



Brazilian household survey: trend in traditional foods consumption, 2002-2018

Pesquisa de orçamentos familiares: tendência do consumo de alimentos tradicionais, 2002-2018

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ABSTRACT

The evolution of consumption of traditional foods and Brazilian basic food basket between 2002 and 2018 is described through a time series of consumption of traditional food and Brazilian basic food basket based on data from Brazilian household surveys. Trend of annual *per capita* household food acquisition of food was analyzed according to the studied periods and regions in Brazil. Results reveal there was a decrease in household food acquisition of all items in the basic food basket, except butter (8.3%). Greatest reduction rates comprised cassava flour (-69.9%), wheat flour (-56.1%) and beans (-52.3%). In the southern region highest percentage decrease rate comprised the acquisition of beans (-56.1%), whilst in the northern region a sharp reduction in meat (-32.1%) and milk consumption (-57.2%) may be underscored. Decrease in the consumption of traditional foods by the population may detect possible damage to the health of individuals and loss of the Brazilian food culture.

Keywords: Demography. Staple Food. Food, diet and nutrition.

RESUMO

Descrever a evolução de consumo de alimentos tradicionais e da cesta básica brasileira entre 2002 e 2018. Série temporal do consumo de alimentos tradicionais e da cesta básica brasileira com base nos dados das três últimas Pesquisas de Orçamentos Familiares. A tendência da aquisição alimentar domiciliar *per capita* anual dos alimentos foi analisada segundo os períodos estudados e as regiões brasileiras. Houve diminuição da aquisição alimentar domiciliar de todos os itens da cesta básica, exceto a manteiga (8,3%). As maiores reduções observadas foram: farinha de mandioca (-69,9%), farinha de trigo (-56,1%) e feijão (-52,3%). Na região Sul ocorreu a maior queda percentual de aquisição de feijão (-56,1%), e o Norte se destacou pela redução acentuada do consumo de carnes (-32,1%) e leites (-57,2%). A diminuição observada no consumo de alimentos tradicionais pode sinalizar possíveis prejuízos à saúde dos indivíduos e perda da identidade cultural alimentar brasileira.

Palavras-chave: Alimentação básica. Alimentos, dieta e nutrição. Demografia.

Received in September 18, 2020

Accepted on February 15, 2021

INTRODUCTION

Brazilian food is mainly based on Portuguese cuisine, coupled to significant influences from Indigenous and African cuisines mix. Rice, bread, vegetable oils, sugar, potatoes, beef and chicken are examples of food brought by the Portuguese to Brazil, while cassava and its byproducts and beans are Indigenous contributions to Brazilian food customs¹. Africans and the Portuguese brought not merely rice and sugarcane, but also banana, and affected the intake of coffee and cow milk. Environmental factors and different types of colonization also contributed towards the plurality and peculiarities of food in the country. These different types of food which formed the Brazilian cuisine culture are part and parcel of the basic Brazilian food basket^{1,2,3}.

The Brazilian basic food basket established by Law 399 on the 30th April 1938 is made up of 13 items with sufficient amounts to guarantee the well being of the adult worker during the month. Basic food basket comprises beef, beans, rice, flour, tomatoes, potatoes, bread, coffee, banana, sugar, oil and butter, and may vary according to the customs and food culture of each Brazilian region.²

It should be emphasized that the contents of the food basket have been the same since 1938, whereas food standards

have been significantly modified ever since⁴. National surveys, such as the Family Budget Research (POFs), telephone survey Vigilance of Risk Factors and Protect against Chronic Diseases (Vigitel) and the Brazilian Health Research (PNS) have provided important data for studies on food and nutritional profiles in Brazilian populations. Increase in ultra-processed food (UPF), the concomitant decrease in the consumption of *in natura* and minimally-processed food, and the increase in fast lunches are significant⁵⁻⁹. Actually, decrease in the consumption of rice and beans, the typical Brazilian food, and the progressive replacement of butter by margarine should be underscored.^{1,7,10}

Whilst taking into consideration production, transport, commercialization, marketing and consumption, globalization-triggered changes in the food system are strictly related to a food standard characterized by health risks and negative transitions within the population's nutritional and epidemiological status. The above-mentioned transitions are characterized by an increase in overweight, obesity and other non-transmissible chronic diseases (NTCDs).¹¹⁻¹²

The intense production and supply of UPF and the eradication of local production practices due to globalization tend to homogenize consumption standards and food practices, causing the loss of the country's or region's food cultural

identity.¹³ Food culture is a reference in cultural, social and ethnic identity since it places people within the world they belong. The conservation of food culture comprises the valorization of food practices which are environmentally and economically sustainable and socially just, opposing the highly rated nutritionally unfavorable food and cuisine imposed by globalized food systems. Consequently, it is greatly relevant to rethink the current food model and develop strategies for the promotion of proper and healthy food practices for the population that would give importance to Brazilian food culture.^{11,12,14,15} Current analysis describes the evolution of the consumption of traditional food which makes up the basic Brazilian food basket, between 2002 and 2018.

METHODOLOGY

SAMPLING AND DATA SOURCES

Data have been retrieved from the last three editions of the Household Budget Surveys (HBS/POF) of the Brazilian Institute of Geography and Statistics (IBGE), comprising the 2002-2003, 2008-2009 and 2017-2018 editions. In each edition, sample represented the set of households in Brazil within the five Brazilian regions. The number of households interviewed in each edition was 48,470; 55,970 and 57,920, respectively. More information on the

sampling procedure may be retrieved from IBGE publications.^{5,7,10}

Survey from each edition lasted 12 months and data analyzed in current study refer to the research information related to food and beverages (simply called food) acquired by families and intended exclusively for household consumption. Data were retrieved from Collective Acquisition Booklet (CAB/POF3), with a detailed daily description (quantity, unit of measure, price, place and mode of acquisition) of each purchased product, during seven consecutive days. The annual *per capita* amount of each product was calculated from the amounts of food products purchased by families for household consumption, using the region's estimated resident population.^{5,7,10}

VARIABLES

The thirteen items composing the Brazilian basic food basket were selected for current investigation, namely, rice, beans, tomatoes, potatoes, banana, wheat flour, baked bread, meat, milk, sugar, ground coffee, oil and butter. Further, cassava flour was also included due to its usages in certain regions of the country, especially in the northern and northeastern regions of Brazil, especially as a main ingredient in traditional recipes and in all meals as a replacement of rice in the tradition rice-beans mix.⁸

DATA ANALYSIS

Prices in each edition were compared to detect the evolution of acquisition of each item from estimates of *per capita* household food acquisition of each product selected from each edition. Evolution was analyzed at national and regional levels. Prices were then employed to calculate the percentage variation between the first and the last edition, namely, the 2002-2003 and 2017-2018 editions, at national and regional levels.

RESULTS

The analysis of consumption of traditional food and Brazil basic food basket shows a decrease in the *per capita* yearly acquisition of almost all items, excepting banana with a 1% increase and butter with 8.3% increase (Table 1). Cassava flour had the greatest decrease rate (-69.9%), followed by wheat flour (-56.1%), beans (-52.3%) and sugar (-50.2%) (Table 1). Annual *per capita* decrease in butter occurred between CAB/POF 2002-2003 and 2008-2009 editions, which demonstrated a significant increase in the last edition, and, consequently, a positive trend between 2002 and 2018.

Table 1. Yearly household food acquisition trends *per capita* of traditional food and basic Brazilian food basket between 2002 and 2018, following Family Budget Research

Food	Yearly acquisition per capita (kg)			
	2002-2003	2008-2009	2017-2018	%(2002-2018)
Rice	31.58	26.50	19.76	-0.37
Beans	12.39	9.12	5.91	-0.52
Tomato	5.00	4.92	4.21	-0.16
Potato	7.42	6.38	5.94	-0.20
Banana	7.01	7.68	7.08	0.01
Cassava flour	7.77	5.33	2.33	-0.70
Wheat flour	5.08	3.40	2.23	-0.56
Baked bread	12.33	12.53	9.49	-0.23
Meat	43.69	42.65	35.99	-0.18
Milk	44.41	37.09	25.81	-0.42
Sugar	12.16	8.04	6.05	-0.50
Coffee	2.67	2.59	2.56	-0.04
Oil	8.24	7.10	5.33	-0.35
Butter	0.32	0.27	0.35	0.08

Rice and beans, typical food of Brazilian cuisine tended towards decrease, already detected in the CAB/DOF 2002-

2003 and 2008-2009 issues, with a pronounced increase in rice acquisition reduction between the 2008-2009 and

2017-2018 editions. However, beans had the highest reduction percentage rate during the analyzed period (-52.3%). Similarly, the same may be said for meat and milk, which had the greatest decrease rate between the 2008-2009 and 2017-2018 editions (Table 1).

Tables 2 and 3 reveal different annual *per capita* household food acquisition among the regions in Brazil. Although rice and beans featured a reduction in acquisition in all regions, the largest percentage reduction rate in bean acquisition occurred in the southern region

(-56.1%), followed by the northeastern region (-54.3%). In the case of rice, the Northeast is the region with the lowest percentage decrease rate in household acquisition of the item (-29%), with the greatest decrease rate in the midwestern region (-43.3%) (Table 3). In the 2017-2018 POF edition, the greatest rate in *per capita* domestic acquisition of beans was detected in the Northeast region, and the lowest rate occurred in the South. The midwestern and southern regions have the highest and lowest *per capita* household acquisitions of rice, respectively (Table 2).

Table 2. Yearly household food acquisition trends *per capita* of traditional food and basic Brazilian food basket, following Family Budget Research 2017-2018

Food	Yearly household food acquisition per capita (kg) 2017-2018					
	Brazil	North	Northeast	Southeast	South	Midwest
Rice	19.76	19.91	21.85	18.81	15.68	25.03
Beans	5.90	4.98	7.88	5.51	4.06	5.49
Tomato	4.20	2.13	4.19	4.24	4.66	5.58
Potato	5.94	2.06	4.56	6.35	9.92	5.49
Banana	7.07	4.11	7.02	7.36	8.28	6.79
Cassava flour	2.33	10.79	3.86	0.58	0.40	0.59
Wheat flour	2.22	1.23	0.81	1.65	7.47	1.74
Baked bread	9.49	9.27	11.78	9.30	7.14	6.99
Meat	35.99	48.71	37.79	30.82	39.45	37.35
Milk	25.80	9.58	15.53	30.85	39.60	27.00
Sugar	0.35	0.30	0.39	0.35	0.16	0.58
Coffee	6.04	5.81	7.13	5.48	4.78	7.88
Oil	5.32	4.48	3.98	5.86	6.13	6.61
Coffee	2.56	2.10	2.49	2.69	2.62	2.45

Table 3. Yearly household food acquisition trends *per capita* of traditional food and basic Brazilian food basket between 2002 and 2018 among the Brazilian regions

Food	Percentage variation between 2002-2003 and 2017-2018 editions					
	Metropolitan Regions					
	Brazil	North	Northeast	Southeast	South	Midwest
Rice	-37.42%	-39.18%	-29.02%	-41.43%	-37.24%	-43.30%
Beans	-52.32%	-50.83%	-54.36%	-50.05%	-56.16%	-45.87%
Tomato	-15.82%	-34.54%	-15.22%	-22.98%	-1.93%	21.71%
Potato	-19.93%	-34.47%	10.92%	-26.55%	-28.39%	28.39%
Banana	1.00%	-47.18%	26.86%	-4.39%	-1.52%	40.26%
Cassava flour	-69.97%	-68.10%	-74.77%	-58.86%	-60.67%	-56.22%
Wheat flour	-56.15%	-42.63%	-45.15%	-55.36%	-58.44%	-55.49%
Baked bread	-23.04%	-13.47%	-3.28%	-34.90%	-25.43%	-18.23%
Meat	-17.61%	-32.19%	-3.54%	-21.56%	-25.69%	0.17%
Milk	-41.88%	-57.29%	-39.87%	-41.04%	-38.17%	-49.37%
Butter	8.33%	-6.67%	8.15%	-4.36%	14.89%	125.58%
Sugar	-50.27%	-44.87%	-50.96%	-52.62%	-38.86%	-53.92%
Oil	-35.30%	-39.29%	-34.83%	-36.75%	-26.96%	-40.04%
Coffee	-4.08%	-3.70%	2.42%	-9.45%	5.64%	-8.27%

Regional differences in annual *per capita* household food acquisition of bananas, potatoes and tomatoes may be underscored. The latter decreased by 15.8% in the national analysis and in four regions, with a 21.7% tomato increase rate in the midwestern. There was a similar trend in potato household acquisition, which, in spite of decrease when all regions are assessed, featured a 10.9% and a 28.3% increase in the Northeast and in the Midwest, respectively. In the case of bananas, although there was an increase trend nationally, only the Northeast and Midwest regions increased respectively

26.8% and 40.2% acquisition (Table 3). The northern region had the lowest annual *per capita* household acquisition rate of banana, potato and tomato, with lower amounts than in other Brazilian regions (Table 2).

In the midwestern region, the *per capita* household food acquisition of butter had a 125.5% increase, whereas, during the same period, there was a 40% reduction in oil consumption in the region, or rather, the highest reduction rate in oil acquisition among Brazilian regions. The Southeast and North regions were the only regions

that showed a decrease in the acquisition of butter (Table 3).

The Midwest was the only region to have a slight increase (0.1%) household food acquisition with regard to animal-derived protein food sources. Highest decrease rate in meat acquisition occurred in the North (-32.1%), whilst the lowest decrease rate occurred in the Northeast (-3.5%) (Table 3), even though, according to the 2017-2018 POF, the highest annual *per capita* acquisition rate was detected in the North (48.7 kg) (Table 2). There was a decrease in milk in all regions, with the highest reduction rates in the North (-57.2%) and Midwest (-49.3%) (Table 3). There is a similar discrepancy between the Northern region, with a 9.5 kg *per capita* milk acquisition in the latest POF edition, and the South region with 39.6 kg, the region with the highest milk acquisition rate (Table 2).

Cassava flour consumption presented marked differences between regions, with North and Northeast region with the highest rates, with annual *per capita* acquisitions of 10.7 kg and 3.8 kg, respectively. The annual *per capita* acquisition among the other regions of Brazil failed to reach 1 kg (Table 2).

DISCUSSION

Current analysis describes the evolution of consumption of traditional foods and other types of food in the Brazilian basic food basket between 2002 and 2018. Results in the last CAB/POF

edition show a reduction in the annual *per capita* household food acquisition of all items in the basic basket, except butter. It is important to take into account that increase trend in fast food expenses has been maintained, with an 8.7% increase against CAB/POF 2002-2003⁷. The midwestern and southeastern regions had the highest percentage rates for fast food in 2017-2018, respectively featuring 38.0 and 32.4%, whilst the northern region had the lowest percentage (21.4%). The highest amount of average monthly household expenditure on fast food has been reported for the midwestern region (R\$ 277.68), or rather, 133.8% of value reported for the northern region (R\$ 118.79), the lowest value among the Brazilian regions.⁷ Although the maintenance of the trend in increased spending on fast food indicates a consequent decrease in household food acquisition, important observations may be made.

The causality model that explains the decision in food consumption among Brazilians is a rather complex matter. Geographic and cultural diversity in Brazil requires sociological, economic and environmental investigations to discuss consumption and food habits among the several Brazilian regions.¹⁵⁻¹⁷

In their systematic review on national surveys, Canuto et al.¹⁶ endeavored to investigate the association between social and economic status and food consumption of Brazilians. In synthesis, the study suggests an inverted association between earnings and

consumption of Brazilian traditional food standards. In other words, low-waged people are conditioned to the consumption of the most basic food standards and thus economically viable. The highest wage level revealed and inverted association to the consumption of traditional food such as rice, roots, tubercles and sugar.

Rice and beans, staple food of Brazilian cuisine, are an important nutrient low cost source, especially when compared to prices of animal-derived proteins. Current study has detected a decrease in the home consumption of grains between 2002 and 2018, with a high decrease rate in rice in the midwestern region and in beans in the south. Vigitel data between 2011 and 2017 have already revealed a mean 1.3% decrease per year in the intake of beans within five or more days of the week. Belo Horizonte had the highest frequency rate in adults that consume beans for five or more days per week (78.4%); Florianópolis had the lowest (29.15%).¹⁷

A prepared survey in the metropolitan region of Goiânia to analyze the perception of consumers on aspects that interfere in the intake of rice and beans revealed a decrease in the household acquisition of rice (almost 60%) and of beans (30%) among Class A1 households. A decrease of almost 36% in rice and beans acquisition has been detected among D-E class households. However, 90% of interviewees were convinced that the consumption of rice and beans was important at least in one meal, whereas

60% believed that the two grains should not be replaced definitively by other products. The authors discussed the influence of the social media when they associate negative issues to the consumption of rice and beans, such as weight gaining and low nutritional value since only 26.5% of the interviewed people said that they agreed that rice was health beneficent. When asked on the rice-bean association with weight gain, almost 72% supplied a kind of comment on the issue with regard to rice and 47% with regard to beans.¹⁸

Current results confirm the change process in food intake behavior and evidenced that, as from the 1970s, as a consequence of industrialization and opening of the market, and, as from the 1990s, due to the great increase in industrialized imports, the implementation of globalized food culture has occurred in Brazil. Cultural diversification and importation of food habits have caused a gradual substitution of tradition foods, such as rice and beans, by animal-derived proteinic food, highly energetic, rich in sodium, sugars and fats, and poor in fibers. The new food standards, constantly on the increase in low- and medium-wage countries, is known as “the Western diet”, and is growing in urban and rural areas of all countries.¹⁹⁻²¹

Further, there is the gradual concomitant elimination of public markets and fairs, the main source in the acquisition of food in the developing world, and the concomitant increase in

local and regional supermarkets of great multinational conglomerations, triggering changes within the acquisition profile and food expenses.²²

In the case of the consumption of fruits, represented by the banana in current study, the northern, southeastern and southern regions, even though with a rising trend nationwide, have experienced a decrease between 2002 and 2018 of POF. The above is important since Brazil has all the climatic conditions that make possible its availability throughout the country during the whole year. In fact, it is the most produced and consumed fruit in Brazil, low cost and highly acceptable. One may infer that the consumption trend of this food group is homogeneous/similar. Whereas the midwestern region had a 40% increase in household acquisition of banana during the period, the northern region had a 47.18% decrease. Employing data retrieved from the 2013 National Health research, Jaime et al. () also evaluated differences in food consumption among the microregions. The authors analyze the lowest availability rates in vegetables and legumes in the north and northeast of Brazil and of beans in the south.²²

The evaluation of the time variation of 2013-2018 Vigitel indexes revealed that the recommended consumption of fruits and vegetables has not attained a favorable and significant evolution in Brazil. Consequently, obesity, weight excess and diabetes testify to an unfavorable evolution.²³ Although a different

consumption behavior may be expected among the regions due to the cultural heritage of each place, environmental specificities and economic disparities, the signalization of a decrease of consumption of protection indexes for the development of chronic non-transmittable diseases and obesity is a warning towards the relevance of specific strategies for the promotion of adequate and healthy food in each region.²⁴

Santos & Conde²⁴ analyzed the trend of food standards employed by people according to the 2007-2012 Vigitel data. Four food standards were identified and results showed inequalities with regard to food standards that are protecting factors against chronic diseases. A greater adhesion to traditional food standards and transition ones containing UPF, have been detected among males, young people and inversely proportional to schooling level.

Although UPF is not the aim of current paper, it is a well-known fact that the consumption of this type of food has interfered in the food habits of Brazilians, with negative consequences for the prevalence of NTCs and weight gain. UPFs have more than one-fifth of calories acquired in Brazilian households. In the midwestern region, very high processed foods are equivalent to 16% of total calories. The IBGE report on the nutritional assessment of food availability in households indicate a trend towards the de-acceleration in UPF household availability between the 2002-2003 and 2017-2018 editions. De-acceleration has been reported in all Brazilian regions and

at all income layers. It may be a positive result of public policies for the production of adequate and healthy food, with special reference to the Food Guide for Brazilians in 2014.⁷

Homogenization trends of food practices due to globalization and adaptations to food production modes within an international scale have gradually distanced peoples from their food cultures, with serious changes in cultural identity and diversity, decrease in food diversity, culture modes, exclusion of the local market and several health damages. Food perceived as commodity and agriculture for the international market make difficult food access, especially for females, children and elderly people. On the other hand, the availability of new food products with unbalanced nutritional profile reveals nutritional disorders. Marketing demands a certain type of food behavior and stimulates UPF consumption, coupled to lack of sociabilization during meals, with high calorie intake and making uninteresting traditional food, especially for young people, with a negative impact in social and familial conviviality.^{8, 25-28}

Availability and commercialization of UPFs during the last 25 years have increased significantly in low and medium income countries²⁸. Increase in sale of such products has favored overweight and obesity. It actually became a worldwide trend, with special significance for Latin America. Several studies corroborated our results and UPFs are replacing the *in natura* food intake, which are minimally

processed and traditional, to the benefit of an increase in obesity and NTCDS.^{23,24,28}

The massification of food costumes and changes within the production chain up to consumption and within social and economic standards may characterize a deep and complex cultural transformation, with serious consequences. Transition in food culture may be identified by such factors as crises in food scarcity and assistance programs, intense technological transformation of food, with the breeding of new species that may not be used in traditional recipes, industrialization, urbanization and migration.^{25,26}

Food culture is the identity of a group of people. It has a symbolic value due to smell, taste and practices which are shared and transmitted to future generations, and thus, they give a feeling of belonging. The preservation of food culture is indispensable to guarantee the Human Right to Adequate Food, Food and Nutrition Guarantee and for the maintenance of Food Sovereignty of the country.^{25,26,29}

Limitation of current study comprises the potential biases on the usage of food register as an evaluation method for food consumption, such as modification of food consumption during evaluation days and underestimation of food consumption. In the case of perspectives, current analysis is a study on the evolution of consumption of traditional food and other types of food within the Brazilian food basket, with subsidies for the development of strategies for the

promotion of adequate and healthy food practice for the population which valorizes its food culture.

FINAL CONSIDERATIONS

Decrease in the consumption of traditional food by Brazilians within the period analyzed has occurred according to estimates of the Family Budget Research. This is a liability for people's health and a loss for Brazilian food culture. Public policies for the promotion of access to adequate and healthy food should be undertaken whilst taking into account the diversity and inequalities in the country's regions, keeping in mind the recovery of food culture.

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