OTTAWA 2023
64TH WORLD STATISTICS CONGRESS

CPS Poster

Ways of measuring internet access in Brazil by different household surveys

Author: Mr Marcus André Alves Zimmermann Vieira

Coauthors: Denise Silva, Mayra Pizzott Rodrigues dos Santos

Submission ID: 724

Reference Number: 724

Presentation Image

OTTAWA 2023
64TH WORLD STATISTICS CONGRESS

ENCE
Escola Nacional de Ciências Estatísticas

nic.br

isi

WAYS OF MEASURING INTERNET ACCESS IN BRAZIL BY DIFFERENT HOUSEHOLD SURVEYS

Marcus Vieira (ENCE), Denise Silva (ENCE) e Mayra dos Santos (NIC.br)

1. Introduction

The internet is a vital tool for integration and social promotion, so its access opens new horizons and opportunities for users around the globe. The production of public statistics to inform progress on SDG 9C - Universal Access to Information and Communications Technology - is essential. Our objective is to compare the methods and results of two national sample surveys that measure ICT access and use by households and individuals in Brazil. Since the surveys use different operational definitions for collecting data on household access to internet, we propose a strategy for producing compatible estimates for the ITU HH6 Indicator: proportion of households with Internet.

TARGET 9·C
UNIVERSAL ACCESS TO INFORMATION AND COMMUNICATIONS TECHNOLOGY

2. Household surveys on ICT in Brazil

- **ICT Households**, a national household survey conducted annually since 2005 by the Regional Center for Studies on the Development of the Information Society (Cetic.br) to map ICT access in urban and rural households in Brazil and to investigate how it is used by individuals 10 years old or older.
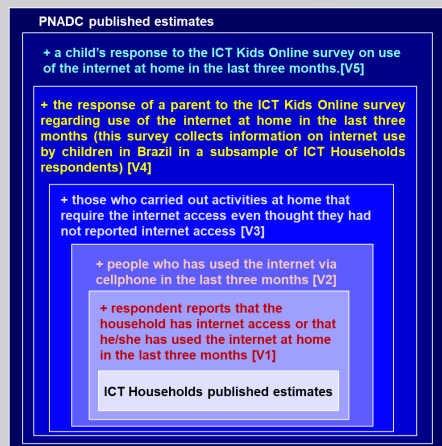
- **PNADC** (Pesquisa Nacional por Amostra de Domicílios Contínua), a national household survey conducted by IBGE, the Brazilian NSO.

How does question formulation impact data collection and the measurement process of ICT indicators?

ICT Households	"Does this household have internet access?" (CETIC.br, 2021, A4)	**Internet access as a utility service available to all residents:** like access to water, sewerage or electricity services. Surveys carried out in Africa, Mexico and Canada also implement the same operational definition (VIEIRA, 2020).
PNADC	"Does any resident have internet access at home using a microcomputer, tablet, cellphone, television or other equipment?" (IBGE, 2018, S01029)	**Internet access at home as an individual mobile service:** if at least one resident has the service and reports its use at home, the household is classified as having access to the internet (even if the resident does not share access with other householders). Surveys carried out in the European Union, Japan, Australia and the US employ this definition (VIEIRA, 2020).

3. Strategy for Producing Compatible Estimates for Proportion of Households with Internet: from ICT Households Survey to PNADC

Alternative ways of calculating **estimates for proportion of households with internet** based on the information collected for the individual reference unit of the ICT Households survey, aiming at producing estimates that are closer to PNADC figures:

PNADC published estimates

+ a child's response to the ICT Kids Online survey on use of the internet at home in the last three months.[V5]

+ the response of a parent to the ICT Kids Online survey regarding use of the internet at home in the last three months (this survey collects information on internet use by children in Brazil in a subsample of ICT Households respondents) [V4]

+ those who carried out activities at home that require the internet access even thought they had not reported internet access [V3]

+ people who has used the internet via cellphone in the last three months [V2]

+ respondent reports that the household has internet access or that he/she has used the internet at home in the last three months [V1]

ICT Households published estimates

Original and alternative estimates on internet access - HH6 (%) in Brazil and corresponding 95% confidence intervals - 2017, 2019 and 2021

HH6 estimates	2017	2019	2021
ICT Households	60.8 [59.0 ; 60.8]	71.4 [70.1 ; 72.7]	81.5 [80.4 ; 82.6]
Version 1	69.5 [68.0 ; 71.0]	77.5 [76.4 ; 78.6]	86.1 [85.2 ; 87.0]
Version 2	72.9 [71.6 ; 74.3]	79.8 [78.7 ; 80.9]	87.2 [86.3 ; 88.1]
Version 3	73.0 [71.7 ; 74.4]	79.8 [78.8 ; 80.9]	87.2 [86.3 ; 88.1]
Version 4	73.9 [72.5 ; 75.2]	80.4 [79.3 ; 81.5]	87.6 [86.7 ; 88.4]
Version 5	74.9 [73.5 ; 76.2]	80.9 [79.9 ; 81.9]	87.9 [87.0 ; 88.7]
PNADC	76.4 [76.1 ; 76.7]	84.0 [83.7 ; 84.3]	90.0 [89.8 ; 90.2]

Source: PNADC, ICT Households and ICT Kids Online (2017, 2019 and 2021).

The alternative estimates were calculated using the R software, based on microdata from the ICT Households and ICT Kids Online surveys. The premise adopted is that the information provided by the respondent represents the household, since there is no information available for all residents due to the sample design.

4. Conclusions

This work addresses the duality of capturing information on internet access at home. There is no ideal way to ensure comparability of estimates for the HH6 indicator based on data collected by the ICT Households and PNADC surveys, since they employ different operational definitions for the underlying concept. The International Telecommunication Union (ITU-UN) recommends the question formulation as adopted by CETIC.br for the ICT Households survey.

To ensure harmonization and comparability of statistics, all elements of the statistical product, including statistical concepts and nomenclatures, must be considered. Among these are the time frame, the reference unit, the geographical scope and the questionnaire design. The best course of action is to promote consensus, and the implementation of concepts and definitions already established by a harmonizing body, such as ITU.

References

Regional Center of Studies for the Development of the Information Society. ICT Households 2021. Questionnaire. Available at: https://cetic.br/media/microdados/615/tic_domicilios_2021_individuos_domicilios_questio nario_v1.0.pdf. Accessed on: 02/24/2023.

IBGE. Continuous National Household Sample Survey. Housing Questionnaire. 2018. Available at: https://biblioteca.ibge.gov.br/visualizacao/instrumentos_de_coleta/doc5539.pdf. Accessed on: 02/23/2023.

Vieira, M. A. A. Z. Formas de mensuração de acesso à internet no Brasil e no mundo por diferentes pesquisas domiciliares. MSc Dissertation – National School of Statistical Sciences. Rio de Janeiro, 2020. Available at: https://ence.ibge.gov.br/images/ence/doc/mestrado/dissertacoes/2020/Dissertacao_Marcus Z.pdf Accessed on: 02/25/2023.

COMMENTS? Write to marcusazimmermann@gmail.com, denisebritz@gmail.com or mayrapizzottrs@gmail.com.

Presentation File

abstracts/ottawa-2023_f4fe57c1ac5844b80dd3082444f0795f.pdf

Files/Uploads

Paper TIC ISI_VF

Brief Description

Session on Survey Methods

Abstract

Official statistics are mainly based on administrative records or sample surveys and censuses, such as household surveys, and investigate various social phenomena. This article investigates methodological aspects of ICT indicators on internet access (HH6), produced by Brazilian surveys: the Continuous National Household Survey by IBGE – the Brazilian NSO, and ICT Households by CETIC.br - a department of the

Brazilian Network Information Center (NIC.br), comparing their methods, concepts, definitions and results. We highlight that operational definitions for internet access are not the same on both surveys, providing HH6 indicator estimates that are statistically different. IBGE adopts the definition of individual mobile service, as the household is classified as having Internet access if at least one resident has the service available. Meanwhile, ICT Households considers internet access as a utility service at home, available to any of the residents. It is interesting to point out that this reading also differs across the world as, for example, countries in the European Union, Japan, Australia and the United States follow the same line as IBGE, while countries in Africa, Mexico and Canada endorse the same definition as implemented by CETIC.br, which in turn ratifies the orientation of the ITU (International Telecommunication Union). Given the divergence of estimates on internet access from the two sources, the paper discusses concepts and definitions, and calculates indicators aiming at comparing survey estimates by bridging the data collection gaps. The final results demonstrate success of this compatibility and harmonizing exercise, allowing the production of proxy estimates and elucidating factors that may influence the measurement process.

Figures/Tables

Table1

HH6 estimates	2017	2019	2021
ICT Households	60.8% [59;60.8]	71.4% [70.1;72.7]	81.5 [80.4;82.6]
Version 1	69.5% [68;71]	77.5% [76.4;78.6]	86.1 [85.2;87]
Version 2	72.9% [71.6;74.3]	79.8% [78.7;80.9]	87.2 [86.3;88.1]
Version 3	73.0% [71.7;74.4]	79.8% [78.8;80.9]	87.2 [86.3;88.1]
Version 4	73.9% [72.5;75.2]	80.4% [79.3;81.5]	87.6 [86.7;88.4]
Version 5	74.9% [73.5; 76.2]	80.9% [79.9;81.9]	87.9 [87;88.7]
PNADC	76.4% [76.1 ;76.7]	84.0% [83.7;84.3]	90 [89.8;90.2]