



**NEW ZEALAND INSTITUTE FOR THE STUDY
OF COMPETITION AND REGULATION**

THE NBN REBOOTED: COMMERCIAL CONSTRUCTS

Sydney, November 18, 2013

Bronwyn Howell,
General Manager

CORPORATE MEMBERS

Contact Energy
Fonterra Co-Operative Dairy
Group
Meridian Energy
Powerco
Telecom Corporation of New
Zealand Ltd
Victoria University of Wellington
Westpac Institutional Bank

INTERNATIONAL EVIDENCE

Commercial constructs based upon

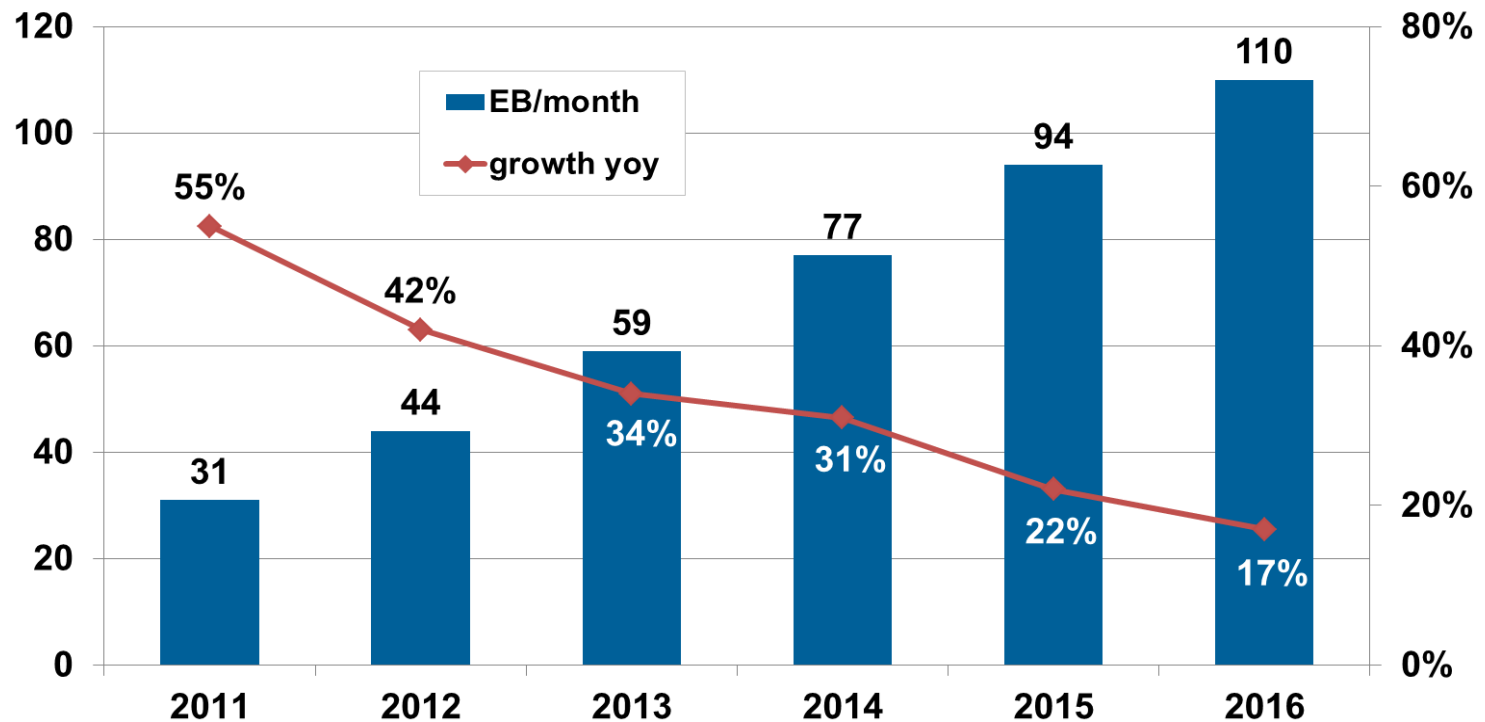
- applications (not internet connections)
- willingness to pay (marginal benefits relative to costs, alternatives)

Data from

- Cisco
- WIK (debt to Scott Marcus)
- Ookla



GLOBAL INTERNET TRAFFIC TRENDS



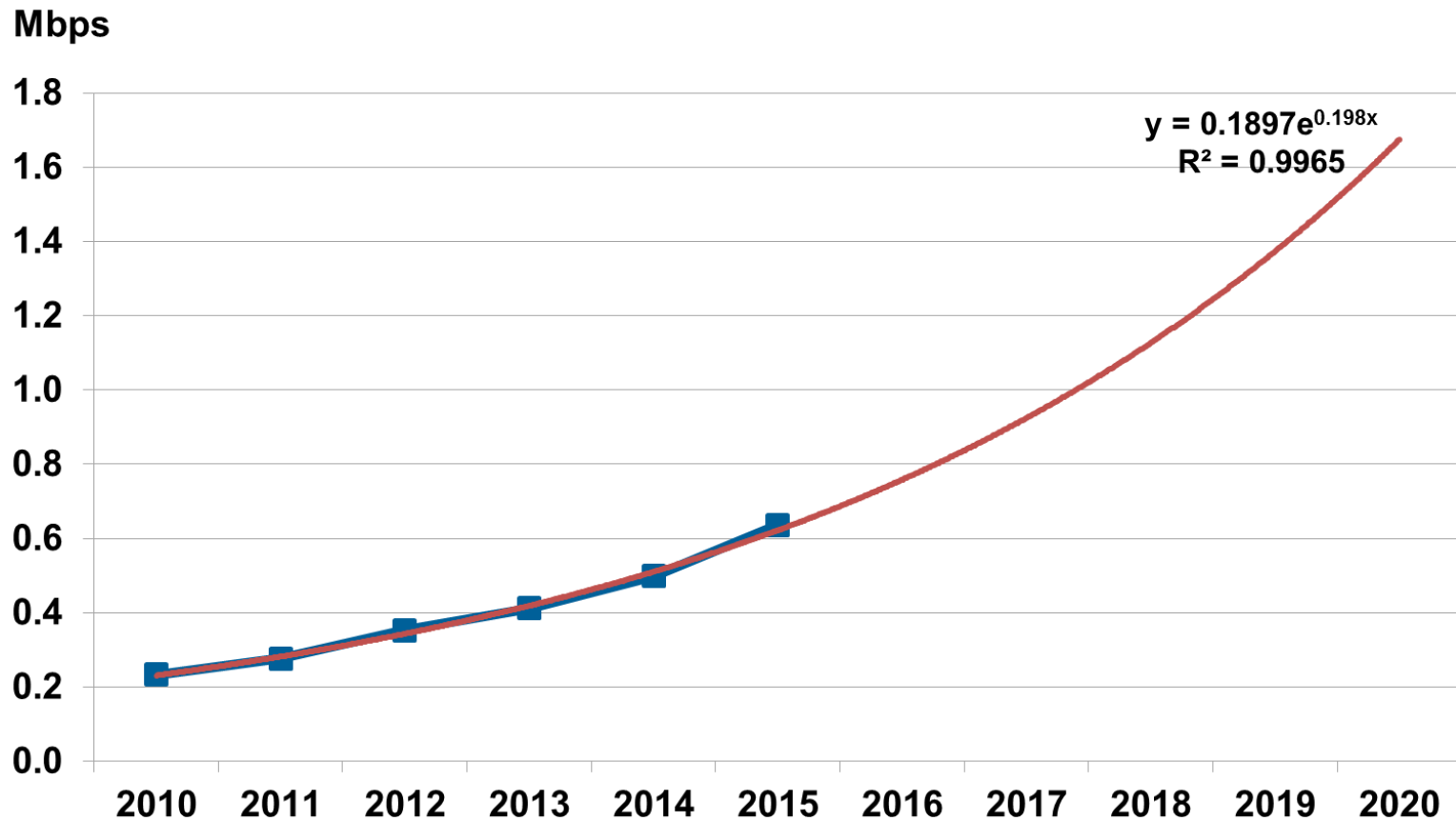
Full report, page 16.

Source: Cisco VNI (2012), WIK calculations.



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AVERAGE BUSY HOUR TRAFFIC PER USER



Full report, page 20.

Source: Cisco VNI 2011 data, WIK calculations.



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TRAFFIC PER HOUSEHOLD

Few HH need large bandwidth (whether average or peak hour).

Household generating more per month than GB	Mean BW > Mbps	Busy Hr BW > Mbps	2010	2011	2012	2013	2014	2015
-	-	-	552	555	540	512	465	419
50	0,15	0,27	62	79	105	126	150	175
100	0,31	0,53	35	49	61	77	103	125
200	0,62	1,06	9	19	33	44	58	72
500	1,54	2,65	3	4	6	8	11	21
1.000	3,09	5,31			2	3	5	6

Source: Cisco VNI 2011, WIK



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TRAFFIC ASYMMETRY

Video plays a huge role in traffic.

Meanwhile, peer to peer not growing in relative importance.



Source: Cisco VNI, 2013

The percentages within parenthesis next to the legend denote the relative traffic shares in 2012 and 2017.

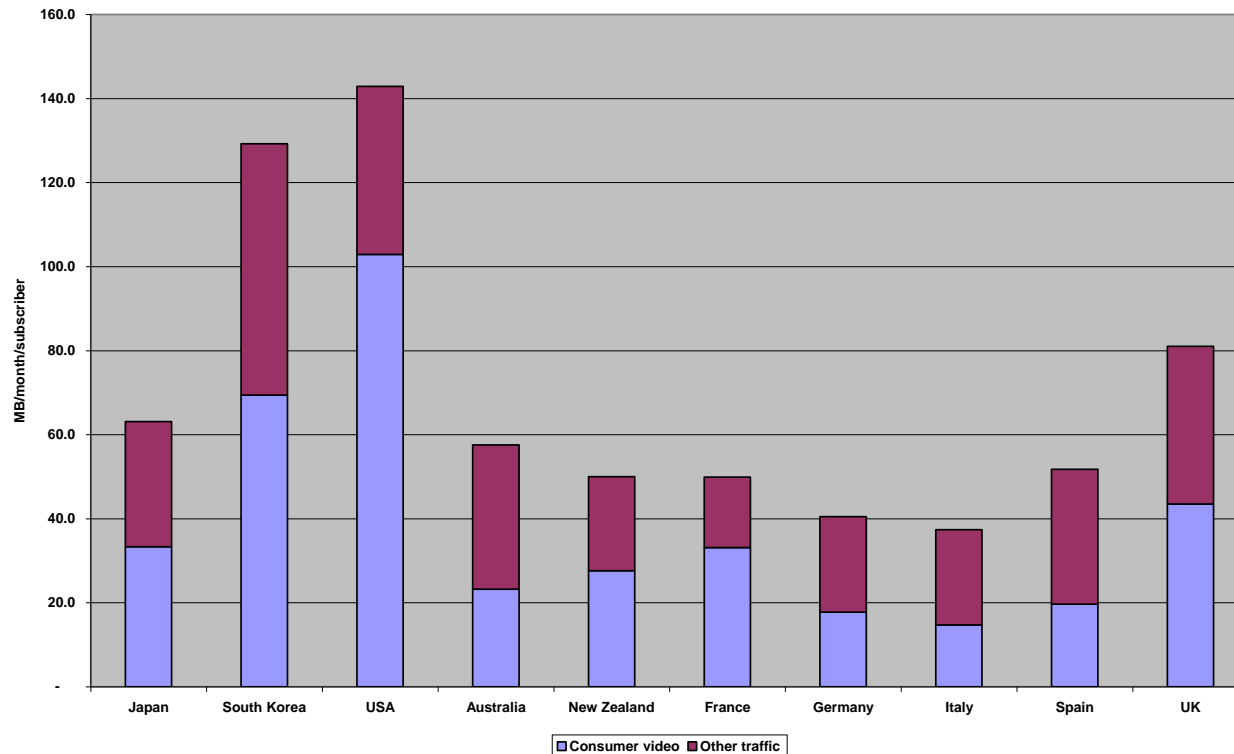
Source: Cisco VNI (2012)



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USAGE CORRELATES WEAKLY WITH SPEED

MB / subscriber / month in selected countries (2012)

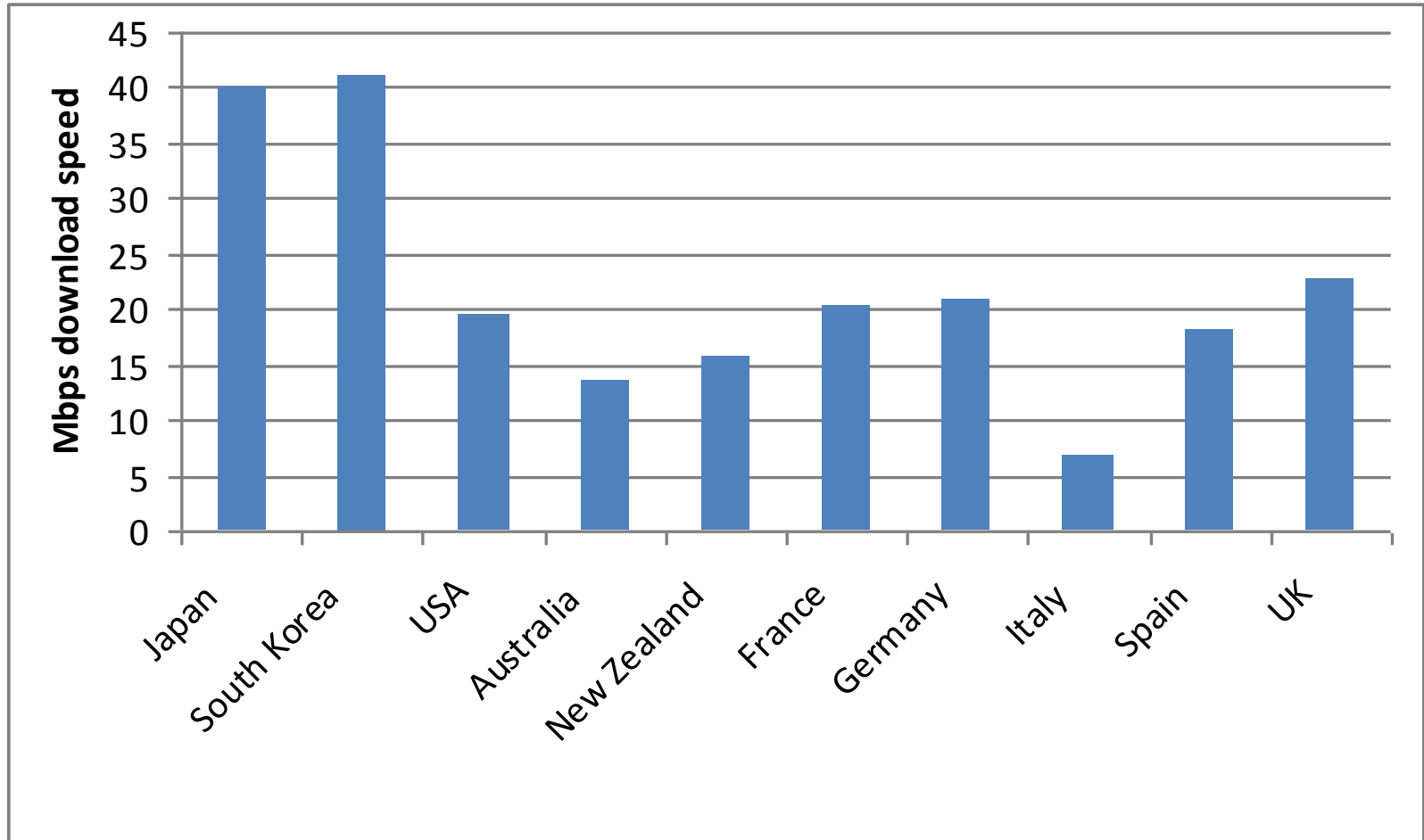


Source: Cisco VNI online database (2013), WIK calculations



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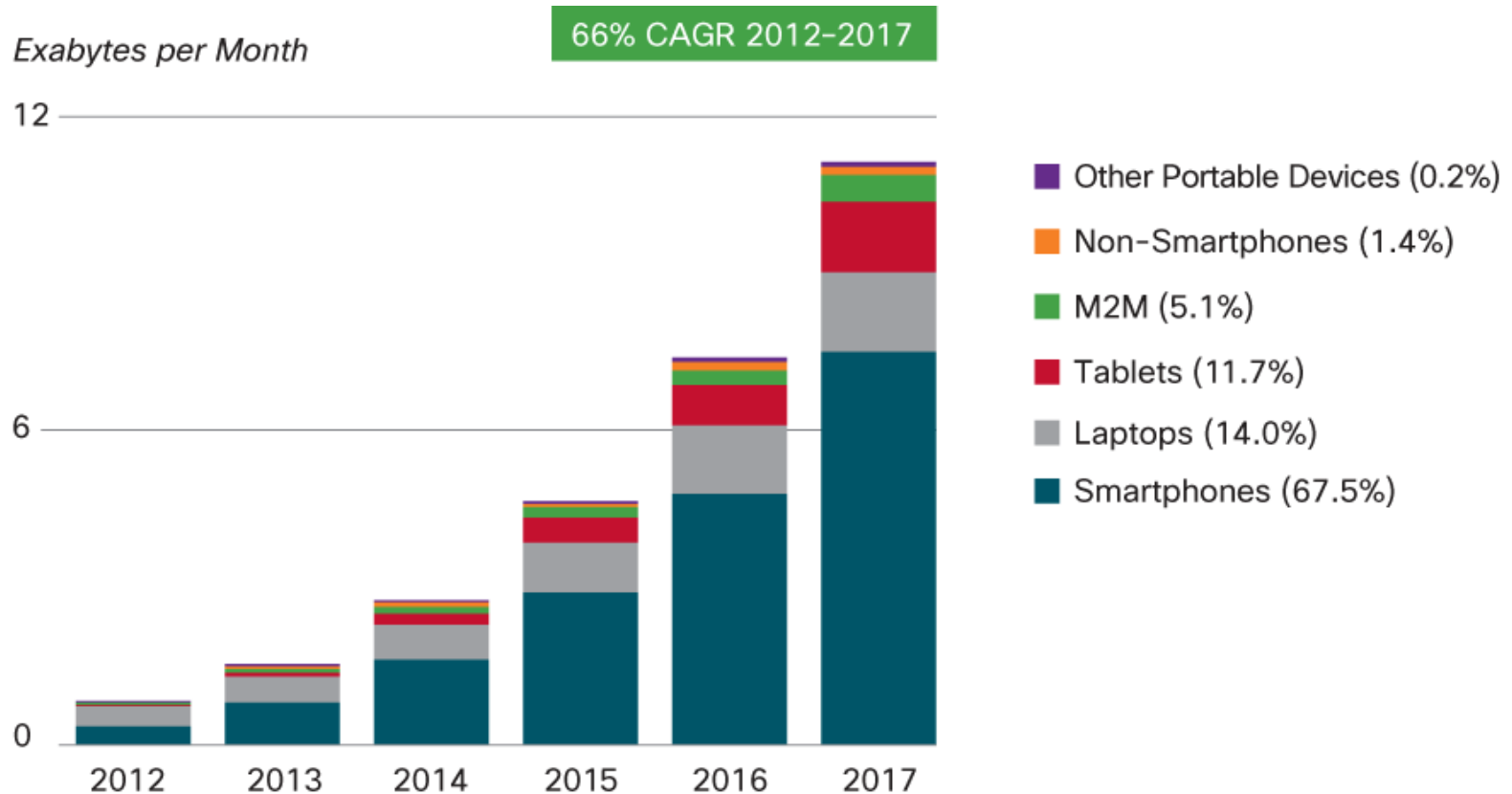
EFFECTIVE DOWNLOAD SPEEDS



Source: Ookla/Speedtest netindex, WIK calculations



A CHANGING MIX OF DEVICES

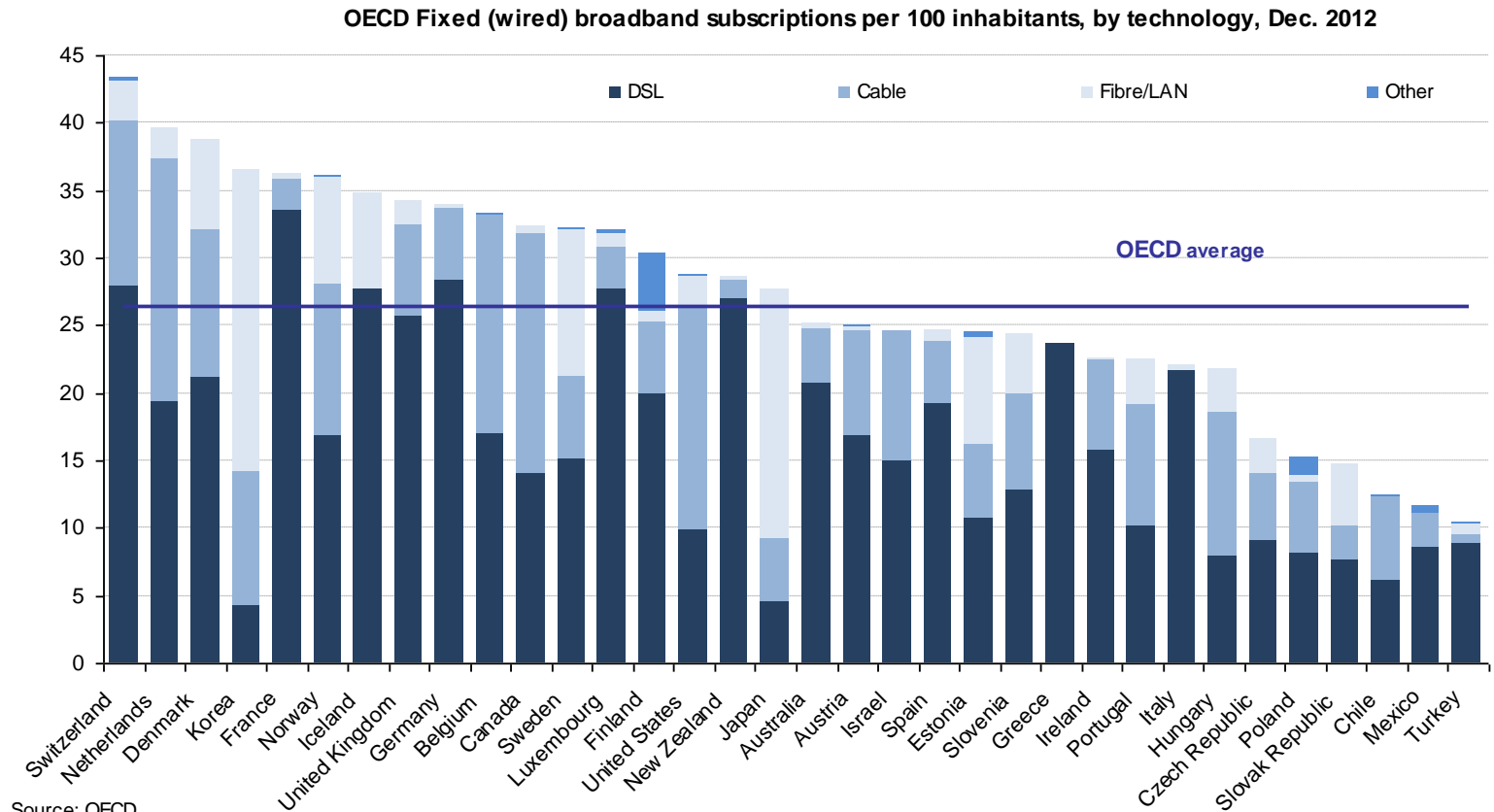


Figures in legend refer to traffic share in 2017.

Source: Cisco VNI Mobile Forecast, 2013

OVERALL ADOPTION

- Coverage and adoption are not the same thing.



Source: OECD

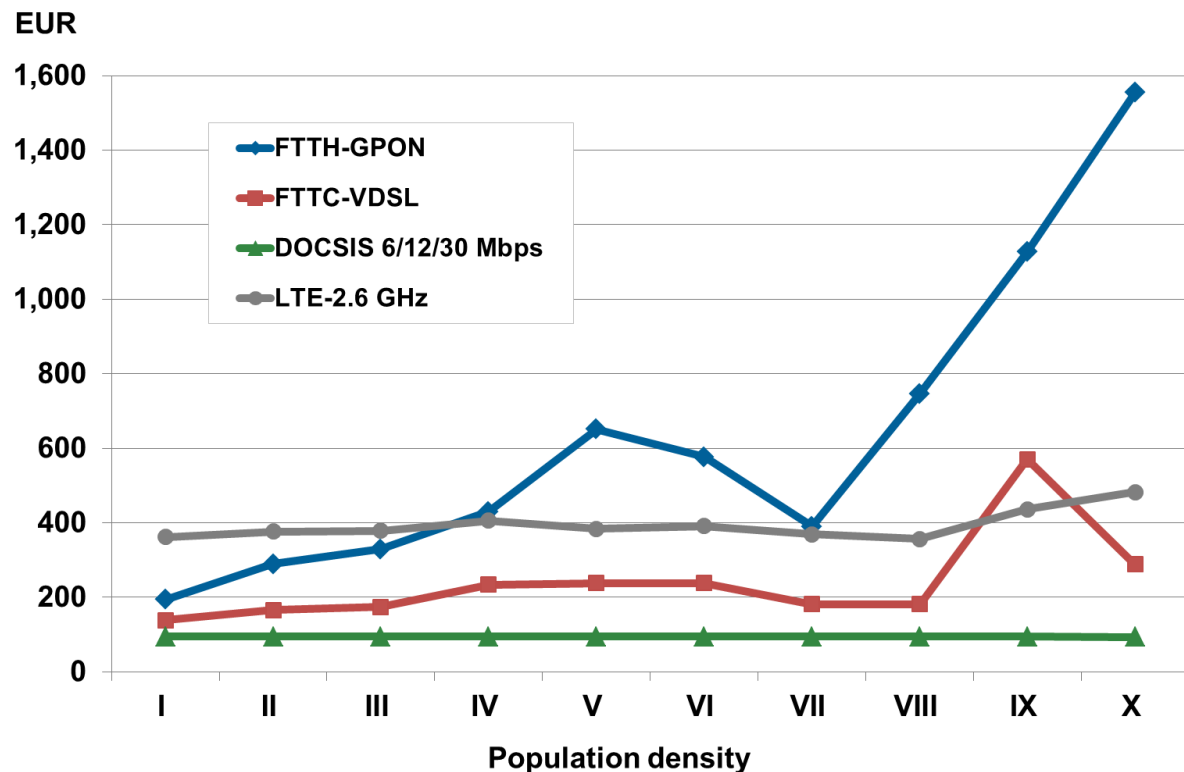
COST IMPLICATIONS OF DIFFERENT TECHNOLOGIES

Annualized cost (€) per user to cover different geotypes in Spain

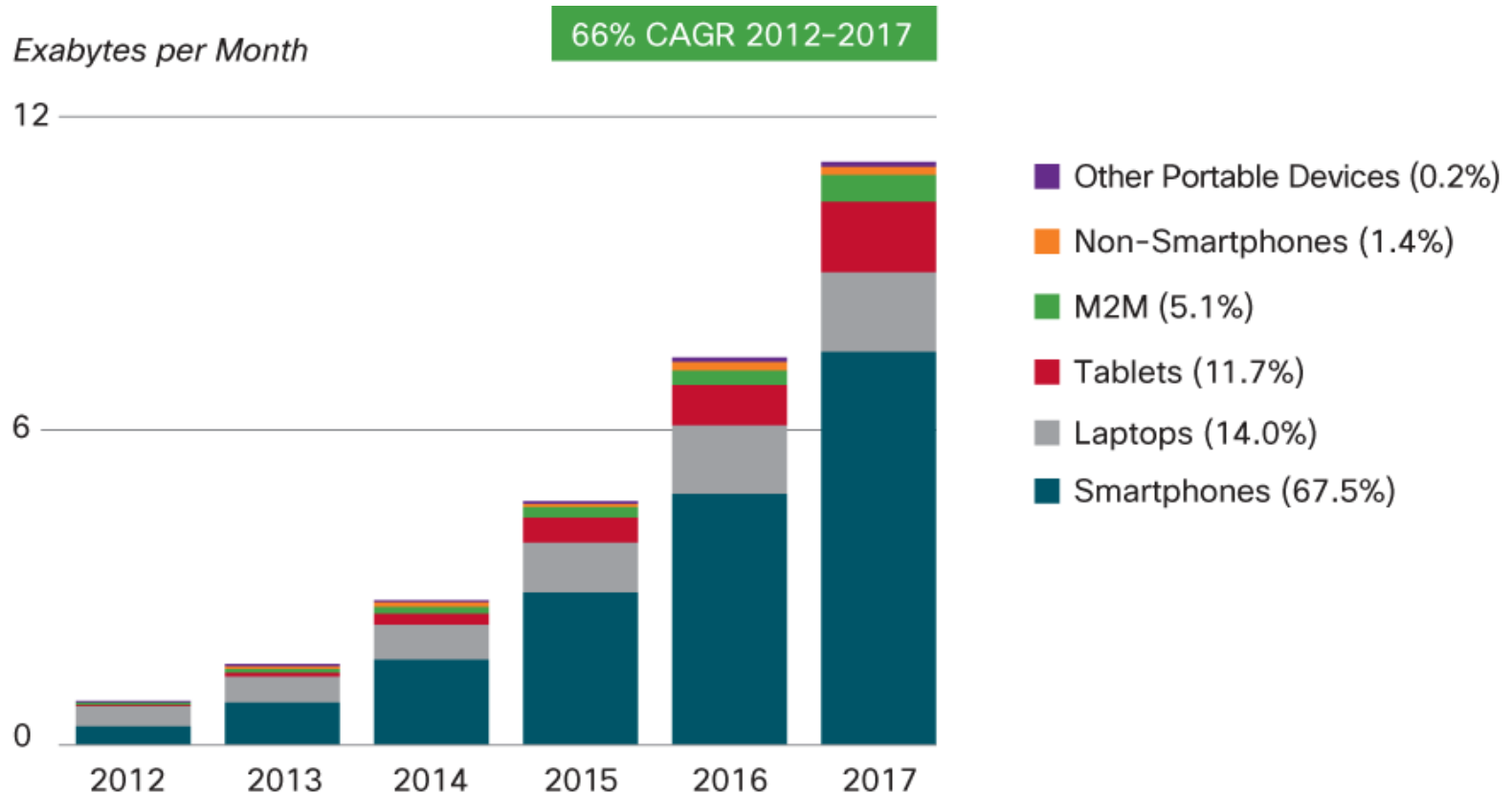
Upgrades to FTTN/VDSL or to FTTH become more expensive on a per-subscriber basis as population density declines.

LTE less expensive than fixed where population density below 3,000 inhabitants per Km².

Cable DOCSIS 3.0 upgrade costs do not depend on density.



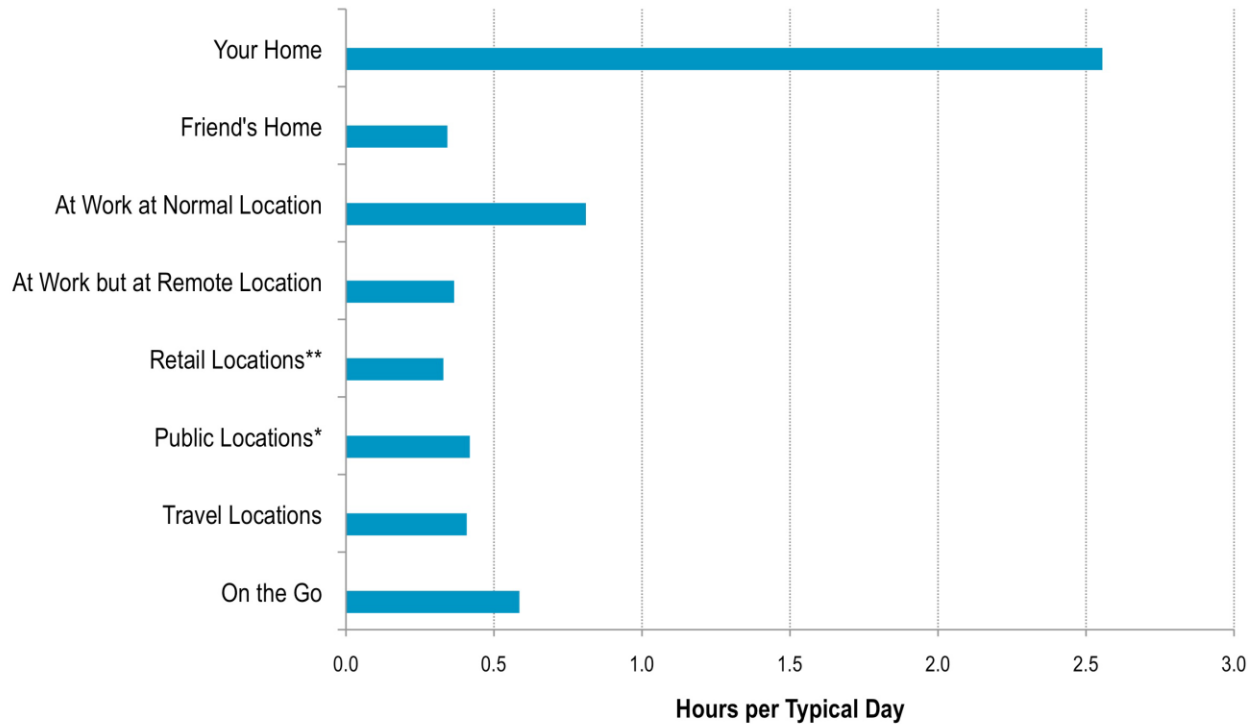
A CHANGING MIX OF DEVICES



Figures in legend refer to traffic share in 2017.

Source: Cisco VNI Mobile Forecast, 2013

CHANGING CHARACTERISTICS OF USE



N=varies

Q33. In a typical day, for how long do you use your mobile devices in each of the following locations?

* Public – e.g., stadiums, parks, schools

** Retail – e.g., stores, restaurants

Source: Cisco IBSG (2012)



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A CHANGING MIX OF APPLICATIONS

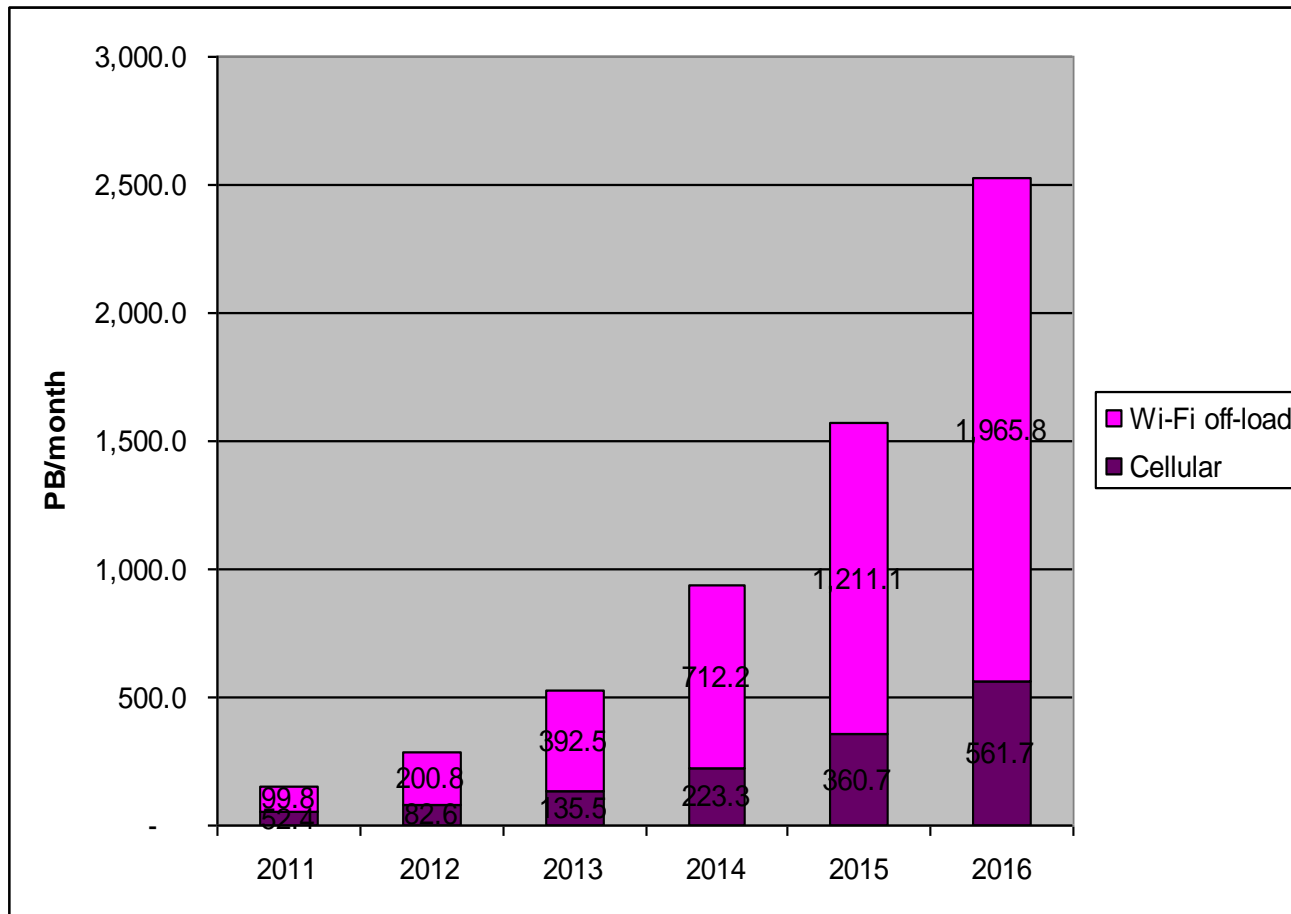
Rank	Cellular	Wi-Fi	Roaming
1	Browsing	Browsing	Browsing
2	Facebook app	YouTube	Facebook app
3	Tethering	Video and audio streaming	Google Maps
4	YouTube	Downloads	E-mail
5	Downloads	iPlayer	Tethering

Source: Informa / Mobidia (2013)



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HOW MUCH MOBILE OFF-LOAD IS TAKING PLACE IN THE EU?



Data Sources: Cisco VNI (2012), Mobidia/Informa (2013), WIK calculations



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CLOSING THOUGHTS

The cost of storage has fallen nine times faster than the cost of transmission in the past 10 years

Data transmission volumes becoming more, not less asymmetric as video streaming comes to dominate residential use

Scarce resources are

- the human information processor (residential)
- a conducive contractual, legislative and regulatory environment (commercial, especially Cloud, applications)

The realities of scale and distance

- 22.7 million Australians may talk faster to each other
- but local data storage key for video apps

SOME REFERENCES

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Cont...

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