

DataSenado:

Quality of Internet Access in Brazilian Households

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Introduction

Due to the implementation of measures to tackle the Coronavirus pandemic, 32 million students are now taking online classes, according to DataSenado estimates for July 2020. To evaluate the quality of Internet access in Brazilian households, an analysis was conducted based on data from the Technology, Information and Communication module of the Continuous National Survey by Residence Samples (PNADC TIC - *Pesquisa Nacional por Amostra de Domicílios Contínua*) carried out by the Brazilian Institute of Geography and Statistics - IBGE. The latest available data are from 2018.

Methodology

We analyzed data from households and people, regarding availability and types of Internet access. We looked into households in general, households with students enrolled in Basic and Higher Education, and households with students under the age of 18 enrolled in Basic Education.

For the purpose of identifying internet access in a given residence, IBGE poses the question 'Does anyone living in this house has Internet access at home through a personal computer, tablet, mobile phone, television or any other device?'

In order to differentiate Internet access via dial-up, landline or mobile broadband (3G/4G), IBGE asks 'The connection used by the resident to access the Internet at home is ...'

Therefore, the survey informs the availability of Internet in the household, but does not allow for further details about who uses it. However, there is data about individual use, which allow for another approach, focused on the student.

The calculations were made using the packages PNADcIBGE and Survey from R software, which make it easier to read the data and allow the incorporation of the complex sampling design of PNADC.

Results

a) Estimates for Households in General

The PNADC-TIC survey collects Internet access data both by and by person. In regard to households, the survey details the types of available access: landline broadband, mobile broadband or dial-up.

In 2018, at least one type of internet access was available in 79% of the 71,737,990 Brazilian households. Dial-up Internet is rare, as only 0.16% of households had this type of connection. Internet access is distributed mostly between landline and mobile broadband internet. There are cases in which only one of these is available, and others in which both are present in the household.

Table 1 shows this distribution:

		Households with Access to MOBILE Broadband Internet				Total
		Yes	No	Don't know	Don't have	
Households with Access to LANDLINE Broadband Internet	Yes	45%	15%	0%	0%	60%
	No	19%	0%	0%	0%	19%
	Don't know	0%	0%	0%	0%	1%
	Don't have	0%	0%	0%	21%	21%
Total		63%	15%	1%	21%	100%

Source: IBGE / PNAD-TIC 2018. Estimated total households: 71,737,990.

It's shown that 45% of residences in Brazil have both mobile and landline broadband Internet, 19% have only mobile broadband and 15% have only landline broadband.

b) Estimates for Households with at Least One Student

Of all Brazilian residences, 45% have at least one student. This corresponds to 32 million residences. For these cases, the breakdown by type of Internet access is shown in Table 2. Although the proportion of households with Internet access is higher in this subpopulation than in households in general, the inequality is larger, given that there is a greater concentration of households with both types of broadband Internet available. In addition, 70% of households with students have at least landline broadband internet, 10 percentage points more than households in general.

Table 2 - Households with at Least One Student by Type of Internet Access - Brazil 2018

		Households with Access to MOBILE Broadband Internet				Total
		Yes	No	Don't know	Don't have	
Households with Access to LANDLINE Broadband Internet	Yes	52%	18%	1%	0%	70%
	No	19%	0%	0%	0%	19%
	Don't know	0%	0%	0%	0%	1%
	Don't have	0%	0%	0%	11%	11%
Total		70%	18%	1%	11%	100%

Source: IBGE / PNAD-TIC 2018. Estimated total households with at least one student: 32,201,759.

c) Estimates for Households with at Least One Student Under the Age of 18

In order to analyze the quality of internet access available to students, another possibility is to focus on households with students under the age of 18 enrolled in Basic Education, which corresponds to 35% of total households (25 million). Table 3 shows the breakdown of households by type of Internet access for this sub-population. The results here are in between those of Table 1 and Table 2.

Table 3 - Households with at Least One Student Under the Age of 18 Enrolled in Basic Education by Type of Internet Access - Brazil 2018

		Households with Access to MOBILE Broadband Internet				Total
		Yes	No	Don't know	Don't have	
Households with Access to LANDLINE Broadband Internet	Yes	48%	18%	1%	0%	66%
	No	20%	0%	0%	0%	20%
	Don't know	0%	0%	0%	0%	1%
	Don't have	0%	0%	0%	13%	13%
Total		68%	18%	1%	13%	100%

Source: IBGE / PNAD-TIC 2018. Estimated total households with at least one student under the age of 18 enrolled in Basic Education: 25,292,086.

d) Estimates for Households with at Least One Student Enrolled in Public and Private Schools

The DataSenado (2020) survey also revealed significant differences in the standard of living experienced by students from Public and Private Schools. To analyze this aspect, we compared the types of Internet access in households with at least

one student from each of these two groups. Although there is an intersection between these two sets, as the same household may have students from both types of school, the discrepancy involving the households is, in fact, worrying. While 14% of households with public school students have no Internet access, only 2% of households with private school students have this shortage. Inequality is also shown in the available forms of access: while 44% of households with public school students count on both types of Internet access, this percentage rises to 72% when it comes to private school students.

Table 4- Households with at Least One PUBLIC SCHOOL Student by Type of Internet Access - Brasil - 2018

		Households with Access to MOBILE Broadband Internet				Total
		Yes	No	Don't know	Don't have	
Households with Access to LANDLINE Broadband Intern	Yes	44%	19%	1%	0%	63%
	No	22%	0%	0%	0%	22%
	Don't know	0%	0%	0%	0%	1%
	Don't have	0%	0%	0%	14%	14%
Total		66%	19%	1%	14%	100%

Source: IBGE / PNADC-TIC 2018. Estimated total households with at least one student enrolled in the PUBLIC SCHOOL SYSTEMA: 23,734,393.

Table 5 - Households with at Least One PRIVATE SCHOOL Student by Type of Internet Access - Brazil - 2018

		Households with Access to MOBILE Broadband Internet				Total
		Yes	No	Don't know	Don't have	
Households with Access to LANDLINE Broadband Intern	Yes	72%	16%	0%	0%	89%
	No	9%	0%	0%	0%	9%
	Don't know	0%	0%	0%	0%	0%
	Don't have	0%	0%	0%	2%	2%
Total		82%	16%	1%	2%	100%

Source: IBGE / PNADC-TIC 2018. Estimated total households with at least one student enrolled in the PRIVATE SCHOOL SYSTEM: 10,718,794

e) Estimates for Households with at Least One Student Enrolled in Basic Education Attending Public and Private Schools

To distinguish the analysis of students enrolled in Basic Education and Higher Education by type of institution, we created Tables 6 and 7. Our analysis reveals that Internet access inequality is greater in Basic Education. As shown, 15% of households with students attending public schools do not have Internet access at

home, compared to 2% of students attending private schools. In addition, 41% of students attending public schools have landline or mobile broadband Internet, compared to 72% of students attending private schools.

Table 6- Households with at Least One Student Enrolled in Basic Education– PUBLIC SCHOOLS by Type of Internet Access

		Households with Access to MOBILE Broadband Intern				Total
		Yes	No	Don't know	Don't have	
Households with Access to LANDLINE Broadband Intern	Yes	41%	19%	1%	0%	61%
	No	23%	0%	0%	0%	23%
	Don't know	1%	0%	0%	0%	1%
	Don't have	0%	0%	0%	15%	15%
Total		65%	19%	1%	15%	100%

Source: IBGE / PNAD-TIC 2018. Estimated total households with at least one student enrolled in BASIC EDUCATION attending PUBLIC SCHOOLS: 21,983,514.

Table 7- Households with at Least One Student Enrolled in BASIC EDUCATION– PRIVATE SCHOOLS by Type of Internet Access

		Households with Access to MOBILE Broadband Intern				Total
		Yes	No	Don't know	Don't have	
Households with Access to LANDLINE Broadband Intern	Yes	72%	16%	0%	0%	89%
	No	9%	0%	0%	0%	9%
	Don't know	0%	0%	0%	0%	0%
	Don't have	0%	0%	0%	2%	2%
Total		81%	16%	1%	2%	100%

Source: IBGE / PNAD-TIC 2018. Estimated total households with at least one student enrolled in BASIC EDUCATION attending PRIVATE SCHOOLS: 5,510,723.

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