TRAFFIC AND MARKET DATA REPORT

ON THE PULSE OF THE NETWORKED SOCIETY

November 2011

CONTENTS

WELCOME

TO THE ERICSSON TRAFFIC AND MARKET DATA REPORT

Total smartphone traffic will triple in 2011. By 2016, users living on less than 1 percent of the Earth's total land area are set to generate around 60 percent of mobile traffic. We are living in exciting times.

In all parts of the world, people are adopting more advanced mobile devices that enable connectivity anywhere, anytime. This trend is taking us towards a society where places, people and devices are constantly connected – a networked society.

Global mobile penetration is now at 82 percent, and the total number of mobile subscriptions is at around 5.8 billion. Growth is particularly rapid in China and India, where 50 million new subscriptions were added in Q3 of this year alone.

At the same time, behavior is changing just as rapidly. Smartphone users are now browsing the internet, chatting online, playing games and checking emails almost constantly – even before getting out of bed.

Fueled by mobile broadband – where subscriptions have grown by 60 percent year-on-year – the data consumed by smartphone users is surging. Mobile data surpassed voice in Q4 2009 and doubled voice in Q1 2011.

These and many more interesting data points are presented in this report, alongside our insights and analysis. We hope you find it engaging and valuable.

ABOUT THIS REPORT

Ericsson has performed measurements over several years from a large base of live networks covering all regions of the world. The aim of this report is to share analysis based on these measurements and from other relevant studies to provide insights into the current traffic and market trends.

The report will paint a broad, informative picture for anyone with an interest in the industry. We will continue to share traffic and market data, along with our analysis, on a regular basis.

TRAFFIC 11

Mobile data traffic is predicted to grow tenfold by 2016.

SMARTPHONES 14

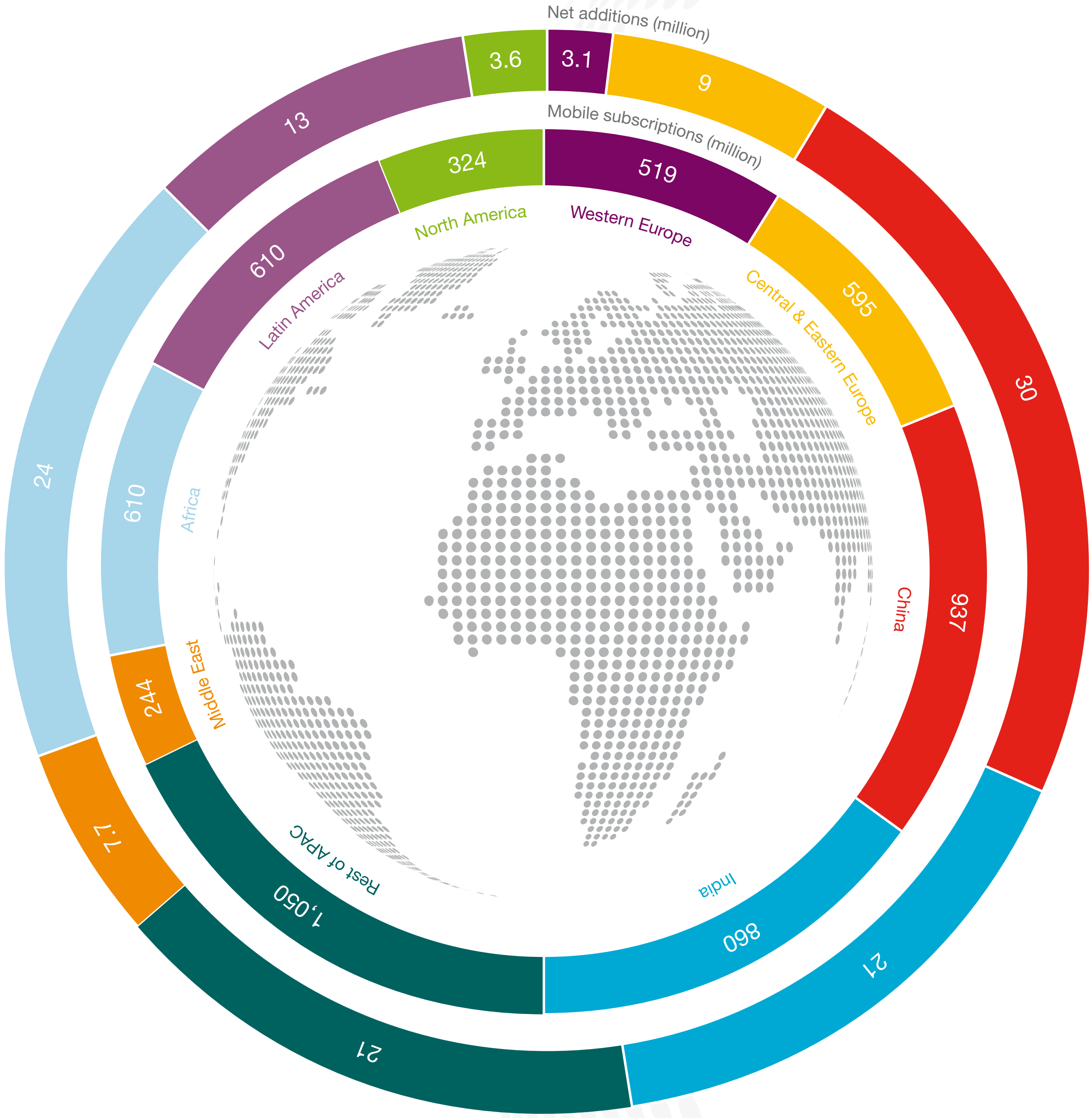
Around 40 percent of smartphone owners use the internet – even before getting out of bed.

STUDY 21

Doubling a country's broadband speed increases its GDP by 0.3 percent.

MOBILE SUBSCRIPTIONS UPDATE

Figure 1: Subscriptions by region, Q3 2011



Source: Ericsson (2011)

Figure 1

Mobile subscription figures are estimates as of Q3 2011.
Mobile net additions are estimates during Q3 2011.
APAC = Asia Pacific.

The estimate of mobile net additions has been made based on historic information, macroeconomic factors and Ericsson data. Historical data may be revised when operators report updated figures.

- Global mobile penetration reached 82 percent in Q3 2011 and mobile subscriptions now total around 5.8 billion. However, the actual number of subscribers is around 3.9 billion, since many subscribers have several subscriptions.
- India and China accounted for approximately 40 percent of the estimated ~135 million net additions during Q3 2011, adding around 20 and 30 million subscriptions respectively. For India, this figure is lower than previous quarters due to operators' increasing focus on active subscribers.
- Indonesia, Brazil and Bangladesh follow in terms of net additions.
- Mobile subscriptions have grown around 13 percent year-on-year and 2 percent quarter-on-quarter.
- Around 75 percent of subscriptions are GSM. 14 percent are WCDMA/HSPA.
- Mobile broadband subscriptions[1] have grown around 60 percent year-on-year and have reached close to 900 million.
- There is continued strong momentum for smartphone uptake in all regions. Approximately 30 percent of all handsets sold in Q3 were smartphones, compared to around 20 percent for the full year 2010. However, only around 10 percent of the worldwide installed base of subscriptions use smartphones, which means that there is considerable room for further uptake.

Figure 2: Penetration percentage

Source: Ericsson (2011)

SUBSCRIPTIONS VS SUBSCRIBERS

There is a large difference between the number of subscriptions and subscribers. This is due to the fact that many subscribers have several subscriptions. Reasons for this could include users lowering their traffic cost by using optimized subscriptions for different types of calls, or having different subscriptions for mobile PCs/tablets and for mobile phones. In addition, it takes time before inactive subscriptions are removed from operator databases. Consequently, penetration can easily reach above 100 percent, which is the case in many countries today.

[1]Mobile broadband is defined as CDMA2000 EV-DO, HSPA, LTE, Mobile WiMAX and TD-SCDMA.

SUBSCRIPTIONS OUTLOOK

Subscriptions development – fixed and mobile

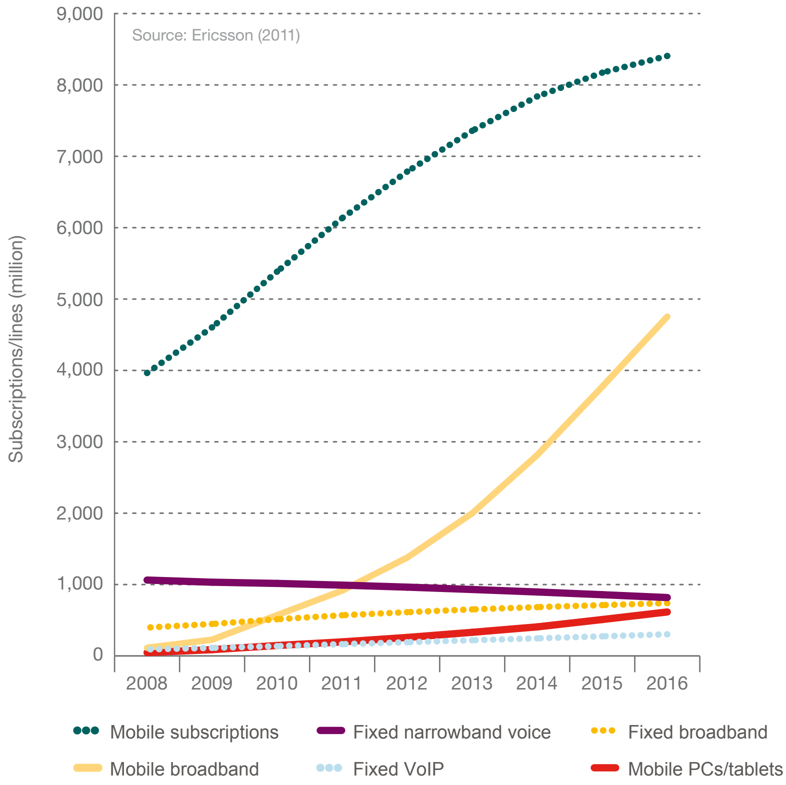
Demand for fixed broadband maintains a robust pace. Net additions during Q2 2011 reached 14 million. Global fixed broadband subscriptions reached around 550 million, mainly boosted by strong growth of DSL in China.

China is the largest single country in terms of fixed broadband subscriptions with around 140 million, followed by the United States and Japan. DSL represents more than 60 percent of all fixed broadband subscriptions followed by cable and Fiber-To-The Home/Building (FTTH/B). Fixed broadband growth will remain steady over the coming years.

The number of fixed voice subscriptions will continue its downward trend as users increasingly switch to mobile and VoIP substitutions. The number of mobile broadband subscriptions will approximately match the number of fixed voice subscriptions by the end of 2011 and is predicted to be close to 5 billion by 2016. Mobile PCs and tablet subscriptions are also increasing and are expected to almost close the gap with the number of fixed broadband subscriptions by 2016.

In total, mobile subscriptions will reach above 8 billion by 2016, excluding the growth potential from M2M and other connected devices.

Figure 3: Fixed and mobile subscriptions, 2008-2016



Regional mobile growth

In Q3 2011, Asia Pacific (APAC), including China and India, contributed the largest portion of new subscriptions with 55 percent, followed by Central and Eastern Europe, Middle East & Africa (CEMA) with 30 percent. Western Europe added 2 percent, North America 3 percent and Latin America 10 percent. China currently has the highest number of subscriptions at above 900 million, followed by India and the US.

Figure 4 projects reported mobile subscriptions in each region up until 2016 and is characterized by steady growth. This is especially evident in the Asian regions where there are many developing nations. The number of mobile subscriptions in the APAC region is predicted to grow by 1.3 billion by 2016, representing 55 percent of global net additions.

USERS PER FIXED SUBSCRIPTION

The number of fixed broadband users is at least three times the number of fixed broadband connections, due to multiple usage in households, enterprises and public access spots. This is quite the opposite to the mobile phone situation, where subscription numbers exceed user numbers. In the latter years of the forecasting period, it is likely that the usage trend for mobile PCs will be similar to fixed broadband usage today, with several users per subscription, especially in developing markets where mobile access will be the main source of internet connection.

Figure 4: Mobile subscriptions by region, 2008-2016

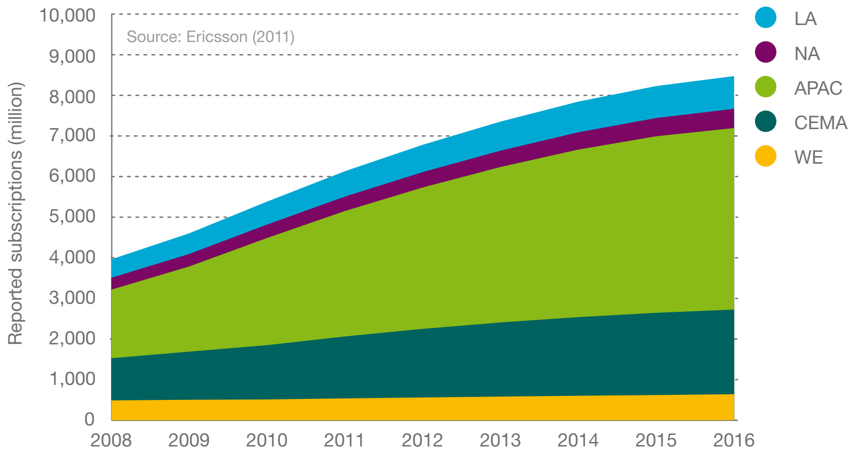


Figure 5: Mobile subscriptions by technology, 2008-2016

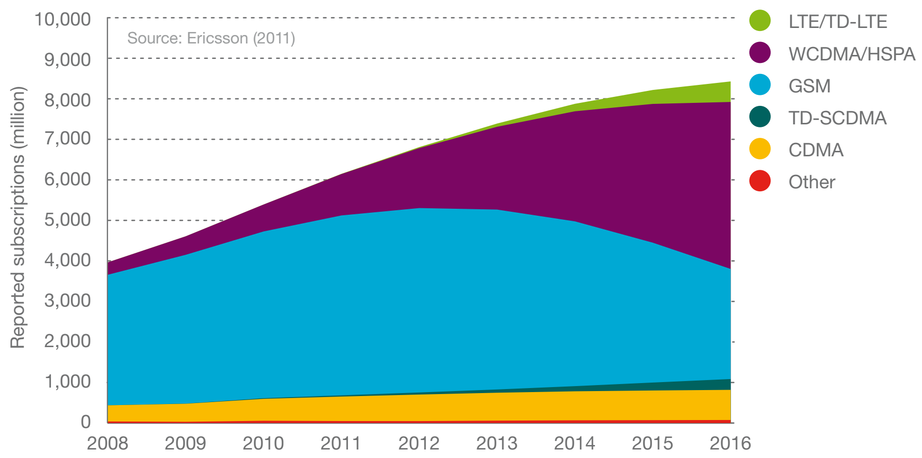
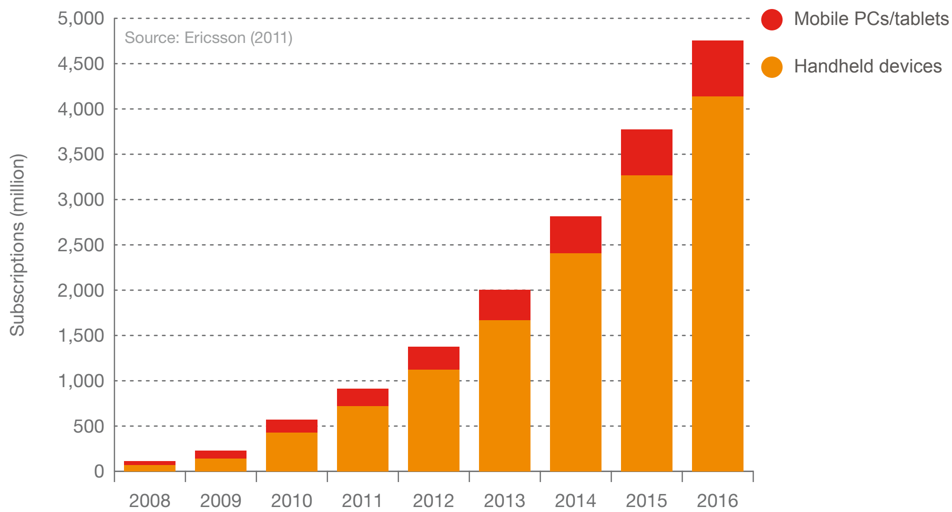


Figure 6: Mobile broadband subscriptions by device type, 2008-2016



Mobile technology

Figure 5 projects reported mobile subscriptions by technology. Subscriptions are represented under the most advanced technology the handset is capable of using. Even though HSPA subscriptions are growing rapidly today, GSM subscriptions will continue to lead until the end of the forecast period. This is based on the fact that new low-end users entering networks in growing markets will use the cheapest handsets available. However, the rapid migration to more advanced technologies in the developed world means that the global number of GSM subscriptions will start to decline from 2012. LTE is currently being deployed and built out in all regions and will be used by a small but growing share of the total subscriber base by 2016.

Mobile broadband

In figure 6, mobile broadband[2] subscriptions are split into handheld devices and mobile PCs/tablets. It is clear that the vast majority of devices are, and will continue to be, handheld. Mobile broadband will gain a larger share of the total broadband subscriptions in many markets, complementing xDSL in certain segments and replacing it in others.

[2]Mobile broadband is defined as CDMA2000 EV-DO, HSPA, LTE, Mobile WiMAX and TD-SCDMA. M2M subscriptions not included in figure 3-6.

COVERAGE

The coverage of the world's mobile networks is constantly increasing as more and more base stations are being deployed. GSM/EDGE is the technology that by far has the widest reach and today covers more than 85 percent of the world's population (see figure 7). WCDMA/HSPA covered around 35 percent of the population by 2010 but is now accessible by over 40 percent of the world population.

Further build out of WCDMA/HSPA coverage will be driven by the availability of affordable smartphones, the surge in mobile broadband services and faster speeds, as well as regulator requirements to connect the unconnected. By 2016 it is estimated that 80 percent of the world's population will be able to access the internet using WCDMA/ HSPA networks.

The combined 2G and 3G population coverage for CDMA is estimated to be above 50 percent. CDMA coverage is expected to grow slightly, and most large CDMA operators have announced a migration plan to LTE.

LTE rollout

Several major operators have started LTE deployments but in terms of population coverage it has a long way to go. In five years' time, it is expected that LTE will have roughly the same population coverage as WCDMA/HSPA had in 2010, which is around 35 percent. In terms of global operator investments, WCDMA/HSPA will remain the leading mobile access technology for many years to come.

From a geographical perspective, we can more or less state that for GSM, only rural areas remain to be covered, while for WCDMA, there are still more densely populated areas lacking WCDMA/HSPA coverage.

Figure 7: Projected 3GPP technology coverage, 2010-2016

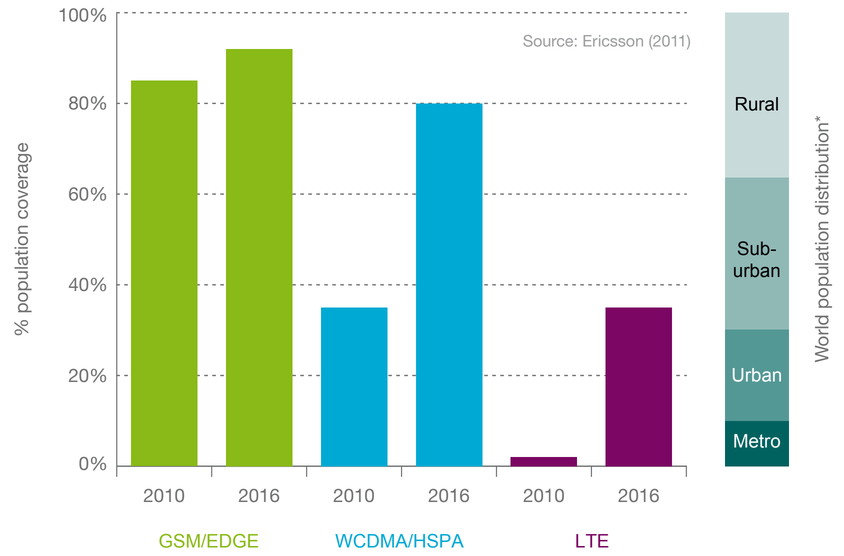
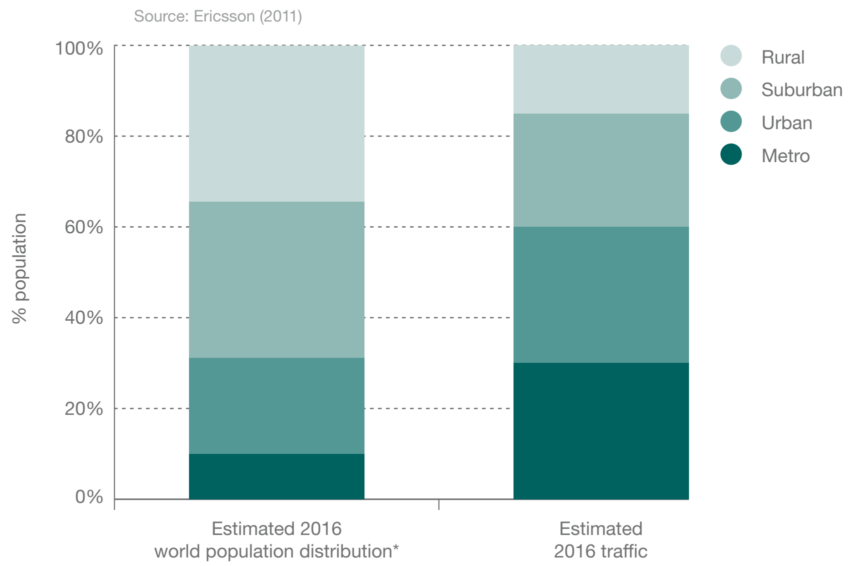
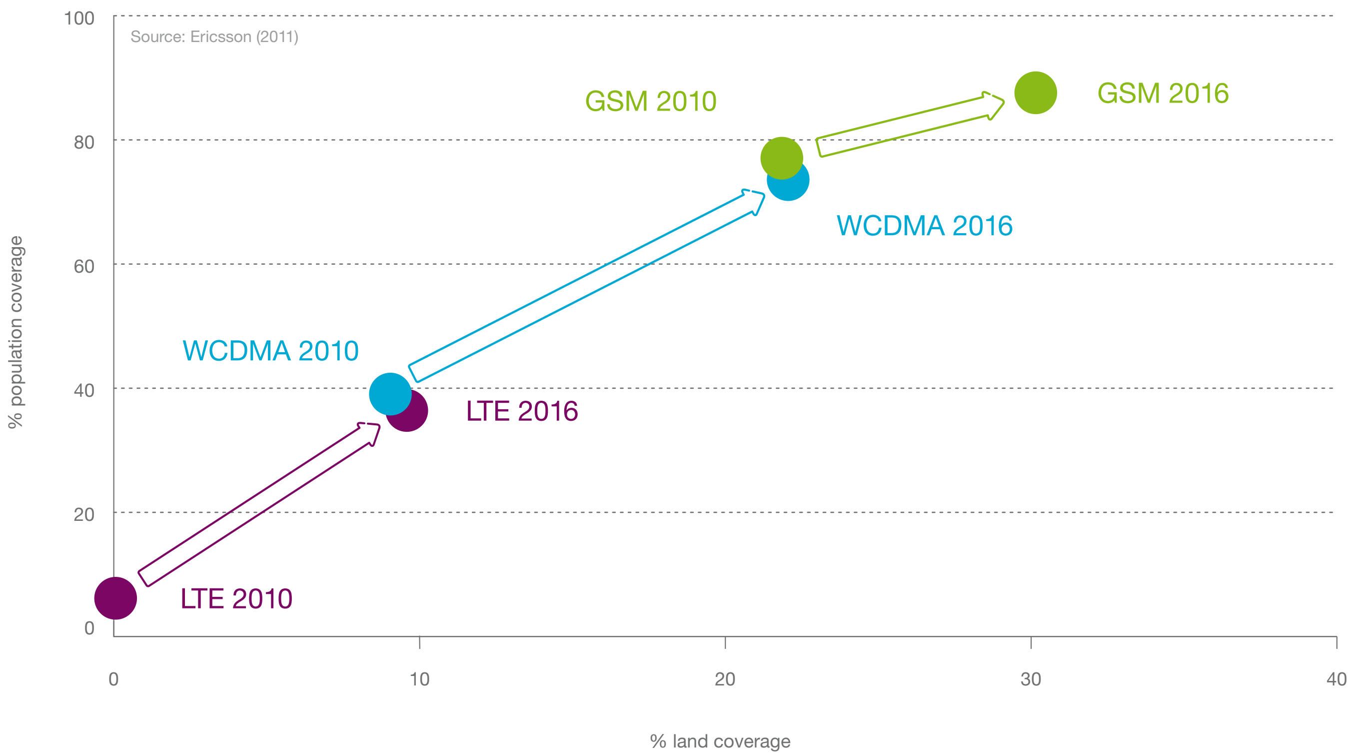


Figure 8: Projected traffic generation, 2016



*Metro: > 4,000 people/sq km
Urban: 1,000-4,000 people/sq km
Suburban: 300-1,000 people/sq km
Rural: < 300 people/sq km

Figure 9: Population and land coverage: 2010 and 2016 projection



Effects of urbanization

Urbanization is currently a major global trend. Figure 8 shows that by 2016 over 30 percent of the world's population are expected live in metro and urban areas with a density of more than 1,000 people per square kilometer. These areas represent less than 1 percent of the Earth's total land area, yet they are set to generate around 60 percent of mobile traffic by 2016.

In metro and urban areas, heterogeneous networks will complement macro network improvements to serve the traffic and provide high-quality user experience. In less-densely populated areas the focus will be more on building cost-effective coverage and capacity.

This analysis is made based on knowledge of traffic volume data from different geographical areas in many networks combined with traffic forecast figures. A high quantity of today's mobile data traffic is already being generated in metro areas. However, it is worth noting that by 2016 the amount of mobile data traffic is forecasted to be 10 times that of 2011.

Coverage projection

GSM/EDGE, WCDMA/HSPA and LTE are all expected to increase both in terms of population and land coverage. However, figure 9 shows that WCDMA/HSPA is expected to cover in 15 years what GSM/EDGE technology took 20 years to achieve. LTE is expected to have an even faster adoption rate. It is predicted that it will take 7 years to cover the same area and population as WCDMA did in 10 years.

HETEROGENEOUS NETWORKS EXPLAINED

Heterogeneous networks involve complementing the macro coverage layer with low-power micro nodes, dedicated to providing extra capacity for areas with high traffic demands.

TRAFFIC DEVELOPMENT

New smartphone launches and the uptake of apps will continue to drive data consumption.

Currently, mobile PCs generate the majority of traffic across most mobile networks.

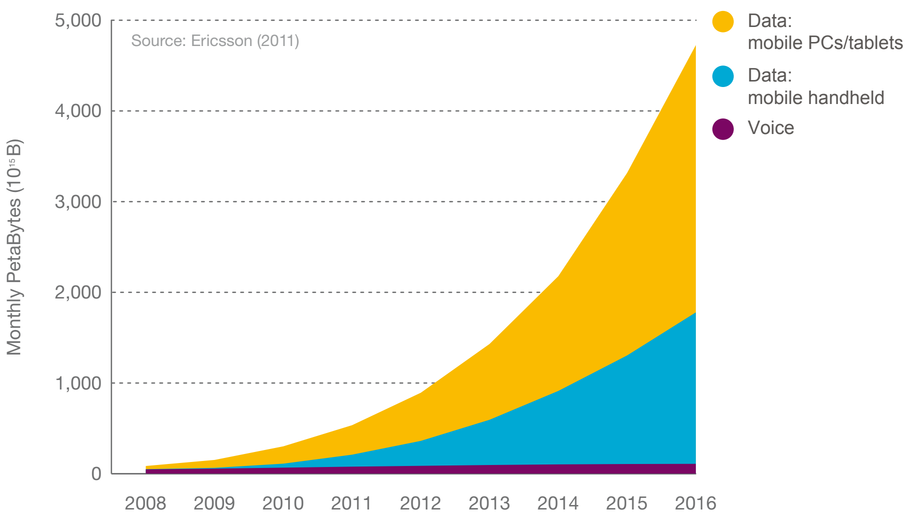
A large proportion of total data traffic is generated by a small share of the user base.

Mobile data revenue continues to increase and while exhibiting considerable variations, now represents around 30 percent of mobile operator service revenue on average.

Traffic patterns vary between markets due to many factors, including the availability of local content, such as online access to video from major broadcasters.

Mobile voice traffic will continue to increase, but at a lower rate, driven by new subscriptions.

Figure 10: Mobile traffic: voice and data, 2008-2016



'Traffic' refers to aggregated traffic in mobile access networks. DVB-H and Mobile WiMax or WiFi traffic have not been included. M2M traffic not included.

Traffic outlook

Even though traffic patterns differ significantly between countries, overall mobile data traffic is expected to double during 2011. Mobile PCs dominate the traffic in most mobile networks today, but total smartphone traffic is expected to triple in 2011. In latter years, smartphone traffic will approach levels similar to mobile PCs.

The attractiveness of accessing the internet from a mobile device will continue to drive mobile traffic development. Mobile data traffic is expected to grow with a CAGR of about 60 percent (2011-2016), driven mainly by video.

MOBILE DEVICE AND TRAFFIC CORRELATIONS

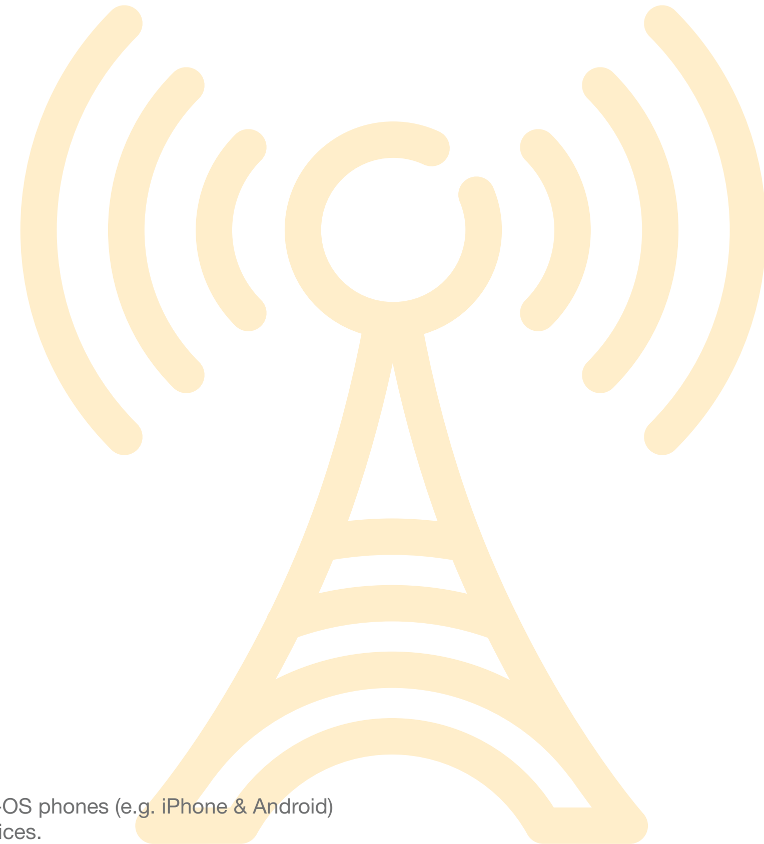
Mobile data traffic is predicted to grow 10 times by 2016, by which time data traffic will be split fairly equally between devices such as smartphones on one hand, and PCs and tablets on the other.

A large part of the data traffic is generated by a limited number of users in each device category. These users may considerably change their usage if operators implement data volume caps or other traffic management schemes. Measures like this could significantly impact the traffic forecast.

Traffic per subscriber partly relates to the screen size of the user's individual device. On average, a mobile PC generates approximately 4-6 times more traffic than a high-traffic smartphone[3]. A mobile PC generates approximately 1-2GB per month on average vs. 250-500MB per month produced by smartphones.

BY 2016...

- Mobile broadband subscriptions will reach almost 5 billion, up from the expected 900 million by the end of 2011.
- The number of high-traffic smartphones[3] will increase more than 5 times and generated traffic will grow around 12 times.
- Mobile PC subscriptions will more than double and generated traffic will grow about 8 times.
- Tablet subscriptions will grow 10 times and generated traffic will increase about 40 times.



[3]High-traffic smartphones is here defined as the subset of open-OS phones (e.g. iPhone & Android) that typically generates high traffic, 5-10x that of low-traffic devices.

MOBILE TRAFFIC: DATA VS VOICE

Data traffic doubled over one year

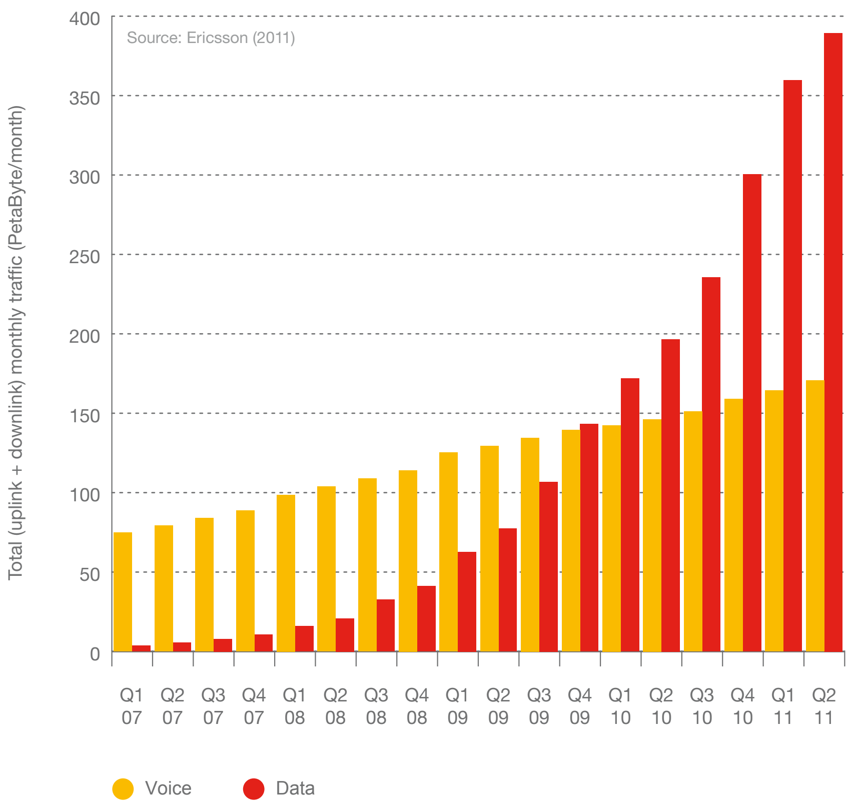
Figure 11 shows the total monthly traffic split for voice and data. It depicts a stable trend of traffic growth with some seasonal variations. However, there are large differences in traffic levels between markets, regions and operators due to differing customer profiles.

Mobile data surpassed voice in Q4 2009 and was double that of voice for the first time in Q1 2011. Data traffic grew by 100 percent between Q2 2010 and Q2 2011. The comparatively smaller quarterly growth of 8 percent between Q1 and Q2 2011 is likely to be related to seasonal variations in traffic levels, similar to those observed in the past.

Mobile voice traffic has doubled over the last four years and continues to grow at a steady rate. The growth is especially high in regions with a strong increase in subscriptions, such as developing nations in Asia.

These measurements have been performed by Ericsson over several years using a large base of live networks that together cover all regions of the world. They form a representative base for calculating world total traffic in mobile networks (not including DVB-H, WiFi, and Mobile WiMax).

Figure 11: Global total traffic in mobile networks, 2007-2011



MOBILE PC DATA

The mobile PC data traffic produced by the average subscription per month varies. The overall trend is positive and average usage is now between 1-2GB on the networks measured.

1-2GB

APPLICATIONS ON MOBILE NETWORKS

Figure 12: Spread of monthly traffic volumes in 3G mobile broadband networks per subscriber, by device

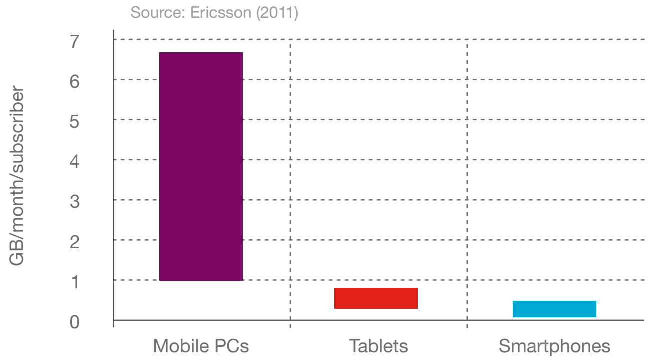
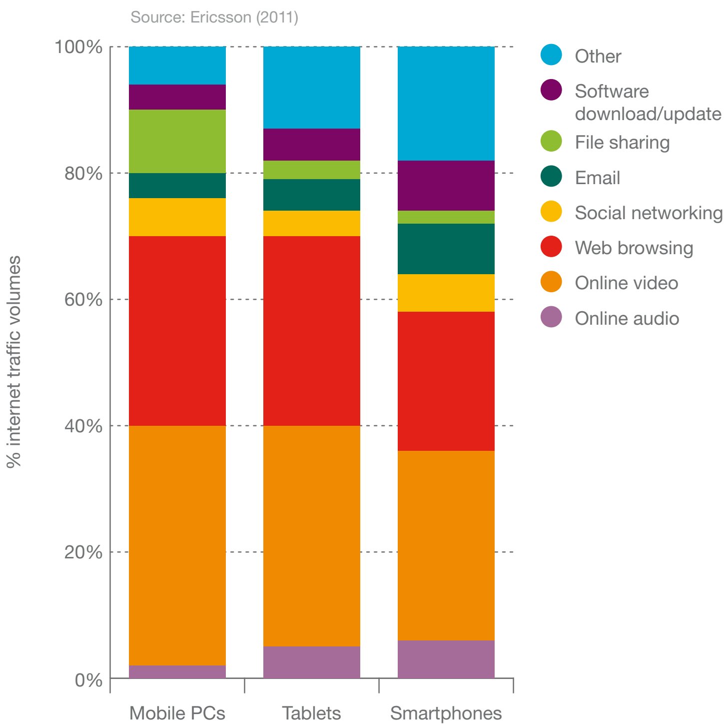


Figure 13: Application internet traffic volumes by device type



The data used for this graph does not take into account WiFi offload traffic. Smartphones include Android and iPhone OS only.

To better understand how usage differs between various devices and networks, a study has been performed based on deep analysis of selected 3G networks that together cover all major regions of the world.

Figure 12 shows the spread of average monthly data traffic per subscription and device type in the different measured networks.

The spread observed for mobile PCs is between 1 and 7GB per month. Mobile PCs have the highest average monthly traffic volume per subscription over 3G (global average at 1-2GB), followed by tablets at 250-800MB and smartphones at 80-600MB.

Figure 13 shows how the most widely-used online applications contribute to overall mobile internet traffic volumes, and how these contributions vary by the type of connected device, based on estimated worldwide average values from the measured networks.

Regardless of device type, online video (30-40 percent) is the biggest contributor to traffic volumes, followed by web browsing (20-30 percent). Traffic drawn from mobile PCs is notable for having significantly higher file sharing activity than other devices. On tablets and smartphone devices, online audio, email, software downloads, and social networking traffic are important contributors to 3G data traffic.

SESSION LENGTHS

Mobile PCs are used for a few longer sessions, mainly during the daytime and evening, but between late night and dawn, most are turned off. In contrast, tablet and smartphone devices usually have frequent, short sessions typically across the whole day. Tablets are in this respect much closer to smartphones than to mobile PCs.

CONSUMER INSIGHTS: SMARTPHONE USAGE

Usage throughout the day

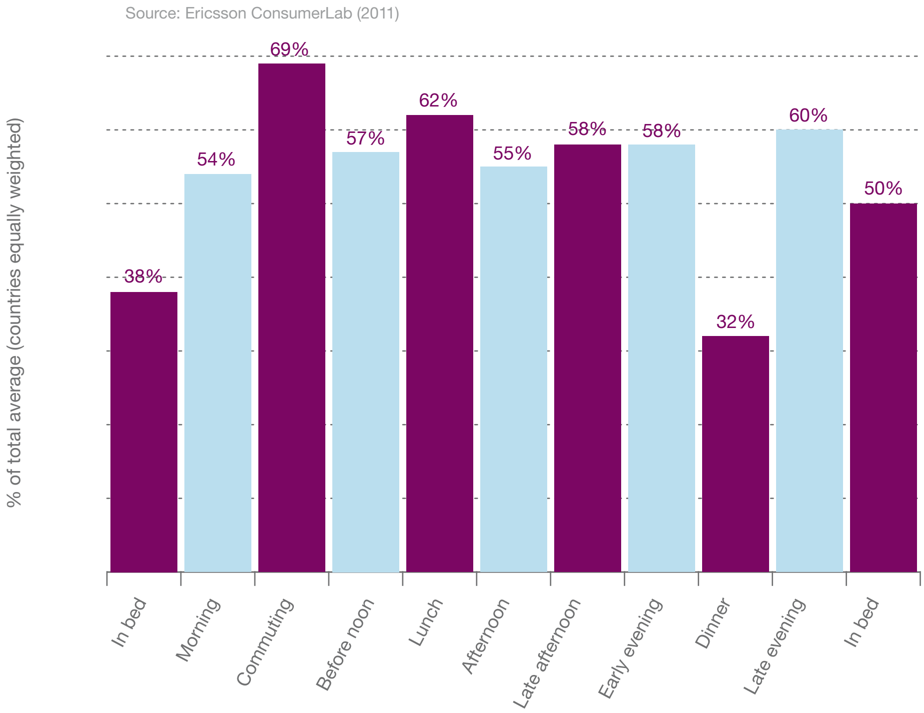
Figure 14 shows the percentage of iPhone and Android smartphone users in different regions of the world who use their smartphones for non-voice applications during various periods of the day.

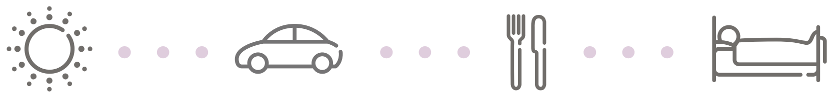
Almost 40 percent of smartphone owners globally use the internet before getting out of bed. This reflects habitual behavior in which users always have their smartphone at hand. Over 50 percent use their device between getting out of bed and leaving home in the morning. From here, usage levels increase, reaching peaks during commuting and lunch hours.

Smartphone users are quickly adopting a pattern of frequent, short internet access that is spread throughout the whole day. The simplicity of smartphone apps has led to consumers developing a habit of finding new apps to address the challenges and chores that everyday life brings. They do this spontaneously as new situations arise, and in the process integrate internet use into a more mundane level of their lives than ever before. The only point during the day when usage dips significantly on a global scale is dinner time.

This is in contrast to mobile PC usage, which is characterized by fewer but longer spells in a small number of places, typically at home, in the office or at school.

Figure 14: Smartphone non-voice usage





Regional commuter variations

There are clear local variations within these global trends. Figure 15 shows regional variations in smartphone application use during commutes. In North America and large parts of South Europe, commuting is based largely on car travel and so GPS-based navigation and map usage is much higher. This also means that commuters in these regions are, in relative terms, less likely to be using other smartphone applications during their journey.

Conversely, GPS usage is much lower than the rest of the world in North and Western Europe as well as in Latin America, where public transport is more widely-used. In these and other regions, the wide spread of applications used on smartphones as well as the overall intensity of use during commuting is already creating issues for commuters. These issues include frustration at the lack of coverage in many subway systems as well as witnessing decreased speed of access on buses and trains during peak commuting hours.

Figure 15: Smartphone usage during daily commute

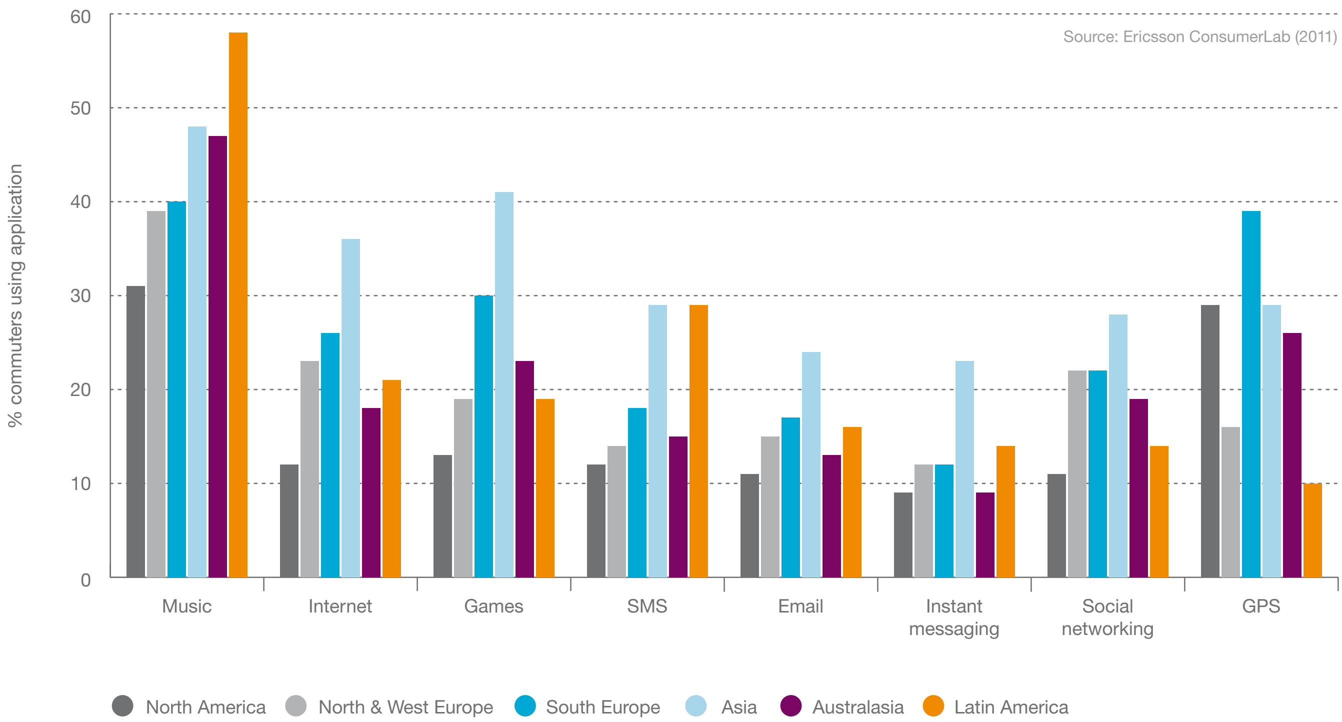


Figure 15

North America: USA, Canada
North and West Europe: Sweden, UK, Netherlands, Germany
South Europe: France, Spain, Italy
Asia: Singapore, Hong Kong, Korea, Taiwan, Malaysia, Japan, China
Australasia: Australia, New Zealand
Latin America: Argentina, Brazil, Chile, Costa Rica, Mexico, Guatemala

Representative sampling of the population aged 16 to 60. Survey administered with a mixed methodology consisting of both face to face and online questionnaires, depending on the country. Sample sizes vary between approximately 500 and 2,400. The study was conducted in January 2011.

NETWORK IMPLICATIONS

The increasing spread of internet usage throughout the day has some important implications. Firstly, usage gets more intertwined with other everyday activities, creating the need to access internet services in new geographical areas. This creates new challenges for network planners and could create new capacity bottlenecks that will need to be overcome.

Secondly, our research shows that applications such as Facebook & Twitter, newsreaders, shopping apps and streaming services are used repeatedly during the day on whatever device is most accessible in each situation. Many of these services are based on login and a consistent environment across devices, making consumers dependent on cloud access – without even realizing it.

DIFFERENT PHONES DIFFERENT HABITS

Figure 16: Ratio of active smartphone users

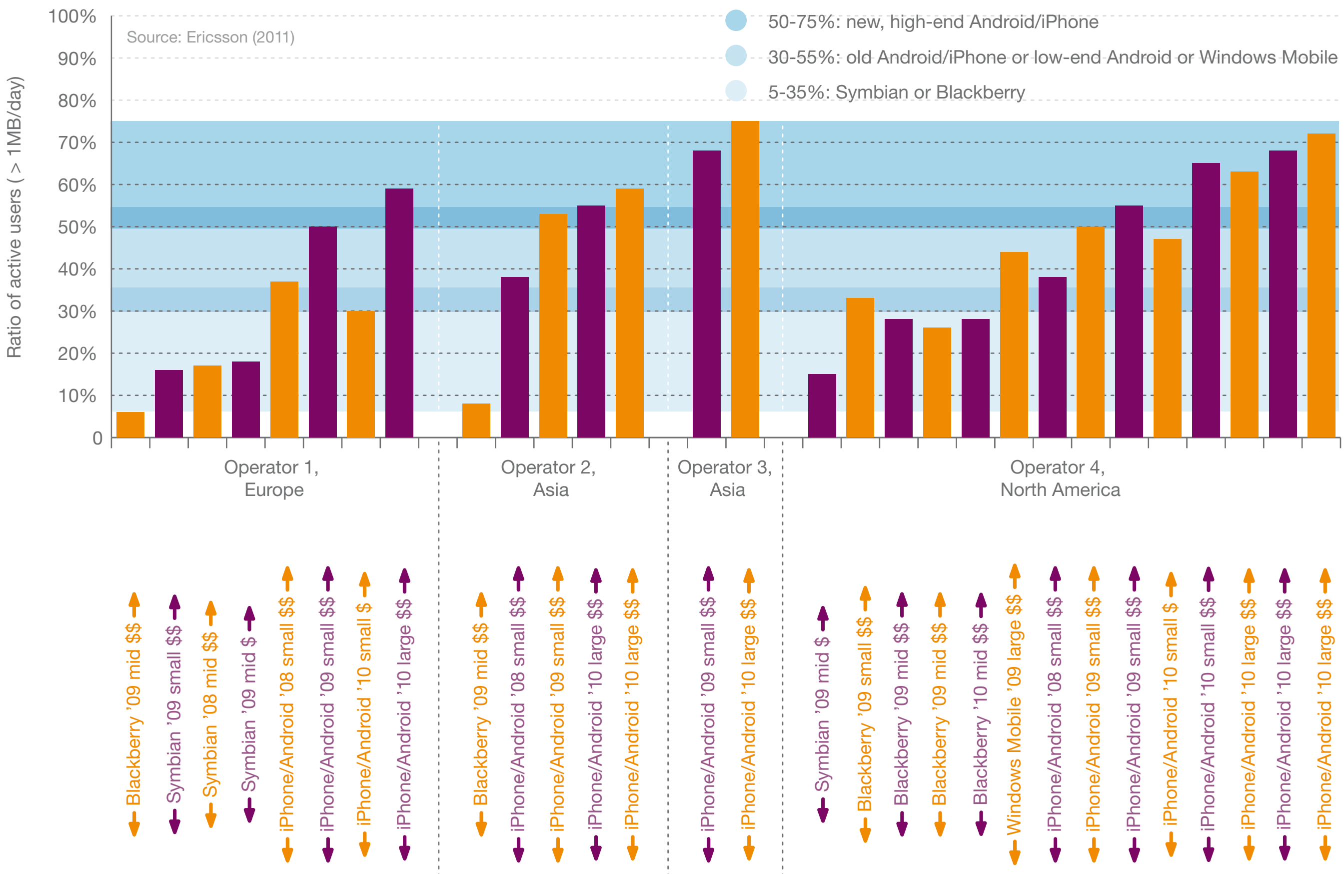
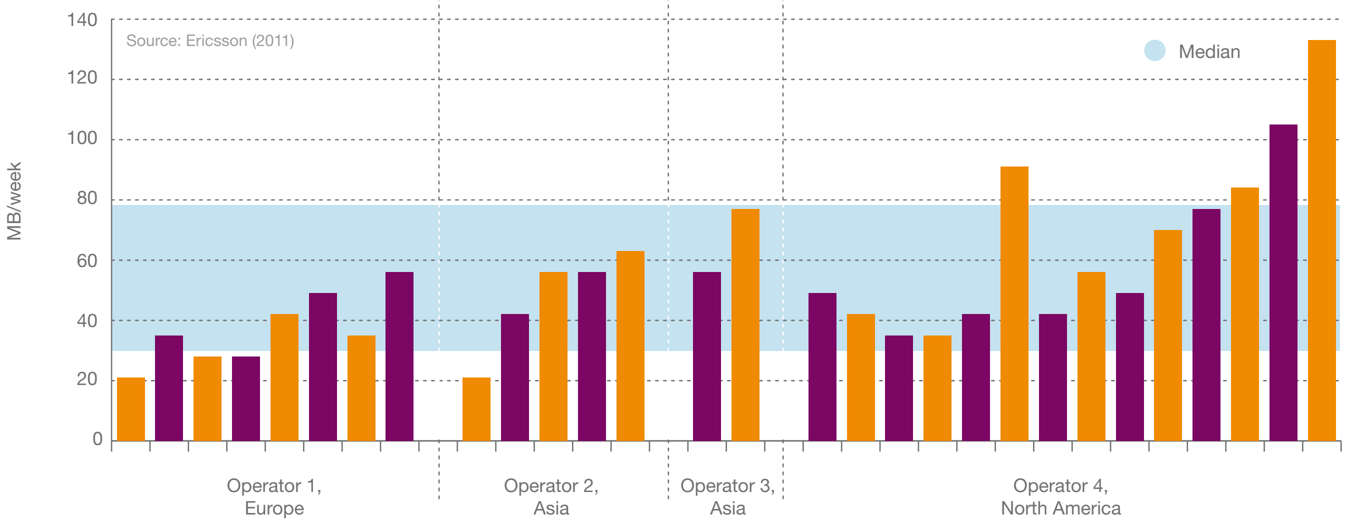


Figure 17: Weekly median smartphone traffic volumes for active users



Impact of handset model and operating system

This section of the report investigates the impact of several different factors on weekly smartphone traffic usage. The findings presented here are based on Ericsson mobile broadband measurements during Q2 2011 from four different operators in mature markets in Europe, Asia and North America.

Figures 16 and 17 compare smartphone usage for the most popular handset models used in these measurements. The handset models are characterized by operating system, year of release, screen size and retail price.

Figure 16 compares for each model the ratio of 'active' smartphone users, defined as those generating more than 1MB traffic per day on average. The ratio of active smartphone users is the highest for new Android and iPhone models at 50-75 percent. They are followed by older or lower-end Android and iPhone models and Windows Mobile phones (35-55 percent) and finally by Symbian and Blackberry smartphones (5-35 percent).

It is interesting to note the striking difference between the ratio of active Blackberry users in North America compared to those outside North America. One reason for this is that Blackberry devices presently have limitations in many countries, such as app store availability.

Figure 17 shows median weekly traffic volume (50th percentile) for active smartphone users (>1MB/day). This value varies between the 30-80MB range for most smartphone models.

For active users that generate more than 1MB traffic per day on average, factors including the screen size, year of release and price of the smartphone have a stronger correlation with median traffic than the OS.

Figures 16 and 17

X axes show smartphone OS/year of global release/screen size/price. Screen size is in pixels (320x480 or smaller = small, 480x800 or higher = large) and price as customer segment ($ = smartphone model & subscription at a price level of feature phones, $$ = high-end model). iPhones and Android smartphones are not specifically distinguished in the charts in order to allow operators to remain anonymous.

The Y axis for figure 16 shows the ratio of active users, defined in this context as a user generating more than 1MB of data/day. The Y axis for figure 17 shows the weekly median smartphone traffic volumes for active users. The bar shows the median (50th percentile) volume.

Example: Under Operator 1, 59% of users with a high-end iPhone/Android device from 2010 and with a large screen are active users (generating more than 1MB data/day). The median weekly data traffic for these users is 56MB.

FOCUS: NORTH AMERICA

On the North American network, new, high-end smartphones with large screens generate about two times more traffic than most smartphones analyzed in Asia and Europe.

It is notable that both fixed and mobile voice usage is several times higher in North America than in Europe. This is not connected to terminals but to tariff plans and cultural behavior.

Figure 18: Average weekly application traffic for different subscriber clusters of a new Android smartphone model (high-end with large screen) at one specific operator

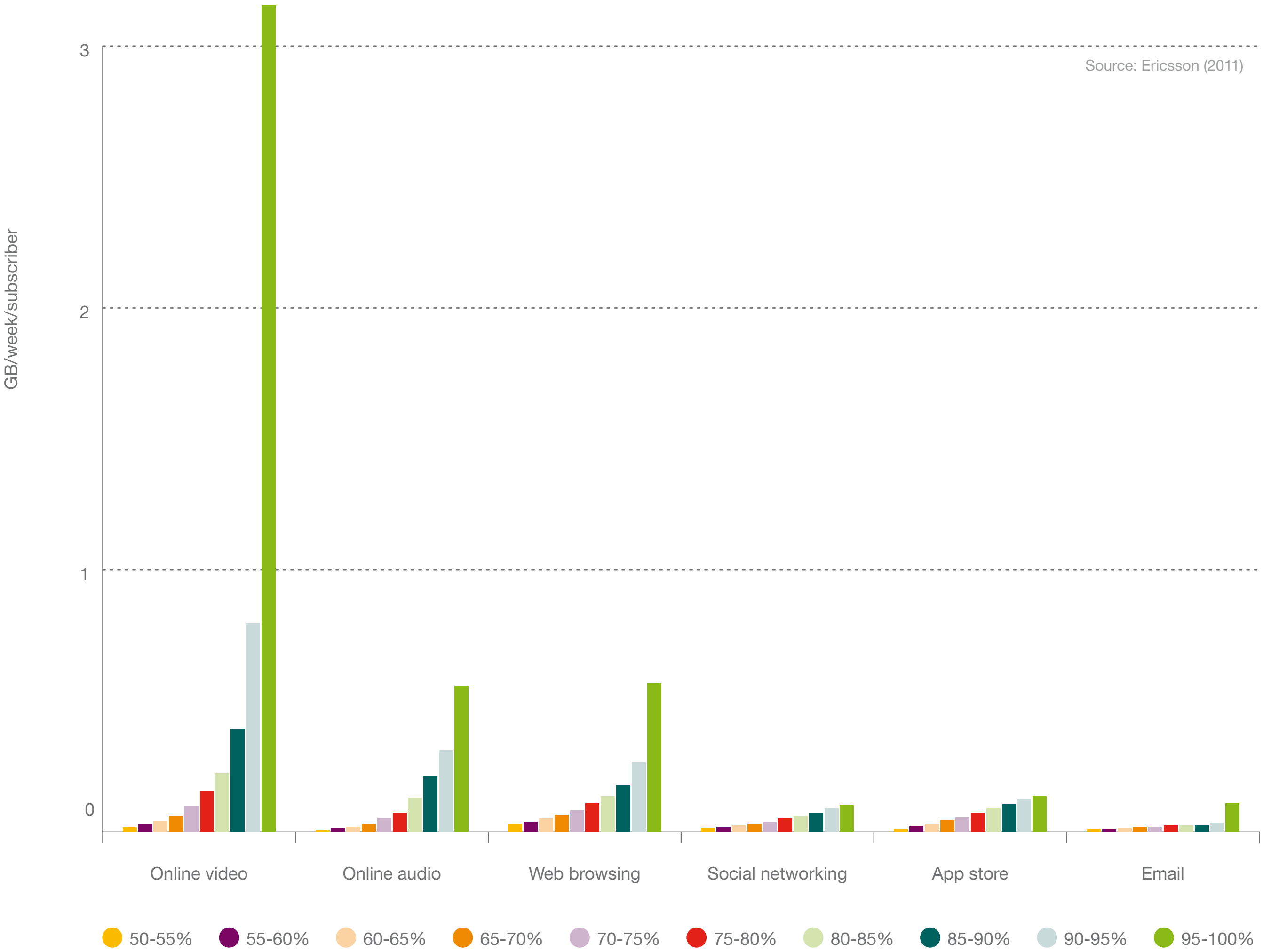


Figure 18 further drills down to usage of a single smartphone model (new high-end Android model with large screen) used under a specific operator. It groups different subscriber clusters by their average weekly traffic volumes and shows each cluster's average application use.

The graph clearly shows that overall usage patterns across subscriber groups differ between applications. For example, social networking and app store traffic increase nearly linearly from low to high-traffic users.

In contrast, online video usage grows rapidly to become extreme for the top 5-10 percent of smartphone users. This group are willing to spend up to 40 minutes a day on average watching online video compared to 30 seconds for the average user.

Similar application usage characteristics can be observed for most new high-end Android and iPhone models.

One conclusion drawn is that traffic management for smartphones could primarily focus on online video.

Figure 18

Subscriber clusters have been created based on total per subscriber traffic volumes, e.g. the 95-100% cluster denotes the heaviest 5% of subscribers.

The clusters presented in the graph exclude the users with the lowest data traffic use and starts with the average users (50-55%).

DATA PLANS AND MOBILE PC USAGE

There are variations in the service availability and data plans provided by operators around the world, with both factors impacting subscriber behavior. This section focuses on the effects of data plans on traffic volumes and application use. The measurements are made using a deep study analysis of one mature operator's 3G network over one month. The results presented here are for mobile PCs only.

Figure 19 shows the monthly traffic for different applications split by data plan cluster. The monthly traffic resulting from applications such as online media and file sharing increases in line with volume data plan caps. Web browsing is the exception here and reaches a saturation point at the 5-10GB data plan cap (i.e. users on the 5-10GB and 10-20GB data plans use around the same volume for web browsing).

Data plan utilization ratio

Figure 20 shows average subscriber unused data in each plan and the ratio of subscribers running over the volume data cap.

Data usage increases with larger data plans. However, the average utilization of data included in the plan decreases as cap size increases.

Note that as these measurements focus on a single month, subscribers consuming far below the cap could become cap over-runners during another month, and vice versa.

Data plan surcharge effects

The way operators handle over-runners affects monthly traffic volumes. Subscribers with plans that apply a surcharge once a cap is reached use significantly lower volumes than those who are simply limited to lower speeds after reaching the cap.

Figure 19: Traffic mix for different data plans

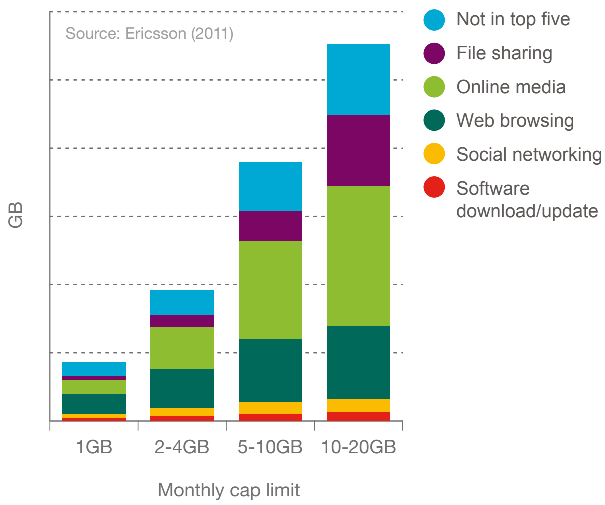
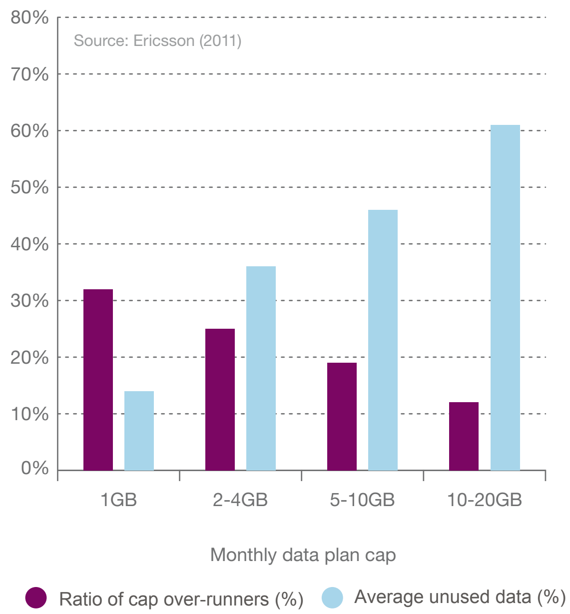


Figure 20: Cap utilization ratio for different data plan



Figures 19 and 20

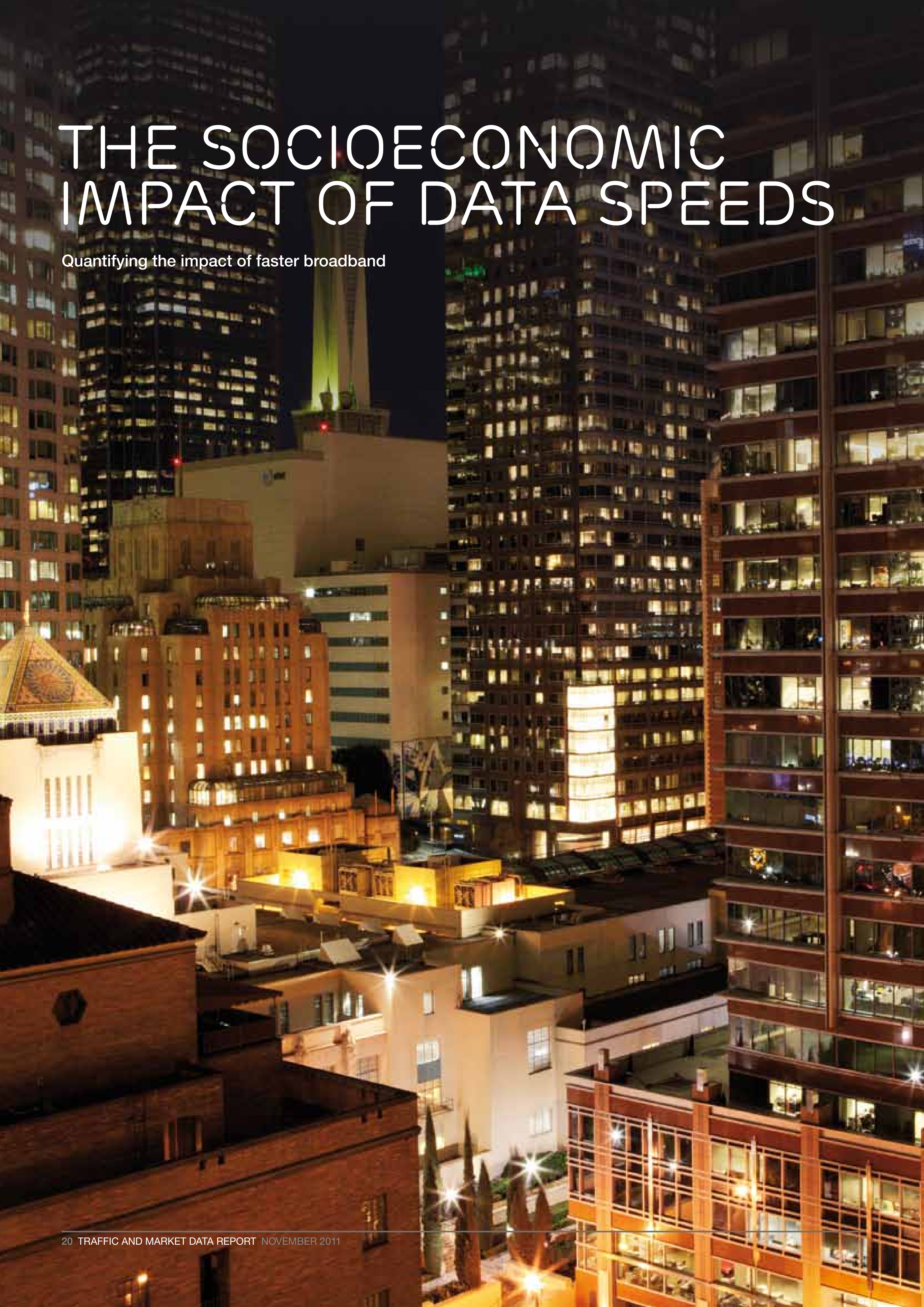
Figure 19: The graph shows average monthly traffic volume per subscriber. Each bar represents a data plan cluster (volume data cap per plan) and is split into usage per application type. For example, a subscriber with a monthly volume data cap of 7GB would fit into the 5-10GB cluster.

Online media is an umbrella category for online video (e.g. YouTube), web-TV, online audio and radio services, etc. Online video is the largest sub-category in this measurement.

Figure 20: The graph represents the same subscriber cluster as figure 19. It shows the cluster's average unused data in each plan and the ratio of subscribers running over their data cap. In this study, subscribers are limited to lower speeds after reaching their monthly cap.

THE SOCIOECONOMIC IMPACT OF DATA SPEEDS

Quantifying the impact of faster broadband



DOUBLING THE BROADBAND SPEED FOR AN ECONOMY INCREASES GDP BY 0.3 PERCENT

80 NEW JOBS ARE CREATED FOR EVERY 1,000 NEW BROADBAND CONNECTIONS

FOR EVERY 10 PERCENT INCREASE IN BROADBAND PENETRATION THE GDP GROWTH IS AROUND 1 PERCENT

In 2010, Ericsson and Arthur D. Little concluded that for every 10 percentage point increase in broadband penetration, GDP increases by 1 percent. This study also revealed that around 80 new jobs are created for every 1,000 new broadband connections provided. This has now been followed up with a new study that focuses on the impact of broadband speeds.

The new study, conducted jointly by Ericsson, Arthur D. Little and the Chalmers University of Technology and presented in Q3 2011, explores the socioeconomic impacts of faster broadband speeds and puts a tangible value on the resulting benefits. The research concludes that doubling a country's broadband speed increases its GDP by 0.3 percent. The equivalent monetary value of a 0.3 percent GDP growth in the OECD region is USD 126 billion. This in turn corresponds to more than one seventh of the average OECD growth rate in the last decade.

Furthermore, the study has shown that an additional 0.3 percent can be added to economic growth each time the broadband speed is doubled. This means that quadrupling speeds will yield a 0.6 percent growth stimulus. Most importantly, the study scientifically confirms that broadband speed is a highly important factor in spurring economic development throughout society.

The effects of increasing broadband speed can be divided into three categories: direct effects, indirect effects and induced effects. In the short term, more jobs will be needed to create the new infrastructure – this is the direct effect and would typically appear within the construction, telecommunications and electronics industries. Indirect effects include spillover business from one sector to another. An example of this is where companies involved in the construction of the infrastructure use business support services.

The induced effects are perhaps the most interesting as they lead to new ways of doing business caused by increased broadband speed. This effect of a changed behavior in society is also the most sustainable dimension of the potential socioeconomic development and could represent up to one third of the 0.3 percent growth.

The link between improved communication speeds and economic growth made by this research is a proof point that we are moving from the information society to the networked society. This offers people and businesses new opportunities to innovate, collaborate and socialize. In turn this helps to make society more productive through the development of automated and simplified processes and real-time information sourcing.

HOW THE STUDY WAS CONDUCTED

This study is the first to quantify the economic impact of broadband speed upgrades which uses a comprehensive scientific method based on empirical data.

The economic impact of broadband speed has been analyzed using panel data regression analysis. Data has been collected for 33 OECD countries, with speed intervals of 2 to 20 Mbps, using publicly available sources.

Countries considered in the study are Australia, Austria, Belgium, Canada, Chile, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, the UK and the US.

KEY FACTS

	2011	2016	CAGR 2011-2016
Mobile subscriptions (million)	6,100	8,400	6%
Mobile PC/tablet subscriptions (million)	180	550	25%
Smartphone subscriptions (million)	810	2,600	25%
High-traffic smartphone subscriptions (million)	450	2,100	35%
Monthly traffic per high-traffic smartphone (MB/month)	300	800	20%
Monthly traffic per mobile PC (MB/month)	1,900	6,500	25%
Total monthly mobile PC traffic (PetaByte/month)	310	2,500	50%
Total monthly mobile traffic including voice (PetaByte/month)	530	4,600	55%
Traffic ratio: per mobile PC compared to per high-traffic smartphone	6	8	
Subscriptions ratio: high-traffic smartphones compared to PCs and tablets	2.5	4	
Increase in total data traffic 2011-2016 (multiple)		10	
Increase in high-traffic smartphone subscriptions 2011-2016 (multiple)		5	

PetaByte = 10^{15} B

GLOSSARY

2G	2nd Generation Mobile Networks
3G	3rd Generation Mobile Networks
3GPP	3rd Generation Partnership Project
CAGR	Compound Annual Growth Rate
CDMA	Code Division Multiple Access
DSL	Digital Subscriber Line
EDGE	Enhanced Data Rates for GSM Evolution
FTTH/B	Fiber-To-The-Home/Building
GB	GigaByte
GDP	Gross Domestic Product
GSM	Global System for Mobile Communications
HSPA	High Speed Packet Access
IP	Internet Protocol
LTE	Long-Term Evolution
M2M	Machine-to-Machine
MB	MegaByte
OECD	Organisation for Economic Co-operation and Development
OS	Operating System
P2P	Peer-to-Peer
TD-LTE	Time Division Long-Term Evolution
TD-SCDMA	Time Division Synchronous Code Division Multiple Access
VoIP	Voice over IP
WCDMA	Wideband Code Division Multiple Access

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