



Socioeconomic Context of the housing units that used the internet as a mean of response to the 2010 Brazilian Population Census

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Abstract

During the work of assessing the quality of the 2010 Population Census data, an evaluation was made of the data that has been collected using the Internet as a mean of response. This data was compared with information obtained through the handheld computer, for possible inconsistencies through a comparative analysis of profiles, sectioning the data under both its origin, that is, if coming from the handheld computer or the internet, and by type of questionnaire. The result of the analysis indicated the existence of a specific profile of housing units who answered the census on the Internet. Through this profile, it was concluded that increased investment in Internet data collection in areas with high concentration of income and a high percentage of refusal could improve the overall use of internet as a mean of response to the census.

Keywords: Population census; internet data collection; socioeconomic context.

1. Introduction

The option of answering the questionnaire on the internet was one of the technological innovations of the 2010 Population Census. Through a sealed e-ticket that could be requested to the enumerator at the time of the housing unit visit, the respondent received instructions on how to access the questionnaire – short or long form - in a specific virtual address, and a single access code and the safety passwords. This option was available to all 5 565 municipalities in Brazil and had forms of online support, both in terms of assistance on filling the questionnaire and in relation to the concepts used in the formulation of the questions. The online questionnaire could be filled all at once or gradually, subject to the maximum of 40 accesses, and its date of completion was up to five days after delivery of the e-ticket by the enumerator. When the filling was completed, the system provided a protocol with the questionnaire receipt number.

The objective of this study is to identify a specific profile of housing units that made the choice to use the internet as a mean of response to the 2010 Population Census, highlighting possible differences between respondents according to their economic and social conditions.

2. Comparison between the profiles of the respondents by type of data collection

Of the 58 051 449 registered housing units, only 43 687 completed the questionnaire of 2010 Population Census via the Internet, representing 0.1%. In terms of geographical distribution, the Southeast

concentrated 62.8% of housing units, followed by the South Region, with a percentage of 16.9%, as can be seen in the following table. Sao Paulo and Rio de Janeiro were the Federative Units with the highest rates of response¹ on the Internet, 38.7% and 14.0%, followed by Santa Catarina, with 7.2%. It was also found that, of the 5 565 Brazilian municipalities, only 15 have response rates higher than 1%. These municipalities were responsible for 62.63% of housing units who responded via the Internet, especially São Paulo, with 20.16%. So, there is a strong influence of these municipalities in the profile of housing units who answered the 2010 Population Census questionnaire on the Internet. Below, we present a comparative analysis of profiles, according to the origin of data collection.

Characteristics of housing units

The general analysis of the characteristics of housing units shows a consistency between the distributions of answers found for the short form and the long form according to the origin of data collection, in other words, there is no influence of the type of the questionnaire in the percentage of responses obtained through the handheld computer and the internet. Therefore, the data used to illustrate the characteristics of housing units by origin of data collection shall relate to the long form.

Regarding the situation of the housing unit, most housing units that answered the 2010 Population Census questionnaire on the Internet belonged to the urban area (99.5%), but housing units with data collection through the handheld computer had a smaller percentage, 85.7%. For housing unit species, it was observed that only the residents of permanent private housing units chose to answer the questionnaire on the Internet. While most housing units with data collection by the handheld computer were houses (85.9%), the apartment was the predominant type of housing unit whose questionnaire was completed via internet, with a percentage of 52.7%.

The percentage distribution of the number of bathrooms for exclusive use of the residents occurred differently according to the origin of data collection: while most of housing units with collection by the handheld computer had a single bathroom (66.8%), housing units with online data collection were diluted among the other response categories, as shown in the chart below: approximately 20% of housing units had four or more bathrooms and only 0.3% had no bathroom for the exclusive use of residents.

Of housing units who responded via the Internet, 86.5% had public sewer system; this percentage drops to 56.9% for housing units with data collection by the handheld computer. Note also the difference of more than 20 percentage points between the percentage of housing units with rudimentary cesspool, as can be seen in Table 1. Most housing units were served by public water supply system: 94.9% for housing units with online data collection and 82.8% for housing units with collection by the handheld computer.

Domestic solid waste management was done directly by direct collection by public or private services in 93.1% of housing units with response via Internet, with a remaining percentage of 6.7% of waste stored in dumpsters and 0.3% for other types of waste collection. These percentages for housing units with data collection by handheld computer were 80.2%; 7.2% and 12.6%, respectively. Note the difference of 12 percentage points among housing units with data collection for handheld computer and those who responded via the Internet in relation to other types of solid waste management.

Access to energy supply from the distribution company was present in 99.9% of housing units who responded online and in 97.8% of housing units with data collection by handheld computer. Meter of exclusive use was also majority in both origins of data collection, with percentages of 91.6% and 88.5% for housing units with response by the internet and with data from the handheld computer, respectively.

¹ Response rate is the percentage of occupied housing units that answered the questionnaire on the Internet.

Table 1
Characteristics of housing units by type of questionnaire and origin of data collection. Brazil, 2010.

Characteristics of the Housing units	Housing units by type of questionnaire and origin of data collection (%)			
	Short form		Long form	
	Handheld	Internet	Handheld	Internet
Type of Housing units	100,0	100,0	100,0	100,0
House	85,9	43,1	85,8	43,3
Village or condominium house	1,8	4,1	1,8	3,7
Apartament	10,6	52,7	10,7	53,0
Other	1,8	0,1	1,8	0,0
Housing tenure	100,0	100,0	100,0	100,0
Owner-occupied	73,3	75,4	73,5	75,3
Renter-occupied	18,3	18,4	18,0	18,3
Other	8,4	6,3	8,5	6,3
Bathrooms for exclusive use of the residents	100,0	100,0	100,0	100,0
0	6,7	0,3	6,3	0,4
1	66,8	24,8	68,5	26,6
2	19,1	31,3	18,7	31,8
3	5,3	23,3	4,8	23,4
4	1,4	10,6	1,2	9,8
5 ou mais	0,7	9,8	0,6	8,0
Sewage disposal	100,0	100,0	100,0	100,0
Public sewer system	56,9	86,5	57,0	88,2
Septic tank	11,9	10,5	12,0	9,7
Rudimentary cesspit	25,1	2,0	25,1	1,5
Other	6,0	1,1	5,9	0,6
Water supply	100,0	100,0	100,0	100,0
Public water supply system	82,8	94,9	82,7	95,5
Well or spring inside the property	10,0	4,4	10,1	3,9
Well or spring outside the property	3,8	0,5	3,8	0,4
Other	3,3	0,3	3,4	0,2
Solid waste management	100,0	100,0	100,0	100,0
Collected directly by public or private services	80,2	93,1	80,2	94,1
Stored in dumpsters	7,2	6,7	7,2	5,6
Other	12,6	0,3	12,6	0,3
Access to energy supply	100,0	100,0	100,0	100,0
Yes, from a distribution company	97,8	99,9	97,8	99,9
Yes, from other sources	1,0	0,1	1,0	0,1
No	1,3	0,0	1,3	0,0
Existence of energy meter	100,0	100,0	100,0	100,0
Yes, for exclusive use	88,5	91,6	88,6	92,2
Yes, for common use	7,8	7,9	7,8	7,3
No	3,7	0,5	3,6	0,5

Source: IBGE. 2010 Population Census.

Existence of consumer durables in housing units

An analysis by origin of data collection shows that 94.5% of housing units with internet response had radio and 98.7%, television. These percentages were 81.4% and 95.1%, respectively, for housing units with data collection by the handheld computer. Regarding appliances, washing machine was present in 91.0% of housing units with internet data collection and refrigerator, in 99.4% of these housing units. For housing units with data collection by handheld computer, these percentages were 47.2% and 93.7%, respectively. On the issue of technology and communication, it was researched the existence of mobile phone, fixed telephone line and personal computer, with or without internet access. Housing units with online data collection had higher percentages than those with data collection by handheld computer for all items surveyed, highlighting the differences of the percentages for existence of fixed telephone line (86.8% and 40.8%, respectively) and personal computer (92.2% and 38.3%, respectively). For housing units with personal computers, most had internet access.

Although with a small percentage (19.5%), motorcycles for private use were more common in housing units with data collection by handheld computer, while the automobile for private use was present in 85.3% of housing units with Internet data collection. That was the largest difference in the comparative analysis of consumer durables in housing units by origin of data collection, reaching almost 54 percentage points. It is also worth mentioning that significant differences were also found in the existence of washing machine, fixed telephone line and personal computer, ranging between 43 and 46 percentage points.

Table 2
Housing units by origin of data collection and existence of consumer durables. Brazil, 2010.

Consumer durables	Housing units by origin of data collection (%)	
	Handheld computer	Internet
Radio	100,0	100,0
Yes	81,4	94,5
No	18,6	5,5
Television	100,0	100,0
Yes	95,1	98,7
No	4,9	1,3
Washing machine	100,0	100,0
Yes	47,2	91,0
No	52,8	9,0
Refrigerator	100,0	100,0
Yes	93,7	99,4
No	6,3	0,6
Mobile phone	100,0	100,0
Yes	83,2	97,6
No	16,8	2,4
Fixed telephone line	100,0	100,0
Yes	40,8	86,8
No	59,2	13,2
Personal Computer	100,0	100,0
Yes	38,3	92,2
With internet access	80,2	95,8
Without internet access	19,8	4,2
No	61,7	7,8
Motorcycle for private use	100,0	100,0
Yes	19,5	11,5
No	80,5	88,5
Automobile for private use	100,0	100,0
Yes	39,5	85,3
No	60,5	14,7

Source: IBGE. 2010 Demographic Census.

3. Socioeconomic Context of the housing units that used the Internet as a mean of response

Through comparative analysis done previously, we decided to apply a criterion of economic classification to the data by origin of collection – internet or handheld computer - to identify whether there is a preference for a certain profile of housing units to respond to the questionnaire on the Internet. Therefore, we adapted the Brazil Criterion for Economic Classification of the Brazilian Association of Research Companies – ABEP – to the data from the 2010 Population Census. The objective of this criterion is to estimate the purchasing power of individuals and families, classifying them into economic classes. The Brazil Criterion adopts a system of points according to the existing consumer durables or goods at the housing unit and its quantity, the education level of the head of the housing unit and the existence of housemaid, as well as its quantity.

For purposes of this work and by the limitation of data about the number of housemaids in the housing unit - information not gathered in the 2010 Population Census - there was a simple adaptation of this

criterion for the existence of consumer durables and goods, existence of bathroom of exclusive use and by the education level of the head of housing unit. The following table illustrates the criteria adopted.

Figure 1
Items valued in economic classification with corresponding score

ITENS	SCORE
Consumer durables	
Radio	1
Television	1
Washing machine	2
Refrigerator	4
Mobile phone	1
Fixed telephone line	2
Personal computer	3
Motorcycle for private use	2
Automobile for private use	4
Existence of bathroom	4
Level of education of the head of the household	
None to incomplete primary school	0
Complete primary school to incomplete secondary school	2
Complete primary school to incomplete higher education	4
Higher education	8
Indeterminate	0

Using the score above, we created the following classes suggested by Criterion Brazil for Economic Classification, but adapting the intervals according to the maximum score that could be obtained by a housing unit according to the criteria for this study. The figure below shows the economic classes of housing units in 2010 Census with the respective score range, according to this adaptation.

Figure 2.
Economic classification and score range of the 2010 Population Census housing units

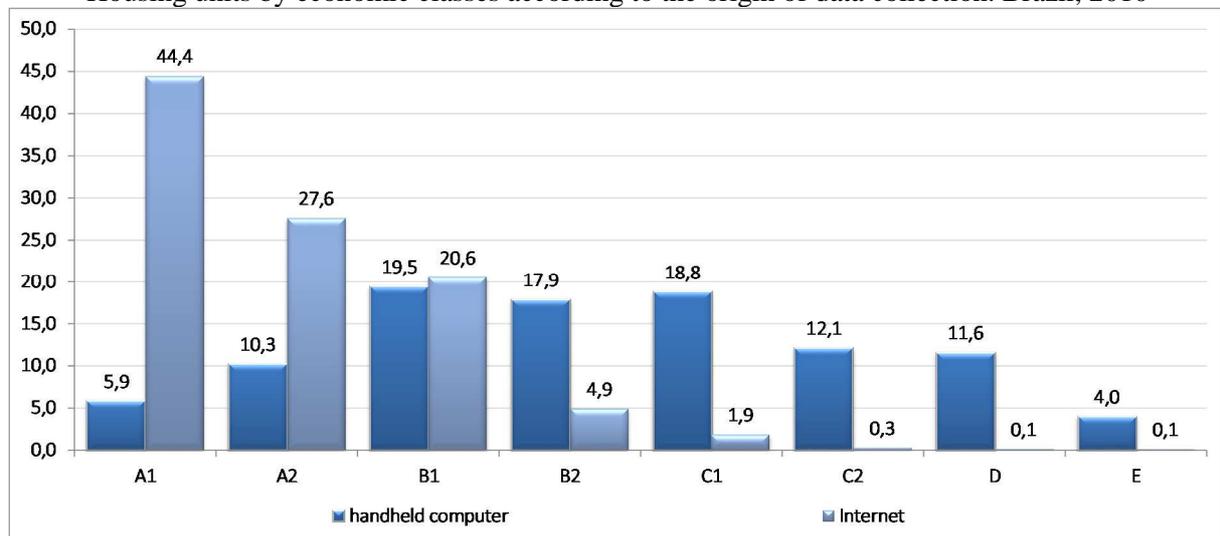
ECONOMIC CLASS	SCORE RANGE
A1	30 - 32
A2	25 - 29
B1	20 - 24
B2	16 - 19
C1	13 - 15
C2	11 - 12
D	6 - 10
E	0 - 5

With the criteria defined, we used the REDATAM software to create the variable that would enable assessment of housing units using adapted criteria and result in the percentage distribution of housing units by income classes. It should be noted that this criterion was applied only to housing units that answered the long form. The analysis of this distribution showed significant differences in the distribution of economic classes according to origin of data collection (internet or handheld computer), noting that the housing units that answered the Internet are concentrated on economic classes with greater purchasing power and with a higher income level. The table and graph below illustrate the differences.

Table 4
Housing units by economic classes according to the origin of data collection. Brazil, 2010

Economic classification of the housing unit	Housing units by origin of data collection (%)	
	handheld computer	Internet
A1	5,9	44,4
A2	10,3	27,6
B1	19,5	20,6
B2	17,9	4,9
C1	18,8	1,9
C2	12,1	0,3
D	11,6	0,1
E	4,0	0,1

Figure 3
Housing units by economic classes according to the origin of data collection. Brazil, 2010



5. Conclusions

Given the specific profile of housing units who responded to the 2010 Population Census via Internet, it is suggested that this feature should be accompanied by a more profound study in future research. The potential of this collection instrument in preventing denials or even for those people who is difficult to contact at a reasonable time, because they are outside the house all day long should be exploited. This strategy could also be directed to that portion of the population with higher purchasing power, where there is a high percentage of refusal. Another important point is to study the possible quality gain of responses provided by the person on the Internet, especially on sensitive issues.

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