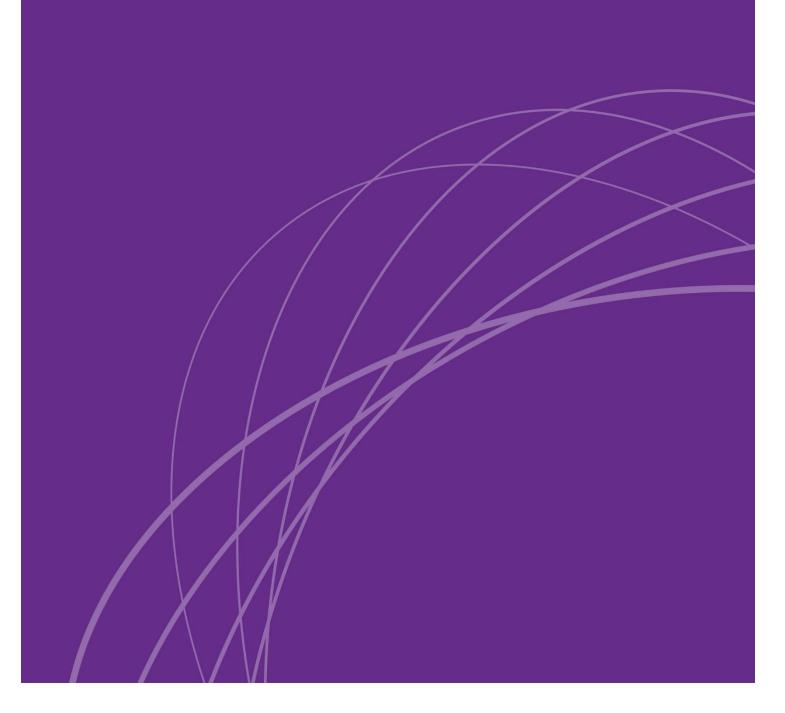


### Report:

# The Swedish Telecommunications Market 2017



### The Swedish Telecommunications Market 2017

### Report number

PTS-ER-2018:16

### Reference number

17-11418

### ISSN

1650-9862

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### **Contents**

Su	nmary of the Swedish telecommunications market 2017	5
Saı	nmanfattning av Svensk telekommarknad 2017	9
1	Introduction	15
2	Income in the market	17
3	Mobile voice and data services  3.1 Subscription - Mobile subscriptions 3.2 Voice traffic 3.3 SMS and MMS 3.4 Data traffic 3.5 Income - Mobile subscriptions 3.6 Market share - Mobile subscriptions 3.7 Market share - Mobile broadband 3.8 Subscriptions - M2M 3.9 Income - M2M 3.10 Income for interconnection in mobile networks 3.11 Number porting - Mobile numbers	18 20 21 22 23 24 25 26 27 27 28
4	Broadband and internet 4.1 Subscriptions - Internet services 4.2 Subscriptions - Fixed broadband 4.3 Transfer speed - Fixed broadband 4.4 Market share - Fixed broadband 4.5 Income from internet services	29 30 31 33 34
5	Fixed line telephone services 5.1 Subscriptions - Fixed telephony 5.2 Voice traffic - Fixed telephony 5.3 Market share - Fixed telephony 5.4 Income from fixed line telephone services 5.5 Income from interconnection in fixed networks 5.6 Number porting - Fixed line telephone services	36 37 39 40 41 41
6	TV services 6.1 Traditional pay TV subscriptions 6.2 Market share - Digital pay TV services 6.3 Income from TV services 6.4 Free-to-air terrestrial TV	<b>42</b> 42 44 46 48
7	Bundled services	50
8	<ul> <li>Data communication services and dark fibre to end customers</li> <li>8.1 Data communication to end customers</li> <li>8.2 Income from data communication services and dark fibre to end customers</li> </ul>	<b>52</b> 52 52
9	Ducting	54
10	APPENDICES	55

### **Figures**

Figure 1	End user market income for electronic communication
Figure 2	Number of mobile subscriptions by type of subscription1
Figure 3	Number of subscriptions that used 4G (LTE)29
Figure 4	Outgoing voice call minutes from mobile subscriptions2
Figure 5	Number of SMS texts sent in total and per subscription per month
Figure 6	Volume of mobile data transferred
Figure 7	Income from mobile subscriptions - by fixed and variable charges24
Figure 8	Market share - mobile subscriptions
Figure 9	Market share - Mobile broadband20
Figure 10	Number of subscriptions for M2M
Figure 11	Number of portings of mobile and fixed line telephone numbers
Figure 12	Number of internet subscriptions
Figure 13	Development of subscriptions for broadband
Figure 14	Distribution of speeds for download of data - fixed broadband
Figure 15	Distribution of speeds for upload of data - fixed broadband
Figure 16	Market share - fixed broadband subscriptions
Figure 17	Income from the end customer market for fixed internet services
Figure 18	Number of subscriptions for fixed line telephony3
Figure 19	Outgoing voice call minutes from fixed telephony
Figure 20	Market share - fixed telephony subscriptions
Figure 21	Income from end customers for fixed line telephone services4
Figure 22	Number of pay TV subscriptions by distribution platform
Figure 23	Market share - subscriptions to digital TV services4
	Income from TV services in basic subscriptions
Figure 25	Number of bundled subscriptions5
Figure 26	Income from data communication services and dark fibre to end customers 5

### **Summary of the Swedish** telecommunications market 2017

### A selection of results from this year's survey

All figures refer to the situation on 31 December 2017 and comparisons are made with the same date the previous year.

### **Mobile subscriptions**



- Total mobile subscriptions: 14.4 million (-2%)
   of which voice & data: 10.3 million (+2%)
   of which only data: 1.9 million (-12%)
   of which only voice: 2.2 million (-10%)

- Mobile data traffic: 831,000 Tbyte (+30%)

### **Broadband subscriptions**

- Fixed broadband (fibre, cable, xDSL, other): 3.9 million (+ 5%)
- of which fibre: 2.4 million (+18%)



### Fixed telephony subscriptions

- Fixed telephony: 2.6 mill (-16%)
- of which IP telephony: 1.5 million (+12%)



### Traditional pay TV subscriptions

- Digital TV subscriptions: 2.9 million (1%)
- of which IPTV fibre: 1.0 million (+18%)
- Analogue TV subscriptions: 2.4 million (-2%)

### About the survey

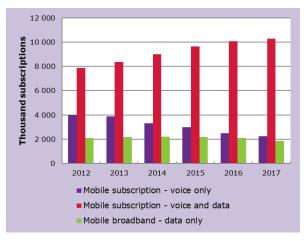
The Swedish Telecommunications Market is one of Sweden's most important operator surveys on subscriptions, income and data traffic in the fields of mobile subscriptions, broadband, fixed line telephone services and traditional TV services. The report is based on PTS' own data collection, which covers developments at operators and other stakeholders.

This is a total survey for which the target population is stakeholders who in 2017 are notified to PTS pursuant to the Act (2003:389) on electronic communication (LEK). The questionnaire was sent to 595 organisations, 565 of which answered the survey. The response rate was 95 per cent. The Swedish Telecommunications Market is a descriptive report. The data is used in PTS' analysis work within the authority's area of responsibility.

### Mobile services:

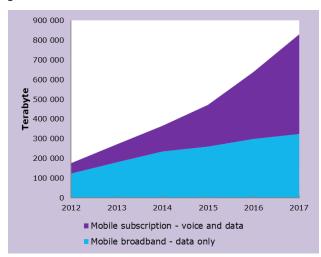
### The number of mobile subscriptions for voice and data continues to grow

The number of mobile subscriptions for both voice and data, which is often used on smart phones, was 10.3 million, an increase of 2 per cent. Mobile subscriptions for voice alone amounted to 2.2 million, which is 10 per cent lower than the previous year. Mobile subscriptions for data alone amounted to 1.9 million, a fall of 12 per cent. 76 per cent of the total number of mobile subscriptions were contract subscriptions, which is the same percentage as the previous year. The rest were pay-as-you-go (cash card) phones.



In 2017, the total end customer income from mobile voice and data services amounted to approximately SEK 30.8 billion. This is an increase of 2 per cent. Fixed charges (subscriptions) generated SEK 25.6 billion in income in 2017, an increase of 4 per cent. Variable charges fell by 7 per cent to SEK 5.2 billion.

### The volume of data transferred in the mobile networks increased by 30 per cent



Data traffic in the mobile networks increased to 831,000 Terabytes (Tbytes) in 2017. This is an increase of 30 per cent, the same rate of increase as in the previous period. Subscriptions for both voice and data accounted for 61 per cent of all data transferred in the mobile networks.

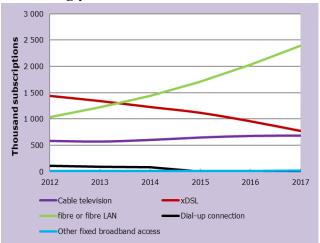
### Launch of VoLTE

During 2017, several operators launched VoLTE (Voice over LTE), which enables subscribers to make voice calls via the 4G network. Call minutes via LTE amounted to 345 million, which corresponds to 1 per cent of total outgoing minutes from mobile subscriptions.

### **Development of fixed broadband:**

Fibre subscriptions continue to increase strongly

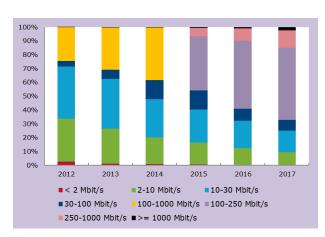
There were 3.9 million subscriptions for fixed broadband, which corresponds to an increase of 5 per cent. The number of subscriptions via fibre increased by 18 per cent and amounted to 2.4 million. Fibre and fibre LAN accounted for the greater part of the increase in fixed broadband and amounted to more than half (62 per cent) of all fixed broadband subscriptions.



Income from fixed internet subscriptions amounted to SEK 12.4

billion in 2017, which is 8 per cent more than in the preceding period. Income from fibre subscriptions increased by 21 per cent during the year to SEK 6.5 billion.

### Subscriptions for 100 Mbps or more continue to increase



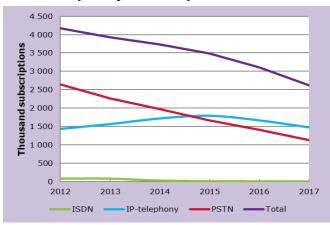
There were 2.6 million subscriptions with download speeds of 100 Megabit/s (Mbps) or more, which is an increase of 19 per cent. This represents 67 per cent of all fixed broadband subscriptions. Subscriptions for 1 Gigabit/s (Gbps) or more increased strongly (167%) to 100,000 subscribers.

Fibre subscriptions with a download speed of 100 Mbps or more amounted to 2.0 million (an increase of 26 per cent), while subscriptions via cable TV networks with the same speed amounted to 560,000, which was an increase of 2 per cent. The number of fixed broadband subscriptions with upload speeds of 100 Mbps or more increased more than in previous periods. These increased by 39 per cent to 1.5 million subscriptions.

### Increase in number of fixed broadband subscriptions via collective agreements

Over 720,000 broadband subscriptions were reported to be via collective agreements, which is an increase of 16 per cent. Fixed broadband subscriptions via collective agreement refer to active, private internet subscriptions by, for example, landlords, housing associations, communities or communes instead of private individuals. The proportion of the total number of broadband subscriptions via fibre via collective agreements was 25 per cent, and the corresponding proportion via cable TV was 16 per cent.

### Fixed telephony subscriptions continue to decrease

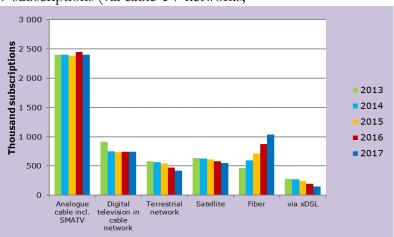


There were 2.6 million subscriptions for fixed line telephony, which is a reduction of 16 per cent. Of these, IP telephony subscriptions fell by 12 per cent to 1.5 million. Income from fixed line voice services fell by 15 per cent to SEK 5.5 billion in 2017.

### Digital TV subscriptions on the same level as the previous year

There were 2.9 million digital TV subscriptions (via cable TV networks,

satellite, terrestrial networks or broadband) which is the same as the preceding year. The number of subscriptions for TV via fibre increased by 18 per cent to 1.0 million, and fibre is the largest digital distribution platform for digital pay TV subscriptions. The total income from TV services for basic and supplementary subscriptions amounted to SEK 9.8 billion



at the end of December 2017, which is the same as a year earlier.

### Want to find out more?

At the PTS statistics portal (<a href="http://www.statistik.pts.se/">http://www.statistik.pts.se/</a>), you can search for and sort statistics in the different areas. Data and market shares for the individual operators are also available.

### Sammanfattning av Svensk telekommarknad 2017

### Ett urval av resultaten i årets undersökning

Alla sifferuppgifter avser förhållandet per den 31 december 2017, och jämförelser görs med samma tidpunkt föregående år.

### Mobilabonnemang



- Totalt mobilabonnemang: 14,4 milj. (-2%)
  varav samtal & data: 10,3 milj. (+2%)
  varav endast data: 1,9 milj. (-12%)
  varav endast samtal: 2,2 milj. (-10%)

- Mobildata trafik: 831 000 Tbyte (+30%)

### **Bredbandsabonnemang**

- Fast bredband (fiber, kabel, xDSL, övrigt): 3,9 milj.(+ 5 %)
- varav fiber: 2,4 milj. (+18%)



### Fasta telefoniabonnemang

- Fast telefoni: 2,6 milj. (-16%)
- varav ip-telefoni: 1,5 milj. (-12%)



### Traditionella betal-tv-abonnemang

- Digitala tv-abonnemang: 2,9 milj. (1%)
- varav iptv fiber: 1,0 milj. (+18%)
- Analoga tv-abonnemang: 2,4 milj. (-2%)

### Om undersökningen

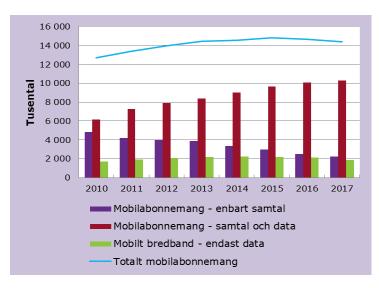
Svensk telekommarknad är en av Sveriges viktigaste operatörsundersökningar om abonnemang, intäkter och datatrafik inom områdena mobila abonnemang, bredband, fasta samtalstjänster och traditionella tv-tjänster. Rapporten är baserad på PTS egen datainsamling som undersöker operatörers och andra aktörers utveckling.

Undersökning är en totalundersökning där målpopulationen är aktörer som är anmälda till PTS enligt lagen (2003:389) om elektronisk kommunikation (LEK). Enkäten skickades ut till 595 aktörer varav 565 har svarat på undersökningen. Svarsfrekvensen var 95 procent. Svensk telekommarknad är en deskriptiv rapport. Underlaget används i PTS arbete med analyser inom myndighetens ansvarsområden.

### Mobila tjänster:

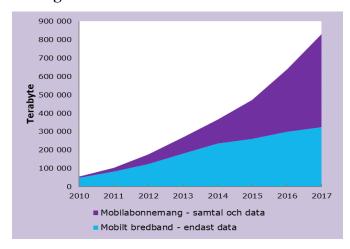
### Antal mobilabonnemang på samtal och data fortsätter öka

Antal mobilabonnemangen på både samtal och data, som ofta används i smarta mobiler, uppgick till 10,3 miljoner, en ökning med 2 procent. Mobilabonnemang på enbart samtal uppgick till 2,2 miljoner, vilket är 10 procent lägre än ett år tidigare. Mobilabonnemangen på endast data uppgick till 1,9 miljoner, en minskning med 12 procent. Av det totala antalet mobilabonnemang var 76 procent kontraktsabonnemang vilket är samma andel som ett år tidigare, resten var kontantkort.



Under 2017 uppgick de totala slutkundsintäkterna från mobila samtals- och datatjänster till drygt 30,8 miljarder kronor. Det är en ökning med 2 procent. Fasta avgifter (abonnemangs-avgifter) genererade 25,6 miljarder kronor i intäkter under 2017, en ökning med 4 procent. De rörliga avgifterna minskade med 7 procent till 5,2 miljarder kronor.

### Mängden överförd data i mobilnäten ökar med 30 procent



Datatrafiken i mobilnäten ökade till 831 000
Terabyte (Tbyte) 2017.
Detta är en ökning med 30 procent, dvs. samma ökningstakt som under föregående period.
Abonnemang på både samtal och data stod för 61 procent av all överförd data i mobilnäten.

### Lansering av VoLTE

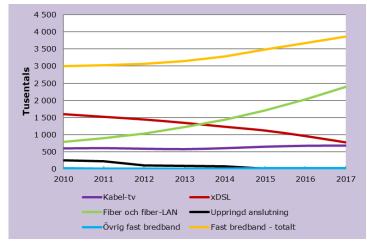
Under 2017 har flera operatörer lanserat VoLTE (Voice over LTE), vilket gör det möjligt för abonnenterna att ringa röstsamtal via 4G-näten. Antalet samtalsminuter via LTE uppgick till 345 miljoner, vilket motsvarar 1 procent av det totala antalet utgående minuter från mobilabonnemang.

### Utvecklingen på fast bredband:

### Fiber abonnemangen fortsätter att öka stort

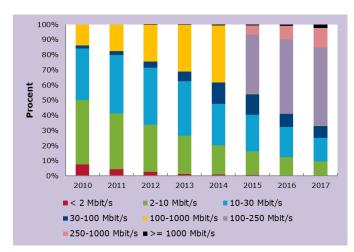
Det fanns 3,9 miljoner abonnemang på fast bredband, vilket motsvarar en ökning med 5 procent. Antalet abonnemang via fiber ökade med 18 procent och uppgick till 2,4 miljoner. Fiber och fiber-LAN har stått för den största delen av tillväxten inom fast bredband och utgjorde mer än hälften (62 procent) av alla abonnemang på fast bredband.

Intäkterna från fasta bredbandsabonnemang uppgick till 12,4 miljarder kronor under 2017, vilket är 8 procent mer än föregående period. Intäkterna från



fiberabonnemang har under året ökat med 21 procent till 6,5 miljarder kronor.

### Abonnemang om 100 Mbit/s eller mer fortsätter att öka



Det fanns 2,6 miljoner abonnemang med nedladdningshastigheter på 100 Megabit/s (Mbit/s) eller mer, vilket är en ökning med 19 procent. Dessa utgjorde 67 procent av samtliga abonnemang på fast bredband. Abonnemang på 1 Gigabit/s (Gbit/s) eller mer har ökat kraftigt

(167 %), till 100 000 abonnemang.

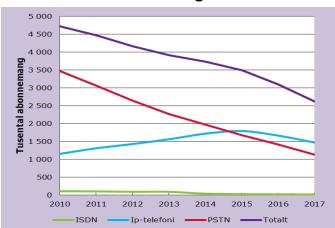
Antalet fiberabonnemangen med en nedladdnings-hastighet på 100 Mbit/s eller mer uppgick till 2,0 miljoner (en ökning med 26 procent) medan abonnemang via kabel-tv-nät med samma hastighet uppgick till 560 000 abonnemang, vilket var en ökning med 2 procent.

Antalet fasta bredbandsabonnemang med en uppladdningshastighet på 100 Mbit/s eller mer ökade mer än tidigare perioder. Det ökade med 39 procent till 1,5 miljoner abonnemang.

### Gruppanslutningar ökar

Drygt 720 000 bredbandsabonnemang uppgavs vara gruppanslutningar, vilket är en ökning på 16 procent. Med gruppanslutningar avses aktiva, privata internetabonnemang som är tecknade med t.ex. hyresvärdar, bostadsrättsföreningar, samfälligheter eller byalag istället för direkt med slutkunden. Andelen av det totala antalet bredbandsabonnemang via fiber som var gruppanslutningar uppgick till 25 procent, motsvarande andel för bredbandsabonnemang via kabel-tv var 16 procent.

### Fasta telefoniabonnemang minskar allt mer

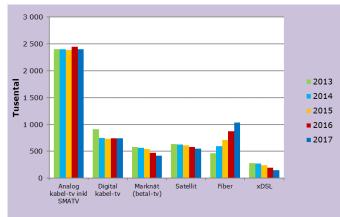


Det fanns 2,6 miljoner fasta telefoniabonnemang, vilket är en minskning med 16 procent. Av dessa minskade ip-telefoniabonnemangen med 12 procent och uppgick till 1,5 miljoner. Intäkten från fasta samtalstjänster sjönk med 15 procent till 5,5 miljarder 2017.

## Antalet digitala tv-abonnemang på samma nivå som föregående år

Det fanns det 2,9 miljoner digitala betal-tv-abonnemang (via kabel-tv nätet, satellit, marknät eller bredband) vilket är lika många som föregående år. Antalet abonnemang på tv via fiber ökade med 18 procent till 1,0 miljoner och fiber är den största digitala distributionsplattformen för digitala betal tv-abonnemang.

De totala intäkterna från tv-tjänster för grund- och tilläggsabonnemang uppgick till 9,8 miljarder kronor den sista december 2017, vilket är lika mycket som ett år tidigare.



### Vill du veta mer?

På PTS statistikportal (<a href="http://www.statistik.pts.se/">http://www.statistik.pts.se/</a>), kan du söka och sortera statistik på de olika områdena. Där finns även data och marknadsandelar för enskilda aktörer tillgänglig.

# Table 1 Key data - the market for electronic communications\*

	2017	2016	Change
Electronic communication			
Total retail revenues	52 858	52 454	1%
Revenues per month from one average household (excluding VAT)	626	621	1%
Mobile subscriptions			
Mobile voice and data - total [2] (thousands)	14 381	14 671	-2%
Private	10 738	11 093	-3%
Business	3 644	3 578	2%
of which subscriptions which have used 4G (LTE)	8 639	7 416	16%
of which data-only subscriptions	1 862	2 112	-12%
of which data and voice subscriptions [3]	10 281	10 059	2%
of which voice only	2 239	2 501	-10%
Outgoing traffic minutes (millions)	32 922	31 663	4%
of which GSM-networks	6 504	7 319	-11%
of w hich UMTS-netw orks	25 897	24 250	7%
of w hich LTE-netw orks (VoLTE)	345		
of w hich unknow n	176	94	86%
Number of SMS sent (millions)	8 461	9 036	-6%
Number of MMS sent (millions)	475	444	7%
Traffic for mobile data services (Tbyte)	831 071	638 527	30%
of which traffic in 4G network	680 543	444 532	53%
Revenues from mobile subscriptions - total (MSEK)	30 818	30 228	2%
Private	21 393	20 841	3%
Business	9 425	9 387	0%
M2M-subscriptions	11 441	8 655	32%
Internet services			
Internet subscriptions (thousands)	16 010	15 855	1%
Dial-up subscriptions [1]	1	5	-85%
Broadband subscriptions	3 866	3 679	5%
via cable television	683	676	1%
via fiber and fiber-LAN	2 389	2 029	18%
via xDSL	777	959	-19%
via Fixed broadband - Other [4]	17	15	15%
Mobile broadband subscriptions	12 143	12 171	0%
of which data-only subscriptions	1 862	2 112	-12%
of which data and voice subscriptions [3]	10 281	10 059	2%
Broadband subscriptions via collective agreement	720	623	16%

Revenues from fixed Internet subscriptions (SEKm)	12 405	11 438	8%
Private	10 148	9 408	8%
Business	2 257	2 029	11%
Fixed call services			
Subscriptions for fixed telephony (thousands)	2 622	3 104	-16%
of which via IP-telephony (thousands)	1 474	1 669	-12%
of which non-acitive subscriptions (thousands)	406	443	-8%
Outgoing traffic minutes (millions)	6 612	8 232	-20%
Private	2 326	3 066	-24%
Business	4 287	5 166	-17%
Revenues from fixed call services (SEKm)	5 484	6 482	-15%
Private	2 973	3 567	-17%
Business	2 511	2 914	-14%
TV services			
Number of digital television subscriptions	2 892	2 873	1%
via digital cable television	740	745	-1%
via digital terrestrial television	416	475	-12%
via satellite	552	583	-5%
via iptv	1 184	1 070	11%
via fiber and fiber-LAN	1 035	875	18%
via xDSL	149	195	-24%
Number of analogue television subscriptions	2 400	2 444	-2%
via analogue cable television	2 187	2 219	-1%
via SMATV	213	224	-5%
Revenues pay-TV-services (SEKm)	9 853	9 846	0%
Data communications services			
Revenues from data communications services to end-users (SEKm)	4 150	4 307	-4%
IP V PN	2 938	3 029	-3%
Network capacity	561	611	-8%
Dark fibre	527	519	1%
Wavelengths to end users	42	44	-5%
Other refined network services to end users	82	104	-21%
Bundled services			
Number of bundled subscriptions (thousands)	2 282	1 637	39%

Source: Swedish Post and Telecom Authority, 25 May 2018.

<sup>\*</sup> See "Contents" or www.statistik.pts.se under Document to find out what questions the statistics come from. For data collection for the Swedish telecom market for the first half year, the same tables are used as for the full year, to make it easier to find the figures. This means that some tables have no new figures for the first half year and some rows in some tables have no new figures.

<sup>[1]</sup> With effect from 2015, ISDN is not included, only PSTN.

<sup>[2]</sup> Mobile subscriptions refer to "mobile subscriptions - voice and data", "mobile subscriptions - only voice" and "mobile broadband - only data".

<sup>[3]</sup> Mobile subscriptions - voice and data refers to all mobile subscriptions with voice and data, both under and over1 Gbyte.

<sup>[4]</sup>  $\acute{\text{I}}$  "Fixed broadband - Other" here includes broadband via satellite, radio link and other fixed broadband

### 1 Introduction

#### **Purpose and assignment**

The Swedish Post and Telecom Authority (PTS) has been tasked with monitoring service developments in the market for electronic communication, promoting competition within this market and providing information aimed at consumers. As a part of this assignment, PTS annually collects and publishes market data in this report, The Swedish Telecommunications Market. The data is used in PTS' analysis work within the authority's area of responsibility.

### About the survey

As in previous years, The Swedish Telecommunications Market 2017 is based on PTS' own data collection.

This is a total survey for which the target population is stakeholders who in 2017 are notified to PTS pursuant to the Act (2003:389) on electronic communication (LEK). There are also a few organisations who were included in other surveys by PTS. The questionnaire was sent to 595 organisations, 565 of which answered the survey. The response rate was 95 per cent. In the previous year, 2016, the questionnaire was sent to 550 organisations, 522 of which responded.

Data collection occurred during the period January to April 2018, and the initial contact was followed up with reminders by e-mail. Some companies that did not respond also had a telephone reminder. The collection of data occurred with the aid of a web-based questionnaire.

However collection and adjustment of operator data continues after the report the Swedish Telecommunications Market has been published, so that the PTS database for operator statistics is always updated.

All figures refer to the situation on 31 December 2017, and comparisons are made with the same date in 2016 unless otherwise stated.

Unless otherwise stated, the information comes from PTS operator statistics. Another source is used for data on number porting, which comes from the Swedish Number Portability Administrative Centre (SNPAC).

On the PTS statistics portal (in English http://www.statistik.pts.se/en and in Swedish <a href="www.statistik.pts.se">www.statistik.pts.se</a>), under the tab "Swedish Telecommunications Market" the market shares of all those who received questionnaires is shown.

There are market shares by income, traffic and subscriptions for the full years 2006-2017.

### 2 Income in the market

In 2017, income in the end user market for electronic communication (mobile voice and data services, fixed internet services, fixed-line telephone services and data communication services, as well as dark fibre to end users) amounted to approximately SEK 52.9 billion, which is the same as the previous year. Total income in the end user market has been stable at this level for the last five years.

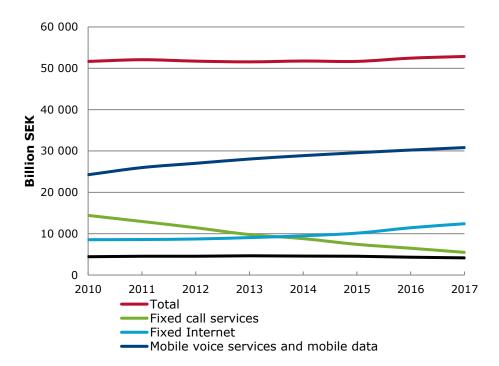


Figure 1 End user market income for electronic communication

The average income<sup>1</sup> generated per household per month in 2017 was SEK 626, which is SEK 5 more than in 2016. The average income per month includes fixed telephone services, SEK 54 (18% reduction), mobile voice and data services, SEK 388 (same level as the previous year) and internet services (excluding mobile data) of SEK 184 (7% increase). Note that this is not the same as "Average income per subscription per month", which is reported in each section.

-

<sup>&</sup>lt;sup>1</sup> Average income is calculated as income for 2017 divided by the average number of subscriptions per household

### 3 Mobile voice and data services

### 3.1 Subscription - Mobile subscriptions

At the end of December 2017, there were almost 14.4 million active mobile subscriptions in Sweden, which is a reduction of 2 per cent compared with a year earlier. The term mobile subscriptions includes mobile subscriptions for voice alone, mobile subscriptions for both voice and data and mobile subscriptions for data alone. Machine-to-machine (M2M) is not included in these figures but is reported in a separate section below.

76 per cent of the total number of mobile subscriptions were contract subscriptions, which is the same percentage as the previous year. These amounted to 11.0 million subscriptions, which is an increase of 1 per cent. As well as contract subscriptions, there were also 3.4 million pre paid (cash card) phones.

### Mobile subscriptions for both voice and data

Mobile subscriptions for both voice and data amounted to 10.3 million, an increase of 2 per cent.

#### Mobile subscriptions for voice alone

Mobile subscriptions for voice alone amounted to 2.2 million, which is 10 per cent lower than the previous year.

### Mobile subscriptions for data alone

Mobile subscriptions for data alone amounted to 1.9 million, a fall of 12 per cent.

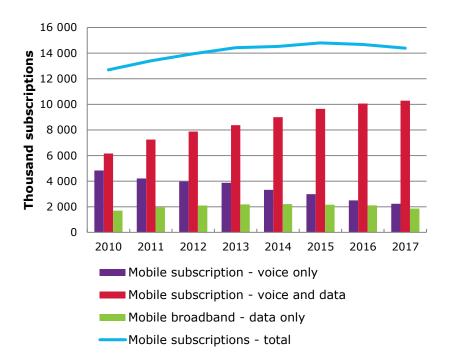


Figure 2 Number of mobile subscriptions by type of subscription

### Subscriptions that have used 4G (LTE)

On 31 December 2017, there were 8.6 million subscriptions that had used services in the 4G (LTE) network, which is an increase of 16 per cent.<sup>2</sup> These represent 60 per cent of all mobile subscriptions and 71 per cent of all subscriptions that include data.

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<sup>&</sup>lt;sup>2</sup> To be able to use the 4G network, a user must have both a SIM card and a terminal that can handle 4G. It is also necessary to subscribe to a service to gain access to the network.

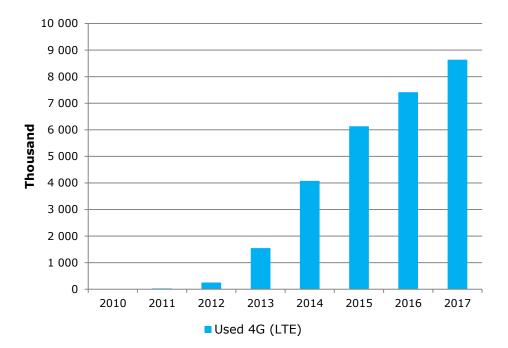


Figure 3 Number of subscriptions that used 4G (LTE)

### 3.2 Voice traffic

The total number of outgoing voice traffic minutes from mobile subscriptions in 2017 amounted to 32.9 billion, an increase of 4 per cent over the previous year.

During 2017, several operators launched VoLTE (Voice over LTE), which enables subscribers to make voice calls via the 4G network. Call minutes via LTE amounted to 345 million, which corresponds to 1 per cent of total outgoing minutes from mobile subscriptions.

Voice call minutes from mobile subscriptions accounted for 83 per cent of all outgoing minutes, compared with 79 per cent a year earlier.

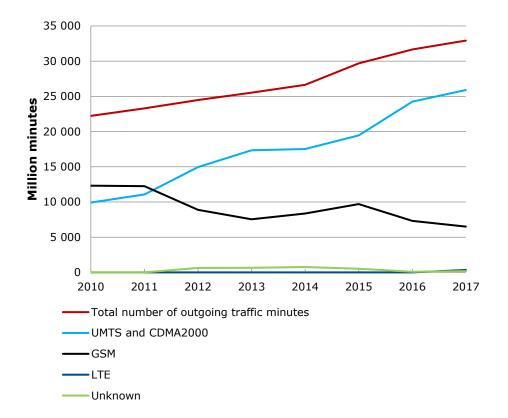


Figure 4 Outgoing voice call minutes from mobile subscriptions

The average number of call minutes per mobile subscription increased by 10 minutes to 219 minutes per month in 2017. The number of outgoing voice calls from mobile subscriptions was 10.2 billion in 2017, which is the same level as the previous year.

The average length of a mobile call was 3.2 minutes and the average number of calls per mobile subscription per month was 68. Both of these were at the same level as the previous year.

### 3.3 SMS and MMS

### **Fewer SMS texts**

Approximately 8.5 billion SMS texts were sent from mobile phones in 2017, a reduction of 6 per cent. On average there were 56 SMS texts per subscription per month, compared with 60 the previous year.

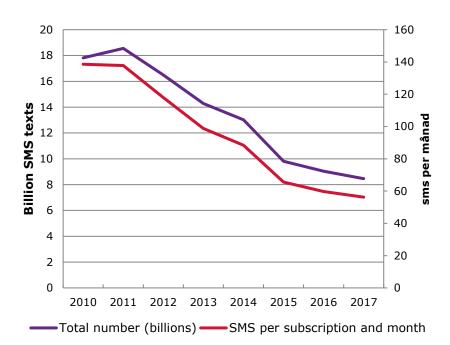


Figure 5 Number of SMS texts sent in total and per subscription per month

### More MMS messages

The number of MMS messages sent was 475 million, which is an increase of 7 per cent compared with 2016. The average number of MMS messages sent per subscription per month increased from 2.9 to 3.2.

### 3.4 Data traffic

Data traffic in the mobile networks increased to 831,000 Tbytes in 2017. This is an increase of 30 per cent, the same rate of increase as in the previous period.

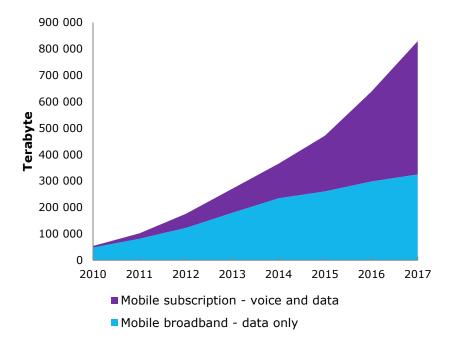


Figure 6 Volume of mobile data transferred

Mobile subscriptions for both voice and data accounted for 61 per cent of all data transferred in the mobile networks, while mobile broadband subscriptions for data alone accounted for 39 per cent.

Data traffic in the 4G networks increased by 53 per cent to 681,000 Tbytes. This means that 82 per cent of all data traffic was transferred via the 4G networks in 2017, compared with 70 per cent in 2016.

Mobile subscriptions for both voice and data (private and corporate) used 4.1 Gbytes per month, which is 44 more than the monthly average the previous year. The volume used by private subscriptions amounted to 4.8 Gbytes per month, which is 47 per cent more than the monthly average the previous year.

Average use per month for mobile broadband subscriptions for data alone was 13.6 Gbytes, an increase of 17 per cent.

### 3.5 Income - Mobile subscriptions

In 2017, the total end customer income from mobile voice and data services amounted to approximately SEK 30.8 billion. This is an increase of 2 per cent. Income from M2M and roaming is not included in these figures.

Fixed charges (subscriptions) generated SEK 25.6 billion in income in 2017, an increase of 4 per cent. Variable charges fell by 7 per cent to SEK 5.2 billion.

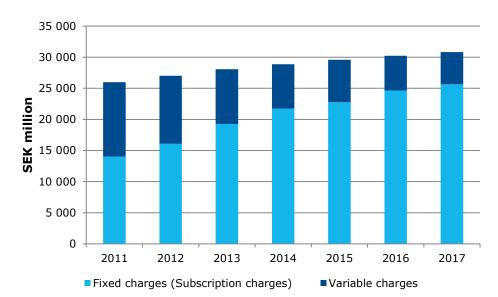


Figure 7 Income from mobile subscriptions - by fixed and variable charges

The figure "Income from mobile subscriptions - by fixed and variable charges" shows nominal income from mobile subscriptions in SEK million. Fixed charges accounted for 83 per cent of all income from mobile voice and data services. The trend over the last decade has been for the percentage of fixed charges to increase as fixed price subscriptions have become more and more common.

### 3.6 Market share - Mobile subscriptions

Market share for mobile subscriptions includes mobile subscriptions for voice and data, mobile subscriptions for only voice and mobile broadband for only data. The four largest companies, Telia Company, Tele2, Telenor and Hi3G (3), had 95 per cent of all subscriptions between them. In The Swedish Telecommunications Market, there is no specific reporting of brands; subscriptions with Hallon for example are included in Hi3G and Halebop subscriptions in Telia Company.

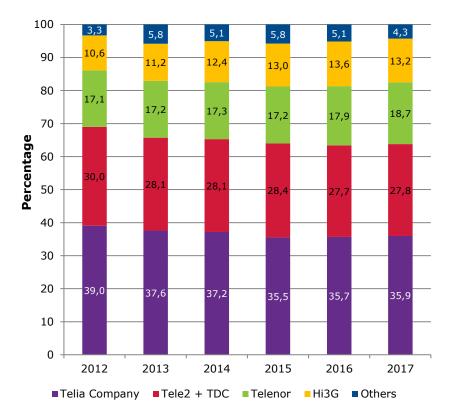


Figure 8 Market share - mobile subscriptions

Telia Company has the highest market share at 35.9 per cent, based on number of subscriptions. This is followed by Tele2, which also includes subscriptions with the former TDC Sweden, which was acquired by Tele2 in 2017.

### 3.7 Market share - Mobile broadband

Market share for mobile broadband is based on the combined total number of mobile subscriptions with only data and mobile subscriptions with both voice and data. The four largest companies, Telia Company, Tele2, Telenor and Hi3G accounted for about 97 per cent of all subscriptions between them.

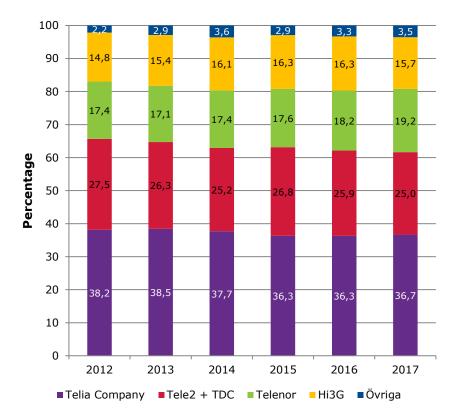


Figure 9 Market share - Mobile broadband

Between 2016 and 2017, Telia Company and Telenor increased their market shares, while Hi3G and Tele2 (including TDC Sweden) reduced theirs. Other organisations increased their combined market share somewhat compared with the previous year.

### 3.8 Subscriptions - M2M

M2M refers to technology for wireless communication between different devices. Here, this refers to the M2M subscriptions that use mobile numbers. M2M solutions are used for, e.g., monitoring, measurement, control, transport and logistics. On 31 December 2017, there were 11.4 million M2M subscriptions, which is an increase of 32 per cent. Services can be global, which means that not all Swedish M2M subscriptions are necessarily used in Sweden.

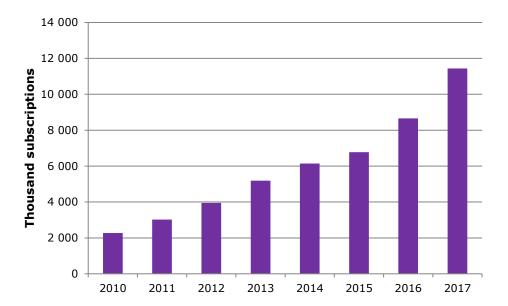


Figure 10 Number of subscriptions for M2M

### 3.9 **Income - M2M**

Income from M2M amounted to SEK 1 billion, which is an increase of 12 per cent. Average income per subscription per month fell by SEK 2 to SEK 8 in 2017.

#### 3.10 Income for interconnection in mobile networks

Interconnection means that a call is made from a fixed line or mobile network and then terminated in another fixed line or mobile network. Calls that are made within the same network are not counted as interconnection. For this reason, the total volume of interconnection minutes is less than the total volume of outgoing traffic minutes.

In 2017, 15.1 billion minutes were terminated in the mobile networks, an increase of 7 per cent. Interconnection income from mobile telephony amounted to almost SEK 1 billion, which is the same level as in 2016.

The average income per minute for termination of incoming mobile traffic from national operators was SEK 0.067, a decrease of SEK 0.006 compared with the year before.

### 3.11 Number porting – Mobile numbers

Number porting is when telephone numbers are moved from one operator to another. The Swedish Number Portability Administrative Centre, SNPAC<sup>3</sup>, collects and publishes statistics on the number of portings in Sweden. The following section is based on data from SNPAC. The number of mobile numbers that were ported amounted to 910,000 at end December 2017, which is an increase of 10 per cent. The SNPAC statistics do not include figures for fixed line numbers. For this reason the number of *porting instances* is shown below, which is lower than the number of ported telephone numbers.

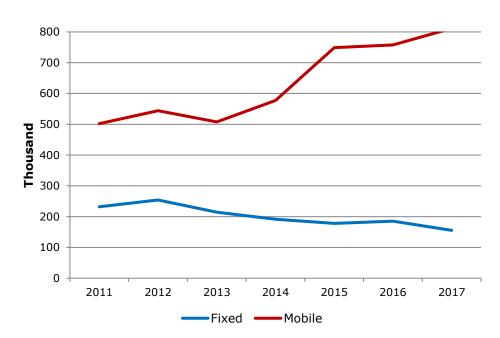


Figure 11Number of portings<sup>4</sup> of mobile and fixed line telephone numbers

The number of porting instances for mobile numbers amounted to 812,000 in Sweden, which was an increase of 7 per cent. This represents 6 per cent of the total number of mobile subscriptions.

See section 5.6 for porting of fixed line numbers.

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<sup>&</sup>lt;sup>3</sup> www.snpac.se

<sup>&</sup>lt;sup>4</sup> The figure shows the number of porting instances. The number of ported numbers may be higher than the number of porting instances.

### 4 Broadband and internet

### 4.1 Subscriptions - Internet services

At end December 2017, the total number of subscriptions for internet services was 16.0 million, which is an increase of 1 per cent; see figure below. Internet services include dial-up connections, fixed broadband (via cable TV, fibre and fibre LAN, xDSL and other fixed connections), mobile broadband with data alone and mobile subscriptions with voice and data. Developments for mobile broadband have been reported in section 2. The number of subscriptions with dial-up connections fell by about 4,000 to below 1,000.5

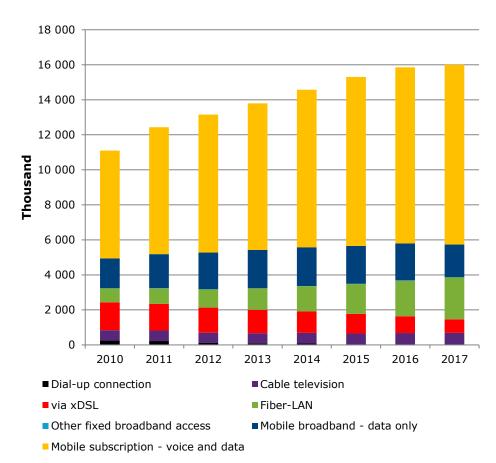


Figure 12Number of internet subscriptions

<sup>&</sup>lt;sup>5</sup> With effect from 2015, dial-up internet via ISDN is not included, only via PSTN.

### 4.2 Subscriptions - Fixed broadband

There were 3.9 million subscriptions for fixed broadband, which corresponds to an increase of 5 per cent; see figure below. Here, fixed broadband refers to broadband via fibre or fibre LAN, cable TV, xDSL, satellite, fixed radio access and other fixed internet access.

The number of subscriptions via fibre increased by 18 per cent and amounted to 2.4 million. Fibre and fibre LAN accounted for most of the increase in fixed broadband and amounted to 62 per cent of all fixed broadband subscriptions. The four largest providers of fibre and fibre LAN were Telia Company, Telenor, Bahnhof and Bredband2, which together accounted for 73 per cent of all subscriptions, which is 5 percentage points more than the previous year.

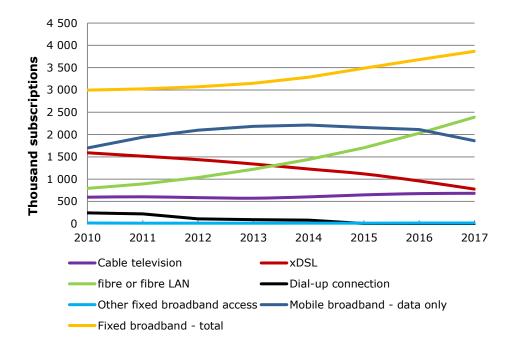


Figure 13 Development of subscriptions for broadband

There were 680,000 subscriptions for broadband via cable TV networks, which was the same level as the previous year.

The number of subscriptions for xDSL fell by 19 per cent and amounted to 780,000. "Other fixed broadband subscriptions" includes fixed radio, satellite and other fixed broadband connections. The number of subscriptions for fixed radio (radio link) increased by 2,000 to 10,000. There were around 200 broadband subscriptions via satellite, which is a reduction of 16 per cent.

### The number of collective agreements on fixed broadband subscriptions

Collective agreements refers to active, private internet subscriptions with, for example, landlords, housing cooperatives, housing associations or village communities instead of private customers. Almost 720,000 broadband subscriptions were stated to be via collective agreements, which is an increase of 16 per cent.

610,000 of the collective agreements were via fibre and fibre LAN, 110,000 via cable TV and less than 1,000 via xDSL. The proportion of the total number of broadband subscriptions via fibre that were via collective agreements was 25 per cent, while the corresponding proportion for broadband subscriptions via cable TV was 16 per cent.

278,000 fixed broadband connections via collective agreements s were bundles, there of 98 per cent via fibre.

### 4.3 Transfer speed - Fixed broadband

In this report, the term transfer speed refers to the speed that the customer pays for in the subscription. The actual speed obtained by the consumer may be lower. Download speed refers to the speed at which a user's connected equipment can receive a package of data via the broadband connection, while upload speed refers to the speed at which a user's equipment can send a package of data.

### Download speeds, fixed broadband

There were 2.6 million subscriptions with download speeds of 100 Mbps or more, which is an increase of 19 per cent (see figure below). This represents 67 per cent of all fixed broadband subscriptions.

Fibre subscriptions with a download speed of 100 Mbps or more amounted to 2.0 million (an increase of 26 per cent), while subscriptions via cable TV networks with this speed amounted to 560,000, which was an increase of 2 per cent. The number of subscriptions with 1 Gbps amounted to 96,000, which was an increase of 60,000. There were 302,000 fixed broadband subscriptions with download speeds between 30 and 100 Mbps, a reduction of 5 per cent.

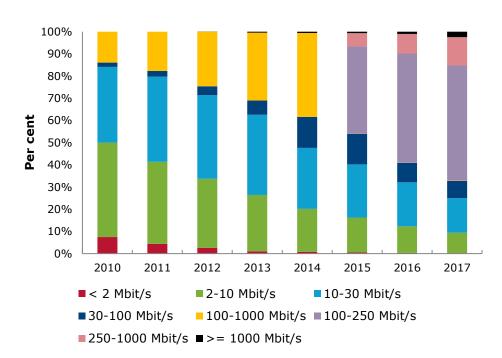


Figure 14Distribution of speeds for download of data - fixed broadband

### Upload speeds - fixed broadband

The number of fixed broadband subscriptions with upload speeds of 100 Mbps or more increased by 39 per cent to 1.5 million. Subscriptions for fixed broadband with upload speeds between 30 and 100 Mbps increased by 6 per cent to 210,000. There were 2.1 million subscriptions with an upload speed of up to 30 Mbps, a reduction of 11 per cent.

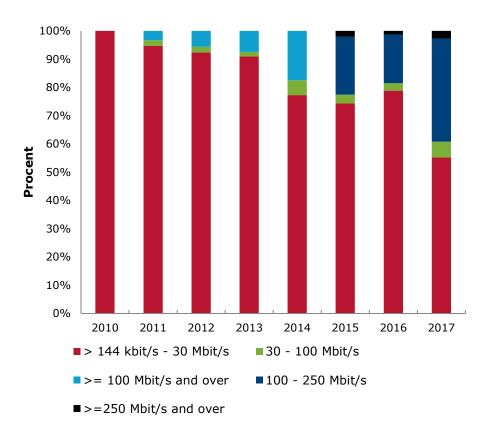


Figure 15 Distribution of speeds<sup>6</sup> for upload of data - fixed broadband

### 4.4 Market share - Fixed broadband

The three largest operators, Telia Company, Telenor and Com Hem accounted between them for 72 per cent of fixed broadband subscriptions at end December 2017.

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<sup>&</sup>lt;sup>6</sup> The speed refers to what is being subscribed for and not the actual speed reading.

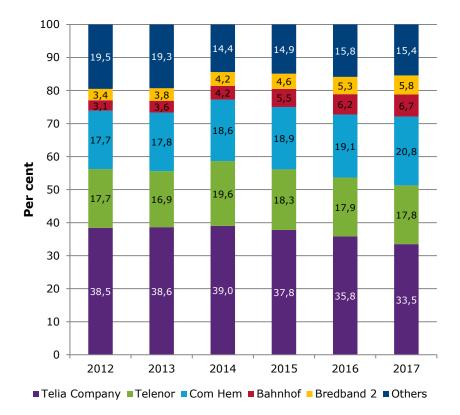


Figure 16Market share - fixed broadband subscriptions

Telia Company has the highest market share at 33.5 per cent, followed by Com Hem (20.8 per cent) and Telenor (19.8 per cent). The market share for Bahnhof was 6.7 per cent and Bredband 2 5.8 per cent. The largest in the group "others" was A3 (formerly AllTele Privat och Företag, Telecom3) with 5.1 per cent of subscriptions.

### 4.5 Income from internet services

The following section mainly reports income from fixed internet services. Income from mobile data networks is reported in section 3.5.

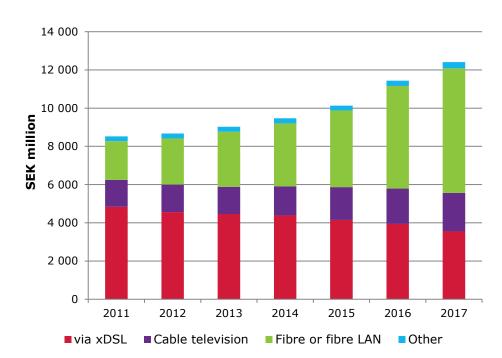


Figure 17Income from the end customer market for fixed internet services

Income from fixed broadband subscriptions was SEK 12.4 billion in 2017. That is 8 per cent higher than the previous year. Income from dial-up connections was negligible.

Of the income from fixed broadband in 2017, fibre subscriptions accounted for 53 per cent, xDSL subscriptions for 29 per cent and broadband subscriptions via cable TV for 16 per cent.

Income from fibre subscriptions increased by 21 per cent to SEK 6.5 billion. Income from cable TV subscriptions increased by 9 per cent to SEK 2 billion, while income from xDSL subscriptions fell by 10 per cent to SEK 3.5 billion. Income from other access technologies was SEK 300 million.

During 2017, the average income per month from a private fixed broadband subscription was SEK 237, which is the same as in 2016.

### 5 Fixed line telephone services

### 5.1 Subscriptions - Fixed telephony

At end December 2017, there were 2.6 million fixed telephony subscriptions in Sweden, which is a reduction of 16 per cent. About 1.9 million of the fixed line subscriptions were private. If this is related to the 4.6 million<sup>7</sup> households in Sweden, this means that around 42 per cent of households had a fixed line telephone subscription.

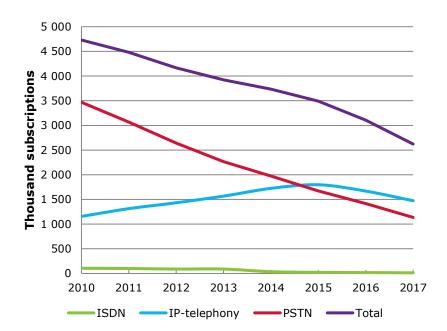


Figure 18 Number of subscriptions for fixed line telephony

### **Connections via PSTN**

There were 1.14 million subscriptions for fixed line telephony via PSTN, which is a reduction of 20 per cent. Of these, there were 283,000 with companies other than Telia Company via the wholesale product GTA<sup>8</sup>. The number of subscriptions via GTA fell by 20 per cent.

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<sup>&</sup>lt;sup>7</sup> According to SCB there were 4.6 million households in Sweden on 31 December 2017.

<sup>&</sup>lt;sup>8</sup> GTA is an abbreviation of *grossistprodukt för telefoniabonnemang*, which means wholesale product for telephony subscriptions. GTA means that a subscriber can pay both subscription fee and call charges to an operator other than Telia Company. Before GTA was introduced in 2004, many subscribers paid a subscription fee to Telia Company and a traffic invoice to another company (so-called Carrier PreSelect telephony)

The number of Carrier PreSelect subscriptions fell by 50 per cent to 29,000.

#### **Connections via ISDN**

At the end of December 2017 there were 13,000 connections via ISDN, which is a reduction of 29 per cent. ISDN is now exclusively a corporate service and there may be up to 30 simultaneous users on the same connection.

# Subscriptions with IP telephony

In addition to traditional telephony (PSTN, ISDN) operators also offer so-called IP telephony (also known as VoIP - Voice over IP). This is done by connection over the IP network that the operator itself has control over, unlike OTT services where traffic is over the internet. The number of IP telephony subscriptions was 1.5 million, which was a reduction of 12 per cent. IP telephony subscriptions amounted to more than half (56 per cent) of all fixed line telephony subscriptions.

The number of IP telephony subscriptions via fibre or fibre LAN was 647,000, which is a decrease of 3 per cent. The number of IP telephony subscriptions via xDSL was 345,000, which is a decrease of 32 per cent. The number of IP telephony subscriptions via cable TV was 275,000, which is a decrease of 7 per cent. The number of subscriptions via "other IP-based access" in increased by 6 per cent to 207,000.

# 5.2 Voice traffic – Fixed telephony

The number of outgoing call minutes from fixed line telephony subscriptions fell 20 per cent to 6.6 billion. Of these, the number of minutes from private subscriptions fell by 24 per cent to 2.3 billion.

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<sup>&</sup>lt;sup>9</sup> Refers to active Carrier PreSelect customers where the customer is indirectly connected. Active means that the customer has made at least one call in the last quarter of the review period. Note that if a customer has different Carrier PreSelects for national and international calls, this corresponds to only one customer. Carrier PreSelect can be abbreviated to CPS. Refers to Carrier PreSelect for both PSTN and ISDN.

<sup>&</sup>lt;sup>10</sup> Some operators have not been able to give an exact figure for this question but have estimated the answer, so that the number is therefore an estimate to a certain extent.

<sup>&</sup>lt;sup>11</sup> The operators state in comments what is referred to. Here are the descriptions of the three that correspond to about 60 per cent of these subscriptions: "VoI Over The Top and we cannot determine access form", " fixed connections Managed Voice" and " Internet, Internet Pro and IP-VPN"

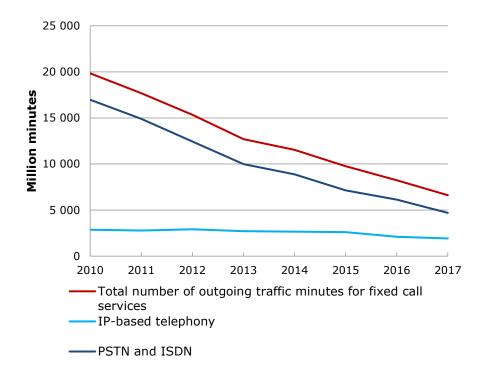


Figure 19 Outgoing voice call minutes from fixed telephony

The number of outgoing call minutes from IP telephony subscriptions fell 9 per cent to 1.92 billion.<sup>12</sup> The numbers of calls from fixed network subscribers fell by 18 per cent to 1.97 billion

The average length of call from private subscriptions was 5.1 minutes, a reduction from 5.3 minutes.

The average number of calls per private fixed network subscription per month was 18, which is a reduction from 20 the previous year.

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<sup>&</sup>lt;sup>12</sup> Some operators have estimated the number of call minutes from IP telephony. The total number of outgoing minutes is thus to some extent estimated.

# 5.3 Market share - Fixed telephony

Market share for fixed line telephony services includes subscriptions for fixed telephony except Carrier PreSelect and prefix subscriptions.

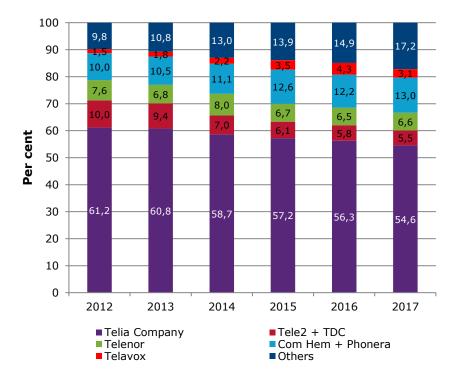


Figure 20Market share - fixed telephony subscriptions

Telia Company has the largest market share at 54.6 per cent. Com Hem including Phonera has the second largest market share at 13.0 per cent. Telavox' share amounted to 3.1 per cent. <sup>13</sup>A3 (AllTele Privat) was the biggest of the "others" with 3 per cent of subscriptions.

# IP telephony subscriptions

The number of active subscriptions with IP telephony amounted to approximately 1.5 million. Here active subscriptions refers to those that have generated traffic (incoming or outgoing calls) during the last 3 month period. The number of IP telephony subscriptions that were not used was 406,000

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<sup>&</sup>lt;sup>13</sup> Telavox has corrected its reporting compared with The Swedish Telecommunications Market 2016 and therefore has a smaller market share in all years.

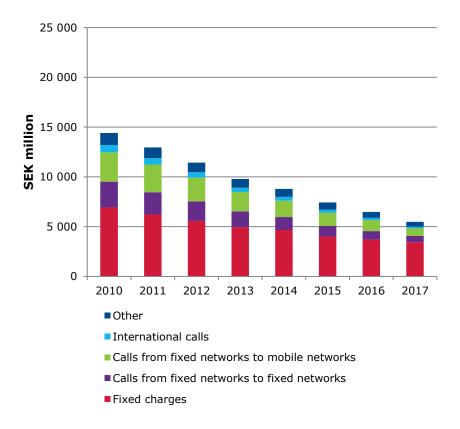
which is an increase of 7 per cent. 97 percent of these subscriptions were with Telia Company and Telenor.

The number of IP telephony subscriptions that were part of a package amounted to 802,000, which is 54 per cent of all IP telephony subscriptions.

# 5.4 Income from fixed line telephone services

Income from fixed line telephone services (excluding income from dial-up internet) fell by 15 per cent to SEK 5.48 billion in 2017.

Figure 21Income from end customers for fixed line telephone services



In 2017 fixed charges represented 63 per cent of income from fixed line telephony, which is 6 percentage points more than the previous year. Income from IP telephony amounted to SEK 1.1 billion in 2017, which is a decrease of 17 per cent from the previous year. IP telephony's share of the income was 20 per cent, which is the same as the previous year.

The average income per month from a fixed line telephone subscription was SEK 160 in 2017, a decrease of SEK 4 compared with the previous year. For private users, the corresponding average was SEK 118 per month, which is a decrease of SEK 4.

# 5.5 Income from interconnection in fixed networks

In 2017, 8.2 billion minutes were terminated in the fixed networks, a decrease of 7 per cent from the previous year.

In 2017 interconnection income from fixed line telephony amounted to SEK 77 million, which is a decrease of SEK 11 million compared with 2016.

# 5.6 Number porting - Fixed line telephone services

This section is about porting instances for fixed (geographical) telephone numbers. See section 3.11 for more information about number porting and figures for the number of porting instances for fixed line telephone numbers and mobile numbers. The number of ported fixed line telephone numbers is not included in SNPAC's statistics. For this reason the number of porting instances is shown below, which is lower than the number of ported telephone numbers.

The number of porting instances for fixed (geographical) telephone numbers amounted to 155,000 in Sweden, which was a decrease of 16 per cent. This represents 6 per cent of the total number of fixed line telephone subscriptions.

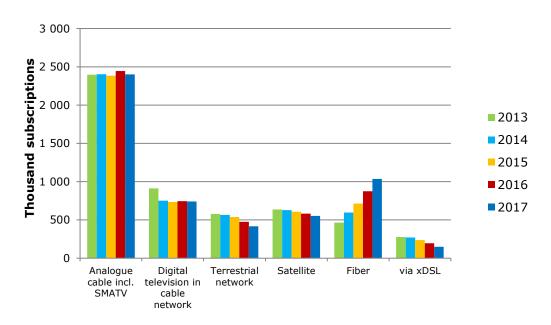
# 6 TV services

This section is about developments in the number of subscriptions for traditional linear TV which follows a fixed schedule. This does not include subscriptions to streaming services such as Netfix and HBO Nordic, and neither is web TV included.

# **6.1** Traditional pay TV subscriptions

Traditional linear TV is distributed to consumers via various distribution platforms such as cable, satellite, terrestrial transmission or broadband. TV via broadband is delivered via fibre, fibre LAN or xDSL. In December 2017, there were 2.9 million digital pay TV subscriptions (via cable TV networks, satellite, terrestrial networks or broadband) which is the same as the preceding year. Analogue TV subscriptions are only available via cable TV networks. These amounted to 2.4 million subscriptions, which is a decrease of 2 per cent. The figure below shows developments in the number of pay TV subscriptions for traditional linear TV. The total number of pay TV subscriptions is greater than the number of households, since households sometimes have more than one subscription. In such cases, the household often has an analogue subscription (cable TV) via the property owner and a digital subscription taken out by the customer (often digital cable TV or fibre).

Figure 22Number of pay TV subscriptions by distribution platform



# TV subscriptions via broadband (IPTV) continue to increase

TV via broadband, known as IPTV, consists of TV distribution via either fibre or xDSL. IPTV is the distribution platform that is growing, which can mainly be explained by the continued development of fibre networks. The number of subscriptions for IPTV continued to increase in 2017 and amounted to 1.18 million, which is an increase of 11 per cent. The number of subscriptions for IPTV via fibre increased by 18 per cent to 1,03 million, and fibre is the largest digital distribution platform. The number of subscriptions for TV via xDSL fell by 24 per cent to 149,000.

# TV subscriptions via cable TV

Digital cable TV: There were 740,000 digital cable TV subscriptions, which is the same as the previous year. There was a movement between 2013 and 2014 when subscriptions fell sharply, which derives from Telenor's acquisition of Tele2's customer base for cable TV subscriptions. 14

Analogue cable TV including SMATV: The total number of analogue cable TV subscriptions including SMATV<sup>15</sup> was 2.4 million, which is a decrease of 2 per cent. Many households living in apartment buildings have an analogue cable TV subscription included in the rent. In such cases, the household often has an analogue subscription (cable TV) via the property owner and a digital subscription taken out by the customer (often digital cable TV or fibre). All analogue cable TV subscriptions were taken out indirectly via agreements with property owners. This explains why the number of analogue cable TV subscriptions has been relatively unchanged since measurements began in 2009.

The majority of the total of analogue cable TV subscriptions are via big TV operators such as Com Hem, Canal Digital Kabel, Sappa, Telia Company and Telenor. Subscriptions of this type amounted to 2.2 million, which is the same level as the previous year. There were 647,000 digital cable TV subscriptions taken out directly by households that also had agreements via the property owners for analogue cable TV subscriptions.

Subscriptions via SMATV have been estimated on the basis of the number of households that have subscriptions via SMATV networks. It is estimated that there are 213,000 subscriptions via SMATV, which is a decrease of 5 per cent

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<sup>14</sup> Telenor: Telenor bought Tele2's Swedish fibre and cable TV operation on the private customer market on 23/10/2013

<sup>15</sup> Satellite Master Antenna Television (SMATV) is an independent cable TV network where many households share an antenna.

compared with the same date the previous year. The volume of SMATV must be viewed with caution however, since these are estimates.

### Subscriptions for TV via satellite continue to fall

The number of subscriptions for TV via satellite continues to fall and amounted to just under 552,000 on 31 December 2017. This is a reduction of 5 per cent in one year.

# Decrease in subscriptions via terrestrial TV (pay TV)

There is only one company that offers pay TV subscriptions on the terrestrial network and that is Boxer TV, which is owned by Com Hem. There were 416,000 subscriptions for pay TV in the digital terrestrial network, which is a decrease of 12 per cent. The number of subscriptions in the digital terrestrial network has fallen every year since 2008.

It is possible to have a pay TV subscription using digital terrestrial TV, but it is also possible to watch digital terrestrial TV free, which is called free terrestrial TV here<sup>16</sup>; see section 6.4 for more about free terrestrial TV.

# 6.2 Market share - Digital pay TV services

The shares for digital TV services are based on the number of pay TV subscriptions by digital distribution methods. The five biggest companies, Com Hem, Telenor, Telia Company, Boxer<sup>17</sup> and Viasat accounted between them for 96.2 per cent of subscription volume on 31 December 2017, which is at the same level as the previous year.

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<sup>&</sup>lt;sup>16</sup> Here free TV refers to TV that can be received unencrypted and free of charge by the end customer, with no requirement for a subscription or equivalent. Free TV is available on the terrestrial platform, where the programme company buys the transmission service directly from Teracom, which transmits the channels unencrypted. Since free terrestrial TV viewers do not have a subscription to watch the programmes, it is not clear exactly how many households only receive free TV and have no pay TV subscription. Free TV is also available via web TV.

<sup>&</sup>lt;sup>17</sup> Com Hem acquired Boxer in June 2016 and Boxer will be consolidated into Com Hem's accounts. Boxer is reported separately here.

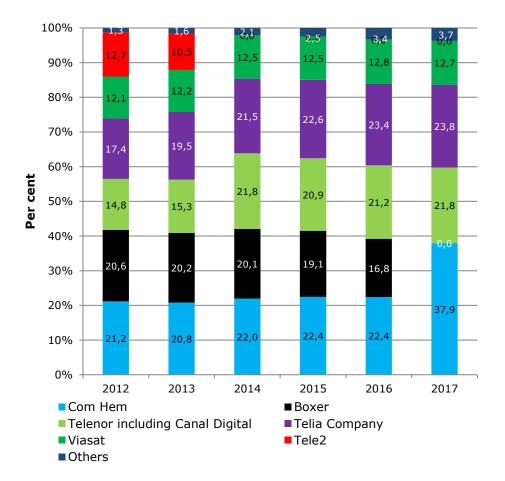


Figure 23Market share - subscriptions to digital TV services

Com Hem, together with the Com Hem-owned Boxer, has the highest share at 37.9 per cent. Telia Company has the second highest share at 23.8 per cent, followed by Telenor at 21.8 per cent. Viasat's share amounted to 12.7 per cent. The group "Others" mainly consists of a number of suppliers of IPTV and their combined share was 3.7 per cent. The biggest company in this group is Sappa. Telenor bought out Tele2's TV customers in autumn 2013.

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 $<sup>^{18}</sup>$  "Others" includes Sappa and small IPTV operators. Since 2012, subscriptions from "small cable TV networks and property owners" have no longer been included in "others" since they are also included in "SMATV operators".

# 6.3 Income from TV services

The following section reports income from pay TV services for basic and supplementary subscriptions.<sup>19</sup> All income that relates to the end customers' purchases of basic or supplementary packages is<sup>20</sup> included.

The total income from TV services for basic and supplementary subscriptions amounted to SEK 9.8 billion at the end of December 2017, which is the same as a year earlier.

The total average income generated per household per month for TV services in 2017 was SEK 179, which SEK 2 less than the previous year.

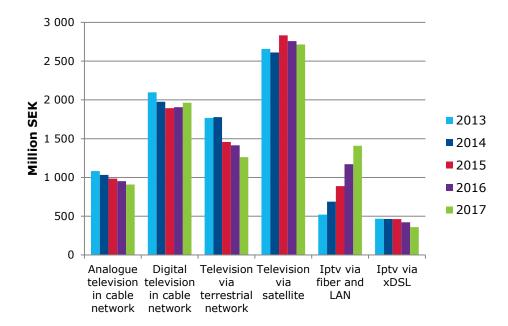


Figure 24Income from TV services in basic subscriptions

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<sup>&</sup>lt;sup>19</sup> In previous years, income from "smaller cable TV networks and property owners" who reported was included in income for analogue and digital cable TV subscriptions.. This income has not been included with effect from the 2012 report.

<sup>&</sup>lt;sup>20</sup> Supplementary subscriptions refers to subscriptions where a household has a separate agreement for additional services such as digital TV with channel package. This includes all income that relates to the end customer's purchase of supplementary subscriptions (channels or packages in addition to the basic subscription): ongoing charges, start-up charges, hire or sale of digital TV boxes and programme cards. Supplementary packages also included income for transaction-based VOD (video on demand) and payper-view up to and including 2015. From 2016 income for transaction-based VOD (video on demand) and pay-per-view is not included.

### Income from the basic package

Income from basic subscriptions<sup>21</sup> amounted to SEK 8.6 billion, which is the same level as the previous year. Income from basic subscriptions has been at the same level since 2012.

Income from basic packages of TV services via Satellite accounted for the greater part of the income from basic subscriptions. This fell by 2 per cent compared with the previous year, to SEK 2.7 billion. Income from basic packages for digital cable TV was the second highest proportion and amounted to SEK 2.0 billion, which is an increase of 3 per cent compared with the previous year. The greatest increase was income from basic packages for TV via fibre, which increased by 20 per cent to SEK 1.4 billion. Income from basic packages for terrestrial TV fell by 11 per cent to SEK 1.3 billion. Income from basic packages for TV via xDSL fell by 15 per cent to SEK 360 million. Income of SEK 0.9 billion came from analogue cable TV subscriptions, which was a decrease of 5 per cent.

# Income from supplementary packages

The reported income from supplementary packages<sup>22</sup> was at the same level as the previous year and amounted to SEK 1.2 billion. With effect from 2016, transaction-based VOD<sup>23</sup> (video-on-demand) and pay-per-view<sup>24</sup> are not included, which means that income figures for supplementary packages before and after 2016 are not entirely comparable. VOD and PPV have been removed because this income does not include income from all companies that offer VOD services in the market, but only those who respond to The Swedish Telecommunications Market.

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<sup>&</sup>lt;sup>21</sup> For the period 2009 to 2014, income from terrestrial TV services for both basic and supplementary packages was reported as a basic package, since they could not be separated. This means that for these years income from basic packages was somewhat too high, while income from supplementary packages was somewhat too low.

<sup>&</sup>lt;sup>22</sup> For the period 2009 to 2014, income from terrestrial TV services for both basic and supplementary packages was reported as a basic package, since they could not be separated. This means that for these years income from basic packages was somewhat too high, while income from supplementary packages was somewhat too low.

<sup>&</sup>lt;sup>23</sup> VOD means distributing films and TV programmes to viewers via some form of network exactly when the viewer wishes to watch them.

<sup>&</sup>lt;sup>24</sup> Pay-per-view means paying to be able to watch a single film or TV programme for a limited period, as distinct from a subscription.

#### 6.4 Free-to-air terrestrial TV

The survey The Swedish Telecommunications Market includes digital terrestrial TV subscriptions where the household *pays* for a subscription. Households can also receive digital terrestrial TV *without paying* for a subscription. In this case households can only see certain channels, which we call the free TV channels (SVT's channels (SVT1, SVT2, SVT24, Barnkanalen and Kunskapskanalen) and TV4 and TV6). We refer to this as free-to-air digital terrestrial TV. Since free TV viewers do not have a subscription to watch the programmes, it is not clear exactly how many households receive free TV.

Here free-to-air digital terrestrial TV refers to TV that can be received unencrypted and free of charge by the end customer, with no requirement for a subscription or equivalent. free-to-air digital terrestrial TV is available on the terrestrial platform, where the programme company buys the transmission service directly from Teracom, which transmits the channels unencrypted. Most free TV channels are also available via web TV.

The survey The Swedish Telecommunications Market does not include free-to-air digital terrestrial TV, for which there is a separate survey.

The following are the results of a survey performed by Enkätfabriken on behalf of PTS<sup>25</sup>:

- Of 1211 interviewed, 101 responded that they only had free-to-air digital terrestrial TV in their normal residence. About 8 per cent of Swedish households only have free-to-air digital terrestrial TV, which corresponds to about 360,000 households (based on SCB's figure for the number of households). This is a decrease compared with 2016.
- 18 per cent had no TV and were not therefore in the target group.
- More people are planning to change the way they receive TV than previously. This applies to both free-to-air digital terrestrial TV and other solutions.
- Free-to-air digital terrestrial TV is most common among those who live in detached houses. Among these households, 11 per cent only have

Swedish Post and Telecom Authority

<sup>&</sup>lt;sup>25</sup> PTS engaged Enkätfabriken to perform a survey of households' use of free TV in 2017; this is published on

http://pts.se/sv/dokument/rapporter/ovrigt/2018/hushallens-anvandning-av-fri-tv-2017/ Previous surveys for 2013, 2014, 2015 and 2016 were performed by SWECO and even earlier surveys for 2011 and 2012 were performed by TNS SIFO.

free-to-air digital terrestrial TV, followed by those who live in terraced houses, about 8 per cent of whom say they only have free-to-air digital terrestrial TV. The figure for those with right of tenancy is 6 per cent. free-to-air digital terrestrial TV is least common in housing cooperatives (1%).

- 44 per cent of households choose to pay for other TV services, such as Netflix, HBO and Via Play. 23 per cent use SVT Play, YouTube and other free services. Compared with 2016, there has been an increase for both pay services and free services (35% had pay services and 5% free services).
- Of those who responded, 27 per cent have access to a holiday home.
   Of the 27 per cent with access to a holiday home, 45% have only free-to-air digital terrestrial TV in the holiday home; others have other solutions.
- The 9 persons who responded that they had stopped watching free-to-air digital terrestrial TV in their main residence gave reasons such as moving, wanting to see more channels and upgrading to fibre.
- Customer turnover among those who had free-to-air digital terrestrial TV (101 persons): 12 months later, 87 per cent had free-to-air digital terrestrial TV. 82 per cent think that they will have the same solution in 12 months' time.
- Customer turnover among those who did not have free-to-air digital terrestrial TV (1,110 persons): 12 months later, 86 per cent had the same solution. 78 per cent think that they will have the same solution in 12 months' time.

# 7 Bundled services

The most common offers on the market include various combinations of telephony, TV and fixed broadband. Bundles with services such as Spotify, Netflix etc. are not included in this report.

In this year's survey the definition of bundled services has changed, which means that the results for 2017 are not entirely comparable with 2016 and previously. In previous years, the definition was "subscriptions that are offered and marketed as an offer or with a price list for bundled services", but this year's survey also included "services that are not marketed together as a special offer, for example when an end customer buys two or more services separately, can be on different occasions".

The number of bundled subscriptions at the end of December 2017 was 2.3 million, which is 39 per cent (645,000 subscriptions) higher than at the same time the previous year. The increase is mainly due to Telia Company reporting 542,000 more bundles than in previous years and stating that the changed reporting is largely affected by the changed formulation of the question.

Telia Company, Com Hem and Telenor together had 88 per cent of the bundled subscriptions.

Fixed broadband was included in about 1.65 million bundled subscriptions. this corresponds to 43 per cent of all fixed broadband subscriptions.

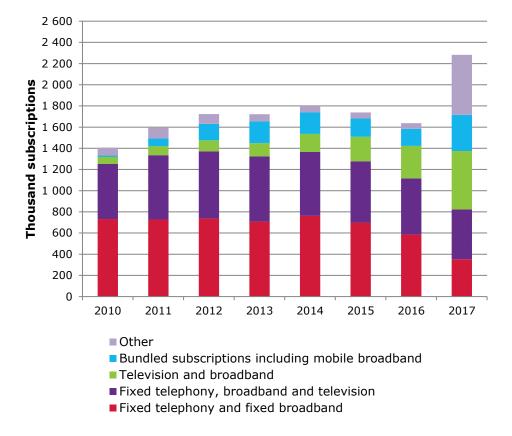


Figure 25 Number of bundled subscriptions

Double play, bundles with two services, increased by 35 per cent to 1.5 million subscriptions. The commonest bundles are now TV with fixed broadband, which increased by 79 per cent to 550,000 subscriptions. Previously, bundles with fixed telephony and fixed broadband were the most common, but these have now slipped to number three. These decreased by 40 per cent to 350,000 subscriptions.

*Triple play*, i.e. bundles of three services, amounted to 680,000, a decrease of 11 per cent. Most (69 per cent) triple play subscriptions are bundles of fixed telephony, fixed broadband and TV. This type is the second most common bundle. Packaging of mobile broadband and/or mobile telephony, fixed broadband and fixed telephony increased from 9,000 to 135,000 subscriptions.

Bundles of four services, so-called *quadruple play*, amounted to 140,000, which is an increase from 14,000 the previous year. Most of this increase is accounted for by the change in the definition of packaging.

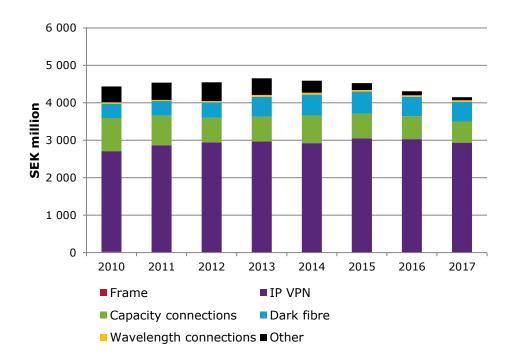
# 8 Data communication services and dark fibre to end customers

### 8.1 Data communication to end customers<sup>26</sup>

Data communication services refers here to services that are used to connect companies' and organisations' working locations and various IP based systems with each other. The number of connections and ports for data communication to end customers amounted to 129,000 in December 2017, compared with 133,000 a year earlier. 96,000 of these were used for IP-VPN<sup>27</sup>, i.e. networks for internal company communication.

# 8.2 Income from data communication services and dark fibre to end customers





<sup>&</sup>lt;sup>26</sup> A data communication service refers to a connection that is used by companies that can for example connect offices or different IP based systems with each other.

 $<sup>^{\</sup>rm 27}$  IP-VPN refers to the following standards: IP Sec VPN, IP MPLS VPN, IP SSL VPN.

The total income from data communication services and dark fibre to end customers in 2017 was SEK 4.2 billion, a decrease of 4 per cent compared with 2016. There are considerable sales of mainly dark fibre<sup>28</sup>, but also capacity services and wavelength connections to operators (wholesalers), but this income is not included in this report.

Between 2016 and 2017 income from IP VPN services<sup>29</sup> decreased by 3 per cent to SEK 2.9 billion, while income from capacity services<sup>30</sup> to end customers fell by 8 per cent to SEK 561 million. Sales of capacity services to end customers have shown a downward trend over the last ten years, while the trend for sales of IP VPN services has been upward. This is mainly because companies and authorities are increasingly outsourcing the operation of their IP networks to an operator instead of handling this themselves.

In 2017, income from wavelength connections to end customers was SEK 42 million, a decrease from SEK 44 million the previous year. End customer income from dark fibre increased by 1 per cent, from SEK 519 million in 2016 to SEK 527 million in 2017.

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<sup>&</sup>lt;sup>28</sup> Dark fibre connections refers to leased optical fibre connections where the fibre is not lit, i.e. physical fibre cables without electronic equipment.

<sup>&</sup>lt;sup>29</sup> IP-VPN refers to the following standards: IP Sec VPN, IP MPLS VPN, IP SSL VPN.

<sup>&</sup>lt;sup>30</sup> The definition of digital capacity services changed in 2014 which means that statistics for the preceding years are not entirely comparable with those after 2014.

# 9 Ducting

This year's information gathering for The Swedish Telecommunications Market included questions about the ownership and use of ducting.

239 organisations received questions about ducting and they all responded. 168 of these stated that they owned their own ducting on 31 December 2017. 23 respondents stated that they hired out ducting during 2017 and a further 89 stated that they have the possibility of hiring out ducting but had not been asked for this. Of the 239 respondents, 27 stated that they hired some form of ducting from other infrastructure owners.

# 10 APPENDICES

# 1. Tables with statistics

Tables with statistics may be found under Document and on the PTS statistics portal <a href="http://www.statistik.pts.se/">http://www.statistik.pts.se/</a> and <a href="http://www.statistik.pts.se/en/the-swedish-telecommunications-market/">http://www.statistik.pts.se/en/the-swedish-telecommunications-market/</a>

# List of participants including response by area and businesses acquired and sold during the year

- List of participants
- Response by area
- If organisations acquired or sold businesses during the year

See under Document on the PTS statistics portal <a href="http://www.statistik.pts.se/">http://www.statistik.pts.se/</a> and <a href="http://www.statistik.pts.se/en/the-swedish-telecommunications-market/">http://www.statistik.pts.se/en/the-swedish-telecommunications-market/</a>

# Major acquisitions

• Com Hem reported for the first time in The Swedish Telecommunications Market about its acquisitions Boxer (2016) and Phonera (2013).

Change of name: See separate list, <a href="http://www.statistik.pts.se/">http://www.statistik.pts.se/</a>

# 3. Method and definitions

# 3.1 Set-up and implementation

The data collection that forms the basis of this report is covered by an obligation to reply, and has been since 2003.

Data collection occurred during the period January to April 2018, and the initial contact was followed up with reminders by e-mail. Some companies that did not respond also had a telephone reminder. By April, responses had been received from 565 out of the 595 questioned, which is a response rate of 95 per cent. However collection and adjustment of operator data continues after

the report the Swedish Telecommunications Market has been published, so that the PTS database for operator statistics is always updated.

The telecommunications companies that completed the questionnaire indicated the areas in which they conducted operations over the course of 2017. The number of companies that had operated within the different areas is shown in the table below. Note that a telecommunications company can operate in several areas.

# Table of the number of respondents per area

Number of respondents per area	2016	2017
Fixed line telephone services	135	135
Interconnection in fixed networks	44	44
Mobile voice and data services	70	84
Interconnection in mobile networks	29	36
Internet services	186	200
TV services	22	17
Bundled subscriptions	31	39
Dark fibre and data communication services to operators	192	201
Data communication services – to end customers	190	198
Building and apartment connections and virtual access connections	153	156
Total number of respondents	522	565

The telecommunications companies that completed the questionnaire indicated the areas in which they conducted operations over the course of 2017. The number of companies that had operated within the different areas is shown in the compilation below. Note that a telecommunications company can operate in several areas.

For a complete list of which operators responded for which areas, see the participant list on the statistics portal, <a href="http://www.statistik.pts.se/en/the-swedish-telecommunications-market/">http://www.statistik.pts.se/en/the-swedish-telecommunications-market/</a>

In the previous year, 2016, the questionnaire was sent to 550 organisations that were notified to PTS in 2016. 522 of these responded, which is 95 per cent.

# 3.2 Discrepancies and updates of data

Measurement errors arise for various reasons during the data collection process, which may be due to a number of error sources. For example:

- Those consulted did not answer all of the questions in the survey
- Not all operators in the market responded to the survey
- The responses were misleading due to the fact that it was not possible to produce an exact value based on the company's accounts, the instructions were misunderstood or inadequate, or incorrect information was submitted

The measurement errors are judged not to be large and can often be compensated for by starting from previously collected data or by estimating based on related questions in the survey.

As the information reported in percentages has been rounded off, the sum of the parts is not always 100 per cent.

The historical statistics are revised as PTS obtains corrections and further information. For this reason, the statistics for one and the same year can differ between editions of the report. The latest updated database is available on the PTS online statistics portal (www.statistik.pts.se).

For a more detailed description of measurement errors and non-response, see the quality declaration 2.3.2.

# 3.3 Historical information and market shares

The development of the market is reported using statistics that, in some cases, go as far back as 1992. Since 2006, PTS has also published data on market shares for variables at the end-user level for every collection period. Market shares for a number of different variables are included in the report, but significantly more information is published on the online statistics portal. The variables judged to be inadequate, or which are misleading in some other way, are not published on the statistics portal.

#### 3.4 Definitions and estimates

In electronic communication, it is common to mix terms up, since there are no generally accepted definitions of these terms.

The Swedish Telecommunications Market is based on data collection in which questions are put to operators and other organisations. Definitions that form the basis for this report are also used in the questionnaire<sup>31</sup>, and these definitions are continually revised so that they are in sync with market developments. The segmentation of the individual sub-markets can change from year to year. Since 2003, PTS has also considered the information requirements for conducting market analyses and for deciding whether any operator has significant market influence. Despite these changes, it is, for the most part, still possible to compare the information with that of previous reports. Some terms that are used in various places in this report are defined below. Besides these, there are also definitions in the report.

Fixed	internet
conne	ction

Dial-up and broadband connection

PSTN, ISDN

**Dial-up connection** 

**Broadband connection** High-speed internet connection. Includes digital

connection via fixed broadband (fibre, fibre LAN, cable TV networks, xDSL, fixed radio and satellite) and mobile

broadband.

Mobile broadband High-speed internet connection that uses mobile

networks. includes the technical standards CDMA2000,

UMTS HSPA and LTE.

Mobile broadband, data

only

Subscriptions primarily used for mobile data, and where data access was used at least once during the latest quarter of the period, or where subscription fees were paid during the latest quarter of the period. The subscription must not have generated any voice traffic minutes during the latest quarter of the period. The connection can be via a USB modem (dongle) or a router.

Mobile subscription for both voice and data

Refers to a mobile subscription with both voice and data services. Here, this refers to subscriptions with data regardless of quantity. Data and voice are usually bought together. In practice, these subscriptions are mainly used

for smart phones.

**Mobile subscriptions** Mobile subscription with or without voice service and with

or without data service.

**Fixed radio** Radio link. Point to point connection.

<sup>31</sup> Questionnaire The Swedish Telecommunications Market 2017

#### Active subscription

For a subscription to be considered active, it must have been topped up (pay-as-you-go, cash card) or generated (outgoing or incoming) traffic (minutes or data) during the most recent quarter of the period.

# Private customer and corporate/business customer

In a number of cases, the statistics reported are divided between private and corporate/business customers, respectively. The definitions of private and business customers are based on who pays for the services, not who the user is. The criterion for the party paying being designated a business customer (including organisations that are not businesses) is that it has an organisation registration number. The remainder are designated as private customers. This means, however, that businesses and organisations registered under a personal identity number are included in the private customer category.

#### Households

From 2016 onwards, Statistics Sweden (Statistiska Centralbyrån; SCB) has changed the method it uses to gather statistics on households. SCB has also revised statistics for household for the years 2011 – 2015 with the same method. This means that statistics related to the number of households in this report are not completely comparable to the corresponding statistics from editions before 2011. The number of households for the full year is based on SCB's statistics of 31 December each year. The number for the half year refers to SCB's information for the previous year, since household statistics are only updated once a year.

# Change in definition of number of mobile subscriptions and numb er of internet descriptions

In previous reports, mobile subscriptions with voice and data with 1 GByte or more per month and subscriptions with under1 GByte per month have been reported separately. With effect from 2017, The Swedish Telecommunications Market reports on "mobile subscriptions for voice and data" in which there is no subdivision: all subscriptions for voice and data are included.

#### Change of definition of bundling

In this year's survey the definition of bundling was, as in previous years, "subscriptions that are offered and marketed as an offer or with a price list for bundled services", but this year's survey also included "services that are not marketed together as a special offer, for example when an end customer buys two or more services separately, can be on different occasions".

# Estimating IP telephony call minutes

As in previous years, some operators have estimated the number of call minutes from IP telephony and the total is therefore to some extent an estimate by the operators themselves.

### Estimating SMATV

PTS estimates SMTAV by taking the figure for the number of households from whichever of Sappa and Canal Digital reports the largest number of households. This is because many households buy from both operators. As part of data collection, PTS obtained opinions on estimation from Canal Digital and Sappa: Sappa and Canal Digital consider that PTS's estimation of the size of SMATV is reasonable and they have no other suggestions for estimation. Both operators have said that they expect SMATV to decrease. Canal Digital states that there is a further operator in addition to Canal Digital and Sappa that does this: SMATV agenten i Tyresö AB. As far as PTS can see this is a small organisation and no website can be found for it.

# Calculation of averages

In The Swedish Telecommunications Market, calculation of averages is done as follows; see the example Average number of calls per fixed network subscription per month

Total number of calls during the period / average number of subscriptions during the period / number of months in the period x 1,000 for the unit to be singular.

Explanation of Average number of subscriptions:

Average number of subscriptions during the full-year period = Number of subscriptions for the full year in question + Number of subscriptions for the previous full year / 2

Average number of subscriptions during the half-year period = Number of subscriptions for the half year in question + Number of subscriptions for the previous full year / 2

# 4. Changes in statistics

The following changes were noted by PTS in the reported data for 2017. See separate file under change log on the statistics portal.

# Historical corrections

Some operators have corrected their historical data in connection with reporting data for 2017. These corrections are updated in the data basis for the report and on the statistics portal under "Change log".

# Changes after publication

Collection of operator data continues after the report the Swedish Telecommunications Market has been published, so that the PTS database for operator statistics is continuously improved and the response rate increases. For the absolute latest statistics, refer to the statistics portal online.

# 5. Quality declaration

See separate document on the statistics portal, <a href="http://www.statistik.pts.se/">http://www.statistik.pts.se/</a>