Report of the subgroup on measuring fixed-broadband penetration

EGTI Meeting

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Objective



The subgroup

EGTI agreed in September 2022 to create a sub-group on "Measuring Fixed broadband penetration".

The objective: to examine the strengths and weaknesses of measuring fixed broadband penetration using the number of inhabitants or households as the denominator for fixed broadband penetration in a country and to provide an assessment of the feasibility of alternative measurement approaches.

The ratio being used

 $\frac{Fixed Broadband subscriptions}{population} (100)$

- it is not a directly representative statistic on the use or take-up of fixed broadband among households or population.

- it is not extracted from a sample with well identified strata and sample design and with specific properties when used for inference.

- subscriptions are not equivalent to households with fixed broadband subscriptions.

ratio does not reflect real take up inside a country because a fixed broadband connection is normally demanded by a household (or by an enterprise or institution), not by individuals.

- some suggest using the *number of households* as the denominator in this ratio.



Pros and cons.....

- the population scaled ratio underrepresents the effective take- up of the service

the household based ratio may underor- over represent the real figure,
depending on specific characteristics in each country

(one household may own more than one dwelling, differing proportions of fixed broadband contracted by Businesses, among others). same household may contract two distinct broadband connections (in two different places)

this double counting is one factor in driving the ratio (Fixed BB/ households)
over > 100 value for some counties

- the size of the household matters: the larger it is, the more accessible it is broadband to more *individuals*





ideally.....

- if all countries would report the surveybased:

"Households with a fixed broadband connection" (HH11)

then this would be our preferred indicator for benchmarking

but

the problem.....

Administrative indicators (supply side)	Reporting countries (2021)
Total Fixed Broadband subscriptions (by technology)	165
Total Fixed BB subscriptions (by speed)	165
Fixed BB subscriptions for organizations	101
Households covered by a Fixed wired network	66
Survey- based indicators (demand side)	
Proportion of households accessing the Internet by fixed broadband, regardless of the type of network used	36
Proportion of household accessing the Internet by mobile broadband network only	40
Proportion of household accessing the Internet by both fixed broadband and mobile broadband network	38
Proportion of households accessing the Internet by a broadband connection	44



Household size all over the world



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Residential vs Business distinction

- the use in the numerator of the *total* number of fixed broadband subscriptions biases both ratios as well.

- Total broadband connections in a country are the sum of: (1) Residential and (2) those demanded by firms and institutions

- The numerator in both cases is inflated if the total stock is used.

- this can be minimized by removing business subscriptions which is also collected by ITU

 but, in many countries the huge majority of established firms are micro- firms (< 5 employees). These units may well contract a standard fixed broadband connection, the one offered to households (Residential)

- they may be used both by household members and for the enterprise goals)



Ways out?

- can we use the ratio?

 $\frac{Fixed Broadband subscriptions}{Households} (100)$

- we would now correct for the average household size problem

- though as a ratio it averages over numerator and denominator



- practical problem: data collection

→ only a subset of countries have data available from the UN Population Division



and another problem.....

	HH with fixed BB (survey)	Fixed BB/ population	Fixed BB/ households	Year of most recent average HH size data
Zimbabwe	1,3	1,3	5,3	2019
Iran*	22,7	11	43,4	2011
Malaysia*	41,2	10,1	53,5	2000
Egypt*	43,8	8,7	48,1	2013
Brazil*	53,7	17	66,6	2010
Mexico*	61,1	19,1	68,8	2015
Costa Rica	61,2	19,4	72	2018
Turkey*	61,9	19,9	97,1	2000
Georgia*	72,5	25,7	105,3	2018
France*	73,6	47,1	109,8	2015
Portugal	81,5	41,9	119	2011
Spain [*]	83	35,3	102,3	2011
Denmark	84,2	44,5	99,1	
Azerbaijan*	86,1	19,4	96,3	2009
UK*	93,7	41,8	100,5	2011
Singapore	94,4	25,5	113,6	2020
average	63,5	24,2	81,3	
stad dev,	26,1	14,1	31,6	

Note: ratios using households as the denominator based on household size data that is older than 2018 are shown in red color. *Sources:* ITU; UN Population Division.



measure: Households with Fixed Broadband connection (survey)

	Pros	Challenge
Data collection and availability		lack of availability for majority of countries (few number of countries conducting annual surveys on ICT use and access by Households)
Methodological	preferred way to measure penetration (take- up) of the service	
	good comparability across countries and over time	



ratio 1: $\frac{Fixed Broadband subscriptions}{population}$ (100)

	Pros	Challenge
Data collection and availability	both numerator and denominator widely available and comparable across countries and long time series	
Methodological		interpretation of ratio not clear
		it is not designed to measure effective take- up or adoption of fixed BB by households- group of people-
		it under-represents effective take up of the service by households

ratio 2:



Fixed Broadband subscriptions Households (100)

	Pros	Challenge
Data collection and availability		while numerator widely available, the denominator only for a subset of countries
Methodological	it follows closer the effective penetration of fixed BB on Households (survey based)	when using "total fixed BB subscriptions" the ratio over- represents take- up of fixed BB on Households
		it is not designed to measure effective take- up or adoption of fixed BB by households- group of people-



ratio 3:
$$Fixed Broadband subscriptions$$

 $Population > 18 y - o$

	Pros	Challenge
Data collection and availability	Harmonized estimates are available from the UN Population Division in its World Population Prospects	
Methodological		Not designed to measure effective take up or adoption of fixed BB by households
		It is a ratio, e.g., a simple averaging over numerator and denominator with no clear population meaning
	It reduces heterogeneity across countries due to differences in the average size of households	Fixed BB is more household driven (the connection is shared)

(100)



Fixed network internet

1	Fixed internet subscriptions	i4213
	Dial up internet subscriptions	i4213d
	Fixed broadband subscriptions	i4213tfbb
_2	Fixed broadband subscriptions, by technology	i4213tfbb
	Cable modem Internet subscriptions	i4213cab
	DSL internet subscriptions	i4213dsl
	Fibre-to-the-home/building Internet subscriptions	i4213ftth/b
	Other fixed broadband subscriptions	i4213ob
	Satellite broadband subscriptions	i271s
	Terrestrial fixed wireless broadband subscriptions	i271fw
3	Fixed-broadband subscriptions, by speed	i4213sp
	256 kbit/s to less than 2 Mbit/s subscriptions	i4213_256to2
	2 Mbit/s to less than 10 Mbit/s subscriptions	i4213_2to10
	Equal to or above 10 Mbit/s subscriptions	i4213_G10
	10 Mbit/s to less than 100 Mbit/s subscriptions	i4213_10to100
	100 Mbit/s to less than 1 Gbit/s subscriptions	i4213_100to1G
	Above 1 Gbit/s subscriptions	i4213_G1Gb
	10 Mbit/s to less than 30 Mbit/s subscriptions	i4213_10to30
	30 Mbit/s to less than 100 Mbit/s subscriptions	i4213_30to100
	Equal to or above 100 Mbit/s subscriptions	i4213_G100
4	Fixed-broadband subscriptions for organizations	i4213tfb_o
5	Leased-line subscriptions	i4213I



Demand side Indicators- survey

Proportion of households with internet	HH6
Proportion of individuals using internet, by location	HH7
home work place of education facility open to the public while commuting	ння
Proportion of individuals using internet, by type of activity	HH9
Proportion of households with Internet, by type of service	HH11
Fixed narrowband network:	
Fixed broadband network:	
Terrestrial fixed broadband network:	
Satellite broadband network	
Mobile broadband network (at least 3G, e.g. UMTS) via a handset	
Mobile broadband network (at least 3G, e.g. UMTS) via a card	
Proportion of individuals using the Internet, by frequency	HH12
at least once a day; at least once a week, less than once a week	
Barriers to household Internet access	HH14
Proportion of individuals using the Internet, by type of portable device	
and network used to access the Internet	HH17
via mobile handset; via computer; via tablet; other portable devices	

Recommendations (I)

- goal: to work and push for <u>collecting all</u> <u>needed indicators</u> and variables so that different benchmarking can be performed.

- there is no "one-size- fits-all" indicator for measuring any objective

 best chosen indicator depends on objective to be measured and availability of enough data (timeliness, frequency and homogeneity in collection method) - we agree that the best indicator for benchmarking the penetration of fixed broadband is:

Households adoption of fixed Broadband (survey based)

- and as alternatives -though did not agree in preference relations here- if not enough survey based data is available:

(a) Fixed BB subscriptions for Residential/
households (ratio)
(b) Fixed BB subscriptions/ population age >
18 y-o (ratio)
(c) Fixed BB subscriptions/ population (ratio)



Recommendations (II)



- indicators that need to be provided by a much larger set of countries regarding fixed broadband are:

(a) from administrative sources (supply side)	"Fixed broadband subscriptions for organizations"
	"Household covered by a fixed broadband network" (by network detail)
(b) from surveys (demand side):	"Households with a fixed broadband subscription"
(c) Indicators that are needed to construct benchmarking (being collected by the UN Population Division):	Number of households and/ or average size of household

- it is the lack of household surveys in many countries on the use of ICT services that limits comparability of effective fixed broadband penetration

Recommendations (III)

- there is currently a lack of up-to-date and comparable data on the number of households for the large majority of countries.

 this subgroup recommends that countries ensure the provision of data on total population, number of households and average size of households to the UN Population Division database. - ITU shall evaluate in two- or three year time the availability of the indicators that need to be improved upon and make available to the public the relevant data so that different indicators or ratios may be used for benchmarking.



Thank you all!

and very especially all the participants at the subgroup