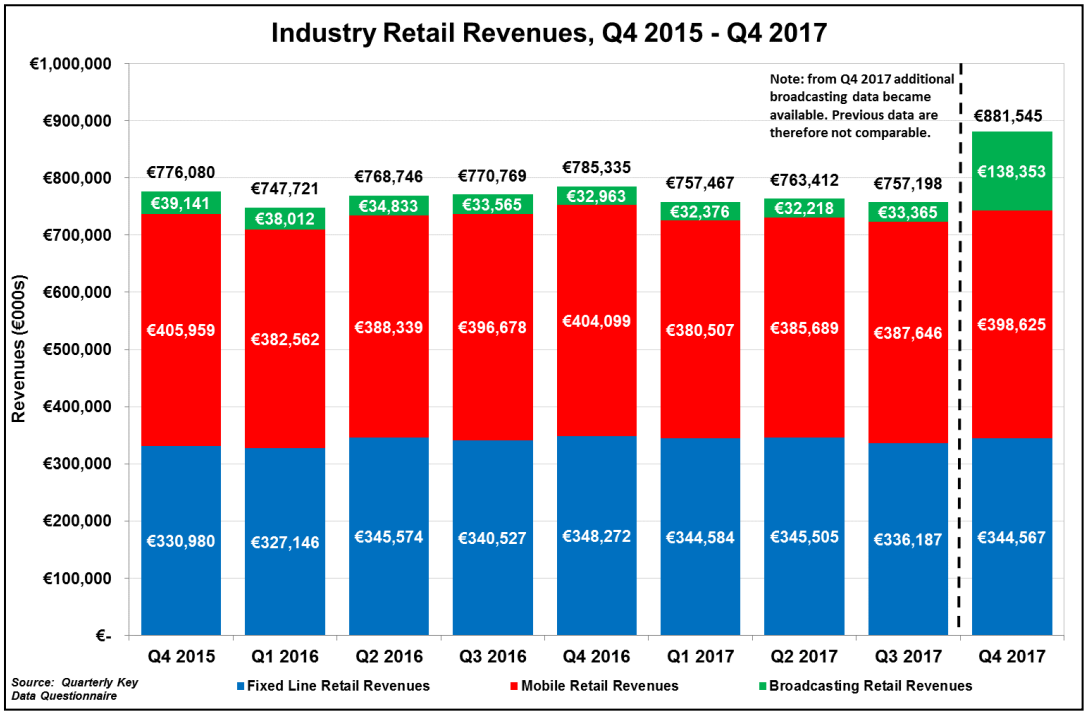
1. Overall Market Data

Data presented in this Quarterly Key Data Report is based on questionnaires completed by certain authorised operators[17] for the period from 1 September to 31 December 2017. The report is based on submissions from 42 active operators[18].

1.1 Overall Electronic Communications Revenues[19]

Figure 1.1.1 shows the developments in revenues attributable to the provision of fixed line, mobile and certain TV broadcasting services. In Q4 2017 mobile revenues accounted for 45.2% of total industry retail revenues followed by fixed line (39.1%) and broadcasting (15.7%) revenues. This quarter, mobile retail revenues increased by 2.8% but decreased by 1.4% compared to Q4 2016. Fixed line retail revenues increased by 2.5% this quarter but decreased by 1.1% compared to Q4 2016.

Figure 1.1.1 – Fixed, Mobile & Broadcasting Retail Revenues[20]



According to the CSO, Ireland's Gross National Product for Q3 2017[21] was approximately €61.4 billion. Based on the Q3 2017 retail revenue data reported to ComReg by operators in the Irish communications sector, these revenues were approximately 1.2% of GNP in that quarter.

[17] Operators who generate in excess of €500,000 in retail and/or wholesale revenues from electronic communications networks and services per annum.

[18] See table A2 in the Appendix on page 83 for the list of respondents who submitted data to ComReg.

[19] Further detail on terms and definitions - ComReg Doc. 18/20a Explanatory Memorandum.

[20] From Q4 2017 additional broadcasting data became available. Previous data are therefore not comparable. See note K on page 9 for more detail.

[21] Q3 2017 is the latest period for which GNP data is available.

1.2 Overall Call Volumes

Figure 1.2.1 – Fixed and Mobile Voice Call Volumes (Minutes)[22]

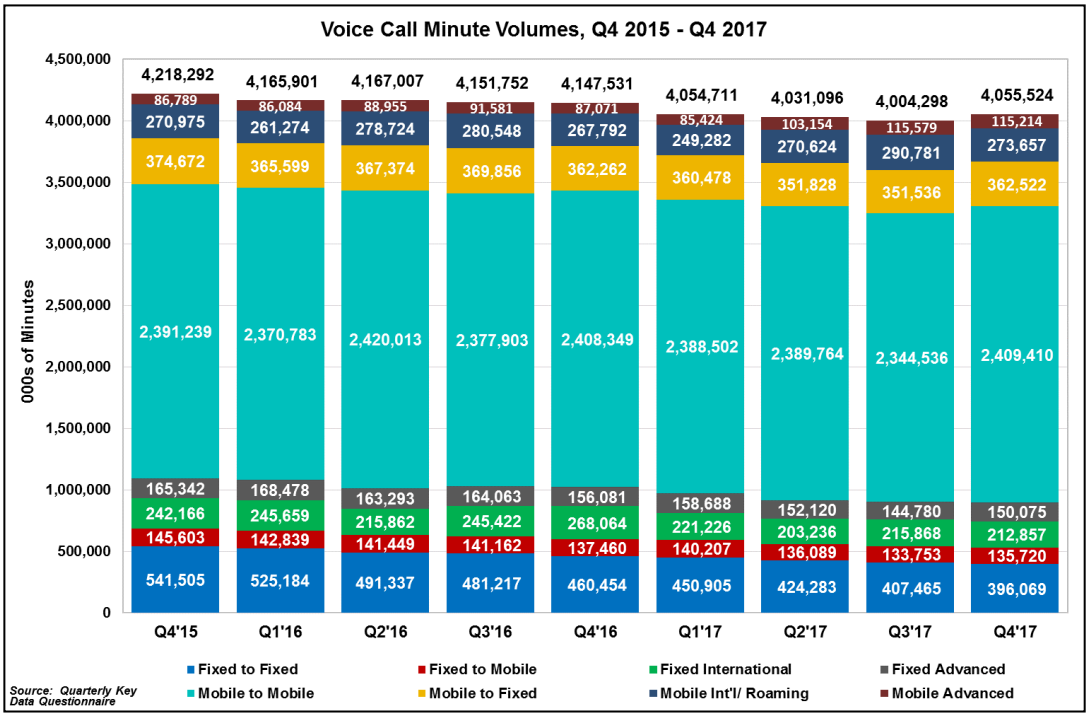


Figure 1.2.1 profiles volumes of originating voice calls by call type on both fixed and mobile networks on a quarterly basis. There was a decrease in total voice minutes this quarter. Voice minutes for Q4 2017 totalled 4.056 billion minutes and there were 16.146 billion minutes in the twelve months to the end of December 2017. Total voice minutes increased by 1.3% from the previous quarter but decreased by 2.2% since Q4 2016.

It should be noted that managed VoB minutes are included with calls originating from fixed networks in figure 1.2.1, and are split according to the same call categorisations (i.e. domestic, international, mobile, other).

Mobile originating voice minutes (up 1.1% on Q4 2016) accounted for 77.9% of all voice minutes in Q4 2017 (compared to 75.4% in Q4 2016) while traffic originating on fixed line networks (down 12.5% on Q4 2016) accounted for the remaining 22.1% of all voice minutes (compared to 24.6% in Q4 2016). Figure 1.2.2 shows total voice traffic in Ireland for Q4 2017.

[22] Fixed advanced minutes include premium rate services minutes, freephone minutes, payphone minutes, operator services minutes, national and international virtual private network minutes. Mobile advanced minutes include premium rate services minutes and other mobile minutes such as voicemail, DQ, call completion minutes etc.

Figure 1.2.2 – Total Voice Traffic

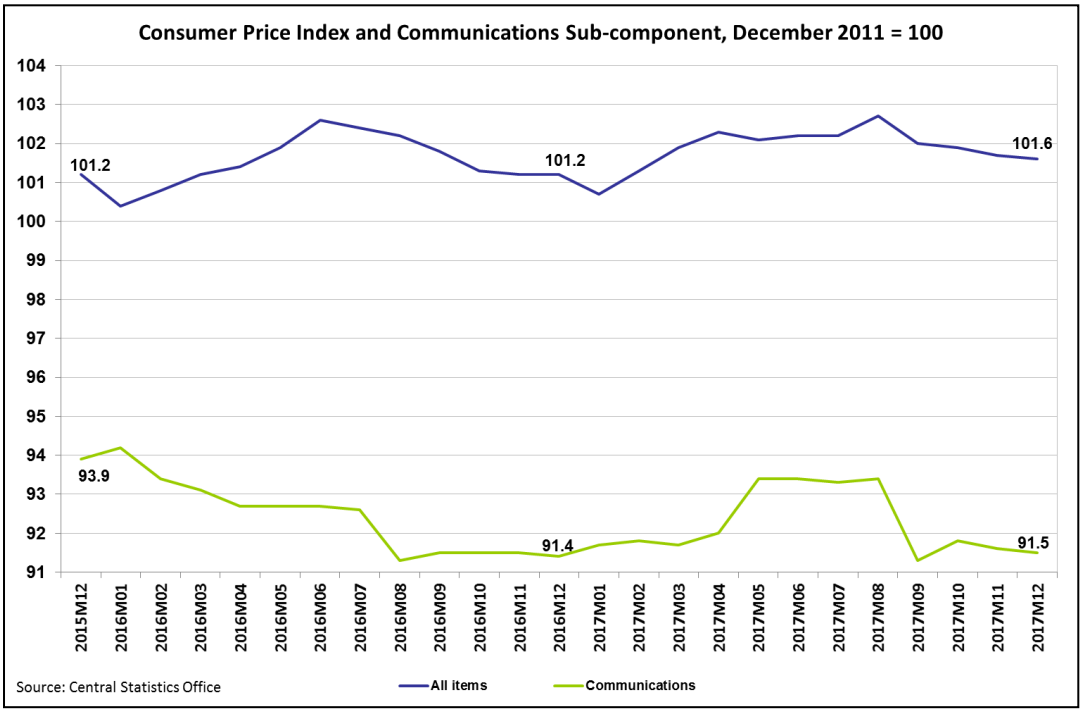
	Q4 2017 Mins	Q3'17 – Q4'17 Growth	Q4'16 – Q4'17 Growth
Fixed Voice Minutes	**894,720,875**	**-0.8%**	**-12.5%**
Mobile Voice Minutes	**3,160,803,419**	**+1.9%**	**+1.1%**
Total Voice Minutes	**4,055,524,294**	**+1.3%**	**-2.2%**

1.3 Communications and the Consumer Price Index

Figure 1.3.1 shows the monthly change in the Consumer Price Index (CPI) and the communications sub-component from December 2015 to December 2017. In December 2017 the CSO weighting for the communications basket was 3.16%[23] of the total CPI, down from 3.23% in December 2016.

Using December 2011 as the base period, communications prices have increased over the last 12 months, although there has been a decline in such prices in the period August to December 2017. Since December 2016 communication prices have increased by 0.1 of a base point, while the overall CPI has increased by 0.4 of a percentage point.

Figure 1.3.1 – Consumer Price Index and Communications Sub-Component



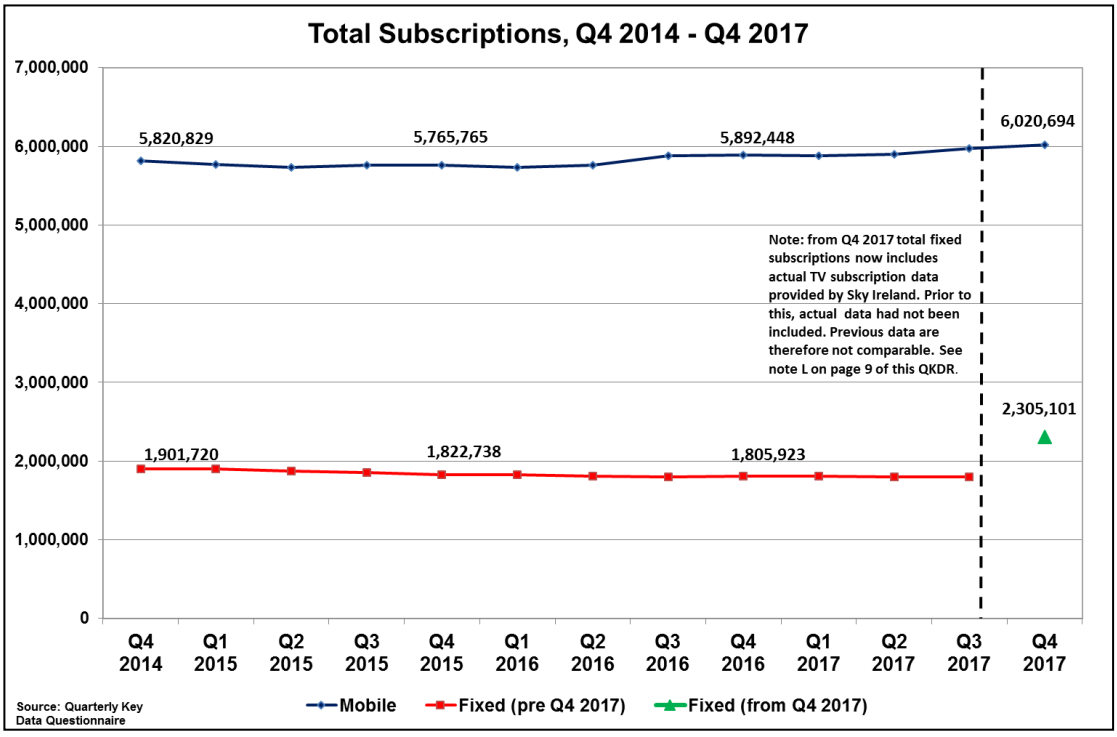
[23] http://www.cso.ie/en/releasesandpublications/er/cpi/consumerpriceindexdecember2017/

1.4 Fixed and Mobile Market Retail Voice, Internet and TV Subscriptions

Figure 1.4.1 shows the total number of mobile subscriptions (inc. mobile broadband and M2M) and the estimated number of fixed subscriptions to voice, internet and TV services (both single play and bundled subscriptions) in Ireland.

Customers purchasing either a single fixed service or more than one service (as part of a bundle) are included in the fixed subscriptions category. Total mobile subscriptions have increased by 0.8% since Q3 2017. Fixed subscription for Q4 2017 total 2,305,101[24]. It should be noted that it is possible that a customer may have more than one subscription, particularly where a mobile customer has more than one SIM card or in the case of a business customer with multiple fixed line subscriptions across several offices.

Figure 1.4.1 – Total Subscriptions (Fixed and Mobile)



[24] Note: from Q4 2017 additional fixed subscription data became available. Previous data are therefore not comparable. This is reflected in Figure 1.4.1 where, from Q4 2017, a new fixed subscription trend will begin. See note L on page 9 of this QKDR. Mobile subscriptions are unaffected.

2. Fixed Market Data

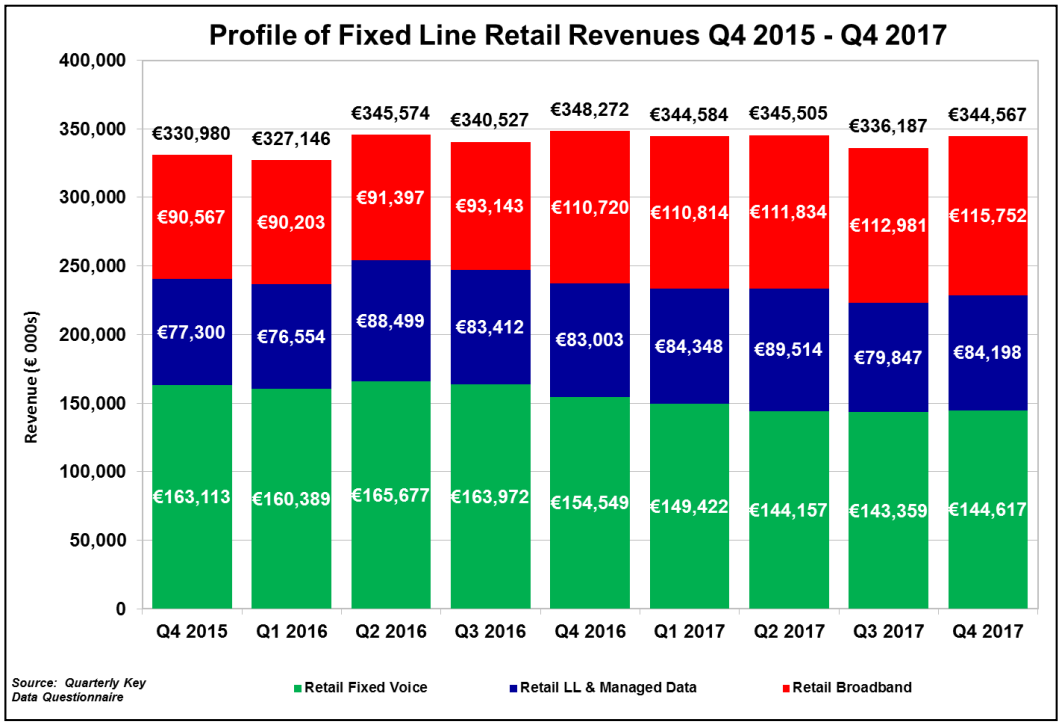
2.1 Fixed Line Revenues[25]

Figure 2.1.1 shows the profile of fixed line retail revenues in Ireland over the last two years. Total fixed line retail revenues for Q4 2017 were over €344 million. This was an increase (+2.5%) on Q3 2017 revenues and a 1.1% decrease on Q4 2016 revenues[26].

Retail broadband revenues (+4.5%), retail leased lines, managed and other data services revenues (+1.4%) have increased since Q4 2016 while and retail fixed voice revenues (-6.4%) has fallen.

Comparing Q4 2016 to Q4 2017, the proportion of retail fixed line revenues attributable to retail leased lines, managed data and other advanced data services increased by 0.6 of a percentage point to 24.4% while retail broadband revenue's share increased by 1.8 percentage points to 33.6%. The proportion of retail fixed voice revenues fell by 2.4 percentage points to 42.0% of overall fixed line retail revenues.

Figure 2.1.1 – Profile of Fixed Line Retail Revenues



Fixed line wholesale revenues were over €137 million in Q4 2017, the majority of which were related to interconnect and wholesale fixed narrowband access revenues, followed by wholesale leased lines, managed and other data services revenues and wholesale

[25] As noted on page 8, note I, additional leased line revenue data became available from two operators since Q3 2017. Hence, revenue and market share information in Figures 2.1.1, 2.1.1.1 and 2.1.1.2 is not directly comparable to information in previous periods.

[26] Fixed line retail revenues were revised from Q1 2017 to Q3 2017. See note 1 within the corrigendum.

broadband access revenues. Wholesale revenues increased by 0.4% compared to Q3 2017 but were down by 1.9% since Q4 2016.

2.1.1 Authorised Operators' Share of Fixed Line Revenues

Figure 2.1.1.1 below outlines the revenue shares for the fixed retail market (comprising narrowband, broadband, leased line, managed and other data revenues) held by the incumbent fixed line operator (Eir), authorised operators having at least a 2% market share, and all other authorised operators (OAOs) with market share less than 2%.

In Q4 2017, Eir had the highest retail revenue share in the fixed retail market with 41.7% market share. Virgin Media had 15.8%, followed by Vodafone (fixed only) with 13.2%, Sky Ireland (6.0%), BT (5.0%) and AT&T (2.1%). OAOs accounted for the remaining 16.2%.[27]

Figure 2.1.1.1 – Fixed Retail Revenue Market Shares[28]

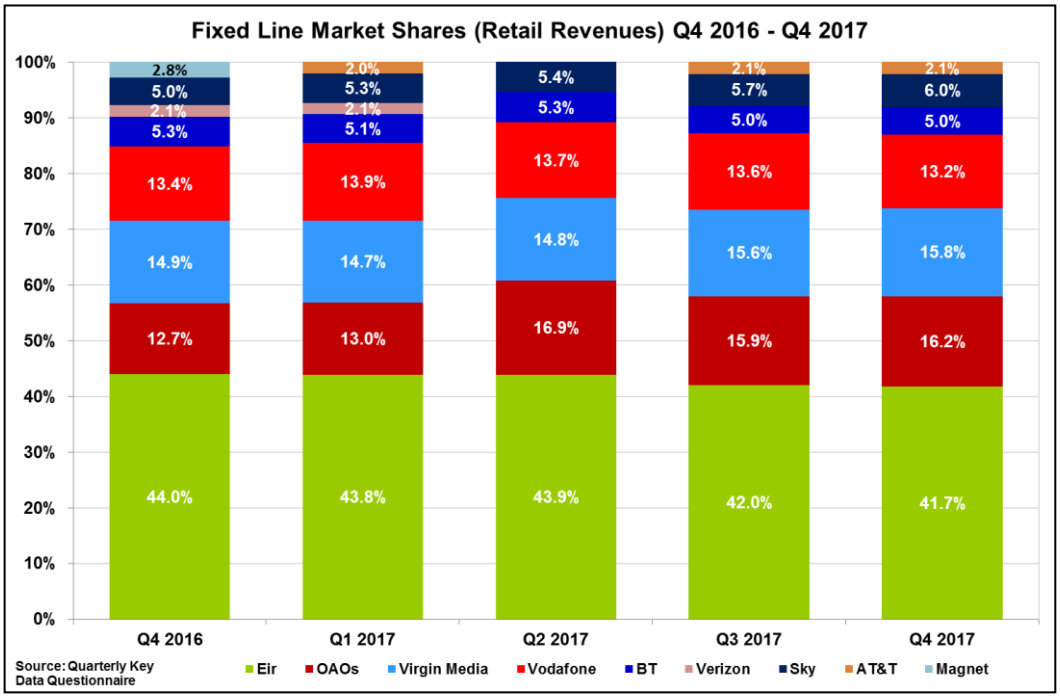


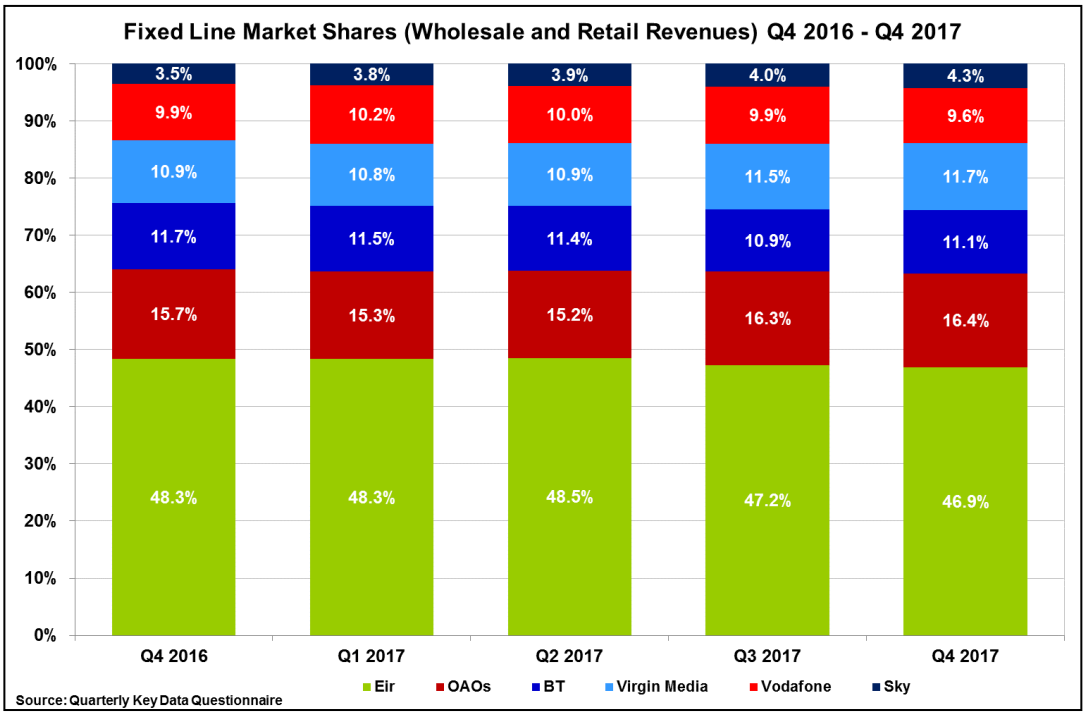
Figure 2.1.1.2 outlines the revenue shares in the fixed market (comprising fixed line retail and wholesale revenues). When making comparisons, it is important to note that the market shares presented below are based on shares across all fixed wholesale and retail revenue streams and some operators may not offer products and services across all segments of these markets.

[27] In Q4 2016 Magnet had a market share greater than 2%, therefore it is not included in the OAO category in that period. From Q1 2017 Magnet fell below 2% market share and is included in the OAO category since. In Q2 2017 Verizon had a market share below 2% and thus is included in the OAO category. In Q2 2017 AT&T had a market share below 2% and was included in the OAO category until Q3 2017.

[28] Market shares for fixed retail revenues were revised from Q1 2017 to Q3 2017. See note 1 within the corrigendum.

In Q4 2017, Eir had the highest revenue market share with 46.9%. ComReg estimates that the next four largest operators (BT Ireland, Sky Ireland, Virgin Media Ireland and Vodafone (fixed only)) contribute a further 36.7% share of total (retail and wholesale) industry revenue, while OAOs account for the remaining 16.4%.

Figure 2.1.1.2 – Fixed Revenue Market Shares[29]



2.2 Fixed Line Access Paths[30] and Subscriptions

2.2.1 Access Paths and VoB Subscriptions

Figure 2.2.1.1 presents the total number of narrowband copper fixed access paths (PSTN and ISDN) and Voice over Broadband (VoB) subscriptions. PSTN and ISDN access paths are usually used for voice services and internet access. There were over 1.38 million direct and indirect PSTN and ISDN access[31] paths in the Irish market in Q4 2017. This represents a decrease of 1.5% on the last quarter and a decline of 4.9% since Q4 2016. The number of PSTN access paths has decreased by 0.9% from last quarter and declined by 3.5% since Q4 2016. The number of ISDN access paths decreased by 3.6%

[29] Market shares for fixed retail and wholesale revenues were revised from Q1 2017 to Q3 2017. See notes 1 and 2 within the corrigendum.

[30] Access paths are not synonymous with access lines as for example in the case of ISDN paths, there may be more than one path provided via a single ISDN line.

[31] Indirect access paths relate to telephone lines provided to customers by means of Carrier Pre-select (CPS), Wholesale Line Rental (WLR) or Switchless Voice (SV). CPS allows the user to receive all or a portion of calls from one provider and line rental from another provider (usually Eir). SB-WLR (also known as Single Billing-WLR) allows the user to receive every aspect of telephone service, including all calls and line rental from one single supplier. SV also known as White Label Access-Voice Access (WLA-(Voice)) is a switchless voice service which allows an operator to purchase end-to-end call services without the need to have its own interconnection infrastructure.

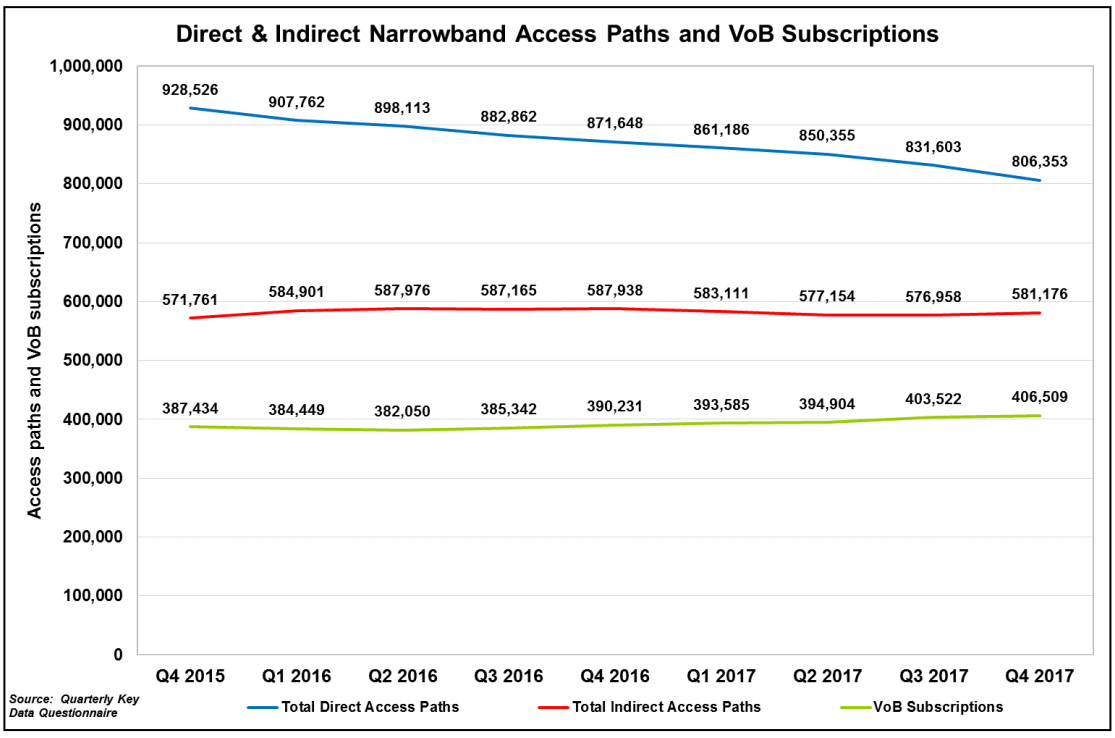
since Q3 2017 and decreased by 10.0% since Q4 2016. At the same time, the number of VoB subscriptions increased by 0.7% since Q3 2017 and rose by 4.2% since Q4 2016.

Figure 2.2.1.1 – Narrowband Fixed Access Paths and VoB Subscriptions

	Q4 2017	Q3'17 – Q4'17 Growth	Q4'16 – Q4'17 Growth
PSTN	**1,095,859**	**-0.9%**	**-3.5%**
ISDN Basic	**109,182**	**-1.8%**	**-6.5%**
ISDN Fractional	**45,568**	**-2.5%**	**-8.9%**
ISDN Primary	**136,920**	**-5.3%**	**-12.9%**
Total ISDN	**291,670**	**-3.6%**	**-10.0%**
Total PSTN and ISDN	**1,387,529**	**-1.5%**	**-4.9%**
VoB Subscriptions	**406,509**	**+0.7%**	**+4.2%**

Figure 2.2.1.2 presents the total number of narrowband fixed access paths broken out by direct and indirect access as well as the number of VoB subscriptions. In Q4 2017, indirect access accounted for 41.9% of all narrowband access paths in the fixed line market.

Figure 2.2.1.2 – Direct & Indirect Narrowband Fixed Access Paths and VoB Subscriptions



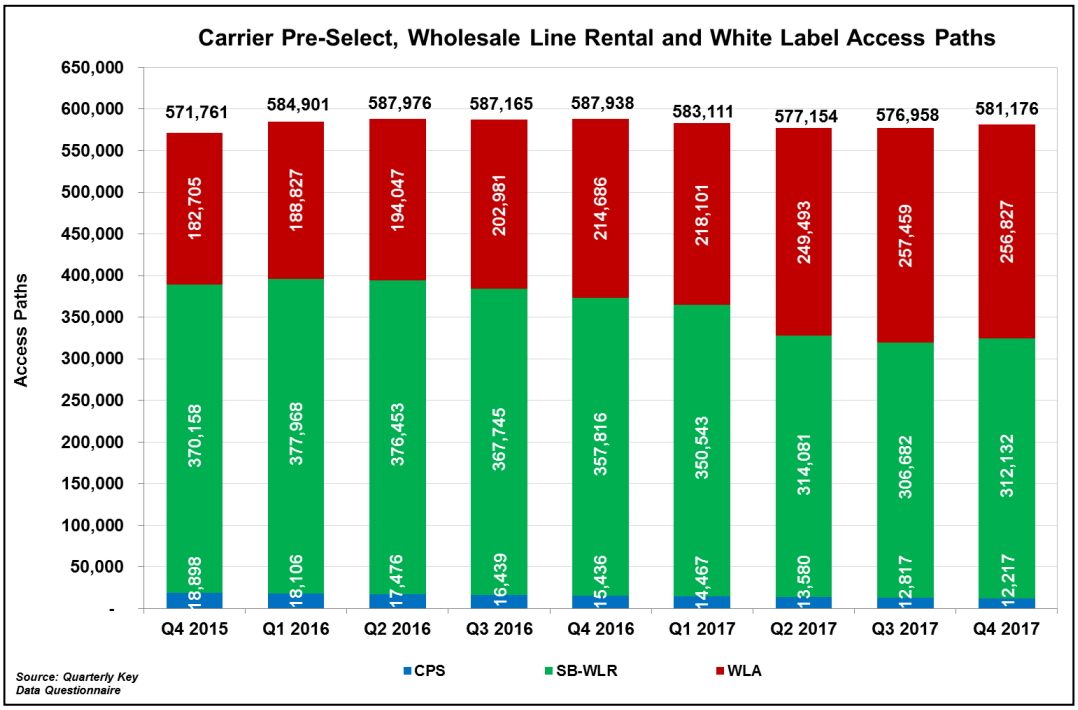
2.2.2 Indirect Access Paths

Figure 2.2.2 illustrates the overall number of indirect PSTN and ISDN paths provided by means of either Carrier Pre-Selection (CPS) only, Single Billing Wholesale Line Rental

(SB-WLR) and White Label (Voice) Access (WLA). In Q4 2017, there were 581,176 indirect access paths in Ireland. The number of indirect access paths increased by 0.7% this quarter and declined by 1.2% in the year to Q4 2017.

The data indicates that OAOs continue to migrate their customer base to single-bill services, i.e. SB-WLR or WLA rather than CPS only (i.e. a calls only service, excluding line rental). SB-WLR used by OAOs now accounts for 53.7% of indirect access paths compared to 64.7% in Q4 2015. WLA paths account for 44.2% of total indirect access paths compared to 32.0% in Q4 2015. The share of CPS only indirect access paths has declined by 1.2 percentage points in the last two years and now accounts for 2.1% of overall indirect access paths.

Figure 2.2.2 – Narrowband Indirect Access Paths

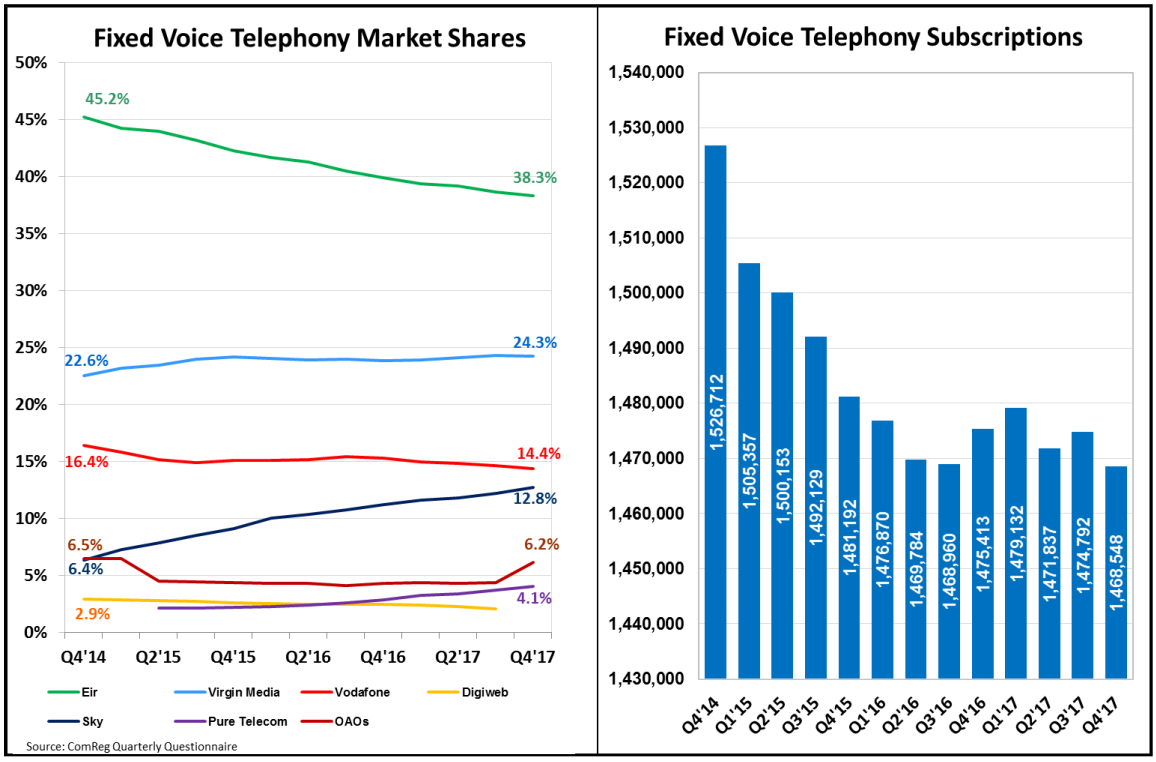


2.2.3 Fixed Voice Subscriptions

Figure 2.2.3 shows the estimated number of retail customers/subscriptions to fixed voice services (either standalone or as part of a bundle) and operators' market shares based on these subscriptions. At the end of Q4 2017 there were 1,468,548 fixed voice subscriptions (a decrease of 0.4% since Q3 2017 and a decrease of 0.5% on Q4 2016). As of Q4 2017 Eir had 38.3% of all fixed voice subscriptions followed by Virgin Media (24.3%), Vodafone (14.4%), Sky (12.8%) and Pure Telecom (4.1%). OAOs accounted for the remaining 6.2% of fixed voice subscriptions[32].

[32] Note in Q4 2017 the market share for Digiweb fell below 2% and therefore is subsumed into the OAO category.

Figure 2.2.3 – Fixed Voice Subscriptions



2.2.4 Fixed Market Retail Subscriptions by Type[33]

Figure 2.2.4 shows the estimated proportion of retail customers/subscriptions to fixed line telephony services (mobile is excluded from single play subscriptions, but included when part of a bundle e.g. double/triple/quad play) broken out by those with a single service and those taking a bundle of two or more services (subscriptions mean a customer with at least one contract with an electronic communications service provider). [34] Single play subscriptions include fixed line services only (including standalone cable TV, IPTV and satellite subscriptions) which means that standalone mobile voice, standalone mobile broadband subscriptions are excluded from this figure.

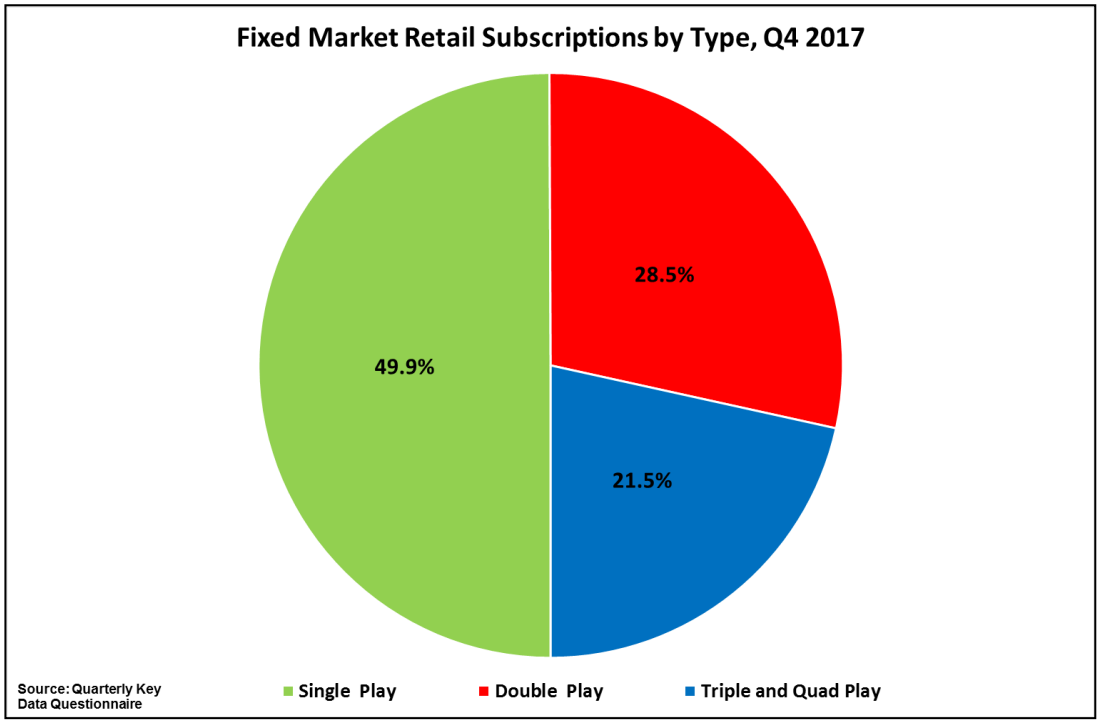
At the end of Q4 2017 there were 2,305,101 fixed voice retail subscriptions across both business and residential customers (a business customer may have multiple subscriptions). In Q4 2017 49.9% of fixed market retail subscriptions were single play,

[33] As noted on page 9 (Notes to data, L), from Q4 2017 total fixed subscriptions now include actual TV subscription data provided by Sky Ireland. Prior to this, actual data had not been included. For data prior to Q4 2017 ComReg estimated Sky Ireland's TV subscriber data when sold in bundles, with this estimation based on extrapolations from market survey data. Comparisons with fixed subscription data prior to Q4 2017 are therefore not valid.

[34] Double play subscriptions can refer to either fixed telephony and internet or television or mobile telephony; television and the internet; mobile telephony and internet or television subscriptions. Triple play subscriptions can refer to fixed telephony and internet and television; fixed telephony and mobile telephony and internet; fixed telephony and mobile telephony and television; or, mobile telephony and internet and television subscriptions. Quadruple play subscriptions refer to fixed telephony, internet, television and mobile subscriptions.

28.5% were double play (a bundle of two services) and 21.5% were a combination of triple play (a bundle of three services) and quadruple play (a bundle of four services).

Figure 2.2.4 – Fixed Market Retail Subscription Type



2.3 Fixed Voice Call Volumes

Fixed voice traffic in Q4 2017 was just over 894 million minutes, which was a 0.8% decrease on Q3 2017 and a fall of 12.5% since Q4 2016.

Managed voice over broadband (VoB) minutes account for approximately 19.4% of total fixed voice minutes down from 19.9% in Q4 2016.

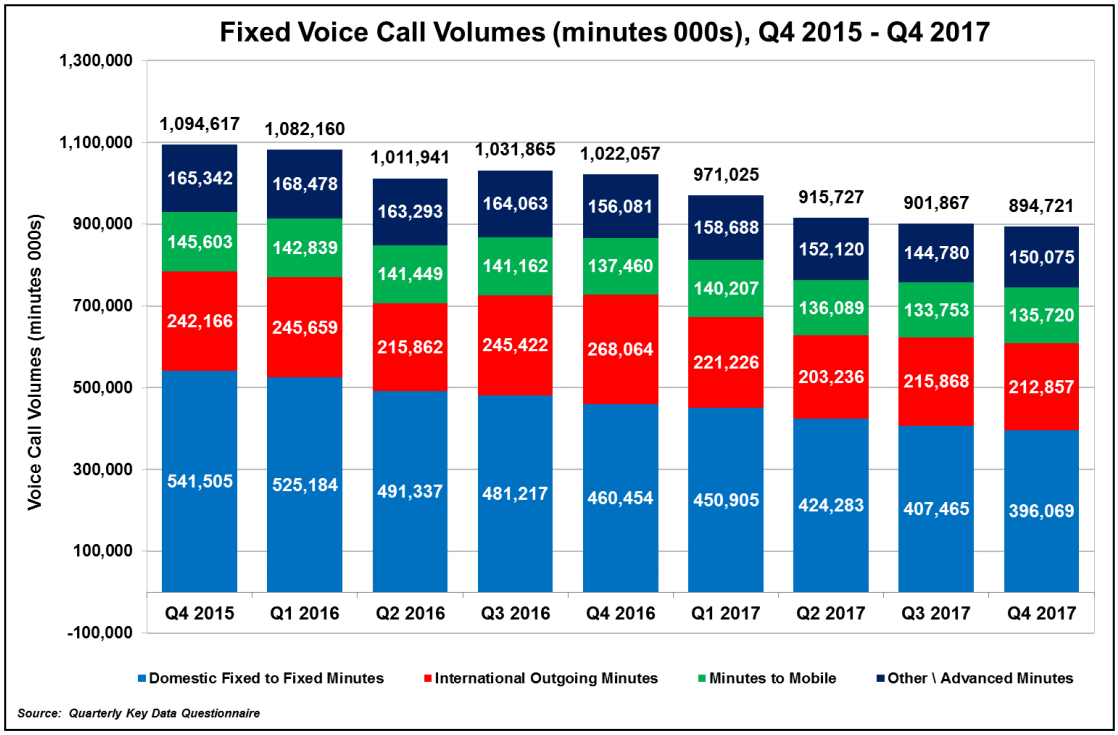
The numbers quoted in this QKDR represent managed VoB services only (for example by Eir, Virgin Media, Vodafone and others such as Blueface) and do not include unmanaged or over-the-top VoB services offered by providers such as Skype.

It should be noted that the split of managed VoB minutes by category (i.e. domestic, international, mobile, other) is placed into those respective fixed minutes categories in figures 2.3.1, 2.3.2 and 2.3.3.

Figure 2.3.1 shows the breakdown of fixed voice call volumes by call type. Domestic fixed to fixed minutes accounted for 44.3% of all fixed voice traffic in Q4 2017. International outgoing minutes accounted for 23.8% of all fixed voice traffic. The share

of fixed to mobile minutes was 15.2% while other/advanced minutes (which include premium rate minutes) represented 16.8% of all fixed voice traffic.

Figure 2.3.1 – Fixed Voice Call Volume (Minutes)[35]



Figures 2.3.2 and 2.3.3 show the change in the average monthly fixed voice call minutes per business and residential subscribers respectively. In Q4 2017 the average business subscriber made 754 minutes of voice calls. The average residential subscriber usage was 104 minutes per month.

[35] Domestic Calls include local & national calls. Advanced service and other minutes include minutes to premium rate numbers, freephone numbers, callsave, operator services, VPN minutes, payphones and other services.

Figure 2.3.2 – Fixed Voice Call Volume per Business Subscriber (Minutes)

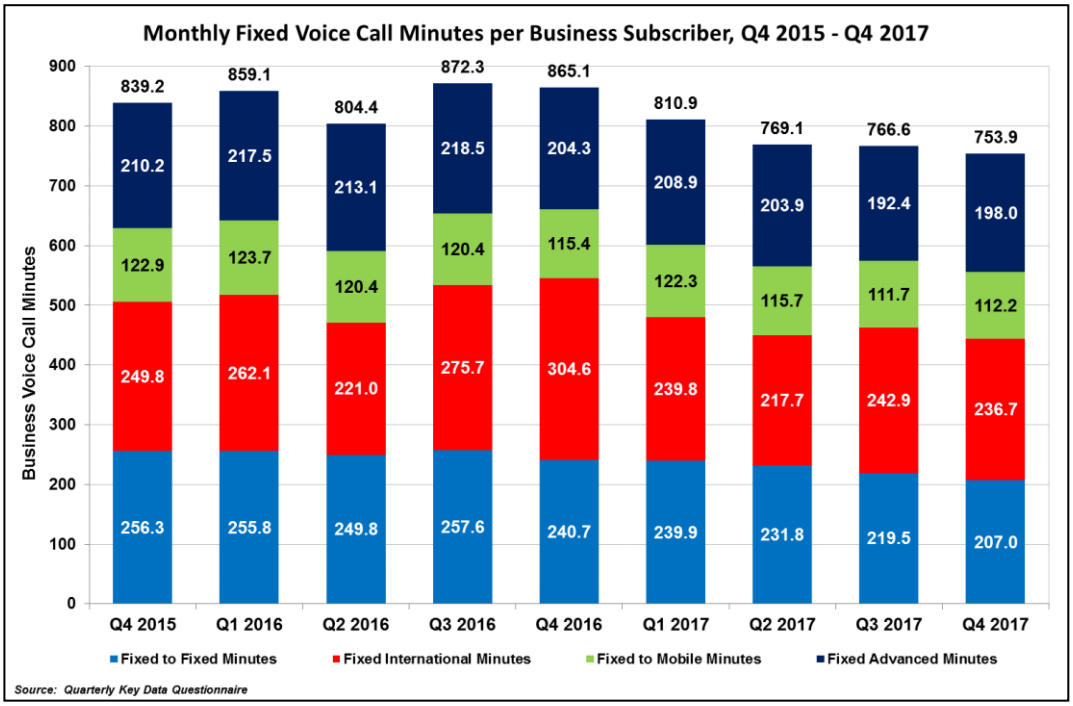
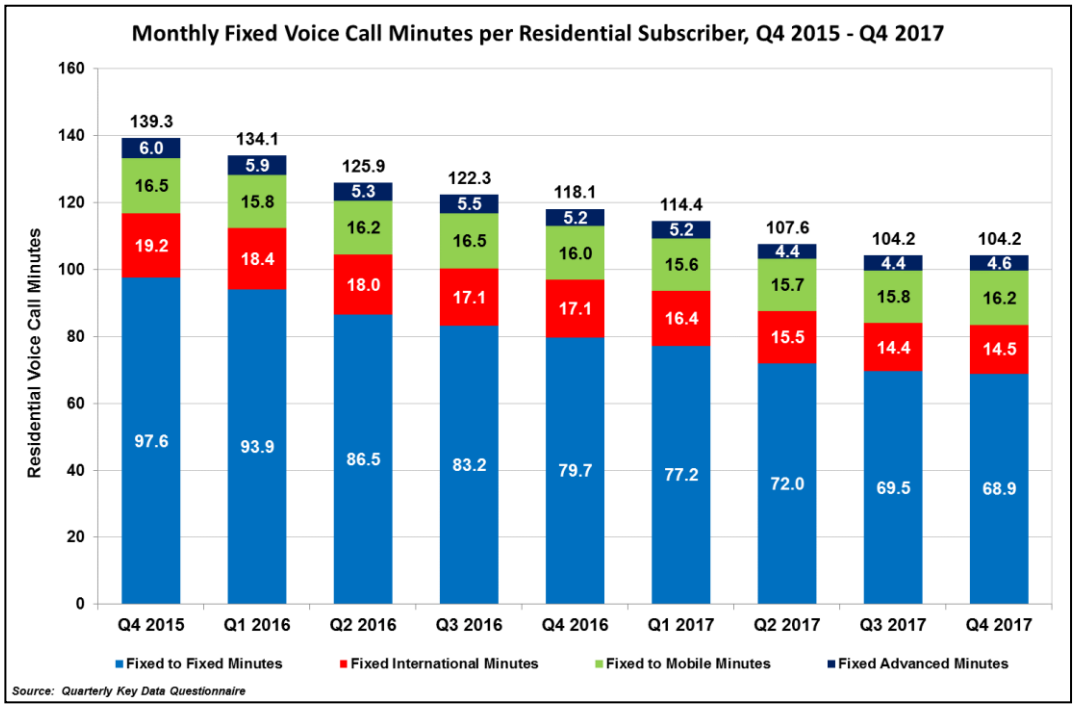


Figure 2.3.3 – Fixed Voice Call Volume per Residential Subscriber (Minutes)



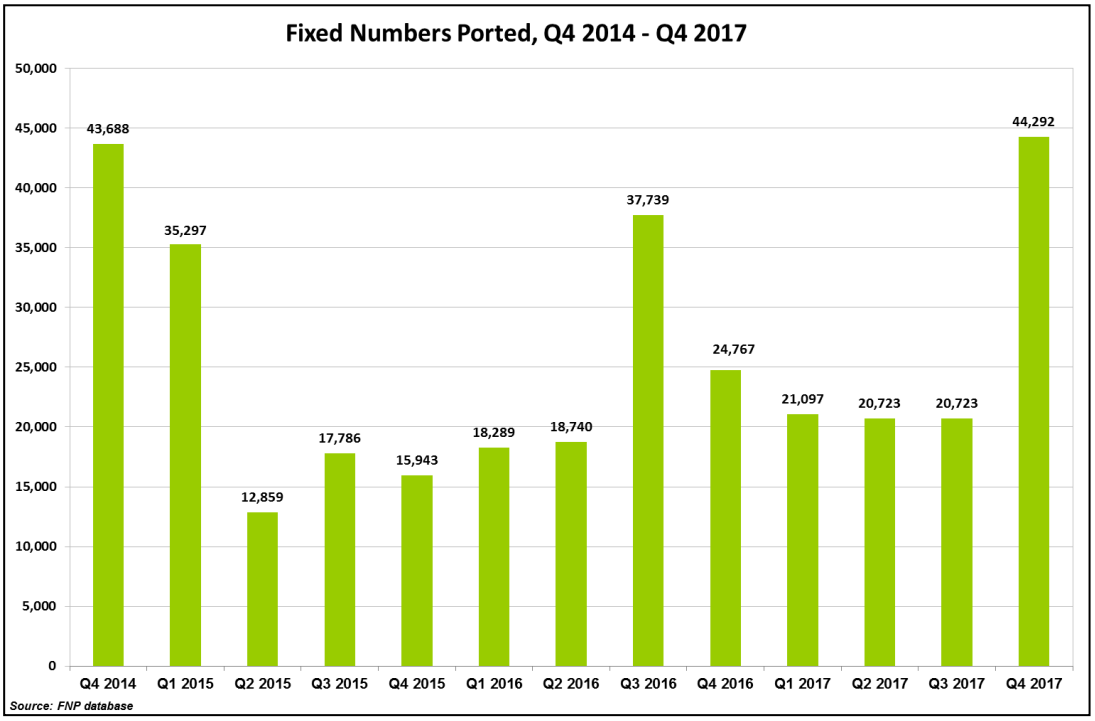
2.4 Fixed Number Portability

Figure 2.4.1 illustrates the number of fixed numbers (geographic and non-geographic) ported between Irish fixed voice service provides since Q4 2014. Fixed Number Portability (FNP) allows consumers to switch fixed voice provider while retaining their fixed number.

In the quarter to December 2017, 44,292 numbers were ported between operators (106,836 numbers in the twelve months to December 2017)[36]. Over the last 12 months, an average of 26,709 numbers have been ported each quarter. ComReg notes a higher than normal quantity in the number of ported numbers in periods Q4 2017, Q3 2016, Q4 2014 to Q1 2015[37].

ComReg notes that the fixed number portability database only records data on customers that retain their telephone number while switching between different fixed voice service providers' networks. Therefore, porting numbers presented in Figure 2.4.1 should not be considered as a full proxy for switching activity in the fixed voice market as switching between operators using the same underlying network for the provision of fixed voice services (e.g. where a retail customer switches service provider, but both service providers underlying retail services is provided on the same network – as in the case where retail services are provided over the same wholesale network) would not be recorded in the FNP database.

Figure 2.4.1 – Fixed Numbers Ported



[36] ComReg is aware that an industry project is ongoing to transition from a porting process based on a legacy central reference database for recording the porting status of geographic and non-geographic ported numbers to a new porting solution. ComReg considers that the data for fixed numbers ported may not be reliable during this transition phase and therefore ComReg has decided not to rely on this data for reporting purposes until the transition phase has ended. The transition phase is currently expected to continue into Q2 2018. The values for fixed numbers ported in Q2 2017 and Q3 2017 have been based on the average value of fixed numbers ported for Q1 2017, Q4 2016, Q2 2016 and Q1 2016. Q3 2016 has been excluded as input to this average due to the higher than expected values recorded for fixed numbers ported during this quarter. From Q4 2017 onwards, port volumes have been recorded using the new porting solution. The value of 44,292 for Q4 2017 is higher than expected (based on historical trends), ComReg notes that the industry project is still in a transition phase and that the reliability of this value cannot therefore be guaranteed.

[37] This was due to an audit of the central reference database which records porting activity of fixed numbers.

2.5 Standalone Fixed Voice Service Pricing Data

ComReg uses independently collated Strategy Analytics (Teligen) pricing data using OECD-approved methodologies to examine the relative prices of a number of specific fixed voice usage baskets of national and international telecoms services for both residential and business users. The pricing data used for international comparisons currently includes pricing information for selected countries, namely Germany, Denmark, Spain, Netherlands and the United Kingdom[38].

For national comparisons, the prices advertised by the largest operators (in terms of number of subscribers to standalone fixed voice services[39]) during Q4 2017 were analysed[40] for selected usage baskets. In this QKDR, standalone fixed voice service prices advertised by Eir, Sky, Digiweb, Pure Telecom and Vodafone were analysed. Thus, the pricing analysis does not necessarily present the lowest prices available in the whole market, but rather the lowest prices offered by the operators having the largest number of subscribers.

For international comparisons, the prices advertised by the largest operators (in terms of number of subscribers to standalone fixed voice service) in each of the respective countries during Q4 2017 were analysed[41] for selected usage baskets[42] (with an average per country price presented based on the average of lowest price tariffs advertised by three highest ranking operators in national pricing comparisons). In order to enable international comparisons, prices are presented in Euro Purchasing Power Parities (PPPs) and exclude VAT charges. PPPs provide an indication of the cost of telecoms services in countries analysed in relation to the cost of all other products and services.

The presented national and international comparison analysis incorporates discounts offered by operators. Nonrecurring charges (e.g. charges for the installation of a service) are discounted/amortised over five years. Fixed recurring monthly costs such as line rental and any other additional recurring charges are included. Calls to fixed, mobile and international destinations are included in the baskets.

[38] In future QKDRs ComReg may expand the analysis and include more countries for international price comparisons.

[39] Standalone fixed voice services are voice services not sold as part of a bundle or other services.

[40] The subscribers of these operators jointly account for over 90% of all standalone fixed voice subscribers.

[41] The subscribers of these operators jointly account for over 80% of all standalone fixed voice subscribers in each of the respective countries.

[42] The same basket was applied to each respective country in order to make the international comparison.

The OECD basket methodologies are reviewed and revised periodically, the 2010 methodology was recently updated. This QKDR uses the 2010 OECD methodology with ComReg expecting to apply the latest OECD methodology in the QKDR for Q1 2018. For more detailed information on basket methodologies see ComReg's accompanying Memorandum, document 18/20a.

The following baskets are presented in this report[43]:

Residential and Business Standalone Fixed Voice Service Baskets

Type of basket	Basket
Residential	60 calls (190 minutes)
Business	260 calls (606 minutes) basket

These baskets were selected given they most suitably corresponded (amongst the available OECD usage baskets) to the fixed voice usage patterns presented in figures 2.3.2 and 2.3.3 above. ComReg notes that these baskets reflect usage patterns of an average user and do not necessarily reflect prices of tariffs that are geared towards customers having different usage profiles.

ComReg notes that comparisons are based on the prices of advertised tariffs[44] only and the analysis does not take into consideration other potentially important factors such as quality of the network, level of customer care, additional units of consumption available after having accounted in the analysis for the units in the OECD usage basket, minimum contract term etc.

OECD Residential Standalone Fixed Voice Service Basket

Figure 2.5.1 compares tariffs advertised by standalone fixed voice service providers for residential customers based on a basket of 60 calls (190 minutes)[45]. Pure Telecom offers the cheapest tariff for this particular basket at €35.86, followed by Digiweb (€40.72) and Sky (€43.25).

[43] In future QKDRs ComReg may expand the analysis and present price comparisons based on additional and/or different usage baskets.

[44] Tariffs publically advertised during Q4 2017.

[45] Basket assumes the usage of 150 fixed to fixed minutes, 25 fixed to mobile minutes and 15 international minutes.

Figure 2.5.1 - Residential Standalone Fixed Voice Basket (National)

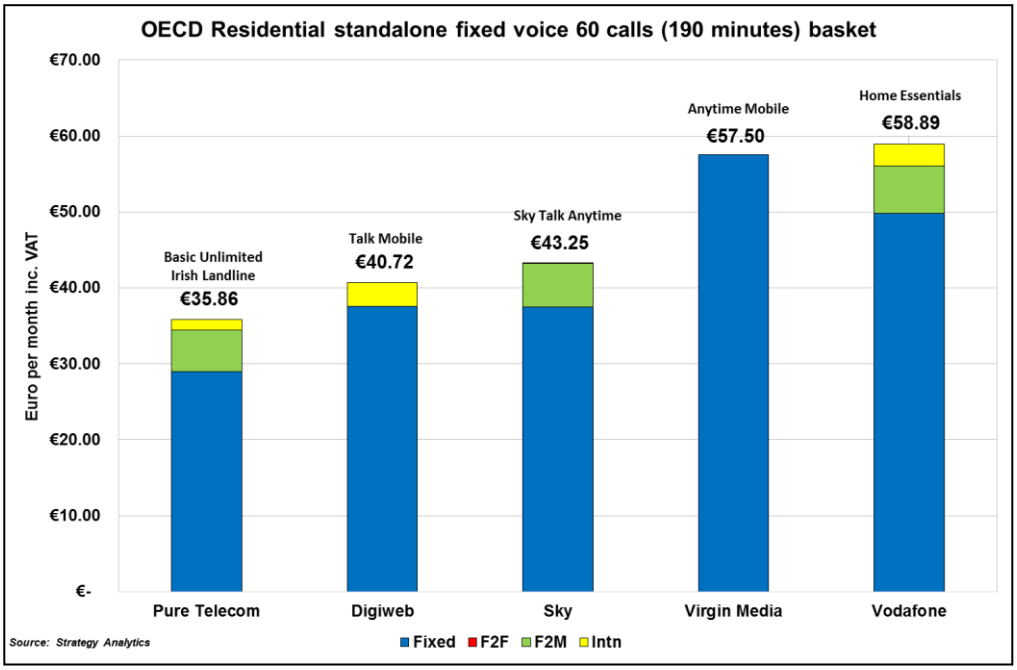
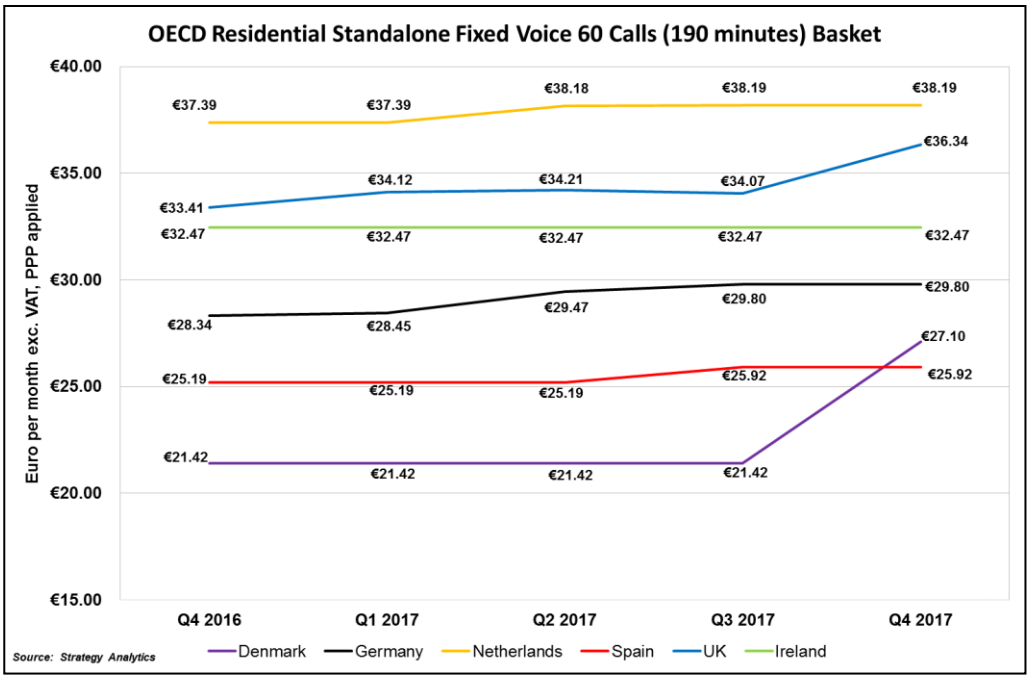


Figure 2.5.2 illustrates Ireland's ranking alongside five other Western European countries with respect to prices for residential standalone fixed voice services. In Q4 2017 Ireland ranked in fourth place with an average price of €32.47[46] for this particular basket. The average price in Ireland is 2.6% more expensive than the average price[47] for all of the countries included in the analysis.

Figure 2.5.2 - Residential Standalone Fixed Voice Basket (International)



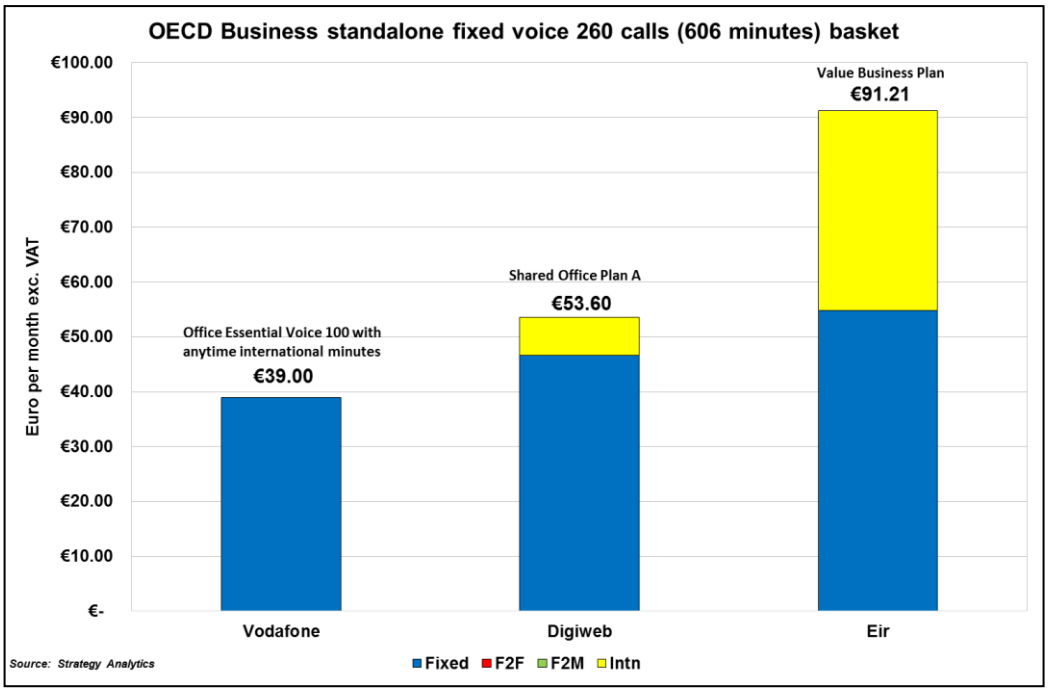
[46] As noted previously, average prices used for international comparisons exclude VAT charges.

[47] The average of prices presented in Figure 2.5.2. Prices include line rental.

OECD Business Standalone Fixed Voice Service Basket

Figure 2.5.3 compares tariffs advertised by standalone fixed voice service providers[48] for business customers based on a basket of 260 calls (606 minutes)[49]. Presented prices exclude VAT charges. Vodafone offers the cheapest tariff for this particular basket at €39.

Figure 2.5.3 - Business Standalone Fixed Voice Basket (National)

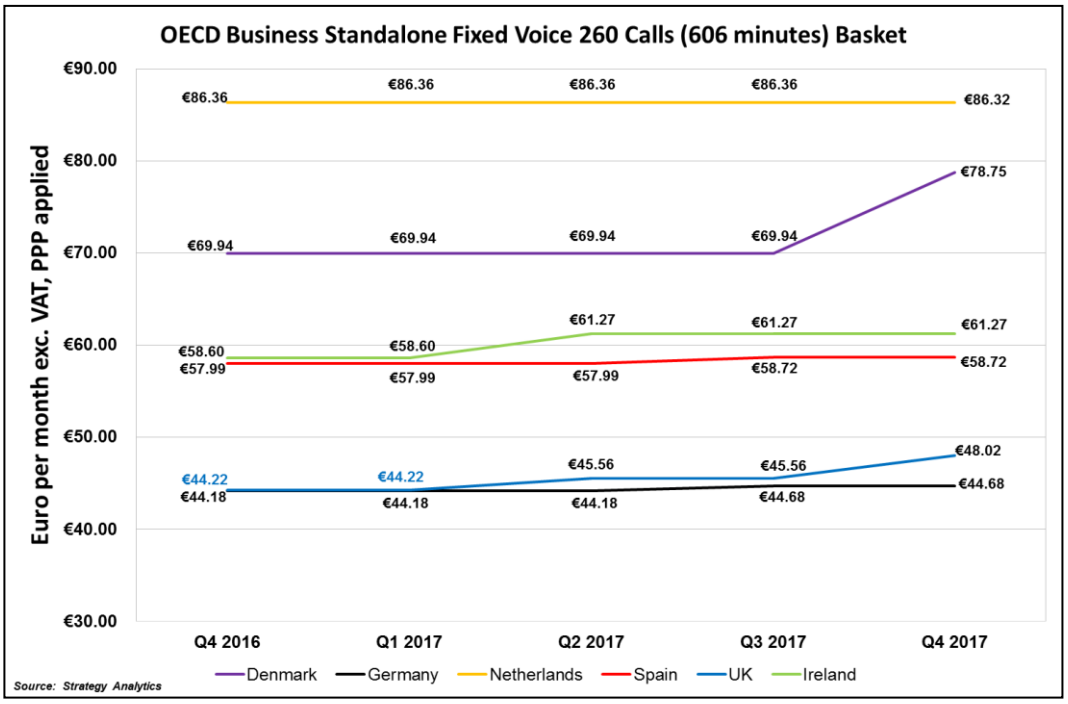


[48] In this QKDR only tariffs advertised by Vodafone, Digiweb and Eir were analysed for business customers. This can arise for reasons such as operators not offering fixed voice services to business customers or not advertising prices publicly. ComReg may expand the analysis and include additional operators in the future QKDRs.

[49] Basket assumes the usage of 402 fixed to fixed minutes, 116 fixed to mobile minutes and 88 international minutes.

Figure 2.5.4 shows that Ireland (€61.27[50]) ranks in fourth place. The average price in Ireland is 2.7% cheaper than the average price[51] for all of the countries included in the analysis.

Figure 2.5.4 - Business Standalone Fixed Voice Basket (International)



[50] As noted previously, average prices used for international comparisons exclude VAT charges.

[51] The average of prices presented in Figure 2.5.4.

3. Broadband Services

3.1 Total Broadband[52] Subscriptions and Provision of Broadband Services

Figure 3.1.1 shows the total number of broadband subscriptions in Ireland as of Q4 2017[53]. At the end of December 2017, there were 1.69 million active broadband subscriptions in Ireland. This was an increase of 0.1% on the previous quarter but a 0.7% decrease since December 2016.

There was an increase in total fixed line broadband subscriptions this quarter (up by 10,634) but a decrease in mobile broadband subscriptions (down by 8,451 subscriptions). ComReg reports active dedicated mobile broadband subscriptions and does not include Internet access over mobile handsets within these numbers.

VDSL[54] (up by 2.8%), FTTP[55] (up by 39.0%), cable subscriptions (up by 0.5%) and FWA (up by 1.9%) showed positive growth this quarter. DSL[56] (down by 5.0%), satellite (down by 0.5%) and mobile broadband (down by 2.8%) all fell this quarter. It is likely that some of the DSL reductions are accounted for by consumers switching to VDSL based broadband services as well as to broadband services provided on other platforms.

Figure 3.1.1 – Total Number of Active Broadband Subscriptions

Subscription Type	Q4 2017	Quarterly Growth Q3'17 – Q4'17	Year-on-Year Growth Q4'16 – Q4'17
DSL Broadband	**359,002**	**-5.0%**	**-17.5%**
VDSL Broadband	**574,768**	**+2.8%**	**+15.2%**
Cable Broadband	**375,546**	**+0.5%**	**+2.4%**
FTTP Broadband	**39,612**	**+39.0%**	**+419.6%**
Satellite Broadband	**4,985**	**-0.5%**	**-5.8%**
FWA Broadband	**47,443**	**+1.9%**	**+2.1%**
Total Fixed broadband	**1,401,356**	**+0.8%**	**+3.0%**
Mobile Broadband	**293,042**	**-2.8%**	**-15.5%**
Total Broadband	**1,694,398**	**+0.1%**	**-0.7%**

[52] ComReg notes that the data provided in this section relates to active subscriptions reported by operators. It takes into account multiple active subscriptions to broadband offerings by individual subscribers.

[53] As of Q2 2017 narrowband Internet subscription data are no longer collected.

[54] VDSL refers to very-high-bit-rate digital subscriber line. These lines are typically utilised in the provision of next generation broadband services.

[55] FTTP (fibre to the premises) refers to a range of fibre access installations such as fibre to the home (FTTH), fibre to the premises (FTTP) and fibre to the curb.

[56] DSL refers to a digital subscriber line, the means by which broadband speeds (i.e. in excess of 144k downstream) are delivered over the copper telecoms network.

Figure 3.1.2 profiles broadband subscriptions in Ireland using the subscription type classifications of outlined in Figure 3.1.1.

Figure 3.1.2 – Total Broadband Subscriptions

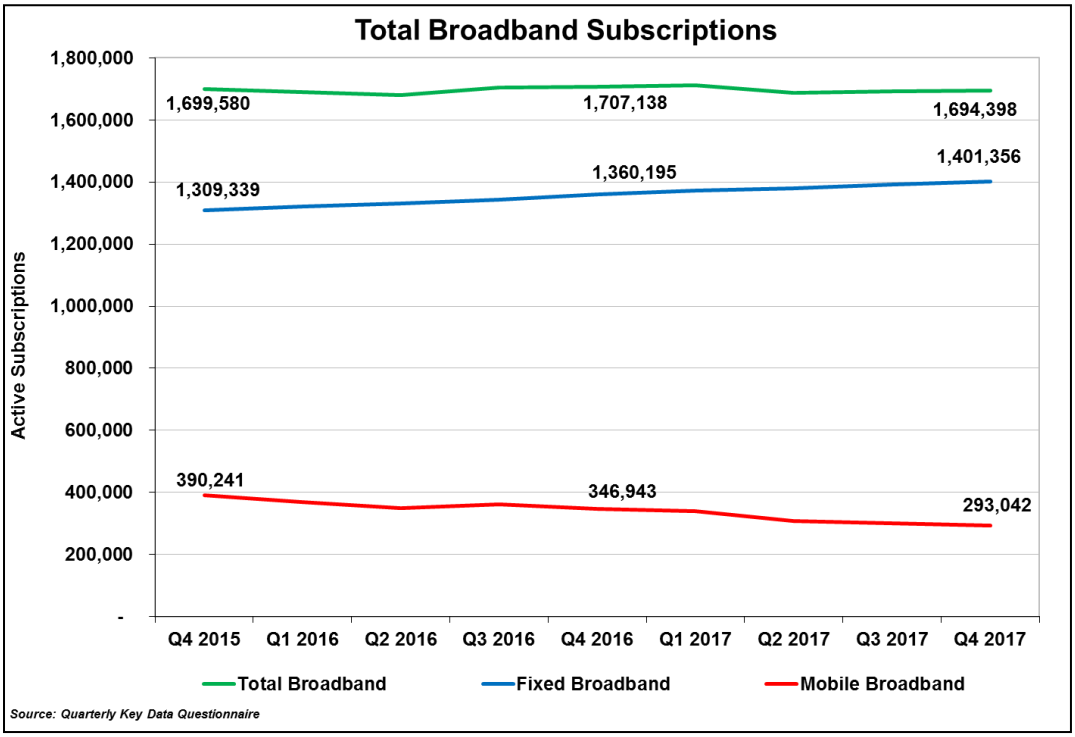
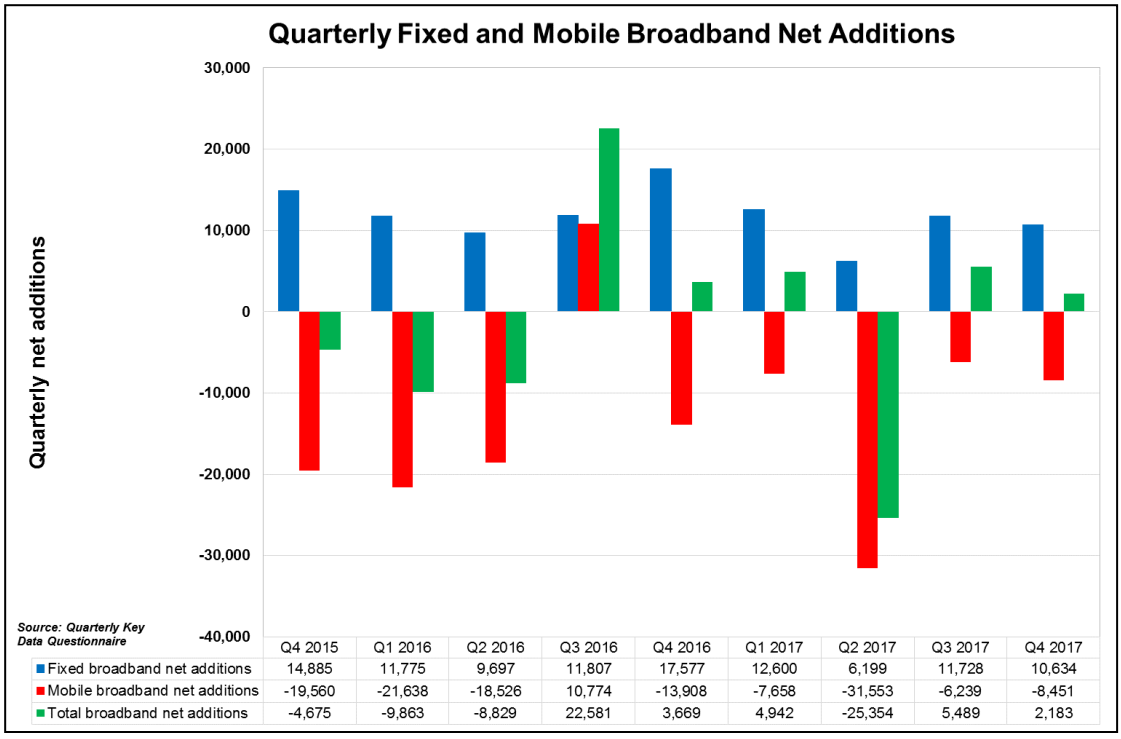


Figure 3.1.3 shows the quarterly growth in fixed and mobile broadband subscriptions since Q4 2015. In general, there has been a steady growth of fixed broadband subscriptions and a decline of mobile broadband subscriptions. It should be noted that ComReg reports on active broadband subscriptions and the mobile broadband subscription numbers reported by ComReg do not include internet access over mobile handsets (such as smartphones).

Figure 3.1.3 – Quarterly Growth in Broadband Subscriptions



	Q4 2015	Q1 2016	Q2 2016	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017	Q4 2017
Fixed broadband net additions	14,885	11,775	9,697	11,807	17,577	12,600	6,199	11,728	10,634
Mobile broadband net additions	-19,560	-21,638	-18,526	10,774	-13,908	-7,658	-31,553	-6,239	-8,451
Total broadband net additions	-4,675	-9,863	-8,829	22,581	3,669	4,942	-25,354	5,489	2,183

Since Q3 2016, VDSL subscriptions have accounted for the largest share of broadband subscriptions at 27.2% with this increasing to 33.9% in Q4 2017. The continuous increase in VDSL subscriptions is likely to be largely accounted for by consumers switching from DSL based broadband services. DSL accounted for 21.2% of all broadband subscriptions in Q4 2017 down from 25.5% in Q4 2016. The share of mobile broadband subscriptions has declined to 17.3% of all broadband subscriptions, down from 20.3% in Q4 2016. Cable has a 22.2% share of all broadband subscriptions up from 21.5% in Q4 2016. FWA has a 2.8% share of broadband subscriptions just up from 2.7% in Q4 2016. The remainder consists of satellite with a 0.29% share of broadband subscriptions, slightly down from 0.31% in Q4 2016, while FTTP has a 2.34% share of broadband subscriptions in Q4 2017, up from 0.45% in Q4 2016[57].

Figure 3.1.4 illustrates the split by type of broadband subscriptions in the Irish market since Q4 2016, while Figure 3.1.5 shows the net additions to broadband subscriptions by each platform. The net total number of broadband subscriptions has increased this quarter, driven mainly by increases in VDSL subscriptions.

[57] Additional FTTP subscriptions were included from Q3 2016 and Q1 2017. Figures presented should not therefore be interpreted as demonstrating year-on-year growth.

Figure 3.1.4 – Broadband Subscriptions by Platform

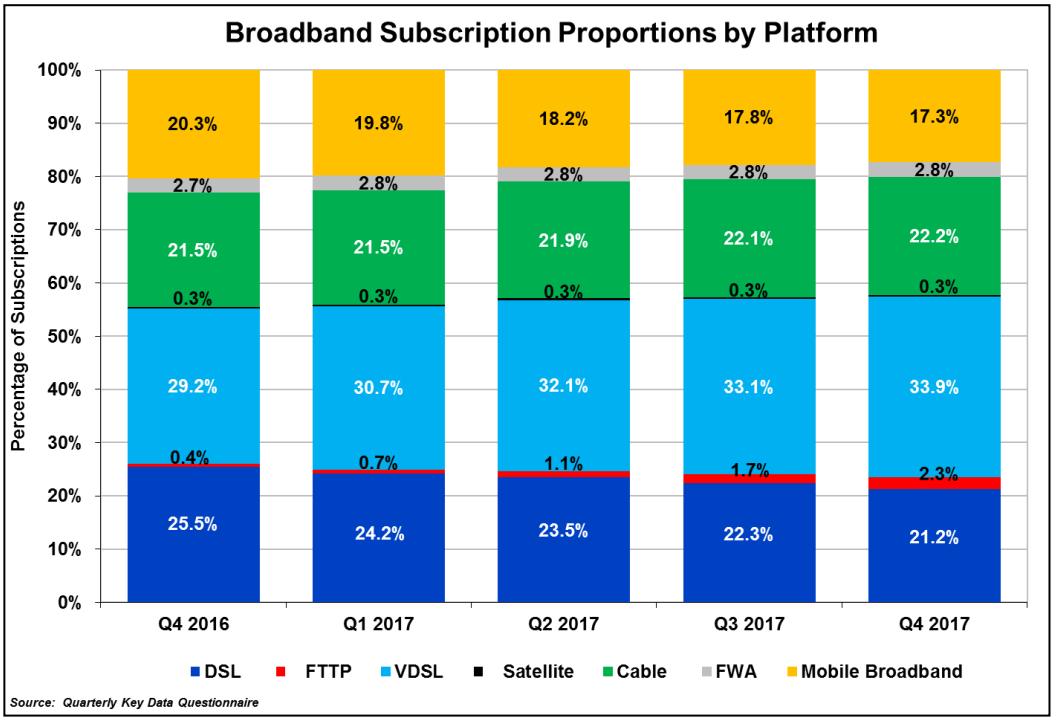


Figure 3.1.5 – Broadband Subscriptions - Net additions

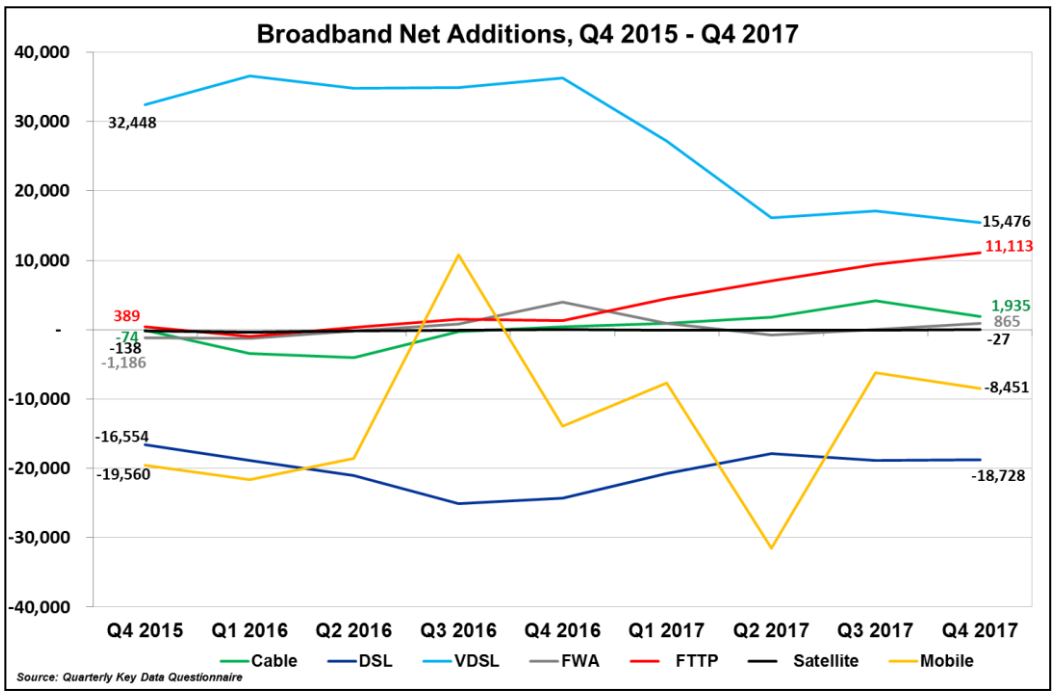


Figure 3.1.6 provides an estimate of the proportion of business and residential subscriptions to DSL, VDSL, cable, FWA, mobile broadband, fibre and satellite

broadband services[58]. In Q4 2017, 83.2% of broadband subscriptions on all platforms were classed as residential broadband subscriptions. The platform with the highest percentage of residential vis-à-vis business subscriptions is cable broadband, while the mobile broadband category has the highest percentage of business customers.

Figure 3.1.6 – Broadband Subscriptions by Subscription Type

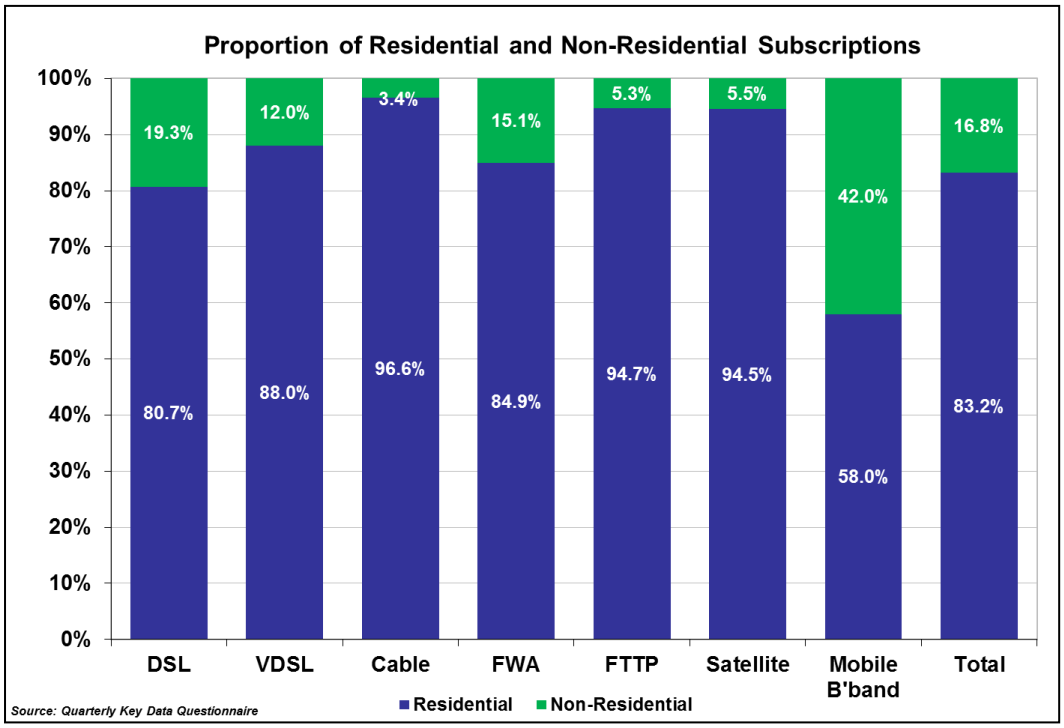


Figure 3.1.7 illustrates the breakdown of broadband subscriptions by advertised (headline) speed across all fixed broadband platforms (mobile broadband is excluded). In total, approximately 72.1% of broadband subscriptions were >=30Mbps (with 25.8% >=100Mbps). This equates to approximately 74.6% (with 28.1% >=100Mbps) of residential subscriptions and 52.6% (with 7.9% >=100Mbps) of business subscriptions.

The data suggests that most business and residential users subscribe to broadband services with advertised download speeds of between 30Mbps - 100Mbps. Many larger business users access their broadband services over dedicated leased lines. Leased lines are not included in these charts. Leased line speeds can range up to speeds in excess of 1 gigabyte per second.

[58] ComReg revised the methodology employed to calculate DSL and VDSL (residential and business) subscriptions in Q2 2016. Revisions to historical data have been made.

Figure 3.1.7 – Fixed Broadband Download Speeds and Subscription Type

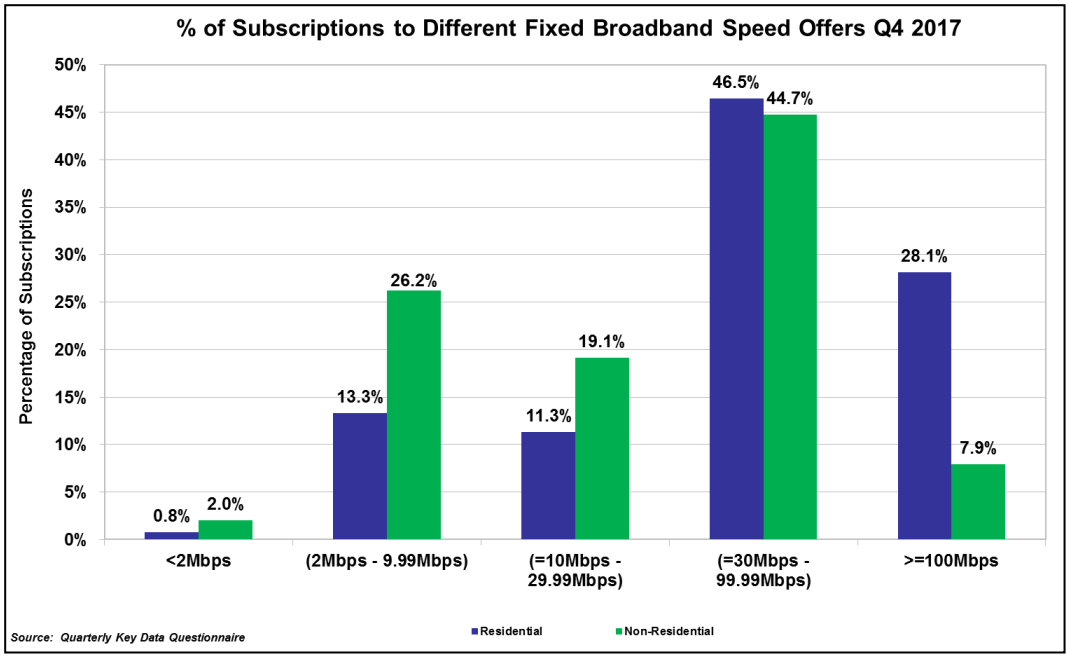


Figure 3.1.8 shows broadband subscriptions by advertised (headline) speed and the type of broadband platform subscribed to.

Figure 3.1.8 – Fixed Broadband Download Speeds and Platform

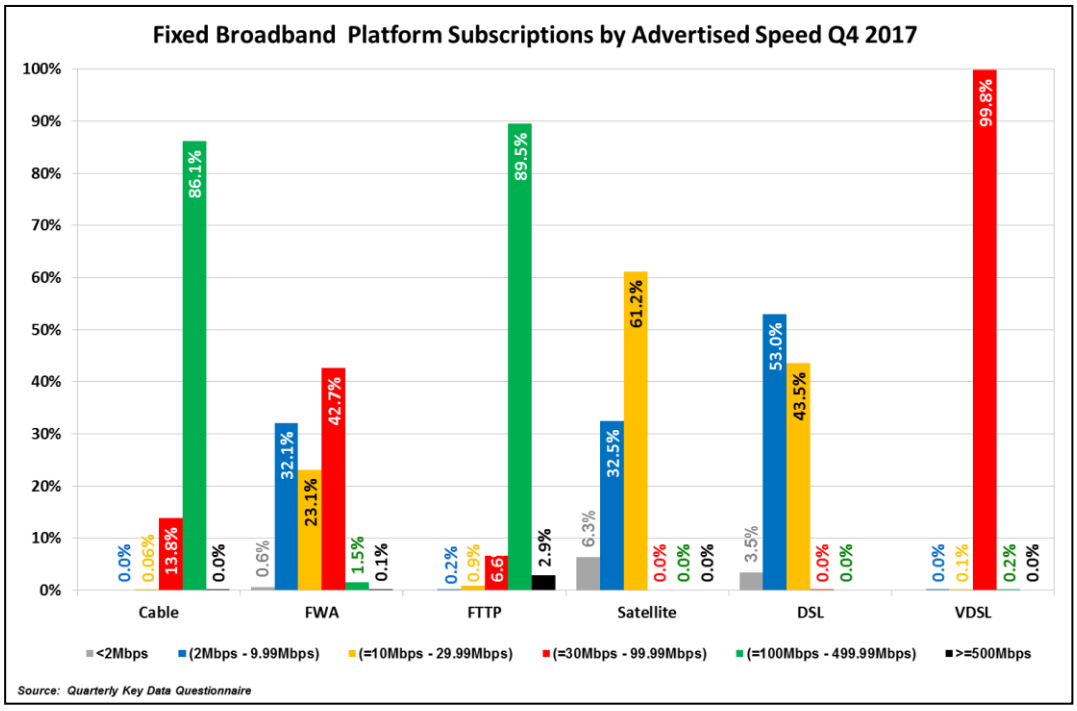


Figure 3.1.9 shows the change in fixed broadband subscriptions by advertised (headline) download speeds between Q4 2015 and Q4 2017[59]. Over the entire period, growth in broadband speeds has been mainly in subscriptions with speeds above 30Mbps. The share of these subscriptions increased from 64.9% in Q4 2016 to 72.1% in Q4 2017.

Figure 3.1.9 – Fixed Broadband Subscriptions by Advertised (Headline) Download Speeds[60]

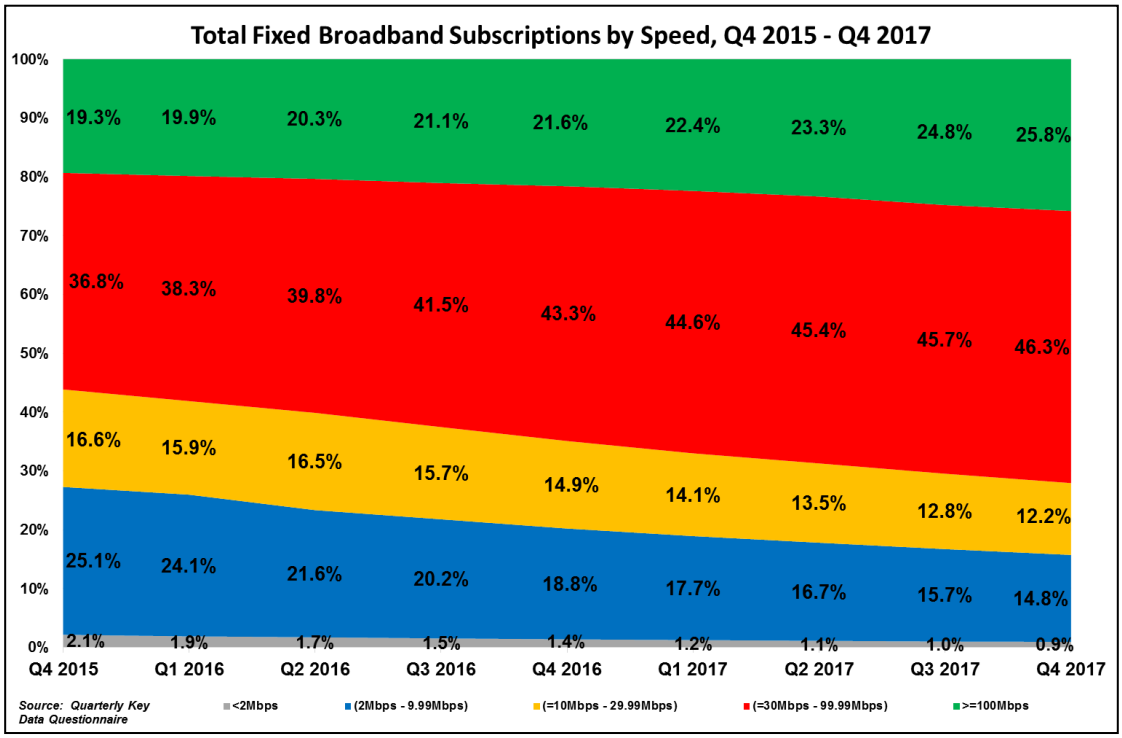


Figure 3.1.10 provides the market shares of fixed broadband operators by number of subscriptions. DSL, VDSL cable modem, FWA, satellite and FTTP subscriptions are used to calculate fixed broadband market shares.

Operators with a market share of 2% or more are shown in the chart below. All those operators with less than 2% of total fixed broadband subscriptions are grouped together under the heading 'OAOs'.

According to the data received from operators for Q4 2017, Eir had 31.4% of total fixed broadband subscriptions, followed by Virgin Media who had 26.8% of subscriptions. Vodafone had 19.0% (excluding mobile broadband subscriptions) and Sky Ireland had a

[59] ComReg revised the methodology employed to calculate DSL and VDSL (residential and business) subscriptions in Q2 2016. This also applies to broadband speeds. Revisions to historical data have accordingly been made.

[60] Fixed broadband speed data were revised from Q2 2016 to Q3 2017 inclusive. See note 3 in the corrigendum.

13.1% market share. All other OAOs combined accounted for the remaining 9.7% share of fixed broadband subscriptions.

Figure 3.1.10 – Subscription Market Share of Fixed Broadband Market

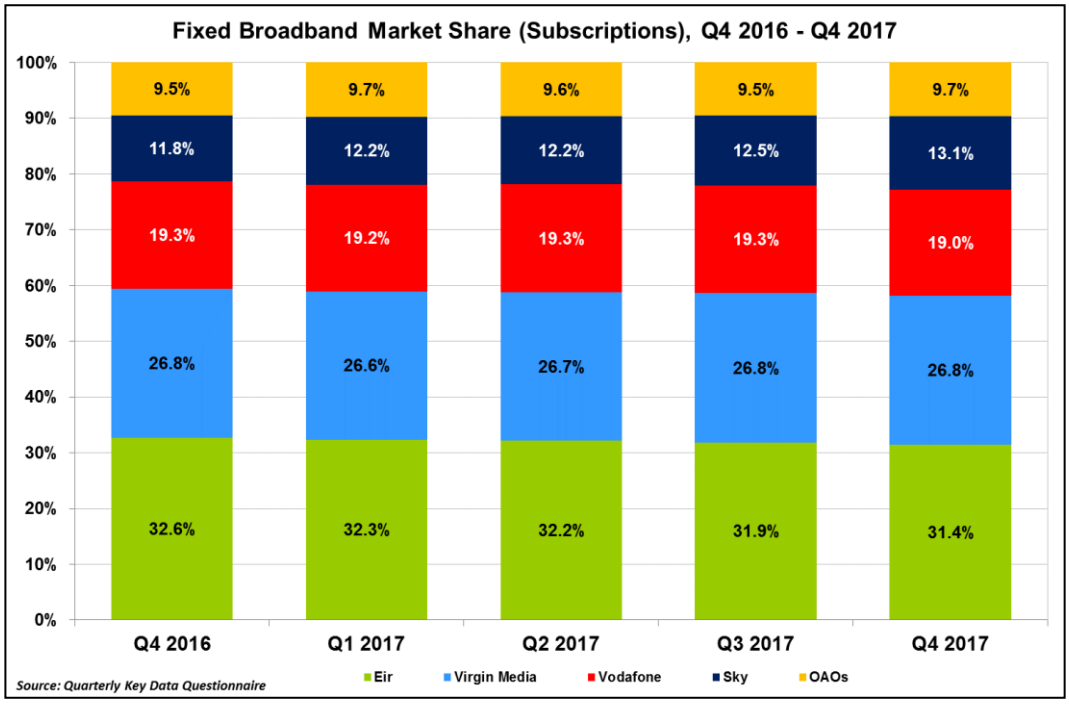
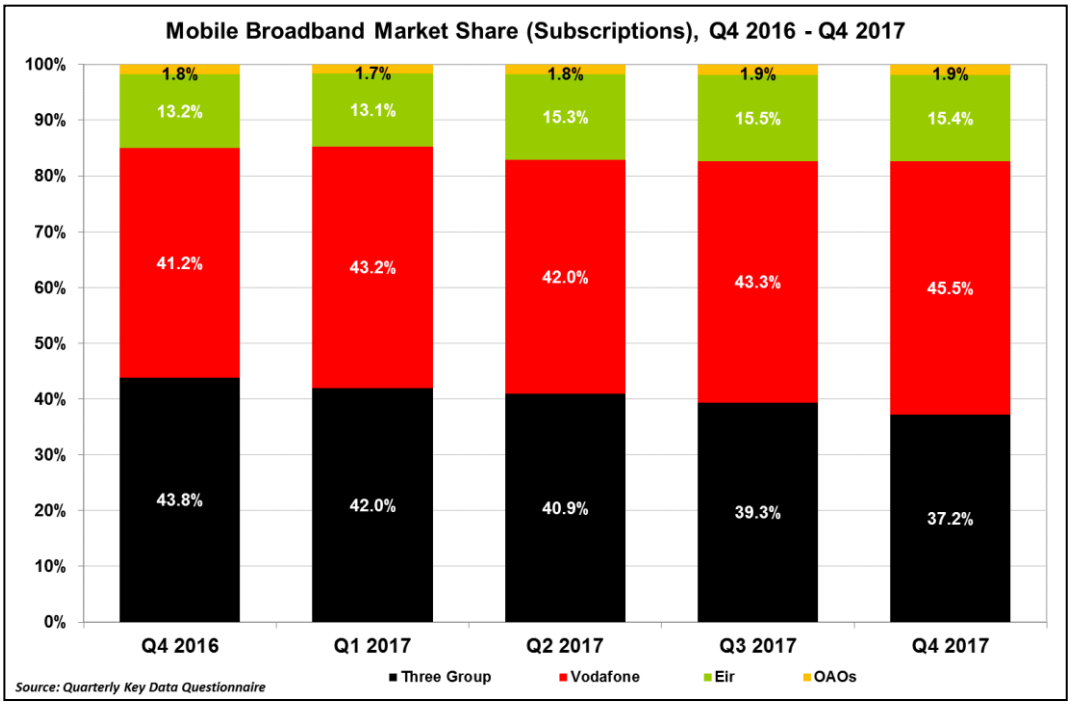


Figure 3.1.11 shows the market share of mobile broadband operators by subscriptions. As of Q4 2017, Vodafone had the largest share with 45.5%. Three Group's market share was 37.2%, down from 43.8% in Q4 2016. Eir had a market share of 15.4% up from 13.2% in Q4 2016 while OAOs accounted for the remaining 1.9%.

Figure 3.1.11 – Subscription Market Share of Mobile Broadband Market



3.2 Provision of DSL Access

Figure 3.2.1 examines the provision of DSL access. DSL broadband services are provided to consumers by operators using three alternative methods of access. DSL may be provided directly to the consumer by Eir using direct access to its network; this accounted for 43.7% of all DSL subscriptions in Q4 2017. Eir's market share of retail DSL lines has declined by 0.3 percentage points over the last year. Retail DSL may also be provided by OAOs who use either Eir's wholesale bitstream service, which enables OAOs to resell another operator's DSL service, or by offering DSL-based broadband using local-loop unbundling (LLU).

In Q4 2017, 44.1% of all DSL lines were provided by OAOs using wholesale bitstream. In absolute terms there were 158,213 wholesale bitstream lines, a decrease of 15.6% since Q4 2016. The remaining 12.2% of DSL lines were provided to subscribers by OAOs using local-loop unbundling. In Q4 2017 there were 43,791 unbundled local loops, down from 55,938 in Q4 2016 (-21.7%) and down from 48,397 in Q3 2017 (-9.5%).

Figure 3.2.1 - Provision of DSL Access

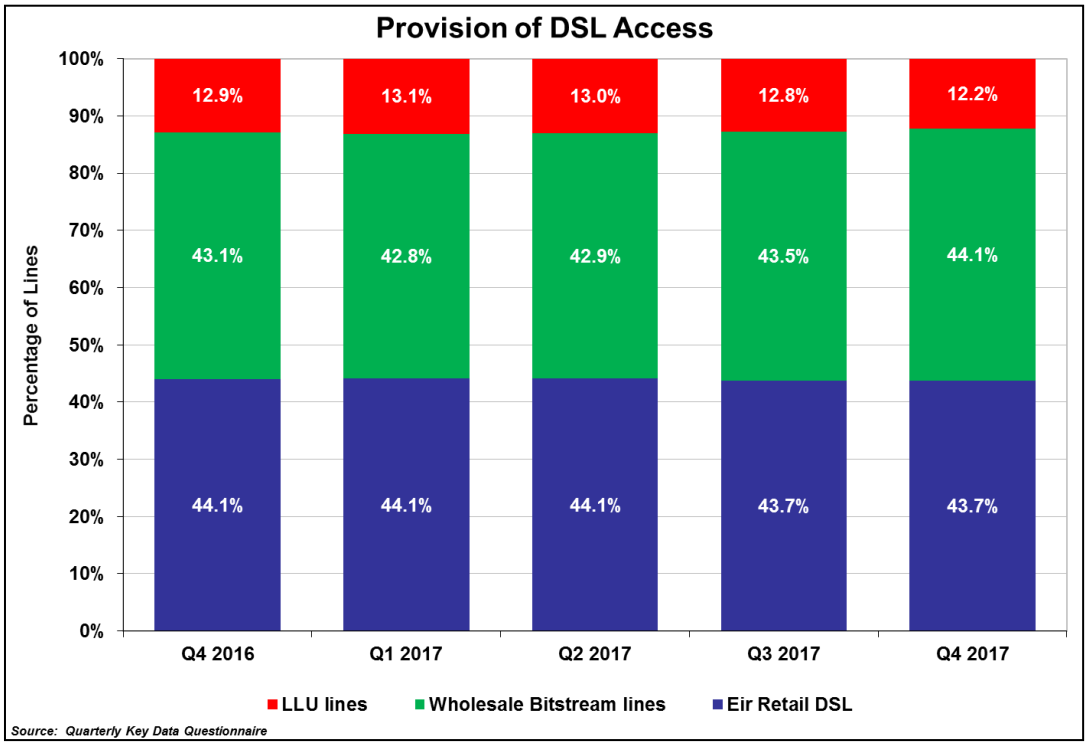
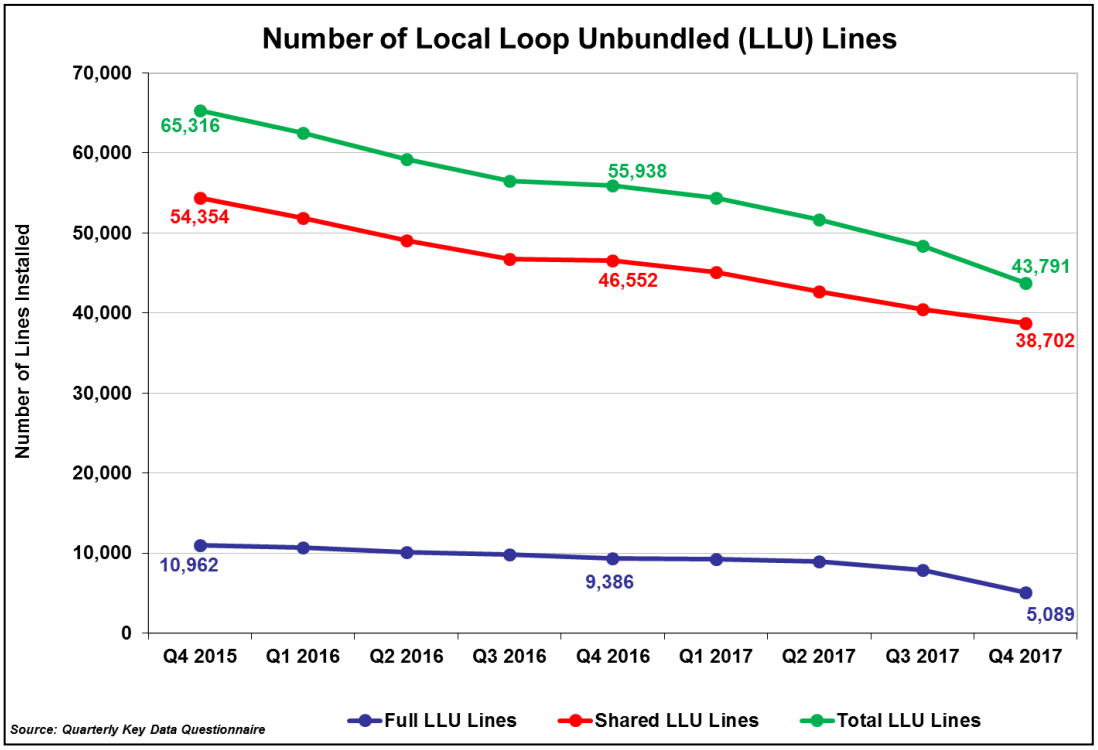


Figure 3.2.2 shows the number of unbundled lines according to their shared and full[61] unbundling status. Between Q4 2016 and Q4 2017 the total number of LLU lines

[61] Full LLU and shared LLU are two ways a copper loop may be unbundled. While full LLU assigns the entire copper loop to the leasing operator, shared LLU enables other operators and the incumbent to share the same line. With shared access consumers can acquire voice and data services from an operator or alternatively data services alone while retaining the voice services of the incumbent.

decreased by 21.7% and declined by 9.5% since Q3 2017. Full LLU lines decreased by 45.8% since Q4 2016 and declined by 35.6% since Q3 2017. Similarly shared LLU lines decreased by 16.9% since Q4 2016 and declined by 4.4% since Q3 2017.

Figure 3.2.2 – Number of Unbundled Local Loops

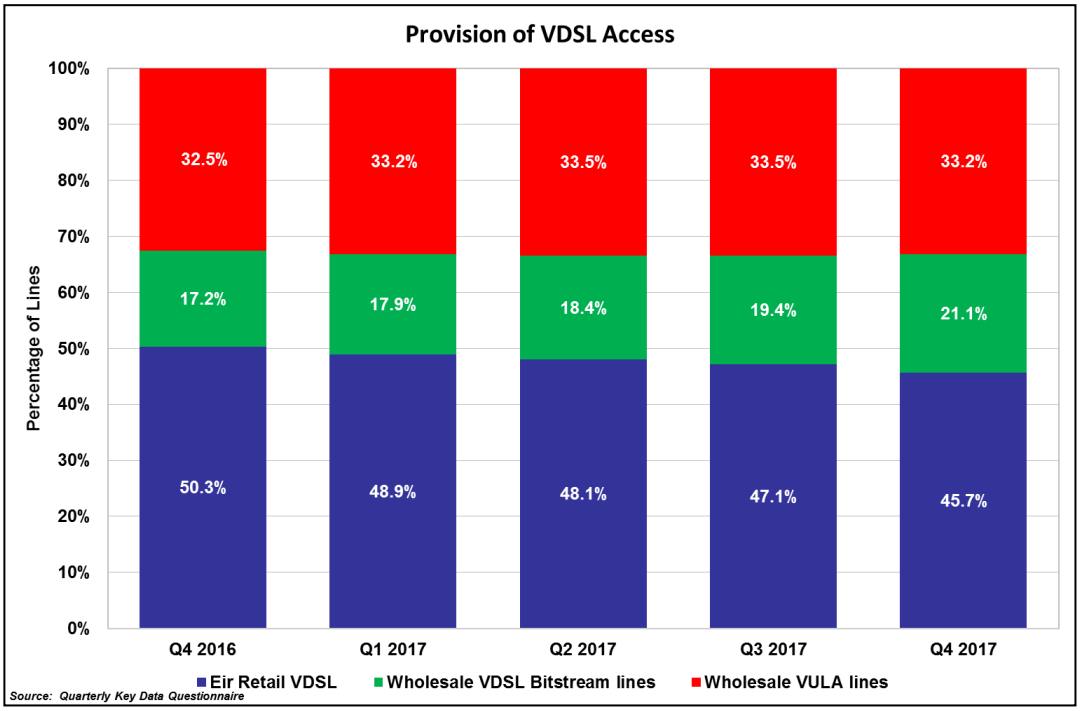


3.3 Provision of VDSL Access

VDSL broadband services are provided to consumers by operators using three alternative methods of access. VDSL may be provided directly to the consumer by Eir using direct access to its network; this accounted for 45.7% of all VDSL subscriptions in Q4 2017. Eir's market share of retail VDSL lines has declined by 4.6 percentage points over the last year. Retail VDSL may also be provided by OAOs who use either wholesale bitstream, which enables OAOs to resell another operator's VDSL service, or by offering VDSL-based broadband using virtual unbundled local access (VULA).

In Q4 2017, 21.1% of all VDSL lines were provided by OAOs using wholesale bitstream. In absolute terms there were 121,312 wholesale VDSL bitstream lines in Q4 2017, an increase of 41.4% since Q4 2016. The remaining 33.2% of VDSL lines were provided to subscribers by OAOs using VULA. In Q4 2017 there were 190,936 VULA lines, up from 162,194 in Q4 2016 (+17.7%) and up from 187,355 in Q3 2017 (+1.9%).

Figure 3.3.1 – Provision of VDSL Access



3.4 Usage of Broadband Services

Figure 3.4.1 shows data volumes generated by fixed and mobile broadband subscribers as well as subscribers to mobile voice and data services. Fixed broadband volumes alone reached 613,351 terabytes while mobile data volumes were over 76,147 terabytes[62].

Figure 3.4.1 – Fixed Broadband and Mobile Data Volumes

	Q4 2017 (TBs)	Q3'17 – Q4'17 Growth	Q4'16 – Q4'17 Growth
Fixed broadband data volumes[63]	**613,351**	**+10.1%**	**+28.4%**
Mobile data volumes	**76,147**	**+6.1%**	**+45.0%**
Total data volumes	**689,498**	**+9.7%**	**+30.1%**

Figure 3.4.2 illustrates average monthly data usage volumes by subscription type. In Q4 2017 an average fixed broadband subscriber used 145.9 GB of data per month. The majority of traffic is generated by residential subscribers with an average monthly data usage per residential subscriber reaching 155.9 GB in Q4 2017. An average business fixed broadband subscriber used 68.9 GB of data per month in Q4 2017. In comparison, average traffic per smartphone reached 4.8 GB of data while the average traffic per dedicated mobile broadband subscriber was 10.3 GB of data.

[62] Mobile data volumes refer to traffic generated from mobile broadband plus mobile voice and data services.

[63] This figure consists of aggregated data volumes from various subscription types. For Q3 2015 to Q4 2017 data generated via cable broadband is based on estimates.

Figure 3.4.2 – Monthly Traffic per Fixed Broadband Subscription by Type

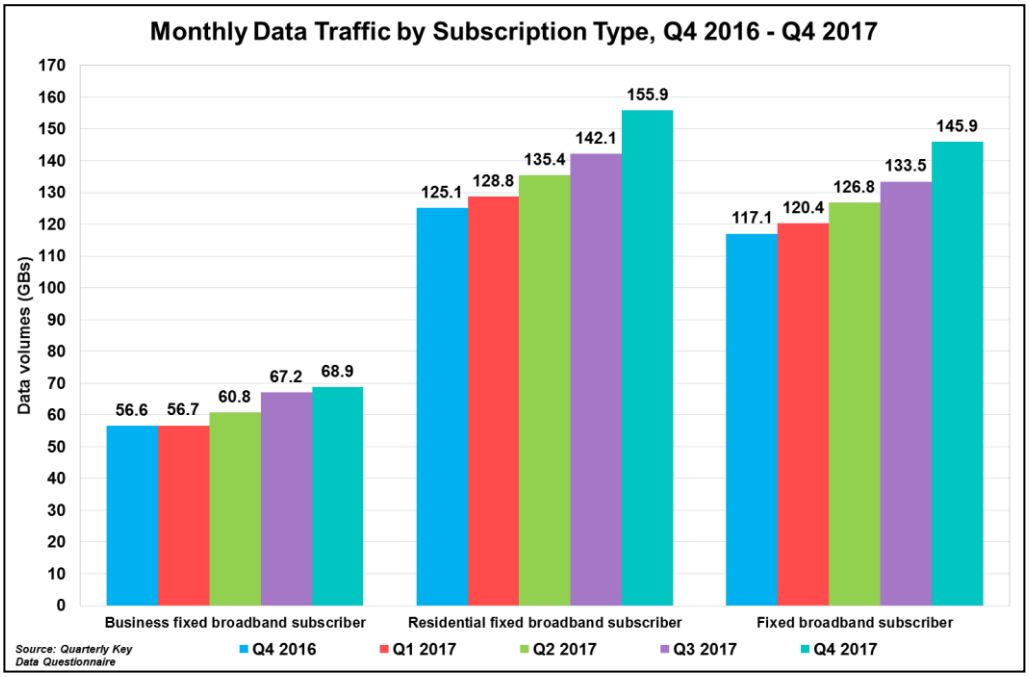
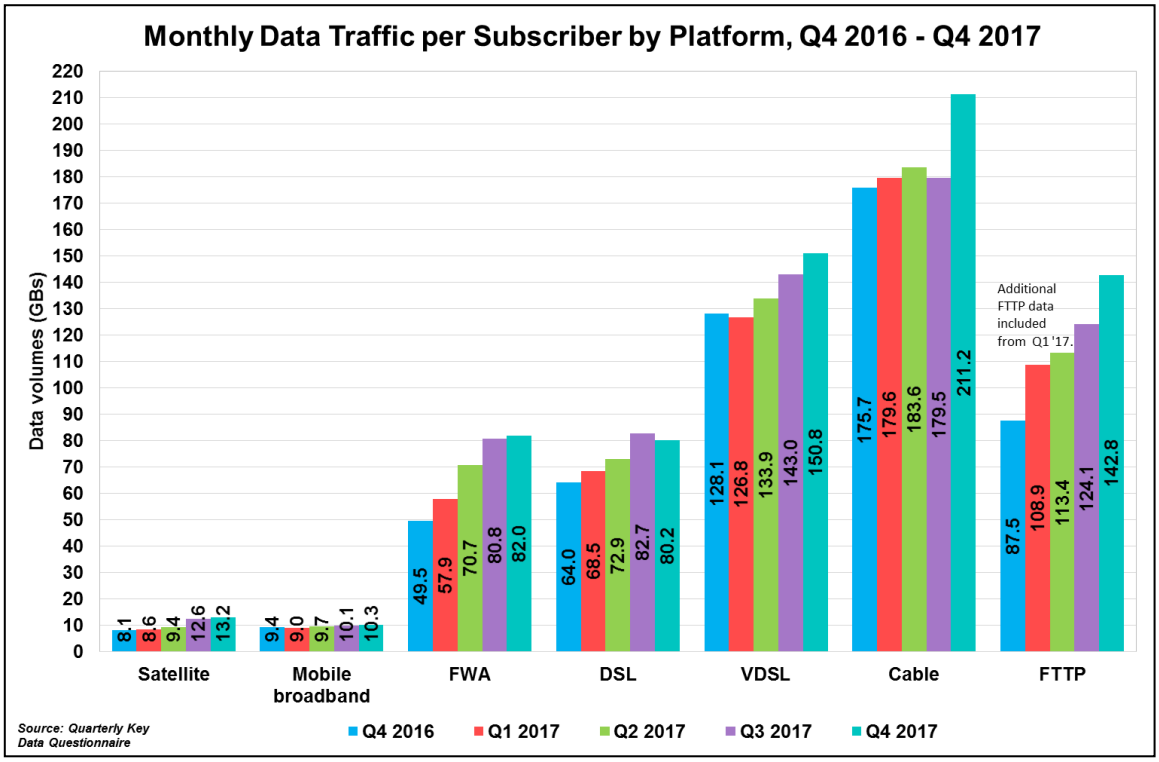


Figure 3.4.3 provides a breakdown of average monthly data usage volumes by broadband platform. In Q4 2017 the average cable broadband subscription generated 211.1 GB of data per month followed by VDSL (150.8 GB), FTTP (142.8 GB) and DSL (80.2 GB). It can be observed from Figure 3.4.3 that the average volume of data used increases with download speed as cable, VDSL and FTTP broadband platforms have the highest proportion of high speed broadband subscriptions as noted in Figure 3.1.8.

Figure 3.4.3 – Monthly Traffic per Broadband Subscription by Platform



3.5 Broadband Penetration

The total number of broadband subscriptions in Ireland for Q4 2017 was 1,694,398. Using fixed residential broadband subscriptions only, 1,240,521 (i.e. excluding business subscriptions and mobile broadband subscriptions), the estimated fixed broadband household penetration rate (there were 1,813,300 households in Ireland using the Central Statistics Office (CSO) Q3 2017 estimate[64]) as of Q4 2017 was 68.4%.

Figure 3.5.1a shows fixed broadband penetration per household in Ireland by platform from Q4 2013 to Q4 2017. VDSL subscriptions had the greatest household penetration rate at 27.9% in Q4 2017 followed by cable subscriptions at 20.0% and DSL subscriptions at 16.0%. FWA, satellite and FTTP subscriptions make up the remaining 4.5%.

Figure 3.5.1a – Fixed Broadband Subscriptions per Household[65]

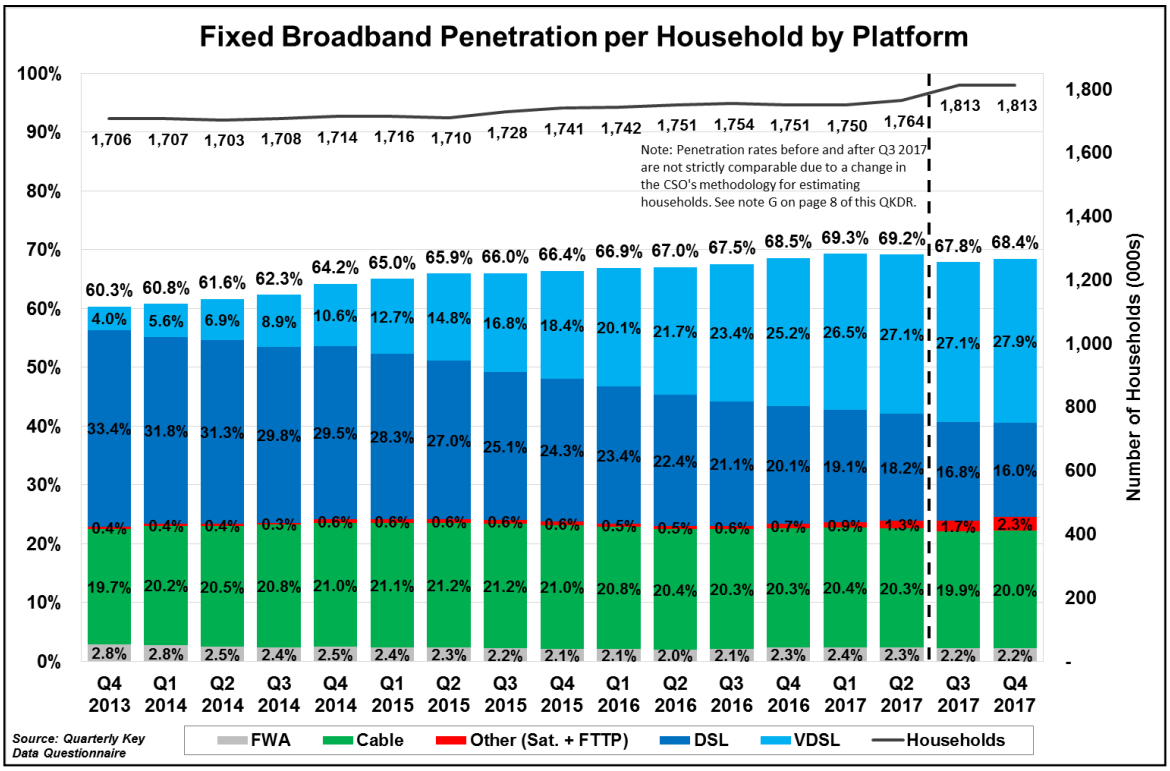


Figure 3.5.1b shows fixed and mobile broadband subscriptions per capita in Ireland from Q4 2013 to Q4 2017. The broadband per capita penetration rate (including mobile broadband) was 35.3% in Q4 2017. The penetration rate for fixed broadband subscriptions was 29.2% while for dedicated mobile broadband subscriptions it was

[64] Q3 2017 is the latest available data. Since publication of Q3 2017 QKDR the CSO have revised their methodology for estimating the number of households. This has impacted figure 3.5.1a. See note G on page 8 of this QKDR.

[65] As of Q3 2017 figure 3.5.1 which presented fixed broadband penetration per capita among 25EU countries has been replaced by figures 3.5.1a and 3.5.1b focusing on Ireland's broadband penetration rates.

6.1%.[66] These figures are based on a population of 4,805,900 from the CSO Q3 2017 estimate[67].

Figure 3.5.1b – Fixed and Mobile Broadband Subscriptions per Capita

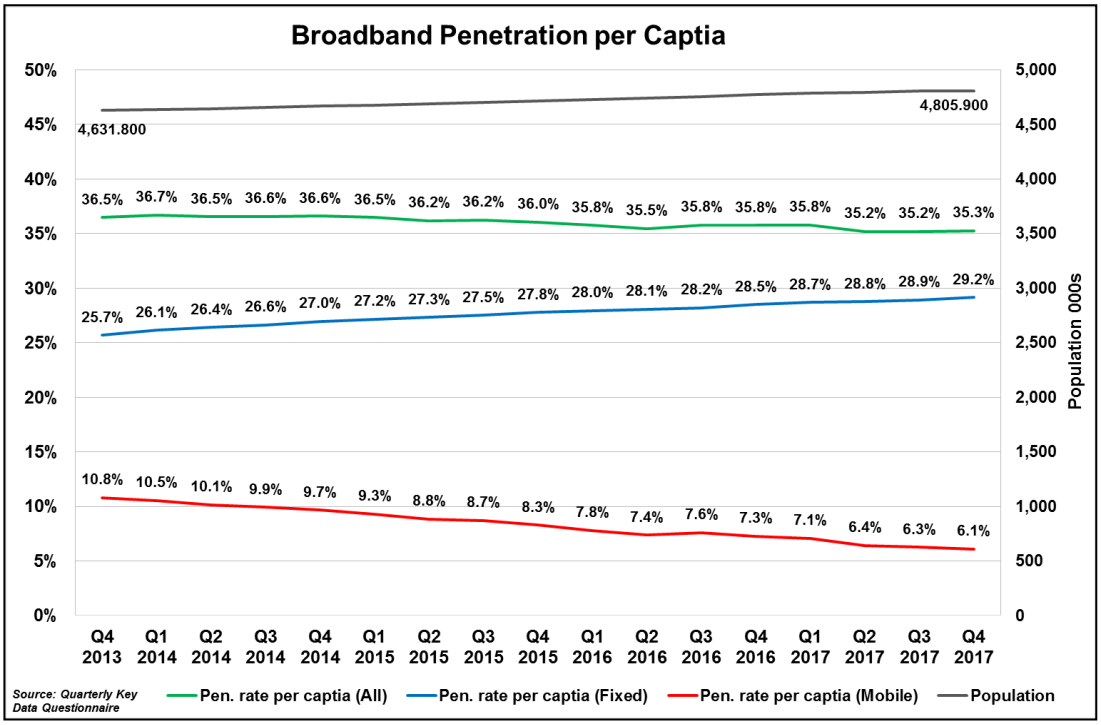


Figure 3.5.2 overleaf shows the proportion of households with broadband connections from 2012 to 2017.[68] Both fixed and mobile broadband[69] are included. Ireland's household broadband penetration rate, at 88%, is higher than the EU28 average of 85%. Penetration has increased by 21 percentage points since 2013 while the EU28 penetration has increased by 9 percentage points. Figure 3.5.3 presents broadband penetration rates in Ireland and EU since 2007[70].

[66] It should be noted that ComReg reports dedicated mobile broadband subscriptions (i.e. on the basis of mobile dongles/datacards) only. Subscriptions with Internet access over a handset are not included. Therefore, the total number of mobile broadband users (i.e. dedicated mobile broadband and handset subscriptions with internet access) will be higher than stated in this report. On the other hand, a broadband subscriber may have both a fixed and mobile broadband subscription and therefore, a broadband penetration rate based on both mobile and fixed subscriptions may overestimate the penetration rate.

[67] Q3 2017 is the latest available data. Since publication of the last QKDR the CSO have revised their methodology for estimating population data. This has impacted figure 3.5.1b. See note G on page 8 of the QKDR.

[68] Latest available whole-year data.

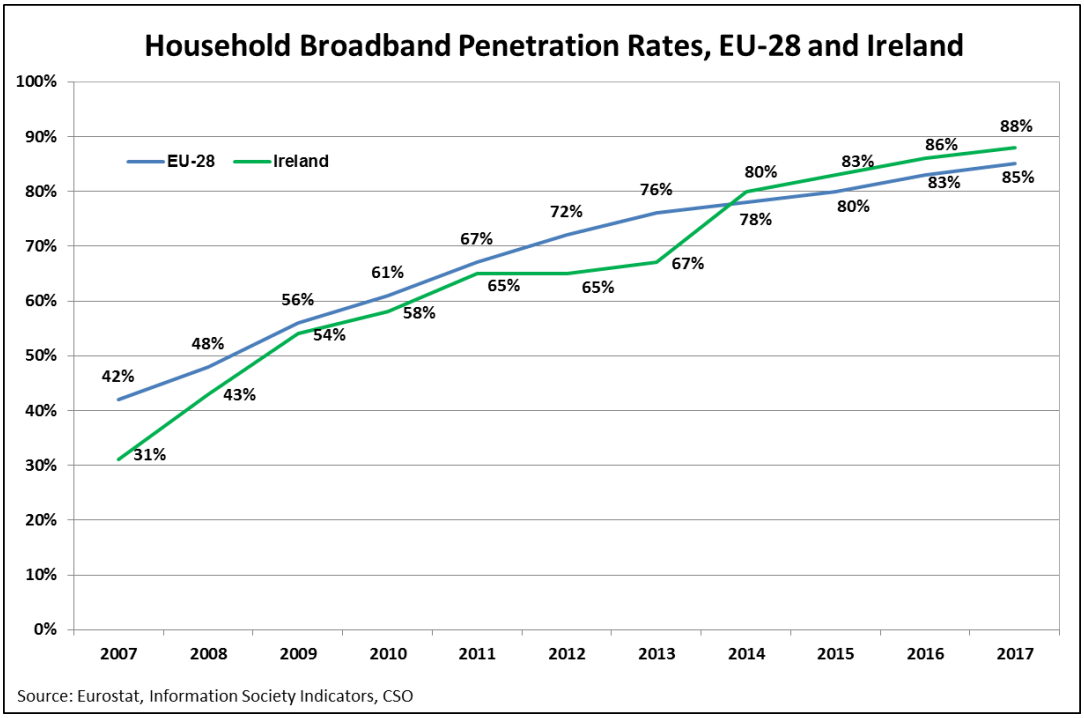
[69] Households with at least one member aged 16–74. Broadband connection includes: DSL, VDSL, wired fixed (cable, fibre, Ethernet, PLC), fixed wireless (satellite, Wi-Fi, WiMax) and mobile wireless (3G/4G).

[70] Source: Eurostat (online data code isoc_ci_it_h).

Figure 3.5.2 – Household Broadband Subscriptions, 2013 - 2017

	2013	2015	2017
Netherlands	87	94	98
Luxembourg	70	95	97
UK	87	90	93
Finland	88	90	93
Sweden	87	83	93
Denmark	87	84	92
Germany	85	88	92
Ireland	67	83	88
Austria	80	81	88
Estonia	78	87	87
EU-28	76	80	85
Malta	79	82	85
Belgium	79	79	84
Spain	69	78	83
Czech Rep.	69	76	83
Hungary	69	75	82
Slovenia	74	78	82
France	78	76	79
Slovakia	70	78	79
Italy	68	74	79
Cyprus	64	71	79
Poland	69	71	78
Croatia	64	76	76
Latvia	70	74	76
Portugal	62	69	76
Lithuania	64	67	75
Romania	56	65	74
Greece	55	67	71
Bulgaria	54	59	67

Figure 3.5.3 – Household Broadband Penetration, 2007 - 2017



3.6 Wi-Fi Broadband Access

While Wi-Fi originally emerged as an alternative to share broadband connectivity in the home and to provide access to nomadic laptop users in airports and other public places, it is now being used by a broader range of service providers with different business models and services which include in home connectivity, outdoor access for nomadic users, and off-loading and coverage alternatives for mobile operators.

ComReg presents data on the Wi-Fi market based on the number of public Wi-Fi hotspots and access points located nationally. Internet hotspots are typically public wireless access points where a laptop computer or other portable devices such as a smartphone or tablet can connect to the internet. A Wi-Fi hotspot can be made up of one or more Wi-Fi access points[71]. Wi-Fi hotspots tend to be found in airports, hotel lobbies and cafés and restaurants. In many cases, the user pays for high-speed internet access at an access point, based either on a vouchered payment for a specific amount of time online or a recurring monthly subscription. There are a number of providers of these services in Ireland including Sky Ireland, BT Ireland and Virgin Media.

Comparing Q4 2016 to Q4 2017, the number of Wi-Fi hotspots increased by 13.4% and the number of access points increased by 18.0%. Wi-Fi minutes increased by 1.9% over this period. A breakout of the data by operators' percentage shares in Q4 2017 is also provided below.

Figure 3.6.1 – Wi-Fi Hotspots, Access Points and Minutes of Use

	Q4 2017	Q3'17 – Q4'17 Growth	Q4'16 - Q4'17 Growth
Wi-Fi Hotspots	**1,208**	**+2.3%**	**+13.4%**
Wi-Fi Access Points	**3,830**	**+1.6%**	**+18.0%**
Wi-Fi Minutes of Use	**573,584K**	**-16.9%**	**+1.9%**

	Virgin Media	BT	OAOs
Wi-Fi Hotspots	**61.3%**	**11.0%**	**27.7%**
Wi-Fi Access Points	**83.5%**	**4.3%**	**12.2%**
Wi-Fi Minutes of Use	**70.4%**	**27.3%**	**2.3%**

[71] Hotspots are typically public locations at which broadband internet access can be obtained. At these hotspots, users can wirelessly connect to the internet either for free or for a fee. Typical locations for such hotspots include cafes and restaurants, hotels and airports. In general terms, more than one access point can be found at a hotspot.

3.7 Fixed and Mobile Broadband Pricing Data

ComReg uses independently collated Strategy Analytics (Teligen) pricing data using OECD-approved methodologies to examine the relative prices of a number of specific fixed and mobile broadband usage baskets of national broadband services and broadband services in other selected countries for residential and business users. The pricing data used for international comparisons includes pricing information for selected countries, namely Germany, Denmark, Spain, Netherlands and the United Kingdom[72].

For national comparisons, the prices advertised by the largest operators (in terms of number of subscribers to fixed broadband services and separately number of subscribers to mobile broadband services) during Q4 2017 were analysed[73] for selected OECD usage baskets. In this QKDR, standalone and bundled fixed broadband service prices advertised by Eir, Virgin Media, Vodafone, Sky, Digiweb and Imagine were analysed. For mobile broadband services, prices advertised by the Three Group, Vodafone, Eir, Tesco and ID were analysed. Thus, the broadband pricing analysis does not necessarily present the lowest prices available in the entire market, but rather the lowest prices offered by the operators having the largest number of subscribers. It should also be noted that some of the operators included in the analysis do not offer their services nationally[74]. In addition, some operators only offer broadband services bundled with another service (e.g. fixed voice services which can include line rental, sometimes also with an inclusive amount of call minutes). In these instances, the analysis is based on the cost of the bundle excluding any voice related usage patterns, i.e., only broadband usage related factors are taken into account in the analysis.

For international comparisons, prices advertised by the largest operators (in terms of the number of subscribers to fixed broadband services and separately number of subscribers to mobile broadband services) operators in each of the respective countries during Q4 2017 were analysed[75] for selected usage baskets[76] (with an average per country price presented based on the average of lowest price tariffs advertised by three highest ranking operators in national pricing comparisons). In order to enable international comparisons, prices are presented in Euro Purchasing Power Parities (PPPs)

[72] In future QKDRs ComReg may expand the analysis and include more countries for international price comparisons.

[73] The subscribers of these operators account for 94% of all fixed broadband subscribers and 100% of all mobile broadband subscribers. For fixed broadband, tariffs based on broadband services via DSL, VDSL, FTTP, cable and FWA were analysed. For mobile broadband, tariffs on broadband services via 3G and 4G networks were analysed.

[74] For example, Virgin Media offers fixed broadband services only in the areas where its cable network is available.

[75] The subscribers of these operators jointly account for over 80% of all fixed broadband subscribers and 80% of all mobile broadband subscribers in each of the respective countries.

[76] The same basket was applied to each respective country in order to make the international comparison.

and exclude VAT charges. PPPs provide an indication of the cost of telecoms services in countries analysed in relation to the cost of all other products and services.

The presented analysis accounts for the fact that broadband services differ in terms of advertised download/upload speeds to ensure that a meaningful comparison can be made between packages in terms of contracted download speeds offered. Packages which limit usage through speed restrictions when usage exceeds inclusive allowances are excluded. The presented analysis also incorporates discounts offered by operators. Nonrecurring charges (e.g. charges for the installation of a service) are discounted/amortised over three years and other recurring fixed costs such as line rental (in case of fixed broadband) are included and any other additional broadband related charges are included in the baskets.

The OECD basket methodologies are reviewed and revised periodically, the 2010 methodology was recently updated. This QKDR uses the 2010 OECD methodology with ComReg expecting to apply the latest OECD methodology in the QKDR for Q1 2018. Further information on the composition of the broadband basket can be found in the Explanatory Memorandum which accompanies this report. The following baskets are presented in this report[77]:

OECD Residential and business fixed and mobile broadband baskets

Type of basket	Basket
Fixed Broadband Residential	18GB basket (broadband speeds <=30 Mbps)
Fixed Broadband Residential	54GB basket (broadband speeds >30 Mbps)
Fixed Broadband Business	33GB basket
Mobile Broadband Residential	5GB basket
Mobile Broadband Business	10GB basket

These baskets were selected given their closeness to the national broadband usage patterns observed having regard to the data provided by fixed and mobile broadband operators to ComReg for the purpose of the QKDR (see Figures 3.4.2 and 3.4.3 above for fixed and mobile broadband data usage patterns). ComReg notes that these baskets reflect usage patterns of an average user and do not necessarily reflect prices of tariffs that are geared towards customers having different usage profiles.

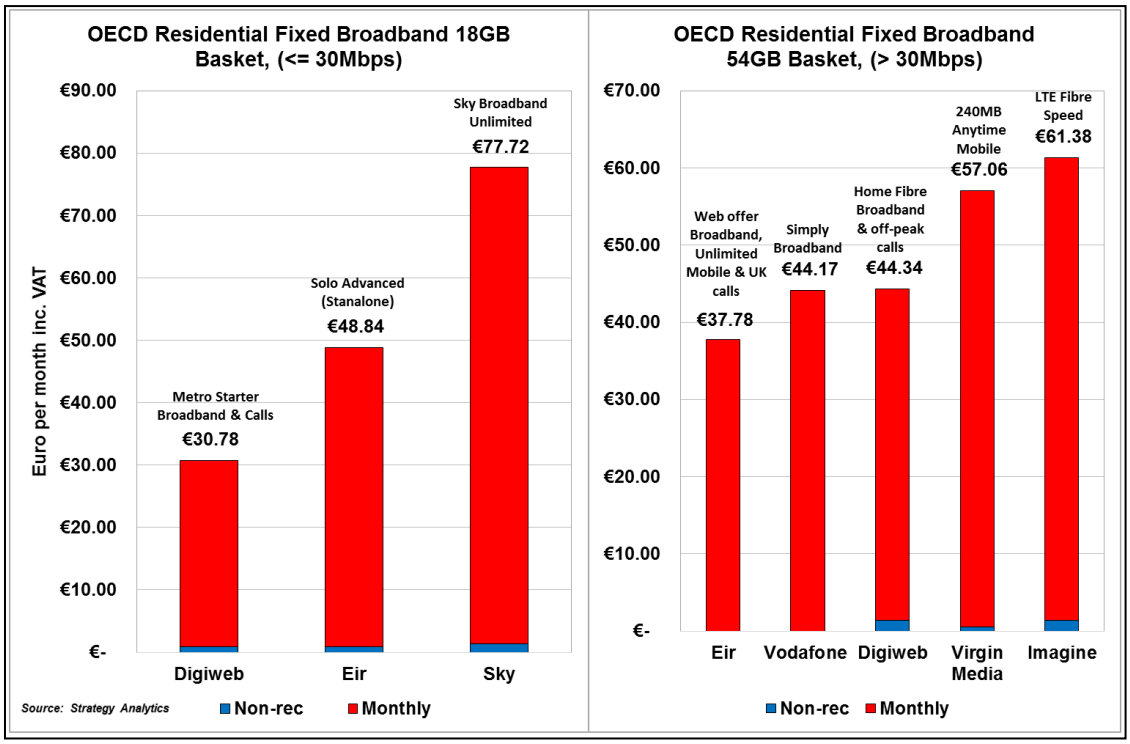
[77] In future QKDRs ComReg may expand the analysis based on additional and/or different usage baskets.

ComReg notes that comparisons are based on the prices of advertised Q4 2017 tariffs only and the analysis does not take into consideration other important factors such as quality of the network, levels of customer care, additional units of consumption available after having accounted in the analysis for the units in the OECD usage basket, minimum contract term etc.

OECD Residential Fixed Broadband Service Basket

Figure 3.7.1 compares the cheapest residential tariffs advertised by fixed broadband providers (whether standalone broadband or broadband sold as part of a bundle) for residential customers based on an OECD 18GB and 54GB monthly data usage baskets. For fixed broadband where the advertised download speed of the broadband service does not exceed 30Mbps, Digiweb offers the cheapest tariff[78] for this particular usage profile at €30.78 followed by Eir (€48.84) and Sky (€77.72). For fixed broadband where the advertised download speed of broadband service exceeds 30Mbps, Eir offers the cheapest tariff (€37.78), followed by Vodafone (€44.17) and Digiweb (€44.34).

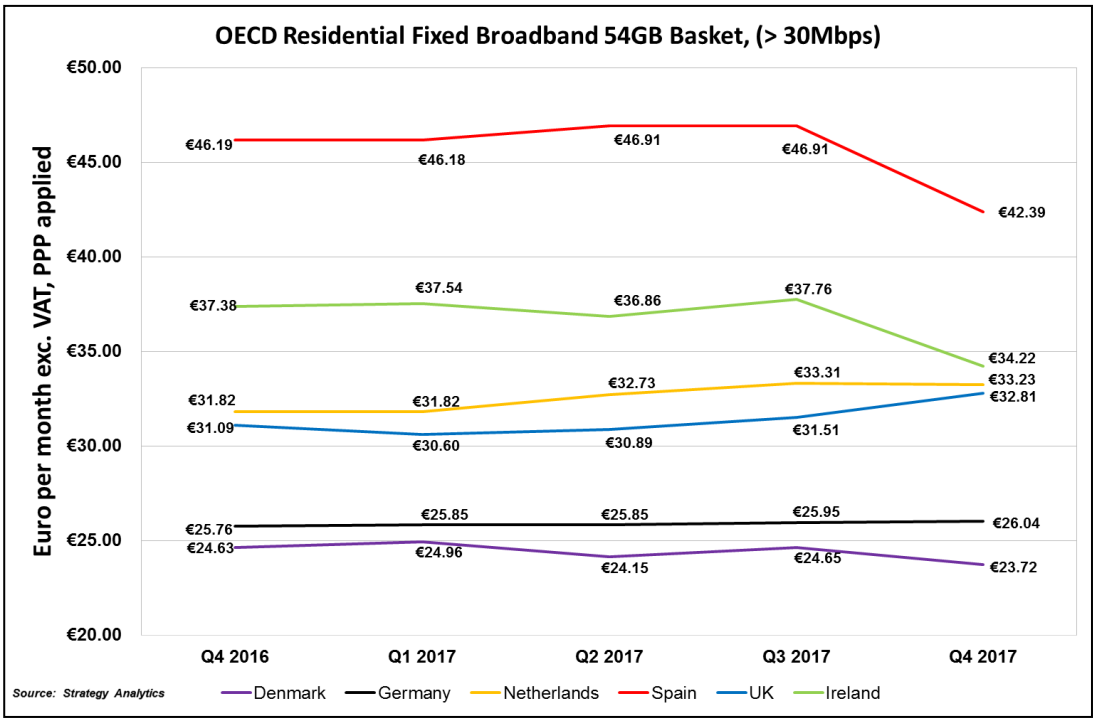
Figure 3.7.1 - Residential Fixed Broadband Basket (National)



[78] This tariff is based on Digiweb's fixed wireless access (FWA) broadband service.

Figure 3.7.2 illustrates Ireland's ranking alongside five other Western European countries. Ireland ranks in fifth place with an average price of €34.22[79] for this particular residential basket. The average price in Ireland is 6.7% more expensive than the average price[80] for all of the countries included in the analysis.

Figure 3.7.2 - Residential Fixed Broadband Basket (International)[81]



OECD Business Fixed Broadband Service Basket

Figure 3.7.3 compares business tariffs advertised by fixed broadband service providers (whether standalone broadband or broadband sold as part of a bundle) for business customers based on a 33GB monthly data usage basket. Presented prices exclude VAT charges. Digiweb offers the cheapest tariff (€30.36) followed by Eir (€35.48) and Vodafone (€40.00).

[79] As noted previously, average prices used for international comparisons exclude VAT charges.

[80] The average of prices presented in Figure 3.7.2.

[81] From Q1 2017 figure 3.7.2 has been replaced from the previous criteria of 18GB (>30Mbps) with that of 54GB (>30Mbps). This is to reflect the market offering greater data allowance for fixed broadband.

Figure 3.7.3 - Business Fixed Broadband Basket (National)

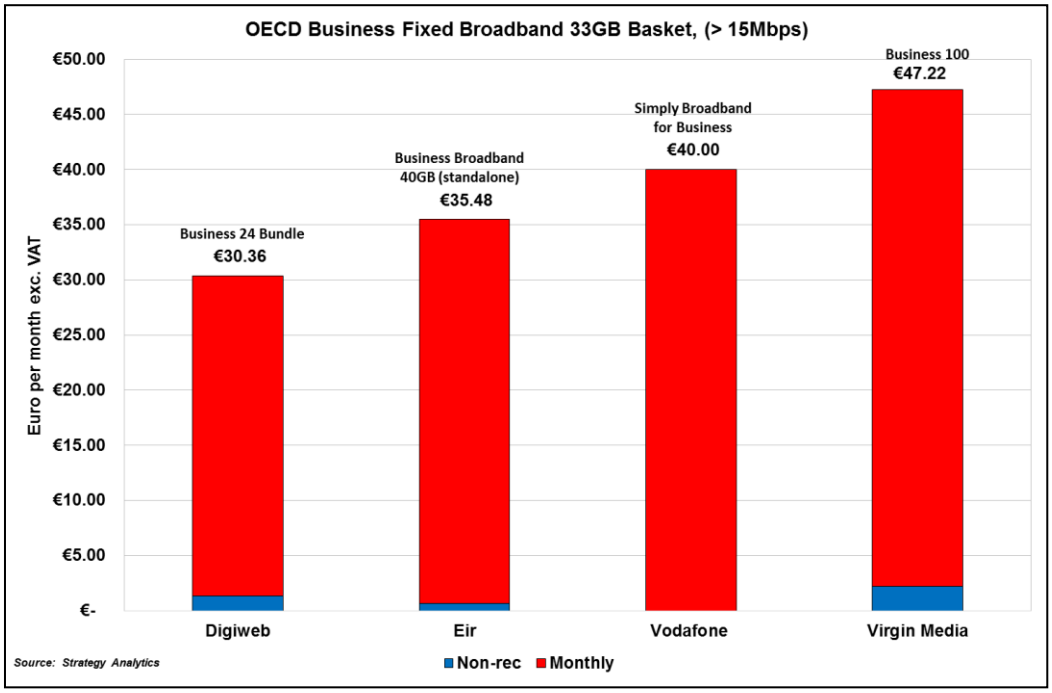
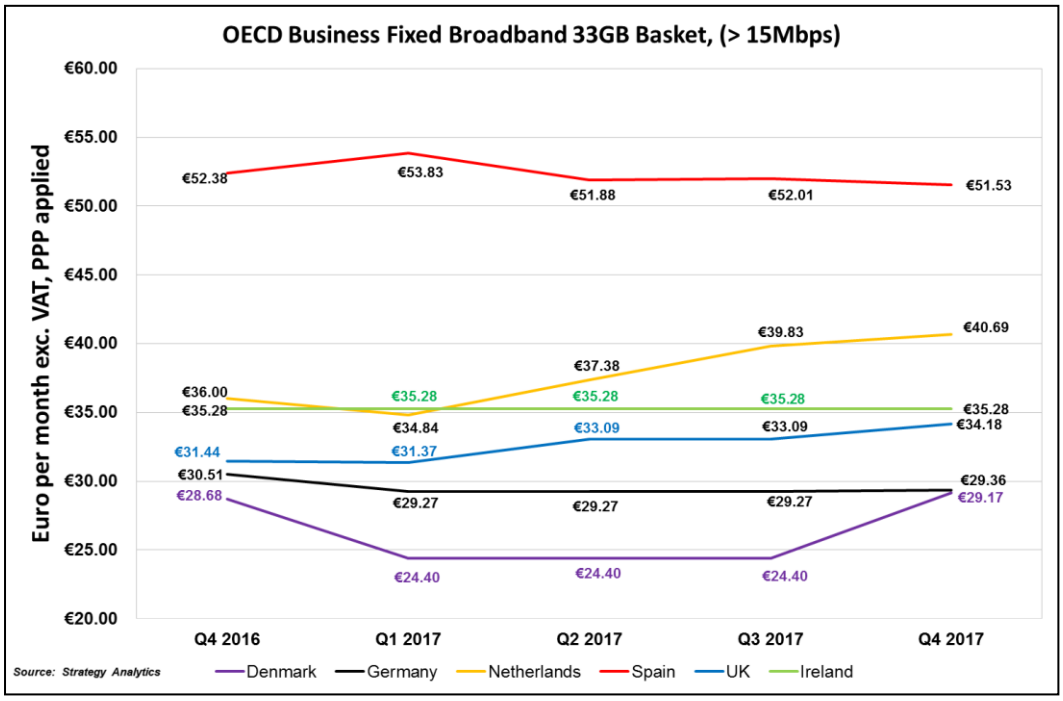


Figure 3.7.4 shows that in an international comparison context Ireland (€35.28[82]) ranks in fourth place. The average price in Ireland is 3.9% cheaper than the average price[83] for all of the countries included in the analysis.

Figure 3.7.4 - Business Fixed Broadband Basket (International)



[82] As noted previously, average prices used for international comparisons exclude VAT charges.

[83] The average of prices presented in Figure 3.7.4.

OECD Residential Mobile Broadband Service Basket

Figure 3.7.5 compares pre-paid and post-paid tariffs advertised by mobile broadband service providers for residential customers based on an OECD 5GB monthly mobile data usage basket. Eir and ID jointly offer the cheapest tariff (€15.00) followed by Vodafone (€21.39) and Three (€25.14).

Figure 3.7.5 - Residential Mobile Broadband Basket (National)

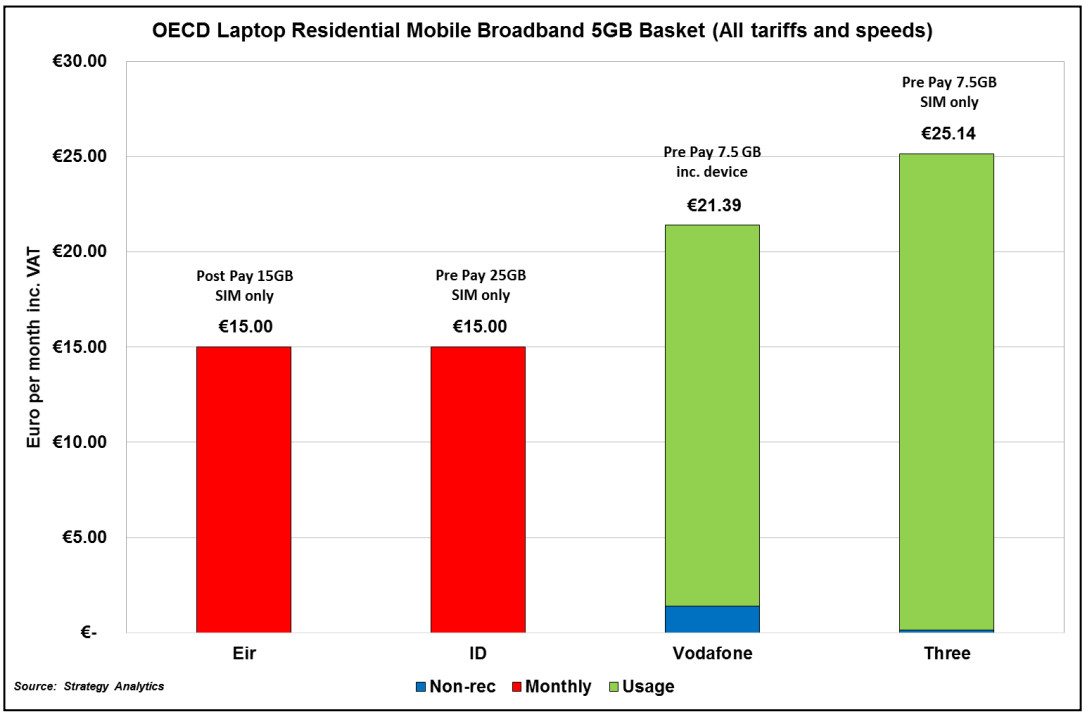
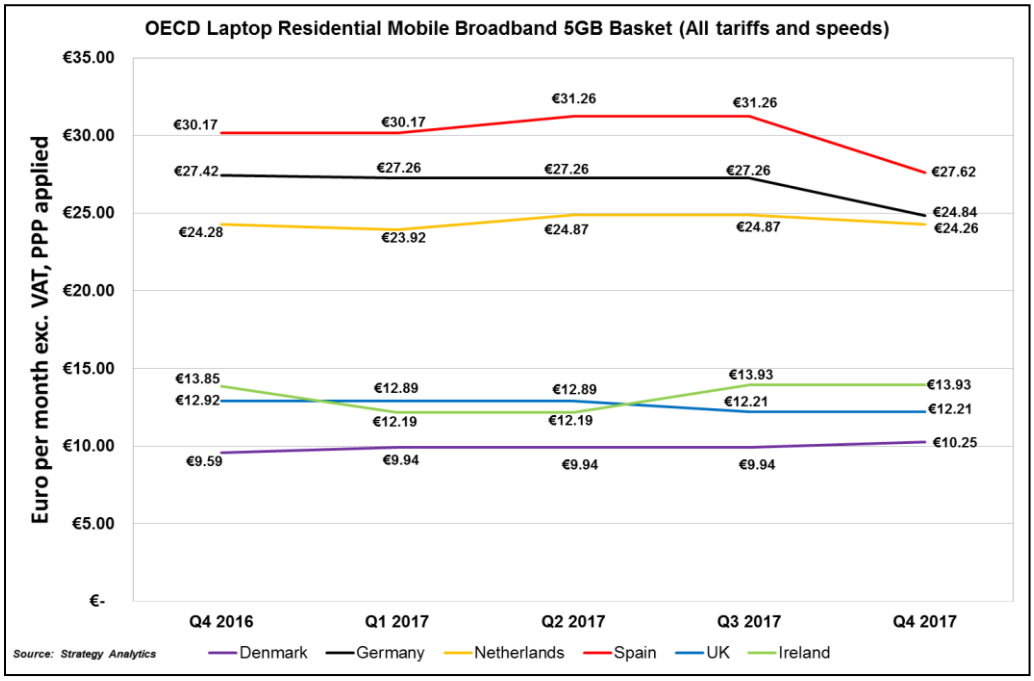


Figure 3.7.6 overleaf illustrates Ireland's ranking alongside five other Western European countries. Ireland ranks in third place with an average price of €13.93[84] for this particular basket. The average price in Ireland is 26.1% cheaper than the average price[85] for all of the countries included in the analysis.

[84] As noted previously, average prices used for international comparisons exclude VAT charges.

[85] The average of prices presented in Figure 3.7.6.

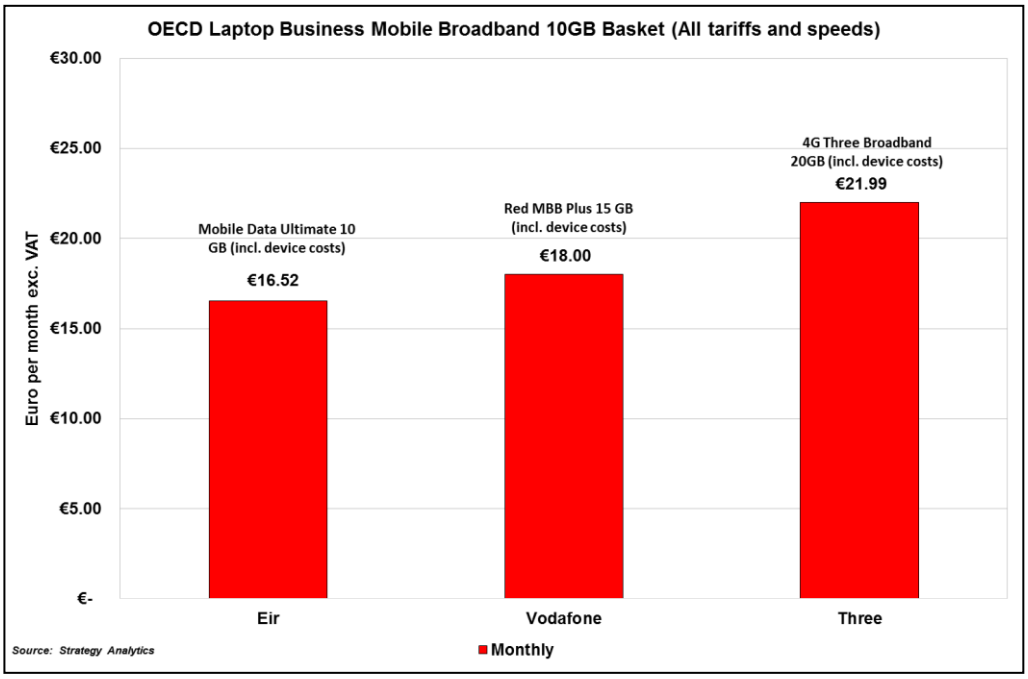
Figure 3.7.6 - Residential Mobile Broadband Basket (International)



OECD Business Mobile Broadband Service Basket

Figure 3.7.7 compares post-paid tariffs advertised by mobile broadband service providers[86] for business customers based on an OECD 10GB monthly data usage basket. Presented prices exclude VAT charges. Eir (€16.52) offers the cheapest tariff followed by Vodafone (€18.00) and Three (€21.99).

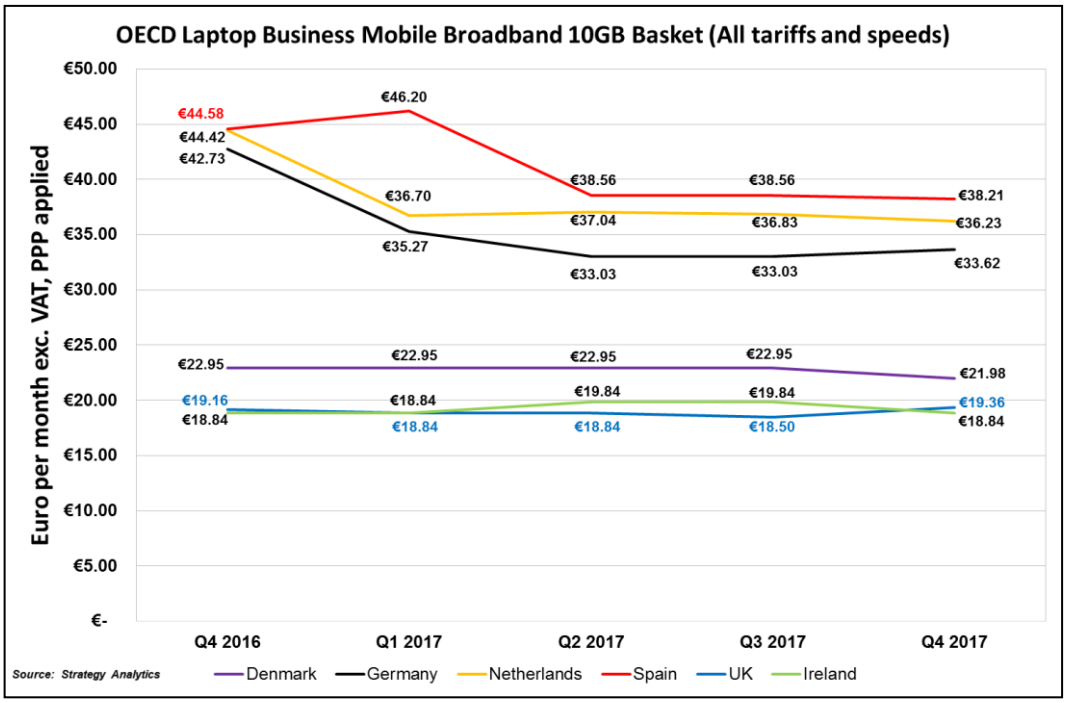
Figure 3.7.7 - Business Mobile Broadband Basket (National)



[86] Only tariffs advertised by Vodafone, Three and Eir were analysed for business customers. Some operators do not offer mobile broadband service to business customers.

Figure 3.7.8 shows that, from an international comparison perspective, Ireland (€18.84[87]) ranks in first place. The average price in Ireland is 32.8% cheaper than the average price[88] for all of the countries included in the analysis.

Figure 3.7.8 - Business Mobile Broadband Basket (International)



[87] As noted previously, average prices used for international comparisons exclude VAT charges.

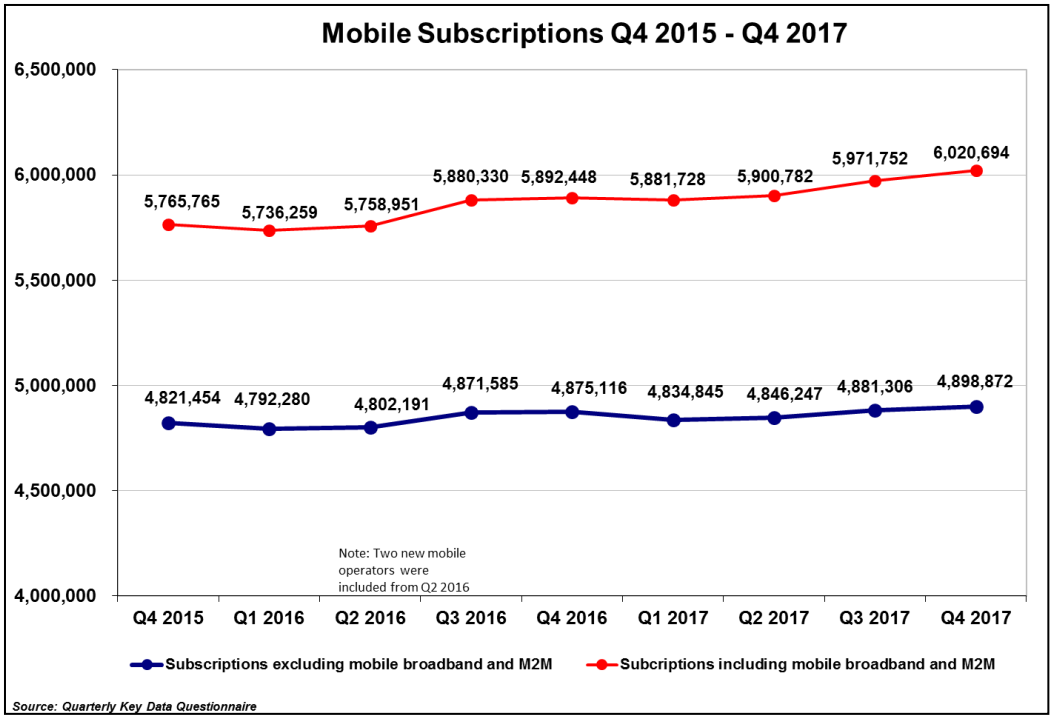
[88] The average of prices presented in Figure 3.7.8.

4. Mobile Market Data

4.1 Number of Subscriptions and Penetration Rate

At the end of December 2017 there were 6,020,694 mobile subscriptions in Ireland, including mobile broadband and Machine to Machine ('M2M') subscriptions. If mobile broadband subscriptions (293,042) and M2M subscriptions (828,780) are excluded, the total number of mobile subscriptions in Ireland was 4,898,872.

Figure 4.1.1 – Mobile Subscriptions



In Q4 2017 there were 4,562,408 mobile voice and data subscribers using 3G/4G networks in Ireland. This figure can be taken as an indication of the number of smartphone users accessing advanced data services such as web/internet content, online multiplayer gaming content, Video on Demand (VoD) or other equivalent advanced data services (excluding SMS and MMS). This represents approximately 93.1% of all mobile subscriptions (excluding dedicated mobile broadband and M2M).

Figure 4.1.2 below shows the breakdown of total active subscribers, total standard mobile voice and data subscribers using 3G/4G networks and dedicated mobile broadband subscribers from Q4 2016 to Q4 2017.

Figure 4.1.2 – Mobile Subscribers using Data Services over 3G/4G Networks

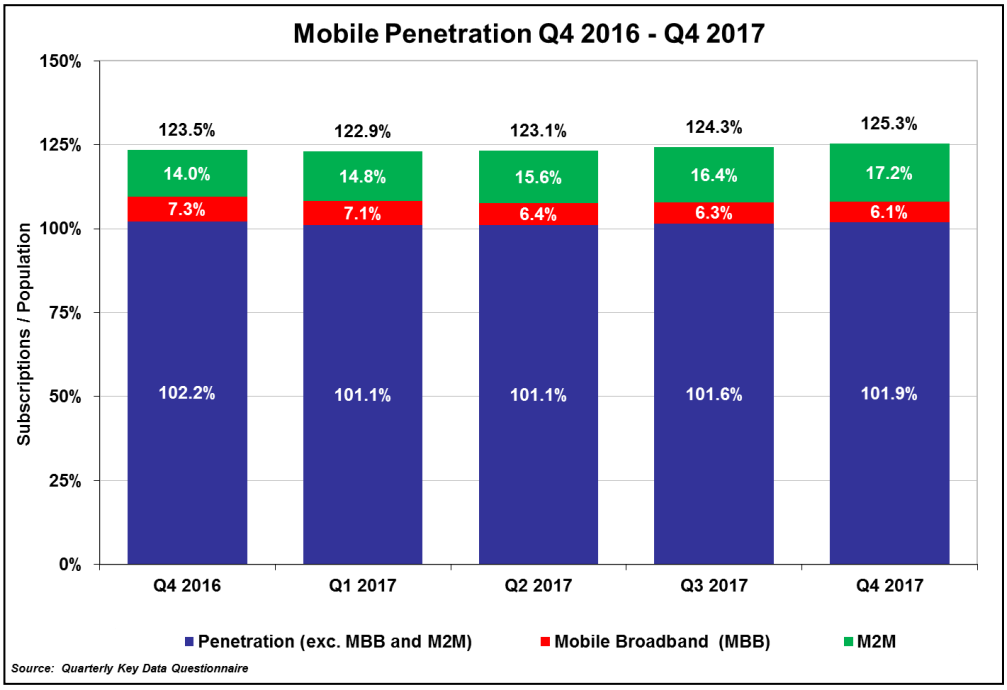
	Q4 2017	Q4 2016	Quarterly Change Q3 '17 – Q4 '17	Annual Change Q4 '16 – Q4 '17
Total active subscriptions	**6,020,694**	**5,971,752**	**+0.8%**	**+2.2%**
Mobile voice and data subscribers using 3G and 4G networks	**4,562,408**	**4,532,192**	**+0.7%**	**+3.3%**
Dedicated mobile broadband subscribers	**293,042**	**301,493**	**-2.8%**	**-15.5%**

Figure 4.1.3 charts mobile penetration since Q4 2016 and shows that at the end of December 2017, mobile penetration, based on a population of 4,805,900 (using the CSO Q3 2017 estimate[89]), was 125.3% including mobile broadband and M2M and 101.9% excluding mobile broadband and M2M. Mobile penetration is recognised as the standard metric internationally to measure the adoption of mobile services, and is calculated based on the number of active SIM cards per 100 of the population.

Given that some mobile users may have used more than one active SIM card during the period, there is likely to be some over-estimation of actual individual mobile penetration using this metric. ComReg's calculation of mobile subscriptions includes active SIMs bundled with mobile broadband data cards and USB modems for internet access via laptops/PCs, SIMs that enable the flow of data between Machines as well as SIM cards used in mobile phones for voice and data services.

[89] Latest available data. Since publication of the last QKDR the CSO have revised their methodology for estimating the number of households. This has impacted figure 4.1.3. See note G on page 8 of this QKDR.

Figure 4.1.3 – Irish Mobile Penetration Rate



4.2 The Profile of Mobile Subscriptions in Ireland

Mobile users pay for their mobile service by either purchasing pre-paid credit, or by receiving a monthly bill from their mobile operator, described in this report as a post-paid payment option.

Figures 4.2.1 and 4.2.2 illustrate the mobile subscription base (including and excluding mobile broadband and M2M subscriptions) in Ireland classified by the proportion of pre-paid and post-paid subscriptions on 2G, 3G and 4G networks at the end of Q4 2017. Post-paid subscriptions are increasing, accounting for 55.4% of subscriptions in Q4 2017, up from 53.4% one year previously at the expense of a decline in pre-paid subscriptions. If mobile broadband and M2M subscriptions are excluded, post-paid subscriptions account for 45.9% of subscriptions, up from 44.6% in Q4 2016.

Figure 4.2.1 – Profile of Pre-Paid and Post-Paid Subscriptions

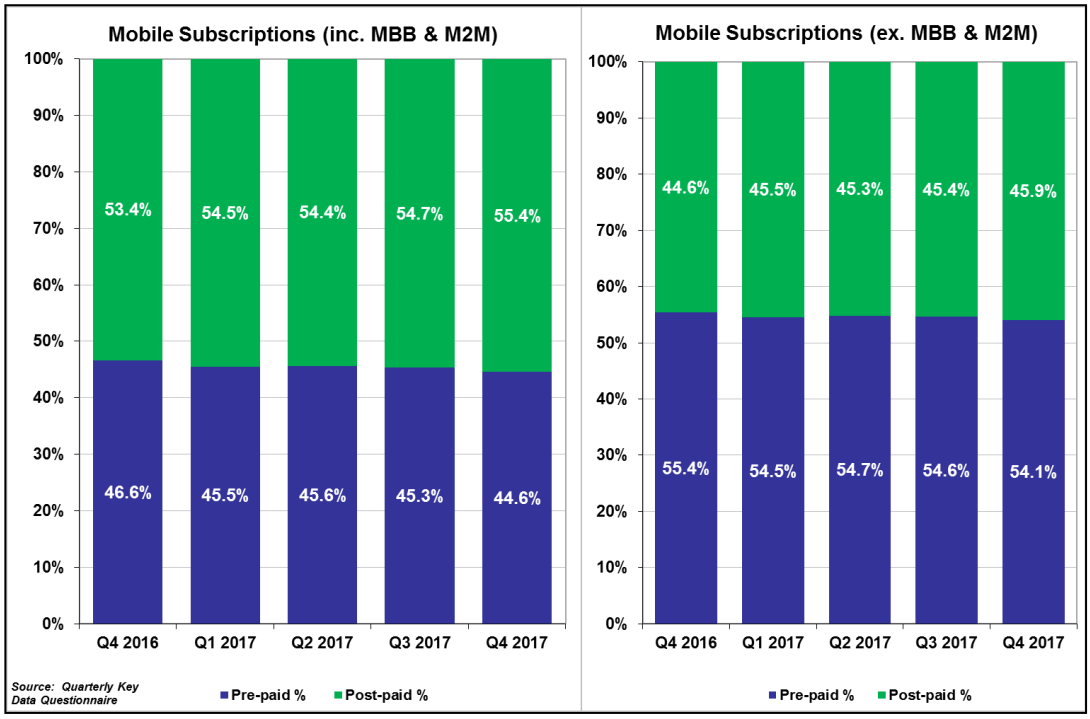


Figure 4.2.2 – Mobile Subscriptions by Pre-pay/Post-pay

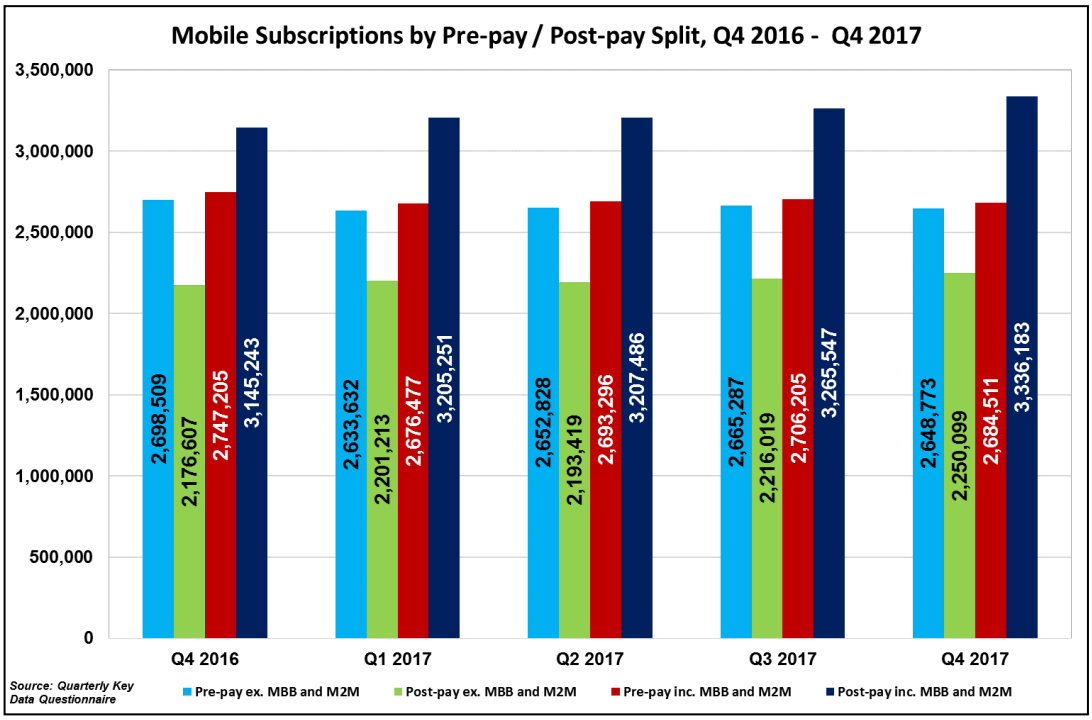


Figure 4.2.3 shows the pre-paid and post-paid subscription profile for each of the mobile operators in the Irish market. Mobile broadband and M2M subscriptions are included. As of Q4 2017, the mobile operator with the highest proportion of post-paid subscriptions was Vodafone (64.0%), followed by Three Group (57.9%), Eir (49.3%) and Tesco Mobile (15.5%). Post-paid subscriptions for OAOs was 39.4%.

Figure 4.2.3 – Profile of Pre-Paid and Post-Paid Subscriptions by Operator

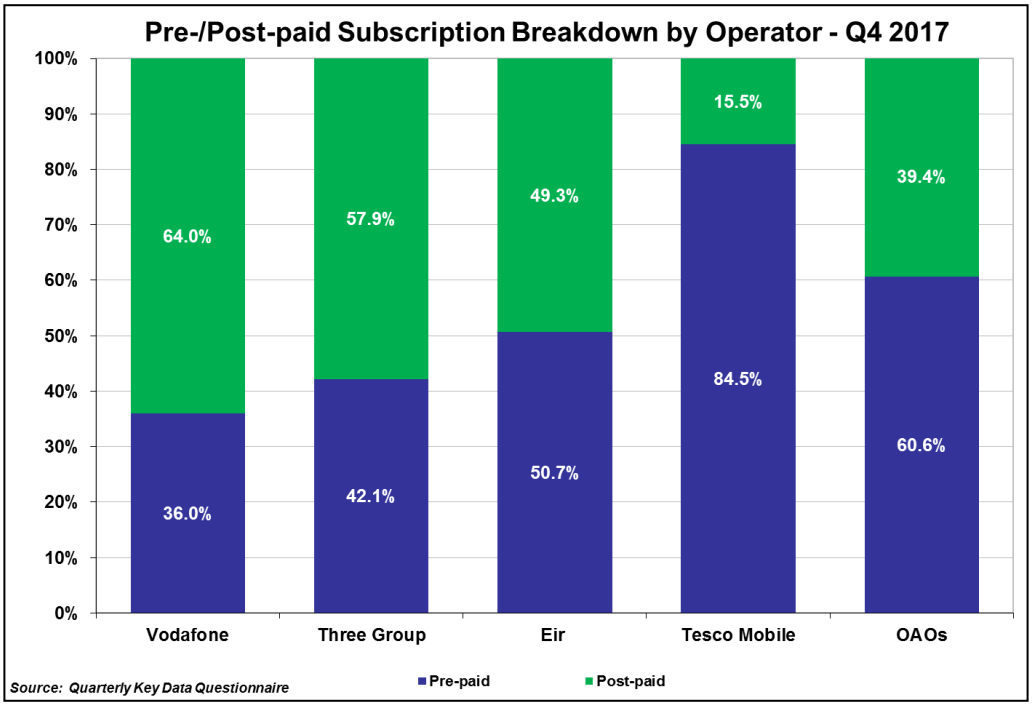


Figure 4.2.4 shows the split between pre-paid and post-paid mobile broadband subscriptions between Q4 2016 and Q4 2017. 87.8% of all mobile broadband subscriptions were post-paid at the end of December 2017, up from 86.0% one year previously.

Figure 4.2.4 – Profile of Pre and Post Paid Mobile Broadband Subscriptions

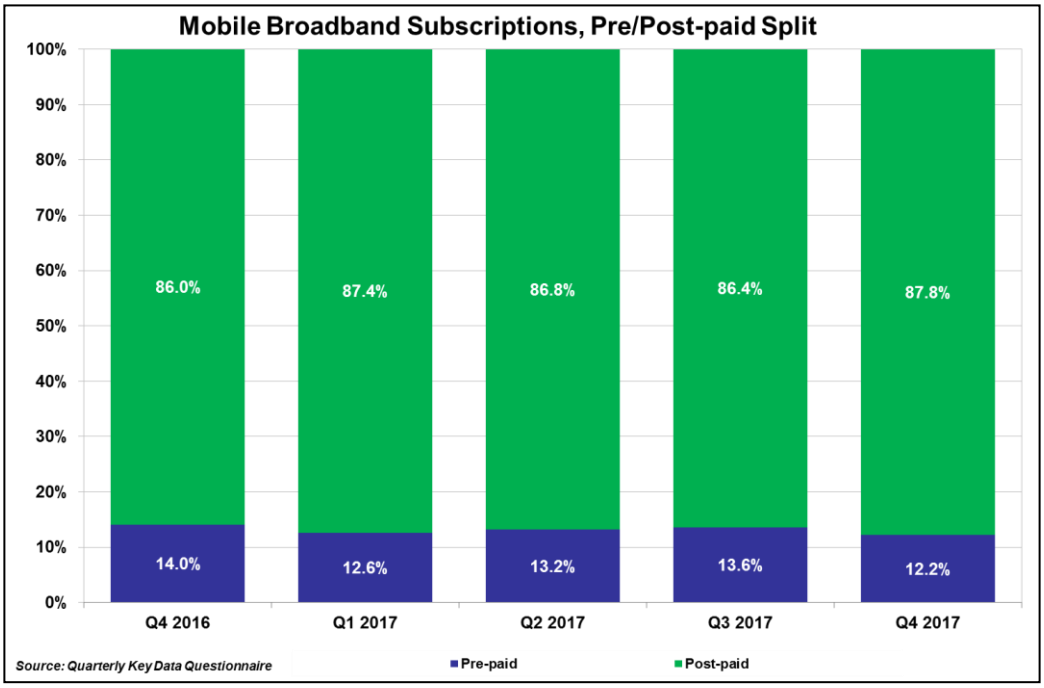


Figure 4.2.5 shows the split of post-paid business and non-business mobile subscriptions including and excluding mobile broadband (MBB) and M2M between Q4 2016 and Q4 2017. Approximately 51.6% of post-paid mobile subscriptions (including mobile broadband and M2M) and 34.2% of post-paid mobile subscriptions (excluding mobile broadband and M2M) were classed as business subscriptions in Q4 2017.

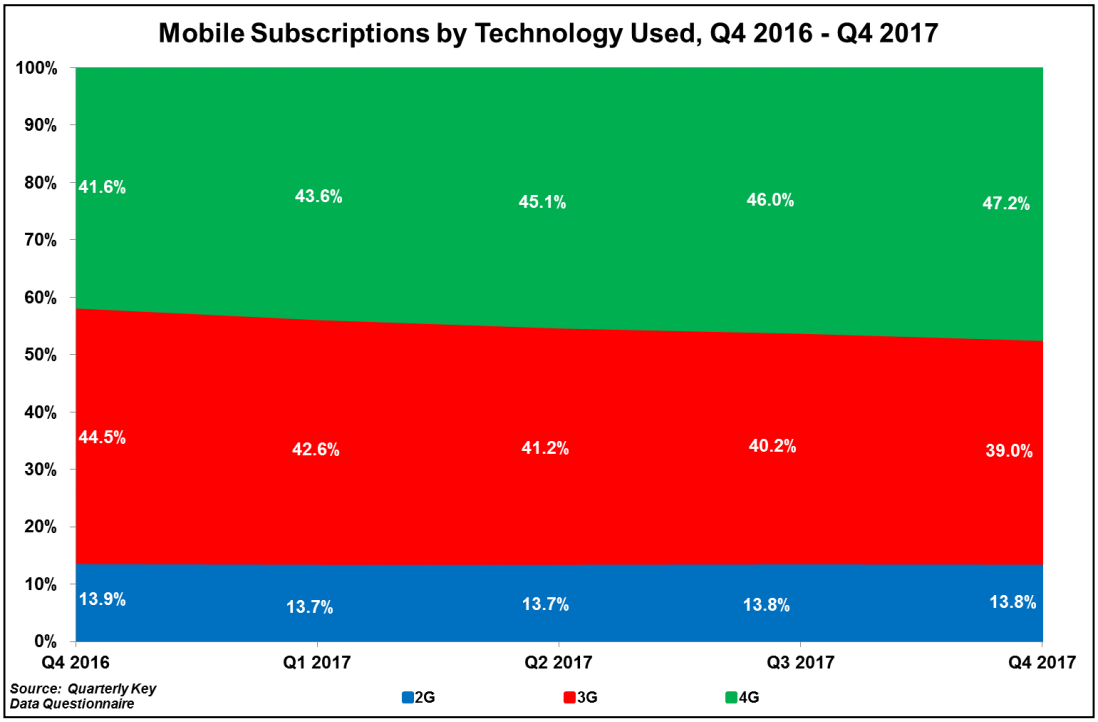
Figure 4.2.5 – Post-Paid Business and Residential Mobile Subscriptions

	Q4 2016	Q1 2017	Q2 2017	Q3 2017	Q4 2017
Residential subs inc. MBB & M2M[90]	**1,607,873**	**1,618,630**	**1,584,721**	**1,593,636**	**1,614,084**
Residential subs ex. MBB & M2M	**1,440,138**	**1,460,982**	**1,443,910**	**1,456,510**	**1,479,800**
Business subs inc. MBB & M2M	**1,537,370**	**1,586,621**	**1,622,765**	**1,671,911**	**1,722,099**
Business subs ex. MBB & M2M	**736,469**	**740,231**	**749,509**	**759,509**	**770,299**

Figure 4.2.6 shows the split of mobile subscribers (including mobile broadband and M2M subscribers) broken down by mobile network technology used by these subscribers. For example, subscribers who purchase 4G plans and have generated traffic on a 4G network are categorised as 4G subscribers. Categories are mutually exclusive in that subscribers who have generated traffic on multiple networks (e.g. 2G and 3G) are categorised as users of the higher quality network (3G in this example). By the end of Q4 2017, 47.2% of mobile subscribers were categorised as 4G network users, 39.0% were using 3G networks with the remaining 13.8% of subscribers using 2G networks only.

[90] All M2M subscriptions are assumed to be business subscriptions.

Figure 4.2.6 – Mobile Subscriptions by Network Used



4.3 Mobile Volumes

Figure 4.3.1a illustrates the change in voice minutes, SMS, and MMS (Multimedia Messaging Service) messages and 'other data' [91] volumes (internet uploads and downloads) sent between Q4 2014 and Q4 2017. Total retail mobile voice traffic was 3.161 billion minutes in Q4 2017, up by 1.1% on Q4 2016.

The total number of SMS messages sent by Irish mobile users was over 1.22 billion in Q4 2017, down 10.2% on Q4 2016 but up by 0.9% since Q3 2017. The number of multimedia messages (MMS) sent was down by 11.8% in the year to Q4 2017. Data usage volumes continue to rise, increasing by 46.1% in the year to Q4 2017 to reach 76,716 terabytes.

[91] Other data volumes means mobile traffic for which customers do and do not have to pay per MB charges and refers to both uploads and downloads. Retail international roaming data downloaded from network subscribers roaming on foreign networks (including EU-28) is also included.

Figure 4.3.1a – Total Voice, SMS, MMS and Data Volumes

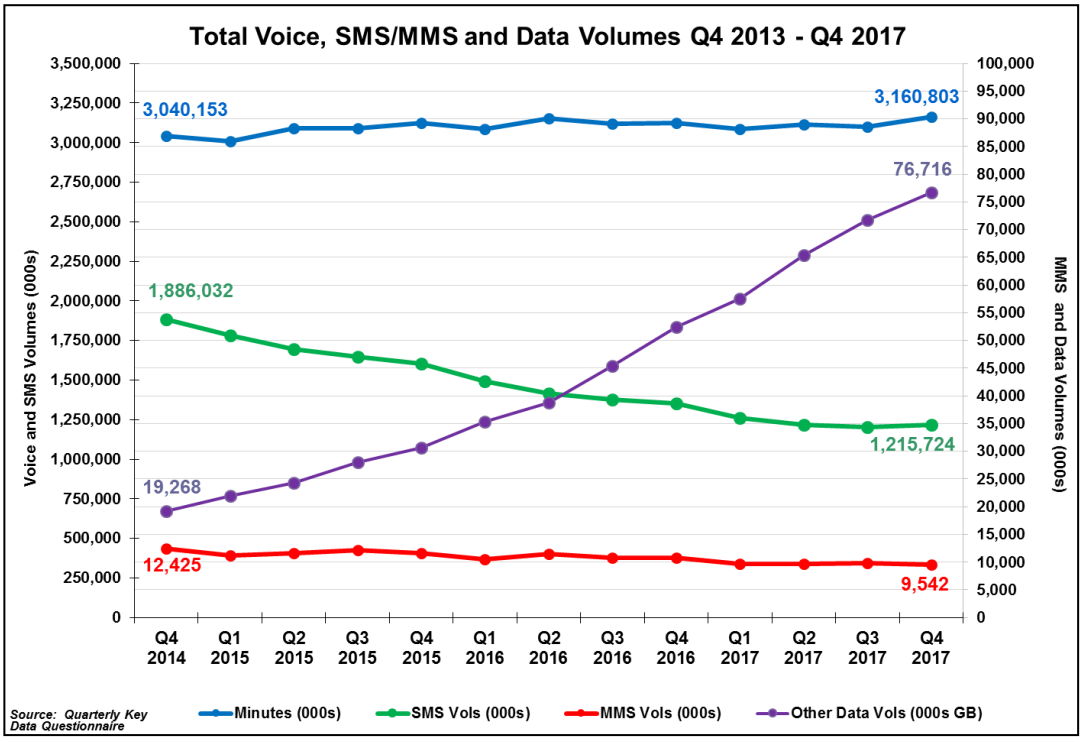


Figure 4.3.1b focuses specifically on total roaming (use of mobile services when abroad) volumes for voice minutes, SMS and MMS messages (combined) and other data volumes (internet uploads and downloads) between Q4 2014 and Q4 2017.

Seasonal effects of mobile volumes for all three metrics are clearly visible with Q3 of each year showing peak use, likely corresponding with summer holiday periods. In Q3 2017 the EU 'Roam Like At Home' roaming regulations came into effect on 15 June 2017[92] and this is likely to have contributed to the increases in roaming traffic.

Total retail roaming mobile voice traffic was 85 million minutes in Q4 2017, up by 35.2% on Q4 2016. Total combined SMS and MMS roaming messages sent by Irish mobile users was over 24 million in Q4 2017, up 0.5% on Q4 2016. Data usage volumes for Q4 2017 were 1,230 TB, up 249% in the year to Q4 2017.

[92] Under the EU Roam Like At Home ('RLAH') regulations, when roaming within the EEA, subscribers are charged the domestic retail price for calls, texts and data, subject to certain exceptions. Please see ComReg document 17/55r for further details.

Figure 4.3.1b – Roaming Voice, SMS, MMS and Data Volumes

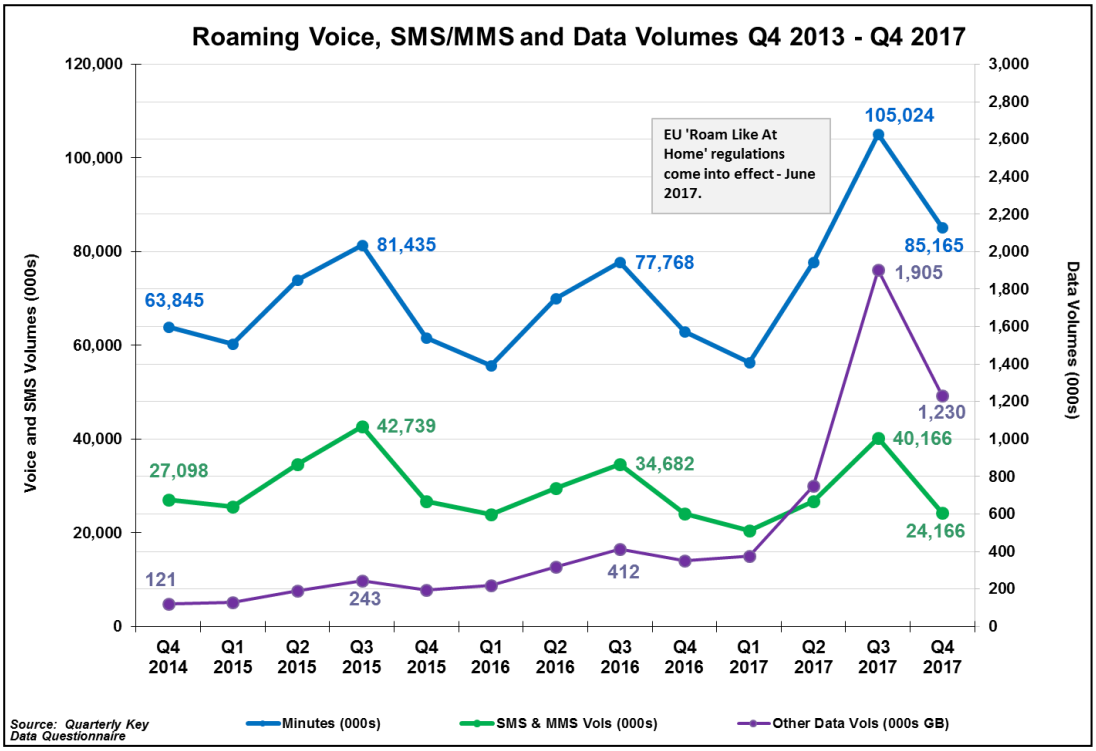


Figure 4.3.2 illustrates the share of types of mobile voice call minutes. As of Q4 2017, 76.2% of all mobile voice minutes were classified as mobile-to-mobile (on-net and off-net), 11.5% of mobile voice minutes were to fixed line phones, 8.7% were classified as international and roaming minutes and the remaining 3.6% were advanced voice minutes which include calls to premium rate services.

Figure 4.3.2 – Voice Call Minute Volumes by Type

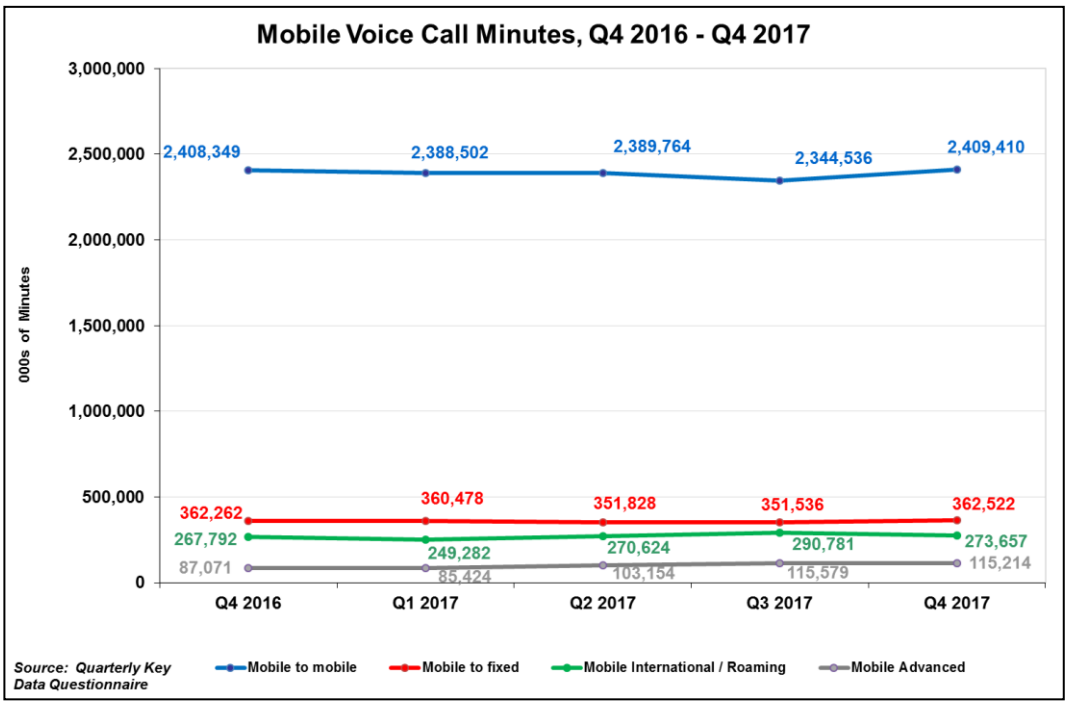


Figure 4.3.3 shows the change in the on-net and off-net mobile to mobile voice call minutes since Q4 2016. During Q4 2017, 55.7% of all mobile to mobile voice minutes were classified as on-net, down from 57.2% in Q4 2016.

Figure 4.3.3 – Mobile to Mobile Voice Call Minute Volumes by Type

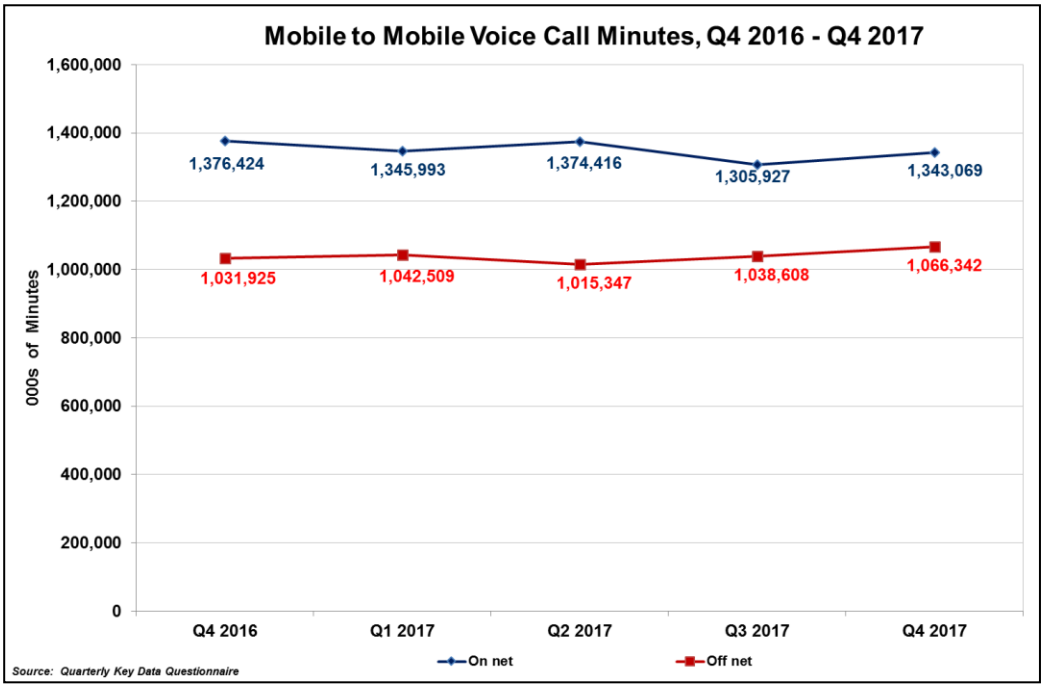


Figure 4.3.4 shows changes in monthly mobile voice call minutes per subscription. In Q4 2017 the average usage was 215.1 minutes (up 0.6% on Q4 2016).

Figure 4.3.4 – Monthly Mobile Voice Call Minutes per Subscription by Type

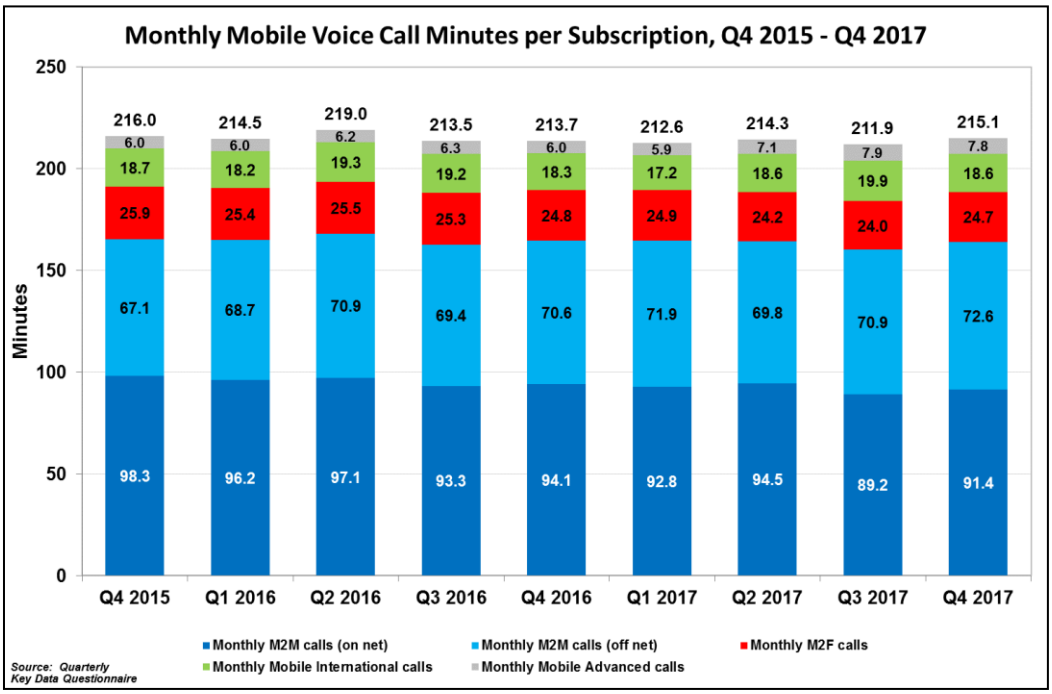


Figure 4.3.5 shows the change in the monthly mobile data volumes per subscription. In Q4 2017 the average monthly number of SMS/MMS sent was 83 and the average traffic per smartphone[93] reached 4.8 GB of data, while the average traffic per dedicated mobile broadband subscriber was 10.3 GB of data[94].

Figure 4.3.5 – Monthly Mobile Messaging and Data Volumes per Subscription

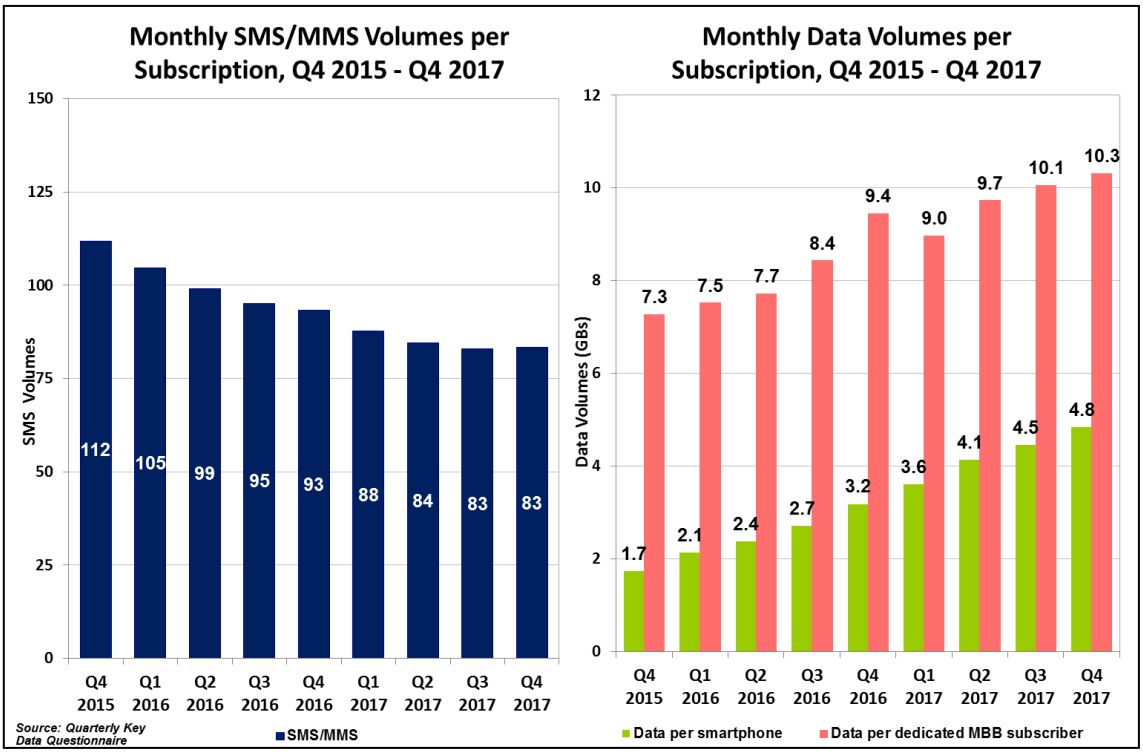
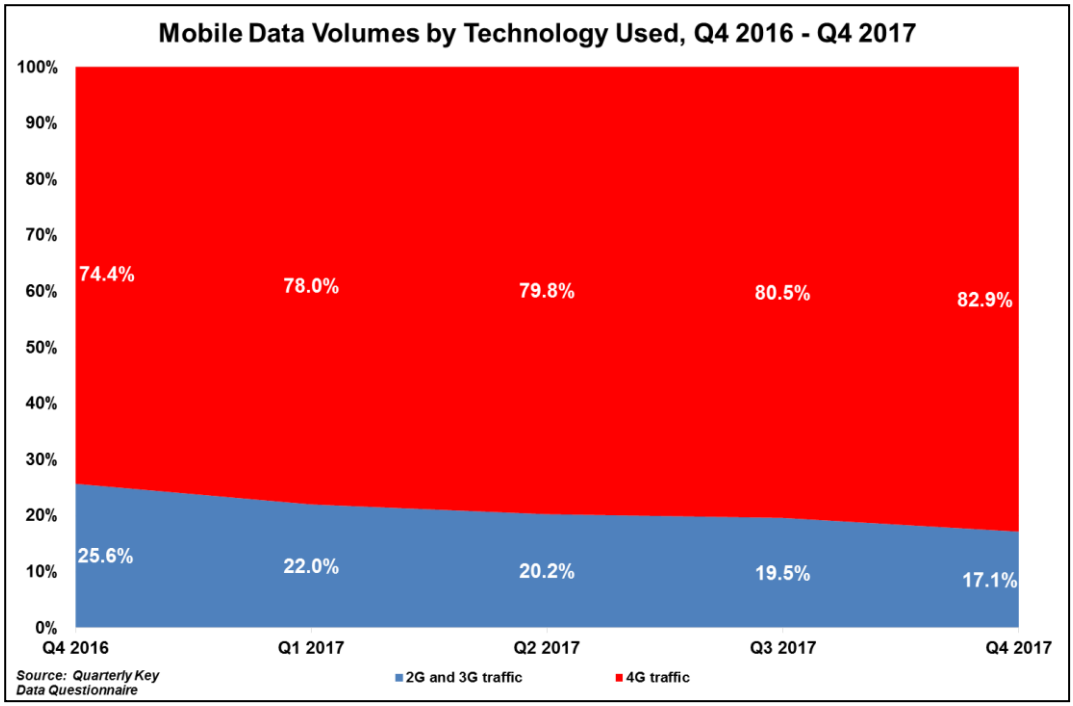


Figure 4.3.6 provides the breakdown of mobile data volumes by mobile network technology. Of all mobile data from Q4 2017 63,604 terabytes or 82.9% was generated by 4G network users, up from 74.4% in Q4 2016.

[93] Based on the number of standard mobile voice and data subscribers using 3G and 4G networks.

[94] Data traffic refers to both uploads and downloads.

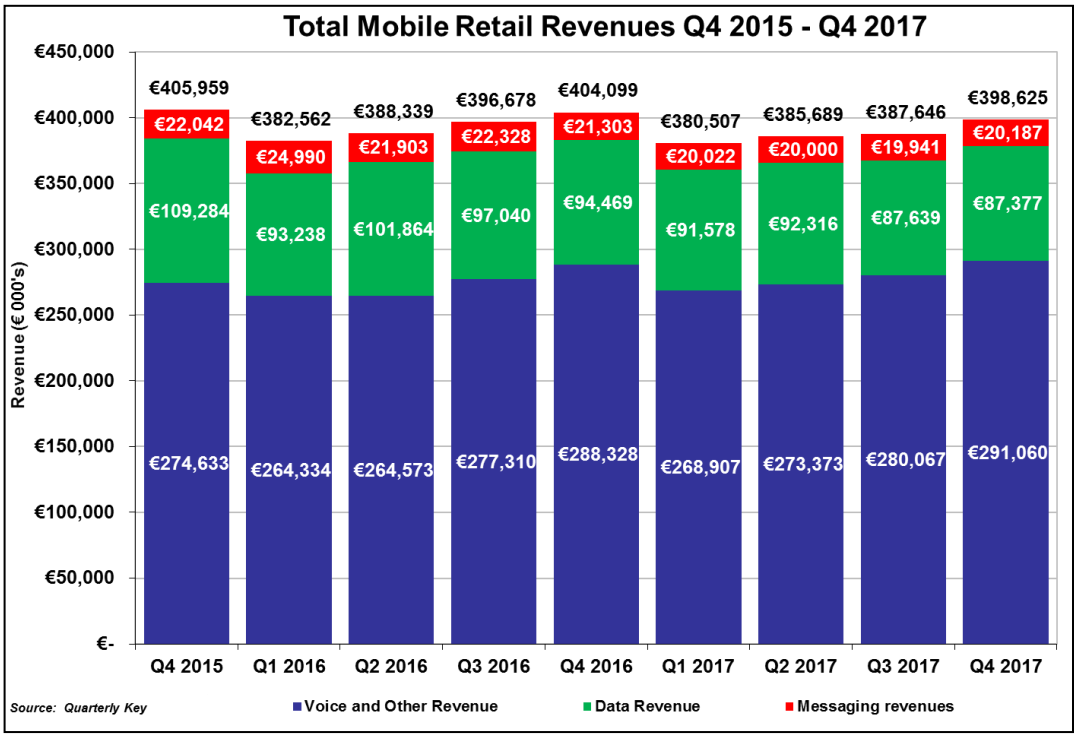
Figure 4.3.6 – Mobile Data Volumes by Technology



4.4 Mobile Revenues

Figure 4.4.1 shows that mobile retail revenues for Q4 2017 were over €398 million. Messaging revenues increased by 1.2% this quarter, data revenues decreased by 0.3% while voice and other revenues increased by 3.9% since Q3 2017.

Figure 4.4.1 – Total Mobile Retail Revenues



Wholesale mobile revenues were over €46 million in Q4 2017 (a decrease of 6.5% since Q3 2017), the vast majority accounted for by terminating traffic, followed by roaming[95] and access[96] revenues.

4.5 Average Monthly Revenue per User

Mobile ARPU is a function of both the price of mobile services and the level of usage of mobile services[97]. Figure 4.5.1 illustrates monthly ARPU for mobile phone services[98], mobile broadband and machine-to machine broken down by prepaid and post-paid subscribers from Q2 2017 to Q4 2017.

In Q4 2017 mobile ARPU for prepaid mobile phone subscribers was €14.05 per month while mobile ARPU for post-paid mobile phone subscribers was €38.84 per month. For the same period mobile ARPU for prepaid mobile broadband subscribers was €13.89 per month while mobile ARPU for post-paid mobile broadband subscribers was €20.25 per month. ARPU for combined or 'blended' prepaid and post-paid mobile phone subscribers was €25.51 in Q4 2017 and €19.37 for mobile broadband subscribers. ARPU for machine-to-machine subscriptions, which are all post-paid, was €1.60 for Q4 2017.

[95] Revenues from the provision of wholesale roaming (inbound) services (voice/text/data services). Excludes revenues from the provision of wholesale roaming (outbound) services to hosted MVNOs.

[96] Includes revenues from the wholesale provision of voice, messaging and data services to MVNOs and access revenues not related to traffic. Includes revenues from the provision of wholesale roaming (outbound) services (voice/text/data services) to hosted MVNOs. Includes revenues from wholesale provision of voice, messaging and data services based on national roaming agreements.

[97] From Q2 2017 mobile ARPU is split into three mobile services (phone services, mobile broadband and M2M).

[98] Mobile phone services include voice calls, SMS/MMS messaging, and data use.

Figure 4.5.1 – Monthly Average Revenue per User by Mobile Service

All operators	Q2 2017	Q3 2017	Q4 2017	Q3'17 - Q4'17 Change
Mobile Phone Services - Prepaid	€14.14	€14.41	€14.05	-2.5%
Mobile Phone Services - Postpaid	€39.40	€38.80	€38.84	+0.1%
Mobile Phone Services - Blended	€25.76	€25.53	€25.51	-0.1%
Mobile Broadband - Prepaid	€13.79	€14.94	€13.89	-7.0%
Mobile Broadband - Postpaid	€19.64	€21.84	€20.25	-7.3%
Mobile Broadband - Blended	€18.94	€20.89	€19.37	-7.3%
Machine-to-Machine	€2.01	€1.69	€1.60	-5.4%

4.6 Machine to Machine Subscriptions

Machine to Machine (M2M) refers to technologies that involve data communication between devices or systems in which, at least in principle, human intervention does not occur. These technologies may encompass either wireless or wired communications, or both. M2M communication is already widely deployed in Ireland and its usage is set to grow rapidly, driven in no small part by the expansion of next generation telecommunications technology and a decline in the cost of the embedded wireless modules and sensors that enable M2M services. This continued improvement in the infrastructural environment around M2M has led to a rapid growth of applications and services that meet users' business and lifestyle needs. M2M technologies transfer data on the condition of physical assets and devices to a central location (which is distantly located the devices) for effective monitoring and control. M2M has a multitude of uses, with current deployments in the healthcare, energy, home automation and transportation sectors. Specific examples of M2M applications include smart metering, vehicle and consignment tracking and alarm monitoring systems of various kinds, ATM machines signalling the need for cash replacement, smart grid monitoring of real time electricity demand, smart home applications such as switching on and off lights, heating and other appliances.

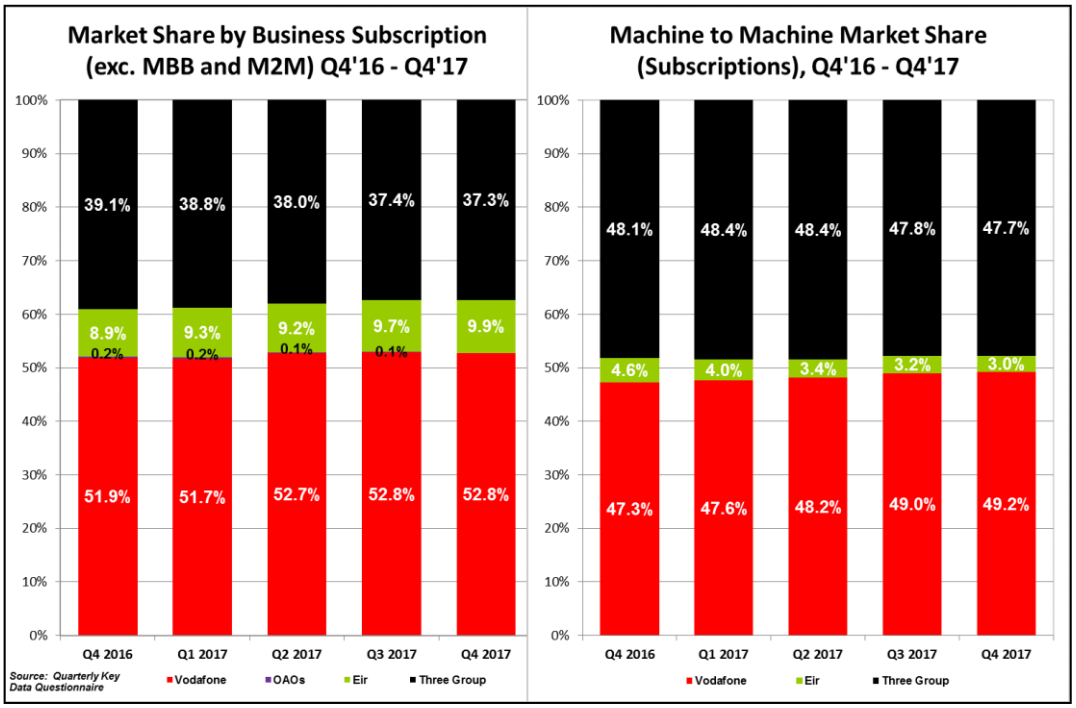
Different networking technologies can be used to connect M2M devices, depending on the amount of mobility needed, quality required, data rate, the degree of dispersion of devices over an area, and so on. Gathering data on dedicated M2M mobile connections assists ComReg in assessing future regulatory needs for M2M, e.g. for numbering resources. The additional data also allows for more accurate assessment of mobile telephony and broadband connections.

There were 828,780 M2M subscriptions at the end of Q4 2017. This is an increase of 23.6% since Q4 2016 and represents 13.8% of all mobile subscriptions. Figure 4.6.1 outlines market shares based on active M2M subscriptions as well as market shares in terms of business subscribers (including mobile broadband and M2M subscriptions).

In Q4 2017 Vodafone Group had the largest market share of M2M subscriptions at 49.2% followed by Three Group with 47.7% of market share. Eir had the remaining 3.0% of M2M subscriptions.

Vodafone had the largest market share in terms of mobile voice business subscriptions (52.8%) followed by Three Group (37.3%) and Eir (9.9%). As of Q4 2017 OAOs no longer have a share in mobile voice business subscriptions[99].

Figure 4.6.1 – Market Share – Business and M2M Subscriptions



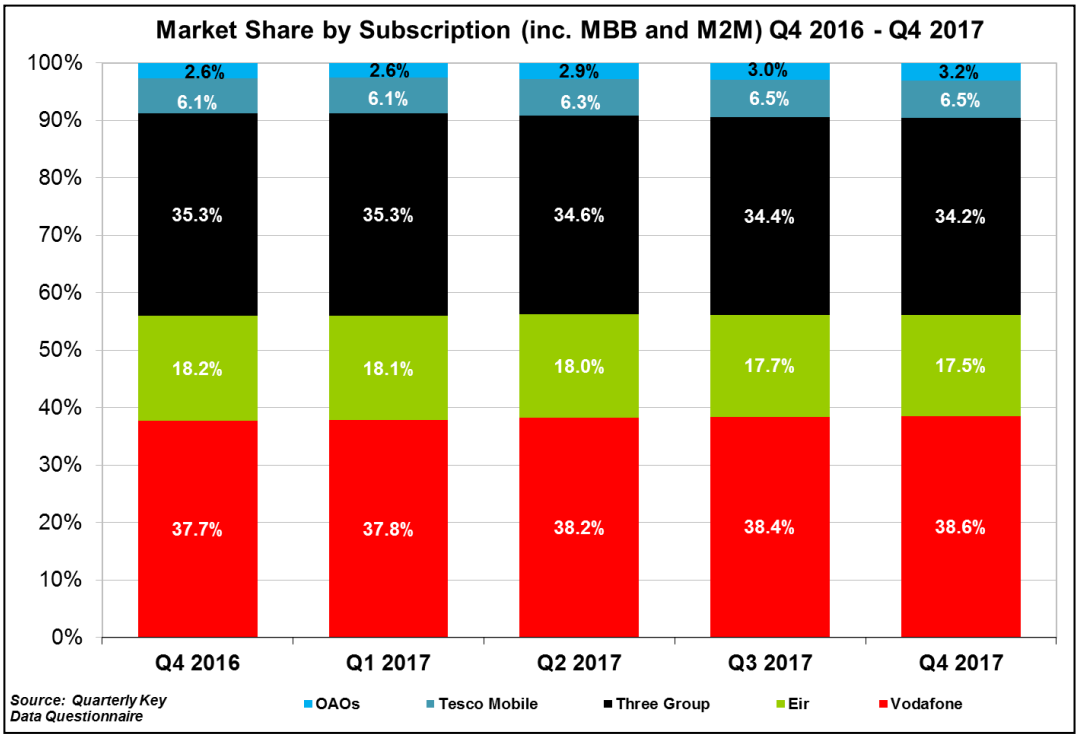
[99] This is due to Blueface exiting the mobile market.

4.7 Competition in the Mobile Market

Figures 4.7.1 and 4.7.2 outline mobile market shares based on the number of active subscriptions reported by each operator.

Figure 4.7.1 includes mobile broadband and M2M while figure 4.7.2 excludes mobile broadband and M2M. Vodafone had the highest market share including and excluding mobile broadband and M2M (38.6% and 36.3%), followed by Three Group[100] (34.2% and 31.8%), Eir (17.5% and 20.1%) and Tesco Mobile (6.5% and 7.9%). OAOs had market shares of 3.2% and 3.8% respectively.

Figure 4.7.1 – Market Share – Number of Subscriptions (inc. mobile broadband and M2M)



[100] As of Q2 2014 O2 is included under Three Group umbrella. For more details see note on page 9 of this report.

Figure 4.7.2 – Market Share – Number of Subscriptions (ex. mobile broadband and M2M)

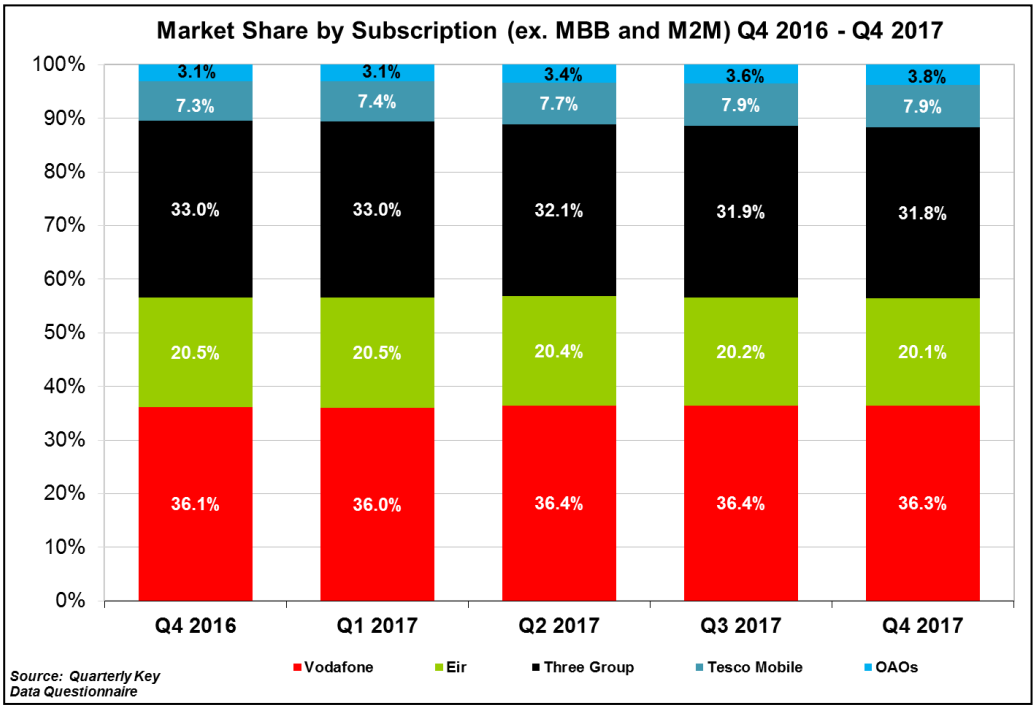
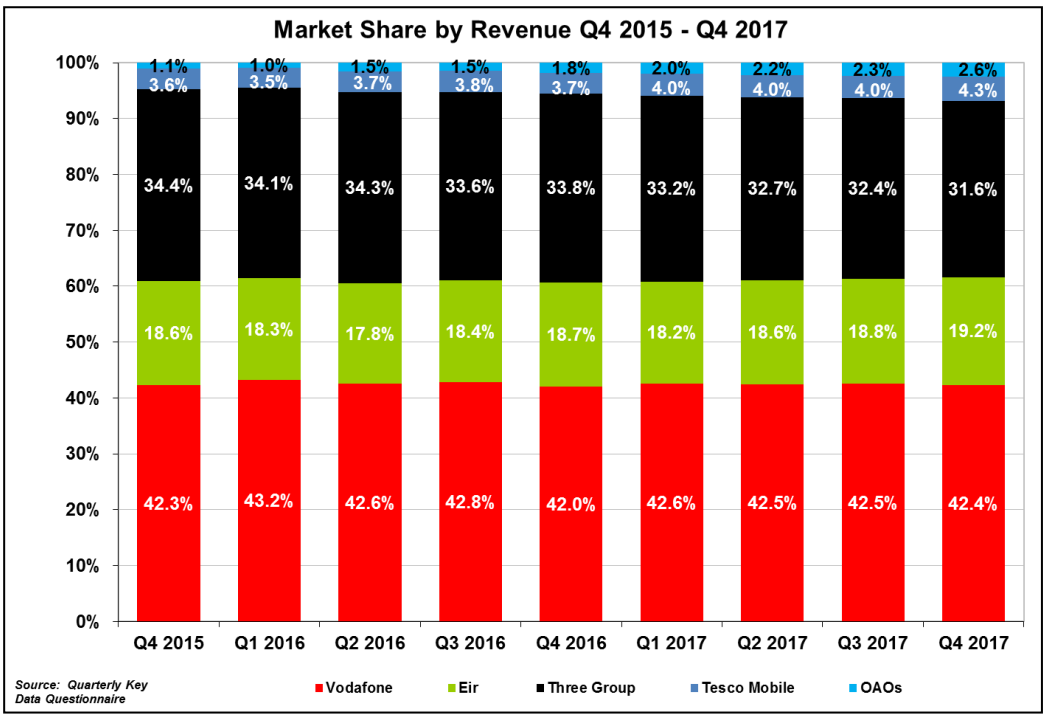


Figure 4.7.3 shows market shares by total retail revenues for mobile operators. Vodafone's market share remains highest at 42.4% followed by Three Group at 31.6%. Eir's market share is the next largest at 19.2% followed by Tesco and OAOs at 4.3% and 2.6% respectively.

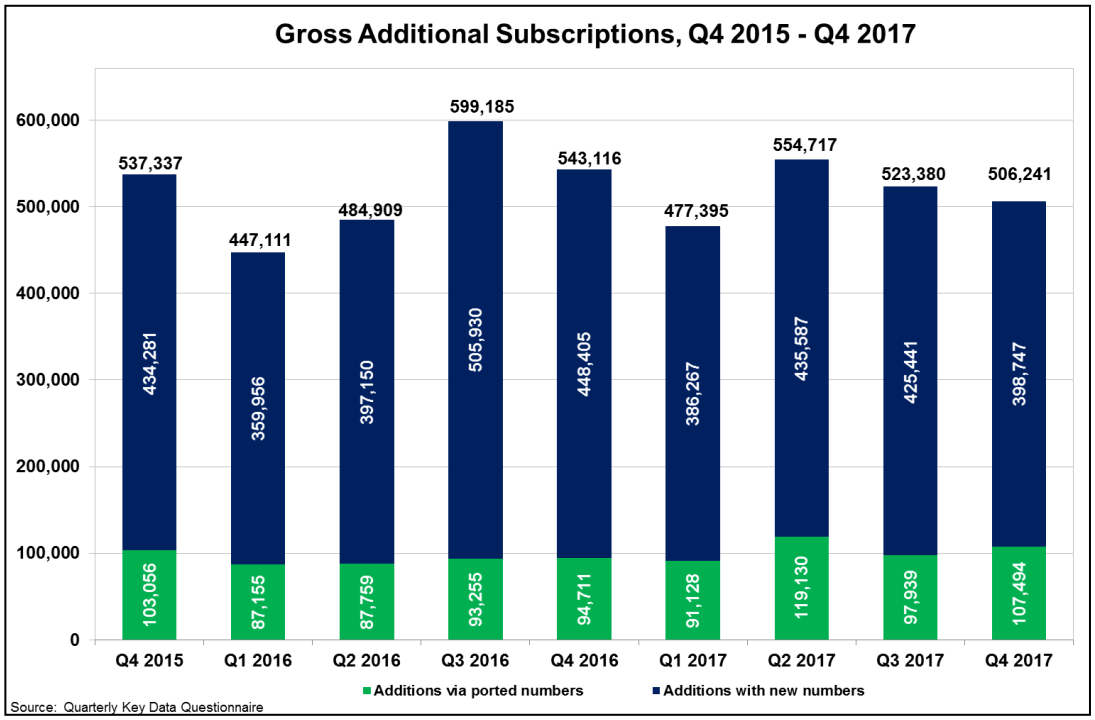
Figure 4.7.3 – Market Share by Revenue



4.8 Switching in the Mobile Market

Figure 4.8.1 illustrates the number of subscribers who port their numbers as a proportion of total gross additions[101]. There were 506,241 gross additional subscriptions in Q4 2017. In the quarter to December 2017, 107,494 numbers were ported between mobile operators with a total of 415,691 numbers having been ported over a twelve month period. Gross additions via ported numbers accounted for 21.2% of total gross additions in Q4 2017.

Figure 4.8.1 – Gross Subscription Additions and Numbers Ported



4.9 Mobile Pricing Data

ComReg uses independently collated Strategy Analytics (Teligen) pricing data using OECD-approved methodologies to examine the relative prices of a number of specific mobile phone usage baskets of national and international telecoms services for both residential and business users. The pricing data used for international comparisons includes pricing information for selected countries, namely Germany, Denmark, Spain, Netherlands and the United Kingdom[102].

For national comparisons, the prices advertised by the largest operators (in terms of the number of subscribers to mobile voice services) during Q4 2017 were analysed[103] for

[101] Gross additions include consumers who avail of multiple SIMs and thus, slightly overstate the switching intensity.

[102] In future QKDRs ComReg may expand the analysis and include more countries for price comparisons.

[103] The subscribers of these operators jointly account for over 99% of all mobile voice subscribers. 4G tariffs were included in the analysis.

selected usage baskets. In this QKDR prices advertised by Three, Vodafone, Eir, Tesco, Lycamobile, ID, Virgin Media and 48 were analysed. Thus, the analysis does not necessarily present the cheapest tariffs available in the whole market, but rather the lowest cost tariffs offered by the largest operators.

For international comparisons, the prices advertised by largest operators (in terms of the number of subscribers to mobile voice services) in each of the respective countries during Q4 2017 were analysed[104] for selected OECD mobile phone usage baskets[105] (with an average per country price presented based on the average of lowest price tariffs advertised by three highest ranking operators in national pricing comparisons). In order to enable international comparisons, prices are presented in Euro Purchasing Power Parities (PPPs) and exclude VAT charges. PPPs provide an indication of the cost of telecoms services in countries analysed in relation to the cost of all other products and services.

The presented analysis incorporates discounts offered by operators. Nonrecurring charges (e.g. charges for the activation of a service) are discounted/amortised over three years. Calls to mobile (on-net and off-net) and fixed phones are included in the baskets.

The OECD basket methodologies are reviewed and revised periodically, the 2010 methodology was recently updated. This QKDR uses the 2010 OECD methodology with ComReg expecting to apply the latest OECD methodology in the QKDR for Q1 2018. Further information on the composition of the broadband basket can be found in the Explanatory Memorandum which accompanies this report.

The following baskets are presented in this report[106]:

Residential and business mobile phone usage baskets

Type of basket	Basket
Prepaid Residential	30 calls (50 minutes), 100 SMS, 0.1GB data basket
Postpaid Residential	100 calls (182 minutes), 140 SMS and 2GB data basket
Business	300 calls (569 minutes), 225 SMS and 1GB data basket

[104] The subscribers of these operators jointly account for over 80% of all mobile voice subscribers in each of the respective countries.

[105] The same basket was applied to each respective country in order to make the international comparison.

[106] In the future QKDRs ComReg may expand the analysis based on additional and/or different usage baskets.

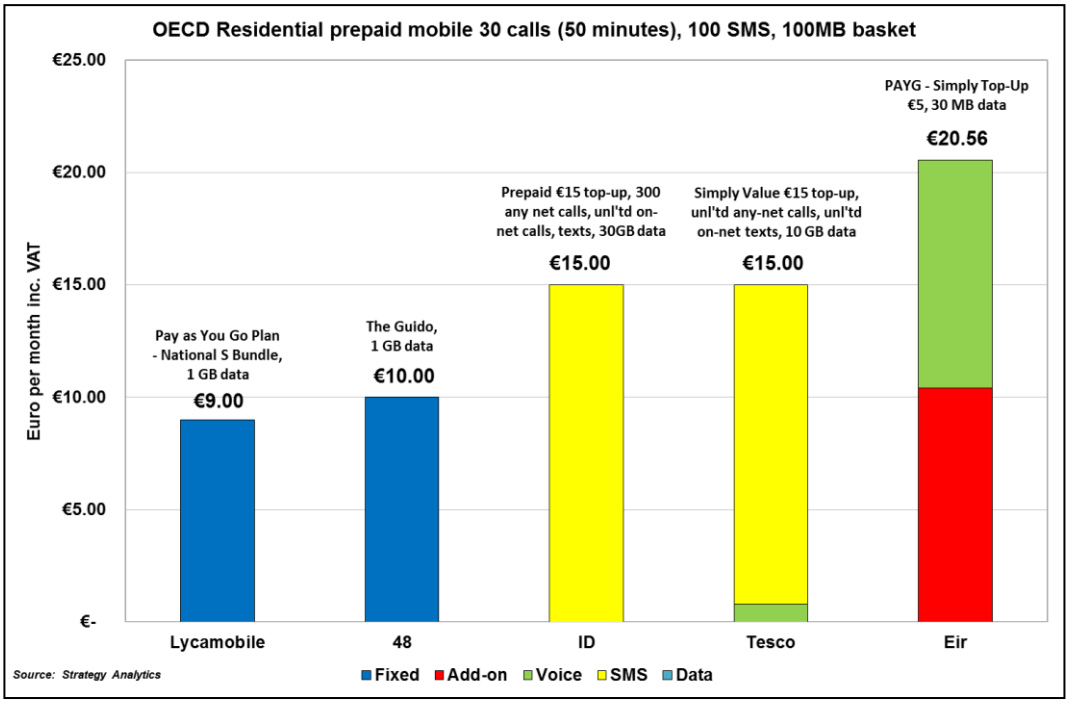
These baskets were selected given they most closely related to the mobile voice usage patterns presented in figures 4.3.4 and 4.3.5 above. ComReg notes that these baskets reflect usage patterns of an average user and do not necessarily reflect prices of tariffs that are geared towards customers having different usage profiles.

ComReg notes that comparisons are based on the prices of advertised tariffs only and the analysis does not take into consideration other important factors such as quality of the network, levels of customer care, additional units of consumption available after having accounted in the analysis for the units in the OECD usage basket, minimum contract term etc.

OECD Pre-Paid Residential Mobile Basket[107]

Figure 4.9.1 compares pre-paid tariffs advertised by mobile phone services providers for residential customers based on a basket of 30 calls (50 minutes), 100 SMS and 100 MB data usage[108]. Lycamobile (€9.00) offers the cheapest tariff for this particular OECD basket, followed by 48 (€10.00) and ID jointly with Tesco at €15.00.

Figure 4.9.1 – Residential Pre-paid Mobile Phone Services Basket (National)

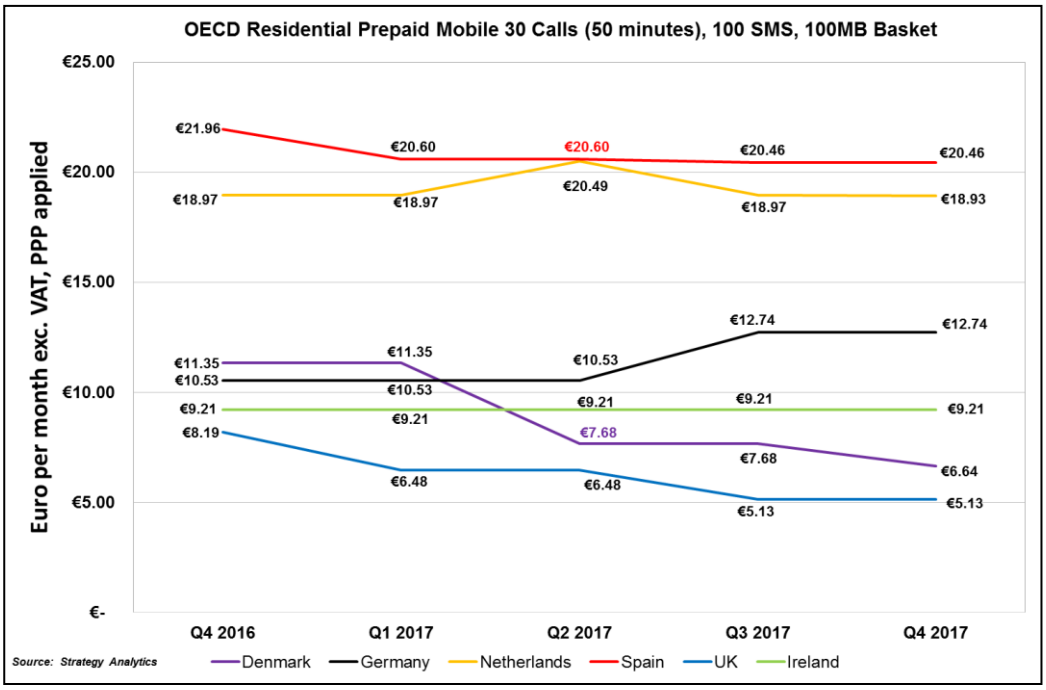


[107] ComReg notes that for pre-paid tariffs requiring periodic mandatory top ups (e.g. mandatory monthly (30 day) top ups), the full cost of the top up would be taken into consideration when estimating the total cost of these tariffs.

[108] Fixed element of the price refers to the pre-paid tariffs that require mandatory top-ups.

Figure 4.9.2 illustrates Ireland's ranking alongside five other Western European countries[109]. Ireland ranks in third place with an average price of €9.21[110] for this particular basket. The average price in Ireland is 24.4% cheaper than the average price[111] for all of the countries included in the analysis.

Figure 4.9.2 – Residential Pre-paid Mobile Phone Services Basket (Int'l)



OECD Post-Paid Residential Mobile Basket

Figure 4.9.3 compares post-paid tariffs advertised by mobile phone service providers for residential customers based on a basket of 100 calls (182 minutes), 140 SMS and 2GB data usage. ID offers the cheapest tariffs for this particular basket at €14.00 followed by Virgin Media (€15.00) and then Eir at €24.17.

[109] Note that historical data for Denmark has been revised by Strategy Analytics resulting in decreases to prepaid pricing.

[110] As noted previously, average prices used for international comparisons exclude VAT charges.

[111] The average of prices presented in Figure 4.9.2.

Figure 4.9.3 – Residential Post-paid Mobile Phone Services Basket (National)

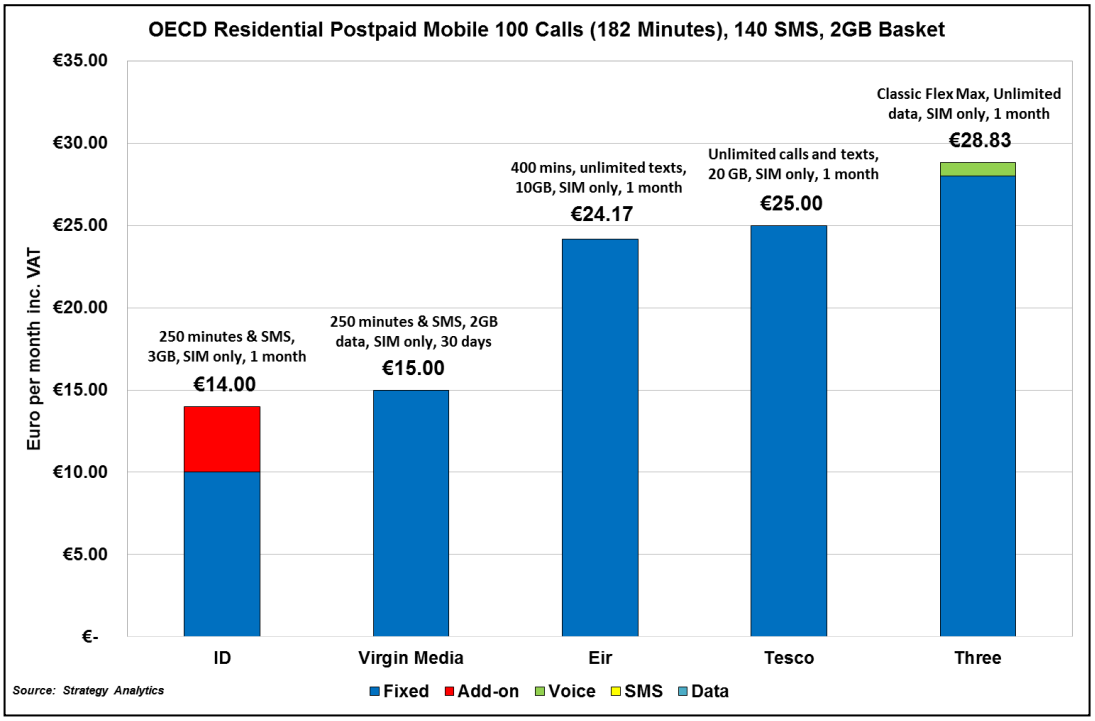
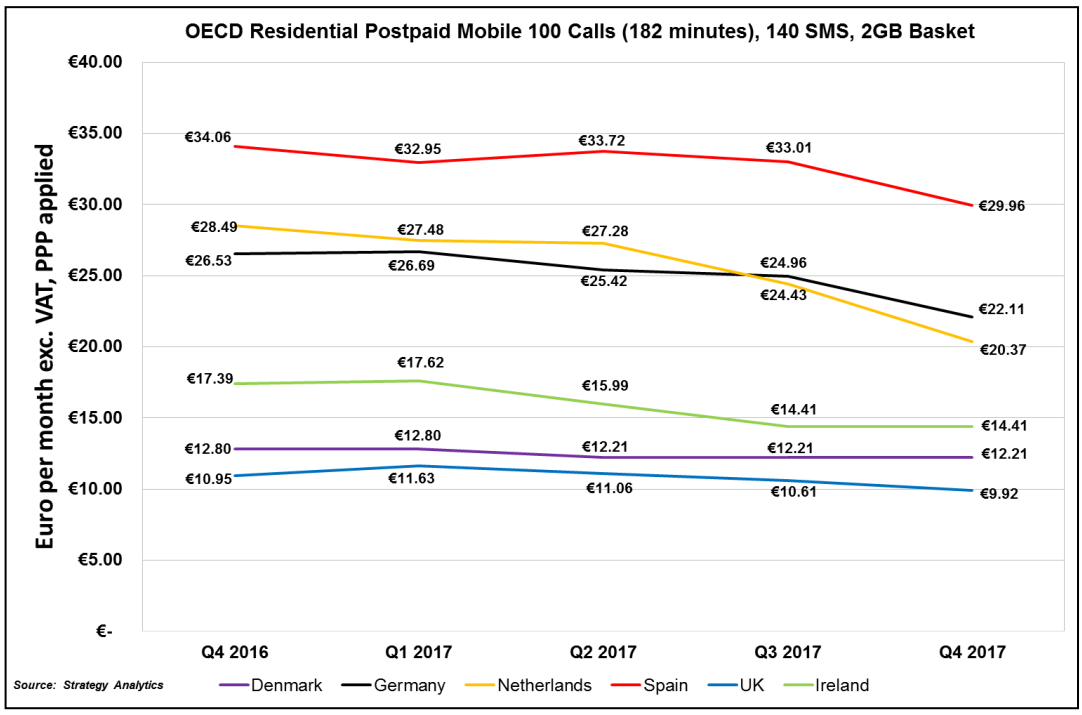


Figure 4.9.4 shows that Ireland (€14.41[112]), in an international comparison context, ranks in third place. The average price in Ireland is 20.7% cheaper than the average price[113] for all of the countries included in the analysis.

Figure 4.9.4 – Residential Post-paid Mobile Phone Services Basket (Int'l)



[112] As noted previously, average prices used for international comparisons exclude VAT charges.

[113] The average of prices presented in Figure 4.9.4.

OECD Post-Paid Business Mobile Basket

Figure 4.9.5 compares post-paid tariffs advertised by mobile phone service providers[114] for business customers based on an OECD basket of 300 calls (569 minutes), 225 SMS and 1 GB data usage. Presented prices exclude VAT charges. Eir offers the cheapest tariff for this particular basket at €24.17, followed by Three (€25.00) and Vodafone (€40.00).

Figure 4.9.5 – Business Post-paid Mobile Phone Services Basket (National)

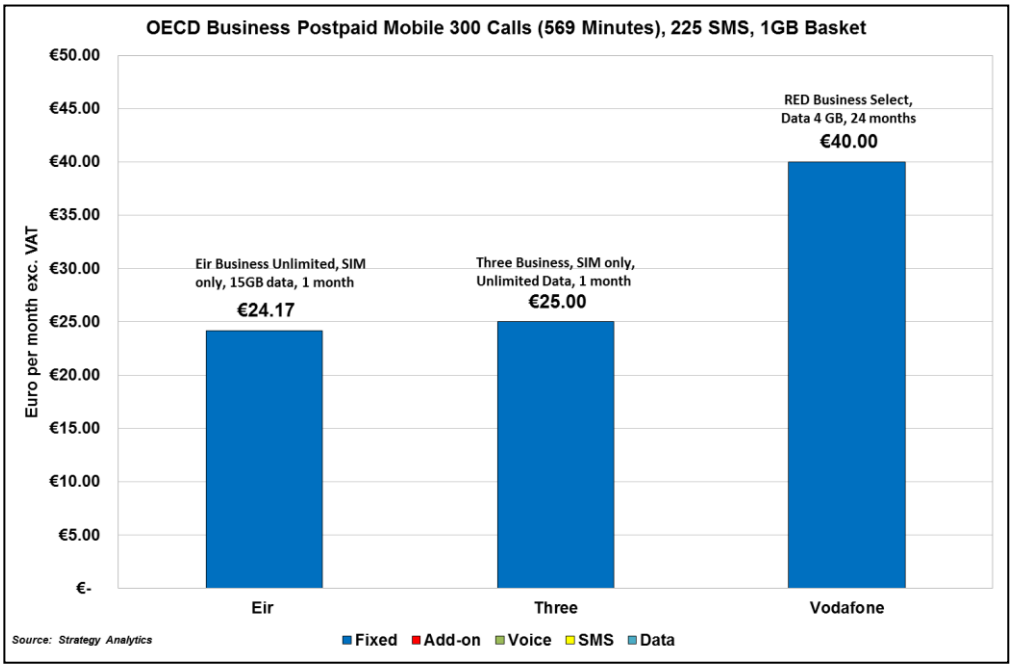


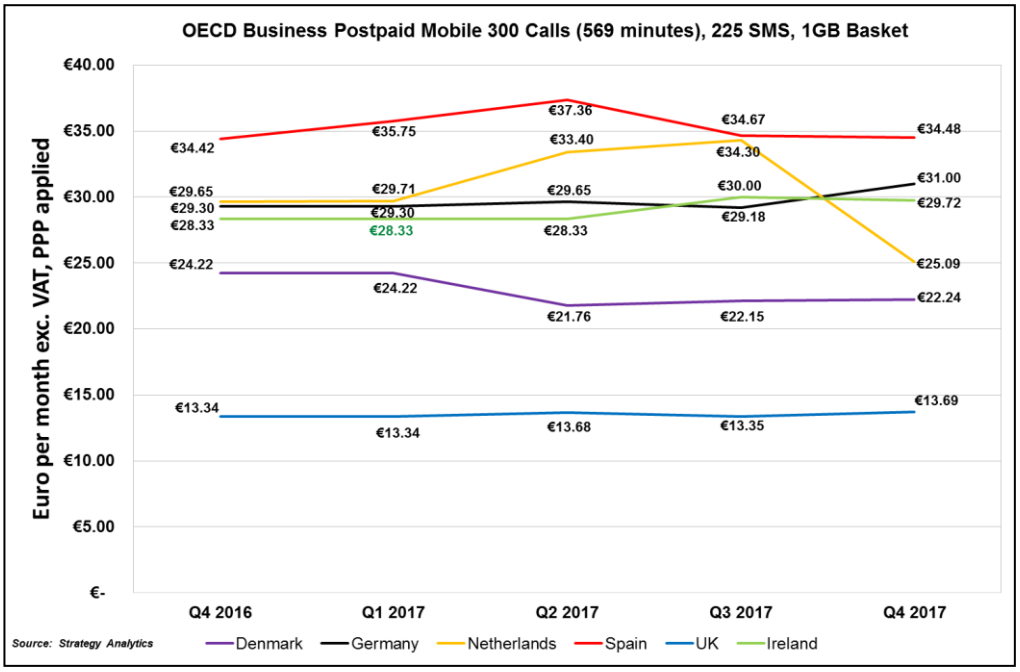
Figure 4.9.6 illustrates Ireland's ranking alongside five other Western European countries. Ireland ranks in fourth place with an average price of €29.72[115] for this particular basket. The average price in Ireland is 14.2% more expensive than the average price[116] for all of the countries included in the analysis.

[114] Only tariffs advertised by Eir, Vodafone and Three were analysed for business customers. Some operators do not offer services to business customers.

[115] As noted previously, average prices used for international comparisons exclude VAT charges.

[116] The average of prices presented in Figure 4.9.6.

Figure 4.9.6 – Business Post-paid Mobile Phone Services Basket (Int'l)



5. Broadcasting

5.1 Overall Broadcasting Market

This broadcasting data is from the Nielsen TV Audience Measurement (TAM) Establishment Survey.[117] The Survey indicated that there were 1,579,000 TV homes in Ireland in January 2018.[118] Figure 5.1.1 shows the estimated number of TV homes by reception type in January 2018 and January 2017 on the basis of the reception method through which the highest number of TV channels is received. Irish terrestrial DTT-only homes represented 11.9% of all TV homes (although 42% of TV homes receive Irish DTT) as of January 2018. Cable/satellite platforms represented the remaining 88.1% of all TV homes in Ireland.[119]

Figure 5.1.1 – TV Homes by Reception Type[120]

Reception[121]	January 2018 (000s)	January 2017 (000s)	Jan. 2017 as % of Total TV Homes	% Change Jan. '17 – Jan. '18
Irish Terrestrial	**188**	**191**	**11.9%**	**-1.6%**
Multi Total	**1,391**	**1,387**	**88.1%**	**+0.3%**
Digital Cable/Sat	**1,391**	**1,371**	**88.1%**	**+1.5%**
IPTV	**81**	**51**	**5.1%**	**+58.8%**
Total Cable/Sat	**1,391**	**1,387**	**88.1%**	**+0.3%**
Total TV Homes	**1,579**	**1,578**	**N/A**	**+0.1%**
RECEPTION: Reception type categories are hierarchically defined and mutually exclusive. A home is classified once within reception type and this is based upon the highest form of reception available within the home.				
Multi Total: Made up of UK DTT / FTA Satellite, Cable, and SKY homes.				
Irish Terrestrial refers to homes which only receive any or all of the following: RTÉ One, RTÉ Two, UTV Ireland, TV3, TG4, 3e, RTÉ One+1, RTÉ News Now, RTÉ jr via an aerial and a set-top box or an aerial and an integrated digital TV or via Saorsat.				
Cable/Satellite: Includes UK DTT / FTA Satellite, Cable, IPTV and SKY homes. Sky homes based on the possession of SKY boxes, not on being SKY subscribers.				

[117] The Establishment Survey is a survey produced by Nielsen TV Audience Measurement (fieldwork is carried out by Behaviours and Attitudes) on behalf of Television Audience Measurement Ireland Ltd (a TV ratings body). The Establishment Survey covers areas such as ownership of TV related equipment, method of TV reception and demographics of TV household individuals such as age etc.

[118] From Q2 2016 TAM data is based on biannual surveys (January and July) rather than three times a year. Therefore Q2 and Q3 will contain the same data as will Q4 and Q1 of the following year.

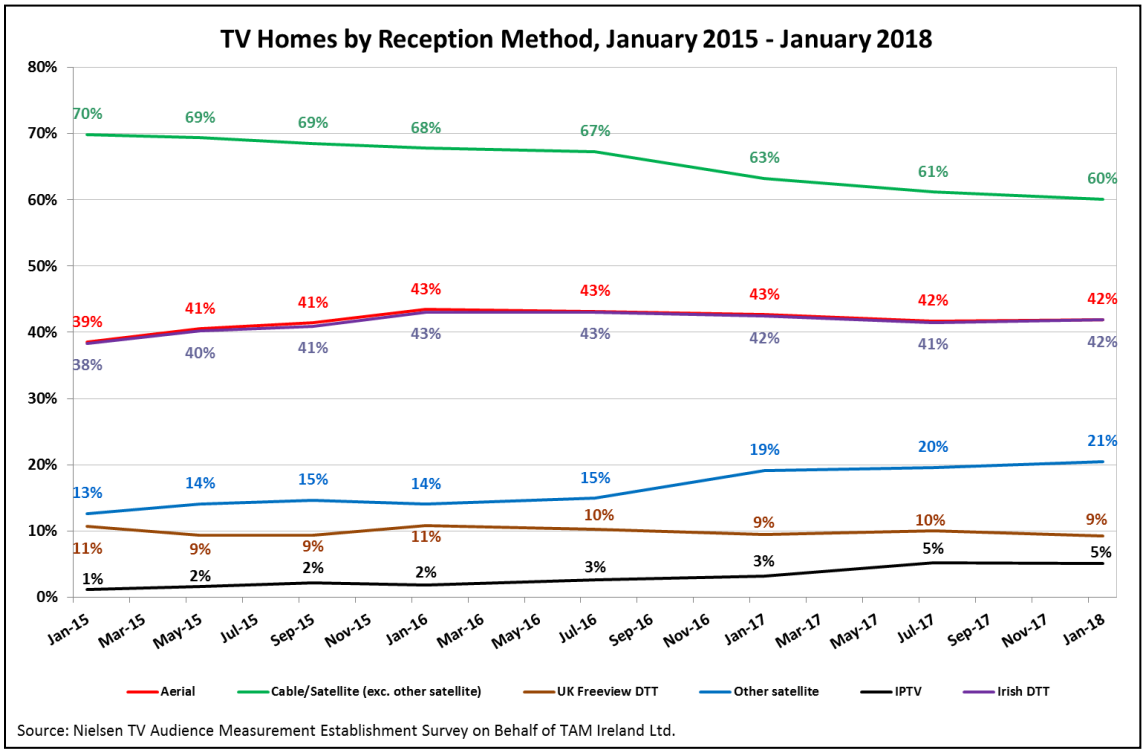
[119] Approximately 412,000 of those reported above as digital cable/sat and total cable/sat are UK DTT/FTA satellite. MMDS (Multichannel Multipoint Distribution Service), was discontinued in April 2016.

[120] Source: Nielsen TV Audience Measurement Establishment Survey on behalf of TAM Ireland.

[121] As of Q2 2017 analogue cable/satellite is no longer included in Nielsen TV reception types.

Figure 5.1.2 shows TV homes by reception method[122] from January 2015 to January 2018. The percentage of cable/satellite TV homes (this does not include other satellite i.e. respondents who said 'don't know' and satellites that receive foreign language stations including freesat) has declined from 70% to 60% over the last three years.[123] Television homes that receive other satellite services (i.e. on a non-subscription basis) beside Sky represented 21% of TV homes in January 2018. Reception by IPTV method is relatively low (5% of TV homes). Approximately 42% of TV homes have Irish DTT.

Figure 5.1.2 – TV Homes by Reception Method[124]



Source: Nielsen TV Audience Measurement Establishment Survey on Behalf of TAM Ireland Ltd.

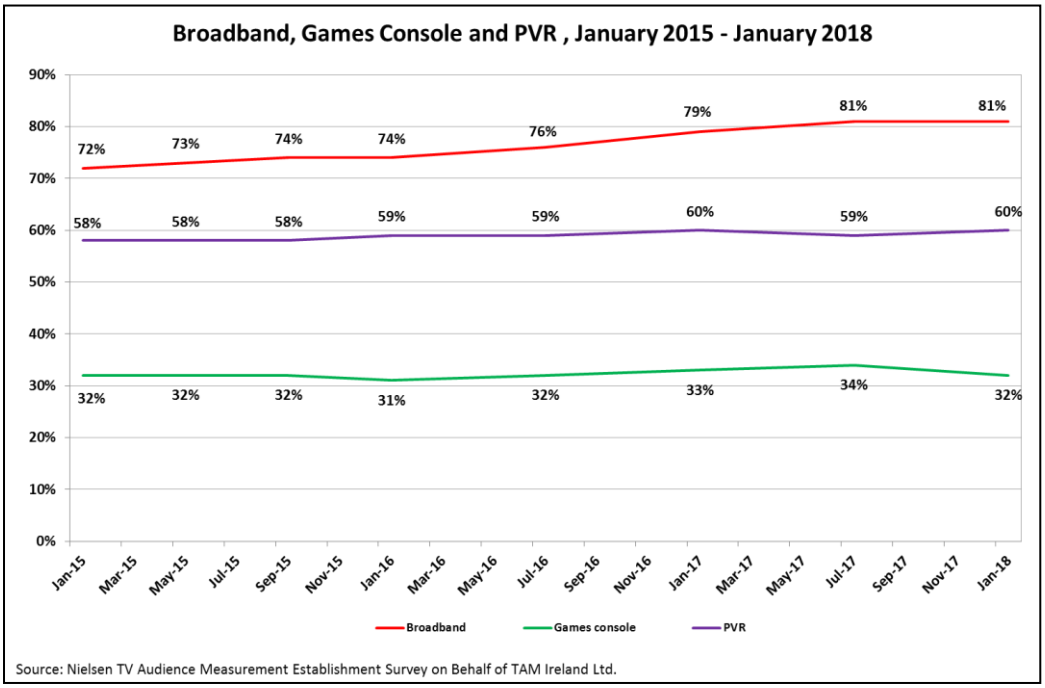
[122] This is determined by the method by which homes with a TV receive their channels. Each home can have more than one method of reception e.g. aerial and cable or digital satellite, digital satellite and cable, etc. The question is asked for their main and up to 9 TV sets. For this reason, the total for the reception methods adds up to more than 100%.

[123] It should be noted that from December 2011 the reporting of the cable/satellite figure has changed. This is because up to December 2011 cable/satellite reception method included homes that had both cable and satellite twice (i.e. (1) cable, (1) satellite). Nielsen now publish homes with cable and satellite as one reception method - as cable or satellite (i.e. cable or satellite (1)).

[124] As of November 2012 'Aerial' includes Saorsat homes. Irish DTT includes Saorsat. Cable/satellite includes IPTV, excludes UK DTT, Irish DTT and Saorsat.

Figure 5.1.4 shows TV homes by broadband [125] access, game console and PVR [126] ownership between January 2014 and January 2017. Broadband access was present in circa 81% of homes with a television in January 2018. The number of homes with games consoles has changed over the last three years from 32% in January 2015 to 34% in July 2017 and back to 32% as of January 2018. PVR ownership was 60% in January 2018, up from 58% in January 2015.

Figure 5.1.4 – Broadband, Games Console and PVR Trends



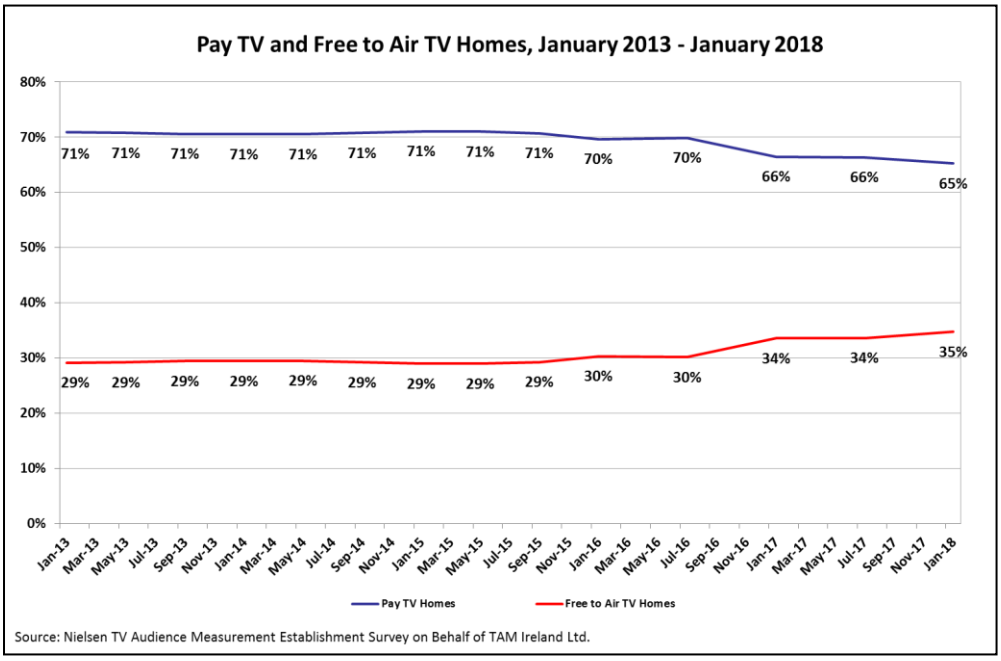
Source: Nielsen TV Audience Measurement Establishment Survey on Behalf of TAM Ireland Ltd.

[125] Both fixed and mobile broadband.

[126] A PVR is an electronic device used to record media digitally. The PVR is also known as a digital video recorder or DVR. A PVR records and plays back television programmes, but, unlike the VCR, it stores the programs in digital rather than analogue format, for example, SKY+Box, or Virgin Media Digital Video Recorder.

Figure 5.1.5 shows the level of household penetration of pay TV services and free to air TV services in Ireland based on reception method. This chart has been derived by ComReg using Nielsen data and is not a classification used by Nielsen or a classification used as part of the survey itself. Homes with a pay TV (cable, satellite and IPTV homes)[127] service were generally stable from January 2013 to July 2016 at 71% average of all TV homes. However, we have seen a decrease in the latter half of 2016 with the figure at 65% in January 2018.

Figure 5.1.5 – Pay TV vs Free to Air TV Homes, 2013 - 2018



[127] IPTV is included from December 2011.

The following table lists Respondents who submitted data which was used to produce the Q4 2017 Quarterly Key Data Report.

Table A1: List of Respondents

Respondent Name (N=42)
AirSpeed Telecom
AT&T Global Network Services Ireland Ltd.
Blueface Ltd.
BT Communications Ireland Ltd.
Casey Cablevision Ltd.
Colt Technology Services Ltd.
Crossan CableComm Ltd.
Digitalforge
Digiweb Ltd.
Edge Telecommunications Ltd.
Eircom Ltd.
E-Net
Equant operations in Ireland (EGN BV and ENS Ltd.)
ESB Telecoms
EU Networks Ireland Private Fiber Ltd.
Europasat Satellite (Ireland) Ltd.
Fastcom Broadband Ltd.
Fulnett Limited t/a Strencom
Host Ireland Business Broadband
ID
IFA Telecom
Imagine Group
Level 3 Communications (Ireland) Ltd.
Lycamobile Ireland Ltd.
Magnet Networks Ltd.
Modeva Networks
Nova Networks Ltd.
Permanet Ltd.
Postmobile
Pure Telecom Ltd.
Rapid Broadband Ltd.
Ripplecom Ltd.
Siro Ltd.
Sky Ireland Ltd.
SprintLink Ireland Ltd.
Tesco Mobile Ireland Ltd.
Three Ireland (Hutchison) Ltd.
Verizon Ireland Ltd.
Virgin Media Business Ltd.
Virgin Media Ireland Ltd.
Vodafone Ireland Ltd.
Welltel (Ireland) Ltd.