Analysis of results

O The results are shown include food consumption analysis that combine nutrients and food groups or foods considered dietary quality markers. He tried to, throughout the discussion of the results, emphasizing the analyzes that combine food and nutrients, since this has been rather how to assess results for the purpose of public policy in the area of nutrition.

The following are estimates of the average consumption of food, energy and nutrients are analyzed for the total population, according to sex, age group, geographic fi c region, household location (urban and rural) and income classes using the data the first day of registration [2]. Similarly, they are discussed estimates of prevalence of inadequate food consumption (percentage of respondents who reported consumption of speci fi c food).

The amounts consumed reported in cooked foods were transformed measures in grams or milliliters to calculate the amount of food consumed by each informant on the basis of these measures table for foods consumed in Brazil POF 2008-2009. To estimate energy, macronutrients and micronutrients cited in search of food, they used the nutritional composition of the food consumed in Tables Brazil, also resulting POF 2008-2009. Both documents are being released simultaneously to this study.

[2] It is considered that on the first day of registration information quality is higher than the subsequent days (subar et al. 2003; SAWAYA et al., 1996).

A total of 1121 food items was cited by informants POF individual food intake module. To effect these results show fi ed items were classified into 21 groups of foods described in detail in Annex 1. The food groups were created in line groupings shown in the publication ***Nutritional Assessment of Availability Household Food in Brazil*** Also resultant POF 2008-2009, fitting noted that in this study included the home diet and that performed away from home.

In the formation of groups 21 of food are considered the information items which individually or together with similar food were reported by at least 100 individuals on the first day food diaries. In each of the formed groups of foods, items consumed by less than 100 people were gathered in the "other" category.

To estimate the prevalence of inadequate micronutrient intake, and diet quality markers foods as well as the percentiles 10, 50 and 90 of the population distributions of consumption of selected nutrients data from the two-day food record and these distributions were used They were corrected by intra-individual variability to estimate usual intake of the population. For this purpose, applied procedure adopted by the National Cancer Institute - NCI, USA (Dodd et al, 2006;. Tooze et al., 2006). This method makes use of mixed-effects modeling to consider the amount of food or nutrient intake, as well as the correlation between the probability of consumption and the amount actually consumed. This modeling can be applied to two different situations: foods that are eaten for sporadic and often the food and nutrients consumed. In the first case, in addition to the intra-individual variability, the model also considers the probability of consumption; this process was applied to estimate the usual consumption of diet quality markers foods. For nutrients, the applied model took into account the reported amounts and intra-individual variability to estimate the usual consumption (Tooze et al., 2006).

Pets for parameters of inadequate intake of nutrients

The prevalence of inadequate intake of micronutrients were calculated using the estimated average requirement values - EAR (Estimated Average Requirement), as proposed by the Institute of Medicine - IOM for the population of the United States and Canada (VERLY JUNIOR, 2009; Marchioni; SLATER; Fisberg, 2004; INSTITUTE OF MEDICINE, 1997, 1998, 2000, 2001, 2011). The EAR is an estimated average requirement of nutrient according to gender and life stage. The prevalence of inadequate intake of each micronutrient was estimated by the proportion of subjects with consumption below the EAR value.

It is noteworthy that the estimated average requirement - RAS can only be used to estimate the prevalence of inadequate when the following assumptions are met:

the distribution and consumption of nutrient needs to be independent; and nutrient requirement distribution is symmetrical and the need for the distribution of the variance is less than the variance of the distribution of consumption. Thus, for this method to be used, knowledge of the distribution of usual consumption of the study population and the estimated average requirement is necessary - EAR (INSTITUTE OF MEDICINE, 2000). There are two cases where this method can not be used: for the energy consumption, where the distributions of consumption and needs are correlated, and evaluation of inadequate iron intake in women of childbearing age, since the distribution iron need is asymmetric (Institute of Medicine, 2000).

To estimate the prevalence of inadequate iron was used method of manually determined probabilistic approach (Institute of Medicine, 2001). This method provides for the calculation of the number of individuals in iron intake intervals. These ranges use, as well as the probability of mismatch specifies for each interval are determined according to gender and age (Institute of Medicine, 2001). Thus, the risk of inadequate corresponds to the number of individuals in each interval multiplied by the probability of mismatch.

In the analysis of folate consumption, since the Brazilian Table of Food Composition - TACO, the State University of Campinas - U NICAMP (TABLE ..., 2006), has no nutritional information folate and forti fi cation of the nutrient in Brazil is different from that used in the United States the analysis incorporated the following routines:

1. for food from TACO table sought on the Nutrition Data System for Research database - NDSR of the University of Minnesota, (NDSR, 2003) the natural folate values and synthetic folate for similar foods; and

2. The amount of synthetic folate, folate representing the cation fortified was adjusted to 140 mcg / 100 g of wheat and maize flour to 150 mcg / 100 g of wheat and maize flour as in Brazil. The amount of dietary folate equivalent was estimated by the formula: dietary folate equivalent (mcg) = natural folate (mcg) + [1.7 * synthetic folate (mcg)]. As the sodium intake in Brazil is high (SARNO et al., 2009), we chose to use UL values (***Tolerable Upper Intake Level)*** to determine the proportion of subjects above the maximum tolerable intake. UL values represent the maximum biologically tolerable daily intake, which probably does not put individuals at risk of adverse effects.

For consumption fi bra total no estimated average requirement - EAR, and the amount proposed in the dietary guidelines of the United States and Canada (DGAC,
2010) refers the median fi consumption bra associated with lower risk of coronary disease in prospective studies, 25 g per 2000 kcal, recommendation is adopted by the Ministry of Health. For comparison, this same limit was considered the results herein.

The recommendation regarding the consumption of fat is primarily related to reduced intake of saturated fat and trans fat. According to the Food Guide for the Brazilian population (Ministry of Health, 2006), the consumption of saturated fat should be less than 10% of total daily caloric intake, and intake of trans fatty acids the maximum value is 1% of consumption total calories daily. However, the Brazilian Society of Cardiology proposes a fat intake

Saturated less than or equal to 7% of total daily caloric intake in line with the recommendation of the National Heart Lung and Blood Institute of the United States (SPOSITO et al., 2007). This study considered the limit proposed by the Brazilian Society of Cardiology.

The World Health Organization - WHO and the Ministry of Health recommend that consumption of free sugars, including sugar added and present in the natural fruit juices, is less than 10% of total daily caloric intake (WHO, 2003). This recommendation was also adopted in the calculation of prevalence.

It estimated the weighted average of inadequacy when prevalence estimates were presented for different age groups from those used in the recommendations for the values of the estimated average requirement - EAR.

For some nutrients are not established EAR values in these cases are not estimated the prevalence of inadequate intake, only limits being presented to percentiles 10, 50 and 90.

Food consumption 1

The highest average daily consumption ***per capita*** occurred for beans (182.9 g / day), rice (160.3 g / day), beef (63.2 g / day), juices (145.0 g / day), soft drinks (94.7 g / day) and coffee (215.1 g / day). Values of around 50 g / day ***per capita***
They were observed for bread salt (53.0 g / day), soups and broths (50.3 g / day) (Table 1.1). The men reported lower consumption ***per capita*** than women to vegetables, salads, and much of the fruit and pastries. consumption ***per capita***
for most of the items was higher among men and consumption of beer and spirits of men is approximately five times higher than among women (Table 1.1).

The consumption percentage away from home in relation to the total consumption was 50% higher than for beer (63.6%); fried and baked snacks (53.2%); and industrialized snacks (56.5%). Values above 30% were for fruit salad (38,8%); chocolate (36.6%); soft drinks ***diet*** or ***light (*** 40.1%); soft drinks (39.9%); liquor (44.7%); ***pizzas (*** 42.6%); and sandwiches (41.4%). The consumption outside the home was higher for men, except for bread, sweet biscuit products ***diet (*** breads, cakes and biscuits), chocolates, ice cream and processed chips (Table 1.1).

Average consumption ***per capita*** according to the sex of subjects reporting the consumption of foods or food groups is shown in Appendix 2, and represents an approximate measure of said middle portion for the food groups.

Of the food consumed on the first day of registration, they have been reported with the highest frequencies rice (84.0%), beans (72.8%); and coffee (79.0%). With percentages near 50% appear the salt bread (63.0%); and beef (48.7%) (Table 1.2). In analyzes stratified fi ed by sex (Table 1.2), men had lower frequency of consumption of all vegetables, much of the vegetables and fruits, and the prevalence of consumption for most items was higher among men.

The stratified fi cation by situation of the household (urban and rural) (Table 1.3) showed that the average consumption ***per capita/*** day in the countryside were much higher for rice, beans, sweet potato, cassava, cassava flour, mango, mandarin, fish

fresh, salted and cured fish. While in the urban area destacaramse finished products for consumption or processed, such as salt bread, sandwich cookies, yogurt, vitamins, sandwiches, fried and baked snacks, ***pizzas,*** soft drinks, juices and beer.

The consumption percentage outside the home in urban and rural areas was similar for beer, processed snacks, ice cream and popsicles. In urban areas, about 50% of the total consumed to occur outside the home liquor (50.0); other non-alcoholic beverages (47.9%); and fried and baked snacks (53.5%); and around 40% for the consumption of soda (40.2%); ***pizzas (*** 42.1%); and sandwiches (41.8%). In rural areas, about 50% of consumption outside the home was reported for fried and baked snacks (48.4%); ***pizzas (*** 52.6%); ice cream (56.3%); and about 30% to liquor (26.4%); soft drinks - ***diet, light (*** 31.5%); and regulating (36,5%) - (Table 1.3). Comparing the consumption prevalence among the five Large regions of the country (Table 1.4), the more differed were cassava flour, which was reported by more than 40% in the North and less than 5% in the South, Southeast and Midwest, and the consumption of acai and fresh fish that occurred almost exclusively in the North.

Average consumption ***per capita*** also shows large variations among the major regions, with rice, beans, beef and whole milk being the most consumed in the Midwest Region. The beans also occurred in the Southeast and the English potato consumption and yogurt stands in the Southeast and South. The tea consumption was much higher in the South than in other regions. In the North, the milk-based preparations, including porridges, were consumed more than in other regions, while the South and Midwest showed average values ***per capita*** very low. Also noteworthy in the North cassava flour consumption (46.2 g / day); and preparations fresh fish (95.0 g / day); and acai (28.4 g / day).

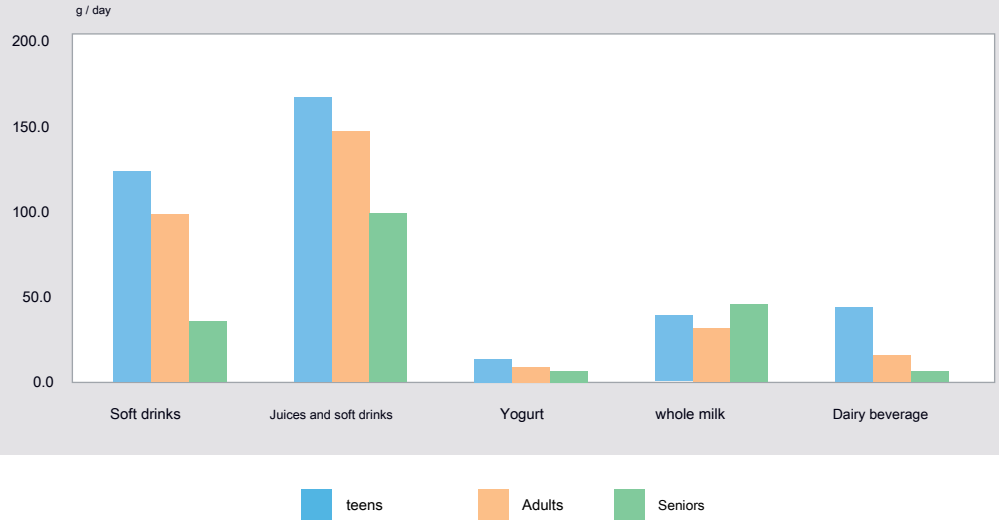
In terms of usage percentage away from home in total consumption, among the five Large regions of the country (Table 1.5), consumption of fries (72.2%) out of the home was much higher in the Northeast (more than 70 %), while in other regions this percentage is around 20% to 30%. Pasta, consumption outside the home was about four times higher in the Midwest than in the North. For breads, cakes and biscuits ***diet / light (*** 48.3%); other fish (69.5%); and sausage (27.0%) consumption outside the home was higher in the South Region More than 90% of beer consumption (91.5%) and industrialized snacks (96.2%).; in the North and over 70% of the wine (72.6%) in the Northeast occurred outside the home, while small portion of consumption of spirits in the South was held outside of the home, when compared to other regions.

When comparing the intake according to age groups, it is noteworthy differences in the percentage of people who reported consumption of biscuits, sausage, sausage, bologna, sandwiches and savory that decrease with increasing age. The values ***per capita*** indicate a lower consumption of beans, salads and vegetables in general for adolescents compared to adults and the elderly (Table 1.6).

For cheeses, there was an increasing consumption with age, and the reverse, i.e. decreasing consumption is observed for the yogurt, sausages, ice creams, juices / soft drinks / juices reconstituted powder milk drinks, snacks, industrialized snacks and sandwiches. The consumption of filled biscuits was four times higher among adolescents (12.3 g / day) than in adults (3.2 g / day) and a minimum among the elderly (0.6 g / day). The consumption of beverages also varied with age (Chart 1.1), and

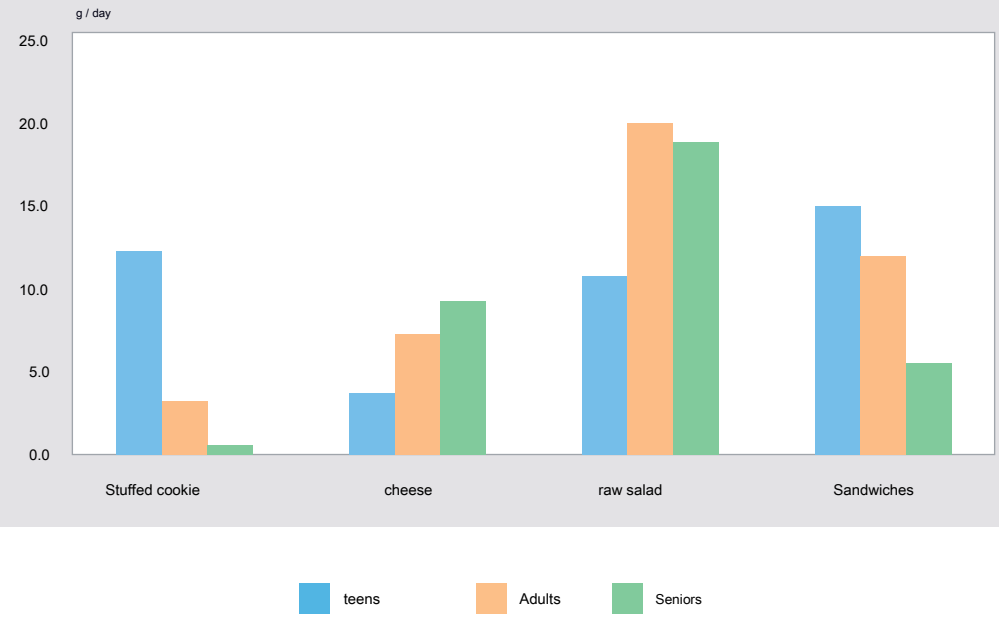
other important variations in the prevalence of consumption of food groups by age group are presented in graph 1.2. For sandwiches, adolescents and adults showed consumption averages two times higher than the elderly.

Graph 1.1 - Consumer *per capita* selected drinks in feed adolescents, adults and the elderly - Brazil - 2008-2009 period



Source: IBGE, Research Board, Work Coordination and Income, Expenditure Survey 2008-2009.

Graph 1.2 - Consumer selected items in the feed teenagers, adults and the elderly - Brazil - 2008-2009 period

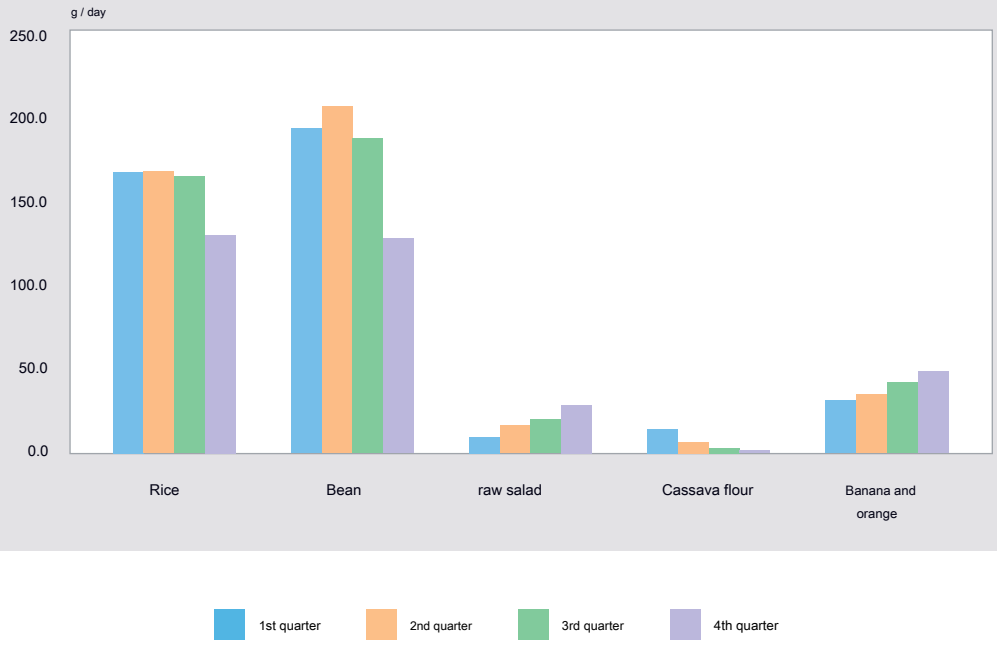


Source: IBGE, Research Board, Work Coordination and Income, Expenditure Survey 2008-2009.

Comparisons by income quartiles showed that for rice and beans there was an increase in the frequency and consumption ***per capita*** the first to the second income bedrooms, with further reduction in the last two income quartiles.

There is a positive association between frequency of consumption and values ***per capita*** consumption with income classes for vegetables, this association is clear that for the salad and also with raw fruit, while cassava flour has a negative association (Table 1.7 and graph 1.3).

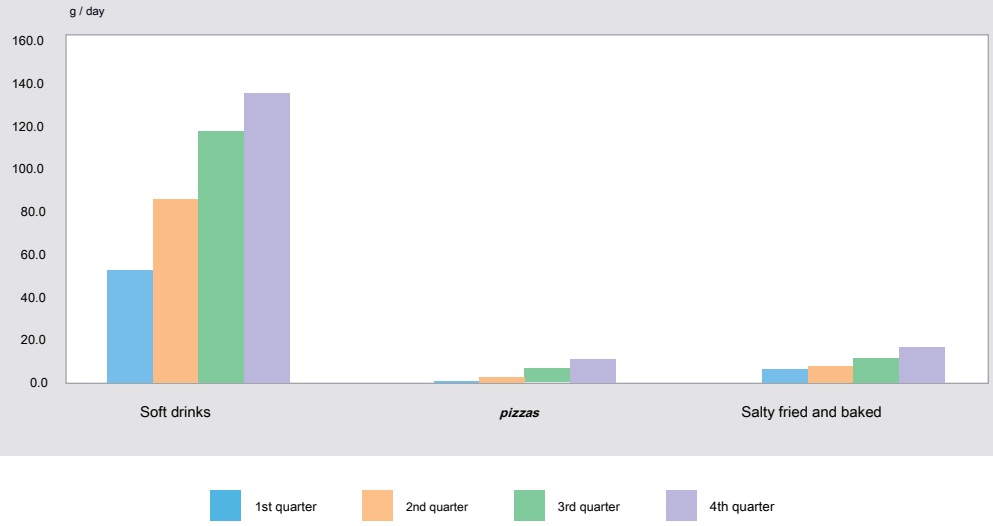
Chart 1.3 - Consumer *per capita* rice, beans, raw salad, manioc flour and banana and orange, rooms income - Brazil - 2008-2009 period



Source: IBGE, Research Board, Work Coordination and Income, Expenditure Survey 2008-2009.

Besides rice and beans, lower income classes consume in larger quantities several items considered as part of a healthy diet. For example, the average consumption of sweet potato ***per capita*** was more than double the lowest income class compared to most. The reverse is observed for the fries. Cassava flour consumption is over 10 times larger in the lower class income greater when compared to the same place in maize whose consumption is more than three times higher when comparing the lowest and highest income classes. The consumption of fresh fish, salted fish and salted meat is slightly higher in the lower income. On the other hand, some negative markers of diet quality, as consumption of sweets, soft drinks, ***pizzas*** and fried and baked snacks, are smaller in the lower income category (Chart 1.4).

Chart 1.4 - Consumer *per capita* soft drinks, *pizzas* and fried snacks and baked by income bedrooms - Brazil - 2008-2009 period



Source: IBGE, Research Board, Work Coordination and Income, Expenditure Survey 2008-2009.

The consumption of fruits and vegetables greatly increases with income, as well as skim milk and milk products (Table 1.7 and graph 1.3). The consumption of skim milk and dairy products with lower fat content, although recommended as suitable options for healthy eating, aimed at reducing saturated fats, is less than 10% of the consumption of this food group, and their consumption is directly associated with increased income. Soft drink consumption increases with income and consumption of soft drinks ***diet*** It is almost non-existent in the lower income category.

The consumption outside the home varied according to income (Table 1.8). There is a consumption increasing trend away from home with the increase of income for many items. For example rice, salads, fresh fish, with a clear exception for sweet potato, sandwich cookies, beef and ham. There are items whose consumption outside the home is not just associated with income as juices, soft drinks, sandwiches, fried and baked snacks.

The distribution of percentages calculated taking into account intra-individual variability of consumption using information from two days to selected food groups, according to the sex of the individuals (Table 1.9) indicated the highest values for males, except for vegetables and vegetables, fruits and sweets. The recommendation of the World Health Organization - WHO and ***Brazilian Food Guide*** for the consumption of fruits and vegetables which is 400 g per day is not reached or the 90th percentile of the population, while the juices consumption medians added to soft drinks is greater than 120 g daily.

2 Power consumption and nutrients

The results discussed in this section relate to the estimates of individual energy food intake, macro and micronutrients. It highlights the main differences observed in the five Great Brazilian regions, in urban and rural areas of the country, in the age groups and between the sexes. The prevalence of inadequacy, that is, the percentage of the population with inadequate intake of micronutrients are also presented according to sex, age, Major Regions and household location (urban and rural).

Taking into account gender and age, it was observed that the average energy consumption of the population generally ranged from 1490 kcal to 2289 kcal. The highest average energy intake were observed in males, especially in adolescents aged 14 to 18 years (2289 kcal / day). The second age group most energy intake was the men 19-59 years of age (2 163 kcal / day). For both sexes, the lowest energy consumption values were obtained among elderly people aged 60 or over, whose averages ranged from 1 490 kcal / day (female) and 1 796 kcal / day (males) (Table 2.1).

In adolescents approximately 28% of dietary energy was coming from lipids and adults and the elderly, around 27%. The percentage contribution of the proteins ranged from 15% to 16% among teens and 16% to 17% in adults and the elderly. The caloric intake of carbohydrates ranged from 54.8% to 57.0% among men and from 56.2% to 57.6% among women (Table 2.1).

The values obtained for the caloric participation of carbohydrates and lipids in the total energy of the diet meets the recommendations contained ***the Food Guide for the Brazilian Population (MINISTRY OF HEALTH, 2006)*** establishing the participation of 55% to 75% for carbohydrates and 15% to 30% lipids. However, the involvement of proteins is slightly higher than the recommendation (from 10% to 15%), especially in adults and elderly (Table 2.1).

The mean intake of cholesterol were lower among women (ranged from 186.3 mg to 237.9 mg) than among men (ranged from 231.1 mg to 282.1 mg) was observed in all age groups. In both sexes, individuals aged 60 and older had the lowest averages and adolescents aged 14 to 18 years the highest average cholesterol consumption. The same can be observed for saturated fatty acids, monounsaturated, polyunsaturated and total polyunsaturated linoleic acid. In turn, for the polyunsaturated fatty linolenic acid, it was observed less variation in consumption between age groups. As for the consumption of trans fatty acids was observed higher average consumption among adolescent males 14-18 years (3.1 g daily) and lower consumption in women aged 60 and older (average of 1 ,

The average daily intake of arms fi consumption was greater in males ranged from 20.4 g to 23.5 g when compared to the average female track in which situouse 17.6 g 18.8 g.

In turn, the average daily intake of total sugars suffered great variation between the age, being higher in the group of adolescents of both sexes, ranging from 105.4 g to 113.1 g for boys and 106.8 g 110.7 g of the

girls. Individuals aged 60 and older had the lowest average total sugar consumption. The average daily consumption of full sugar among adolescents was about 30% higher than among older people, with 15% to 18% higher in the adults (Table 2.1).

The analysis, according to the household situation (urban and rural), reveals that the average daily energy intake is higher among adolescents of households in urban areas compared to those in rural areas (Table 2.2), while in men aged 60 years or older the relationship is reversed, consumption in rural areas is higher.

In terms of caloric participation, protein intake was lower in urban areas, except for women aged 60 or older. In urban areas, the caloric participation of protein increases with age for both sexes. For males ranged from 15% in adolescents 10-13 years of age to 17% in the elderly. The average caloric participation of lipids was higher in urban areas, especially in male adolescents 14-18 years of age (Table 2.2).

In both urban and rural areas, elderly women were those who had the lowest average intake of cholesterol, saturated fatty acids, monounsaturated, polyunsaturated and trans isomers. In urban areas, the male adolescents 14-18 years of age had the highest average intake of these nutrients, as noted above for total lipids. In rural areas, higher cholesterol intake and lipid components of the diet were observed in adult males 19-59 years, except the intake of trans fatty acids. The consumption of trans fatty acids was more pronounced in urban areas than in rural in both sexes and in all age groups (Table 2.2).

For bras fi and total sugar intake exhibited distinct patterns according to the household situation (urban and rural). Rural areas concentrated the highest average bras fi intake and urban areas, the highest average intake of sugars. It should be noted that adolescents in urban areas of both sexes consume an average of 21% to 26% more free than in rural areas sugars (Table 2.2).

Table 2.3 shows the average energy intake and macronutrient for major regions: North, Northeast, Southeast, South and Midwest, respectively. In the northern region were observed average energy intake above national averages and the rest of the country, ranging from 1660 kcal to 2496 kcal. It was noted also that calorie average share of proteins in this region is the highest for all age groups and in both sexes and exceeded the national average. Women aged 60 or older in the Northern Region have the lowest relative consumption of lipids (24.3%).

In the Northeast, the average energy intake was estimated that stood in the range from 1448 kcal to 2174 kcal according to the age group, however, the protein intake exceeds the maximum recommended limit of 15%. Compared to other regions, it was observed that in the Northeast region the highest average caloric participation of carbohydrates among teens 10-13 years of age, adults and elderly men was slightly higher. In this region, the caloric participation of lipids was below the national values (Table 2.3).

The average energy intake in the Southeast varied from 1504 kcal to 2421 kcal. In this region, the caloric participation of proteins in the total energy of the diet varied from 14.7% to 16.9% holdings were below national averages also caloric average share of slightly lower mostrouse carbohydrates in this region than the national average. For lipids, the average caloric participation of the Southeast Region was the highest compared to other regions and the average of the country for teenagers (10-18 years old) and elderly (60 years or older) male and groups from 14 to 18 years and 60 years or older females (Table 2.3).

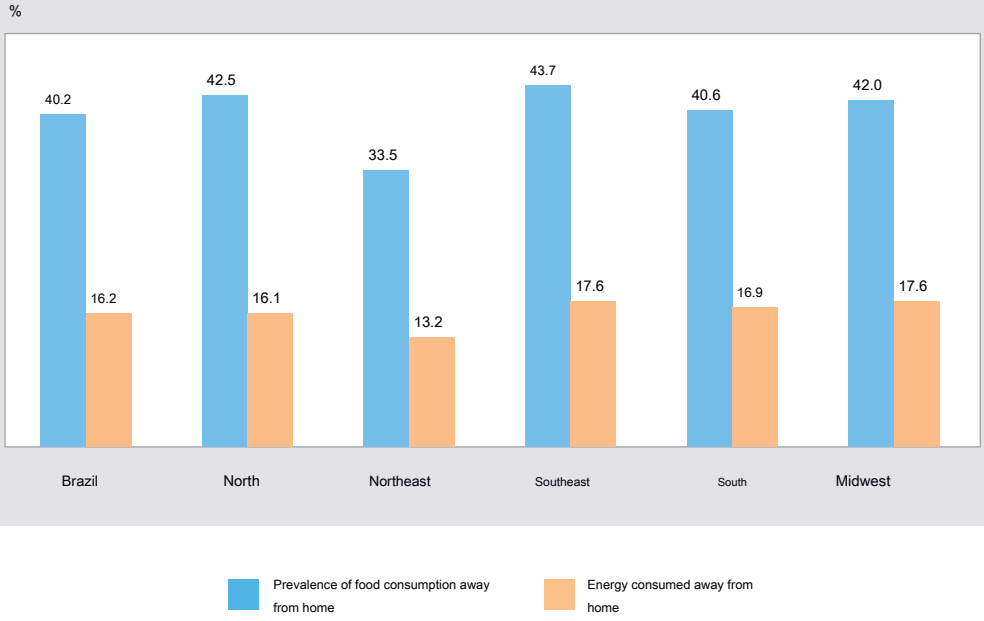
In the South, the energy intake of average values ranged from 1484 kcal to 2232 kcal and were lower than national in almost all investigated groups except men 19-59 years and women DE10 18 years old. In this region, the average caloric participation of protein were lower than other regions and national averages. By analyzing the caloric contribution of lipids, veri fi ed that the medium in this region were higher than the national average (Table 2.3).

The Midwest showed an average energy intake of 1453 kcal to 2185 kcal, which were lower than the national average observed in groups of 14 to 18, 19 to 59 years and 60 years of age or older. With regard to the caloric participation of proteins, the Midwest had the second highest average in the country, fi cating behind the North. In the Midwest the lowest percentages were observed caloric average share of carbohydrates in the total energy consumption in adults and elderly men (Table 2.3).

Among the Major Regions, also observed differences in the intake of cholesterol, lipid components of the diet of fi bras and total sugars. Accordingly, the Northern Region had the highest mean intake of cholesterol in both sexes and polyunsaturated fatty acids in males. Moreover, the highest average concentrated arms fi intake, particularly in the group of adolescents aged 10 to 13 years and from 14 to 18 years old. In turn, the Northeast Region recorded the lowest average intake of dietary lipid components in most of the groups, the lowest average of bras fi intake in women and children under total sugar consumption among teenagers 10-18 year-old male.

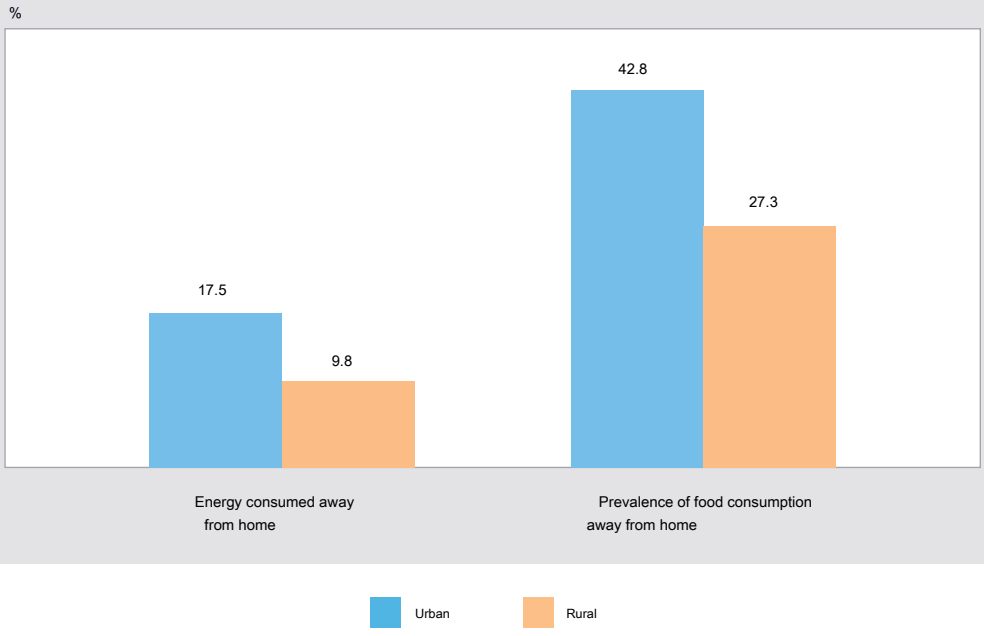
In Brazil, the average power consumption outside the home accounted for approximately 16% of the total caloric intake (Chart 2.1). The consumption outside the home was reported more frequently in urban areas (Chart 2.2) and male (Chart 2.3) among adolescents (Chart 2.4), and individuals in the family income range ***per capita*** higher (Chart 2.5). However, the proportion of energy provided by the consumption of food outside the home was higher for adults than adolescents and elderly (Chart 2.4). In the Southeast region, showed the highest proportions of occurrences and contribution to the total energy consumption in consumption away from home (Chart 2.1), while in the Northeast were observed smaller reporting values for caloric intake and average consumption caloric away from home (Chart 2.1).

Chart 2.1 - Prevalence of food consumption outside the home and contribution percentage to the total energy consumption, by Major Regions period 2008-2009



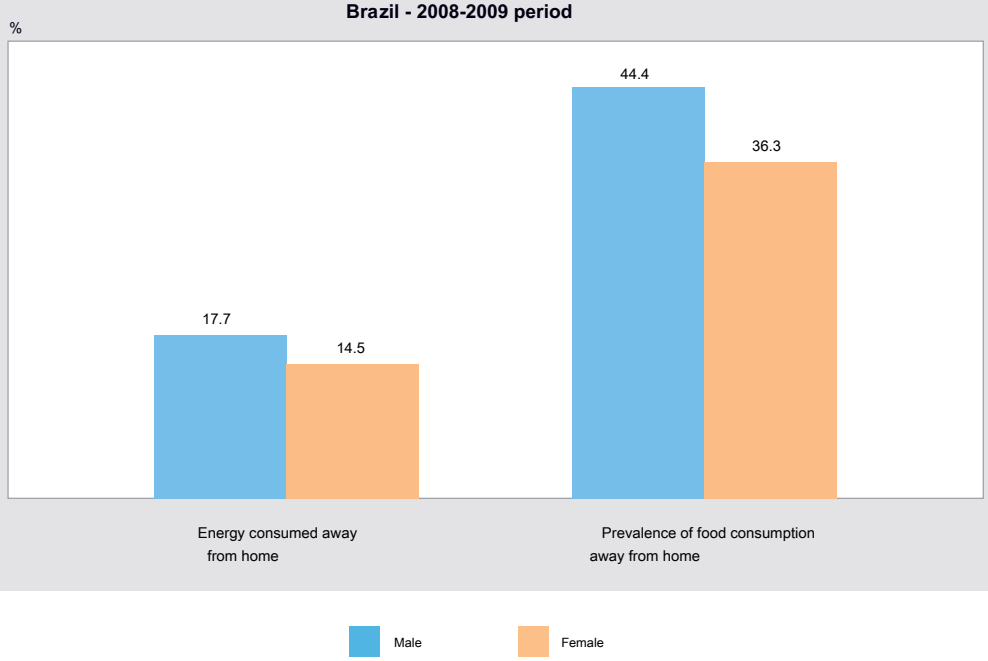
Source: IBGE, Research Board, Work Coordination and Income, Expenditure Survey 2008-2009.

Chart 2.2 - Percentage contribution to total energy consumption and prevalence of food consumption outside the home, on the situation household - Brazil - 2008-2009 period



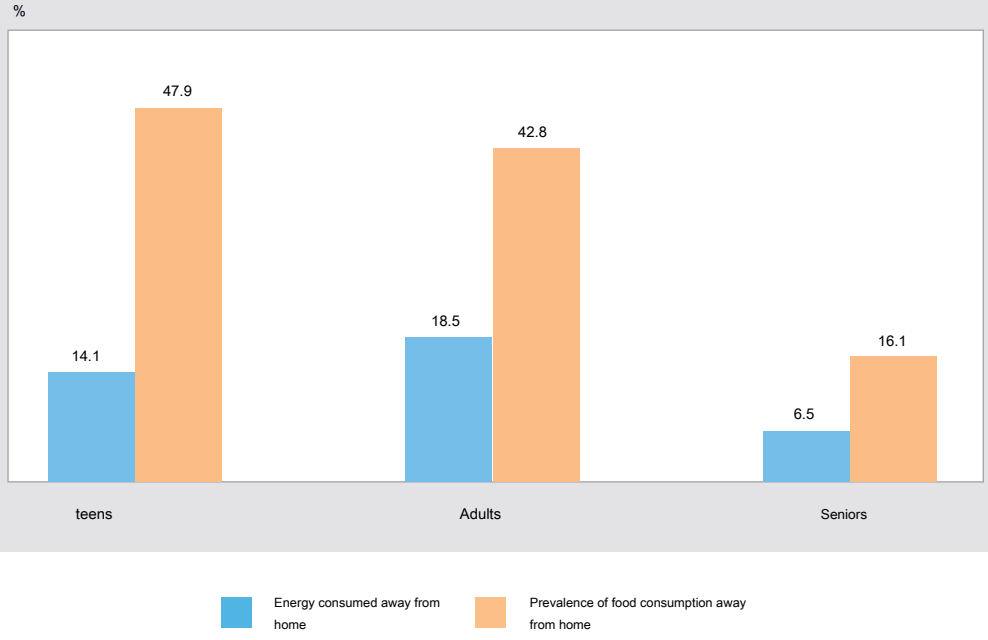
Source: IBGE, Research Board, Work Coordination and Income, Expenditure Survey 2008-2009.

Graph 2.3 - Percentage contribution to total energy consumption and prevalence of food consumption outside the home, by sex Brazil - 2008-2009 period



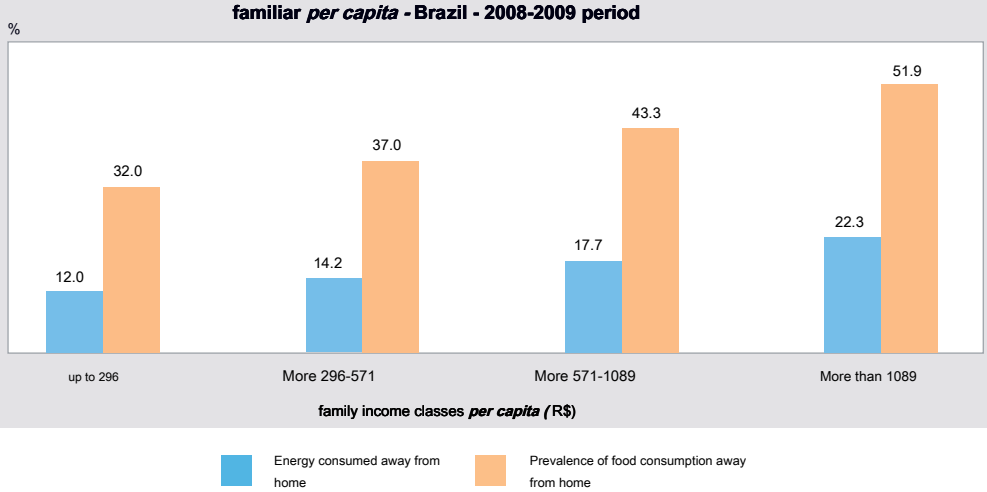
Source: IBGE, Research Board, Work Coordination and Income, Expenditure Survey 2008-2009.

Chart 2.4 - Percentage contribution to total energy consumption and prevalence food consumption outside the home, the power of teens, adults and the elderly - Brazil - 2008-2009 period



Source: IBGE, Research Board, Work Coordination and Income, Expenditure Survey 2008-2009.

Chart 2.5 - Percentage contribution to total energy consumption and prevalence food consumption outside the home, according to income classes familiar *per capita* - Brazil - 2008-2009 period



Source: IBGE, Research Board, Work Coordination and Income, Expenditure Survey 2008-2009.

Micronutrient intake

The average micronutrient intake totaled by gender, age, household location (urban and rural) and Major Regions are shown in Tables 2.4 to 2.6. intake means comparison between sex and age can cause erroneous interpretations, since reference intake values vary between these groups. Average intake of a particular nutrient, even though similar in age and sex strata, does not necessarily indicate that both are on the same prevalence of inadequacy. For this reason, comments on the intake of these nutrients are related to the percentage of individuals with inadequate intake.

Prevalence of inadequate nutrient intake

The percentage of individuals with below average estimated consumption requirement - EAR was calculated for nutrients: vitamin A, E, C, D, B1 (thiamine), B2 (ribo fl avina), B6 (pyridoxine), B12 (cobalamin), folate, niacin, selenium, zinc, copper, iron, phosphorus , magnesium and calcium. The analyzes were stratified fi ed by sex and age (adolescents 10-13 years and 14-18 years; adults 19-59 years, and older than 60 years or older), since the intake recommendations differ between these groups. stratified were made fi cations also by household situation (urban and rural) and Major Regions of the country.

Table 2.7 shows the prevalence of inadequate nutrient intake for adolescents according to sex, stratified fi ed by age groups of 10 to 13 years and 14-18 years. The nutrients that showed high prevalences were inadequate vitamin
E, vitamin D, calcium, vitamin A, phosphorus, magnesium and vitamin C. adolescents aged 10 to 13 years of age, in general, have inadequate prevalence of lower consumption of nutrients compared to adolescents aged in the range 14 18 years, especially in relation to iron, thiamine, and pyridoxine. Inadequacies were similar between the sexes with the exception of iron (11% among boys compared to 24% among girls) and ribo fl avina (16% for males against 8.6% for females), both aged 14-18 years. Regarding the sodium, more than 70% of adolescents had higher intake to a maximum of tolerable intake (UL).

In the age group of 19 to 59, as shown in Table 2.8 for men and women, respectively, higher prevalences were also inadequate for vitamin D, vitamin E, calcium, magnesium, vitamin A and vitamin C. At the age of 60 years or more, in addition, it was observed high prevalence of inadequacy for pyridoxine and thiamine. differences were observed in the prevalence of inadequacy for men and women for the match (7% *versus* 16%) copper (12% *versus* 26%), selenium (6% *versus* 14%), folate (23% *versus* 38%) and pyridoxine (18% *versus* 32%) among adults in 19 to 50 years old. The proportion of subjects with sodium intake above the safe intake level was 89% in men and 70% among women in the age group from 19 to 59 years, and 80% and 62%, respectively, for men and women aged 60 or older.

The main differences between age groups were seen for magnesium, which prevalence of inadequacy was higher for women over the age of 14 years (around 85% compared with a prevalence of about 42% for girls aged 10 to 13 years); phosphorus, most inadequate adolescent girls between 10 and 18 years compared to adults and elderly (around 70% of inadequacy against values less than 20% of inadequacy) (Tables 2.7 and 2.8).

In individuals aged 10 to 13 years and from 14 to 18 years of age, inadequate prevalence in urban areas in both sexes, were inferior compared to those in rural areas, especially with respect to copper, zinc, thiamine, ribo fl avina , pyridoxine and cobalamin. Among the nutrients with higher inadequacies, the percentages were similar between urban and rural areas. However, the proportion of subjects with sodium intake above the safe intake level was higher in urban areas compared to rural areas. For example, 83% of boys between 10 and 13 years of age consume sodium urban areas above the tolerable level as compared to 76% of rural areas, as seen in Tables 2.9 and 2.10.

Tables 2.11 and 2.12, data concerning the age group from 19 to 59 reveal that the nutrients with higher inadequacy are the same both in urban areas and in rural areas (calcium, vitamins A, E, C, and D, phosphorus and magnesium). Most nutrients, however, has inadequate modestly lower in urban areas compared to rural areas, except only magnesium in both sexes. The proportion of subjects with sodium intake above the safe intake level remained high in both sexes (> 85% and> 70% in urban areas and> 85% and> 65% in rural areas among men and women, respectively).

Among individuals aged over 60 years, the nutrient with the highest percentage of inadequacy were vitamins E, D and calcium, both for men and women in urban and rural areas. The proportion of subjects with sodium intake above the safe level was also very high, being higher in men than in women and in urban areas (Tables 2.11 and 2.12).

inadequacy of the results for adolescents of both sexes by Major Regions are presented in Table 2:13 to 2:17. In all regions analyzed, vitamins A, E, C and D; and the minerals calcium, phosphorus and magnesium were the nutrients highest percentage of inadequacy. In general, the inadequacies for these nutrients are similar among the Major Regions and similar to the observed data for the country in these age groups studied. The inadequacy of folate intake was that more distanced from the regions, reaching the North and Southeast regions, respectively, 32% and 8% for males 10-13 years of age, and 29% and 10% for females in the same age group.

Pro fi l is similarly shown in Tables 2:18 to 2:22 for those aged 19-59 years and 60 years or older. In the five major regions studied, the highest prevalences were inadequate for calcium, vitamins A, E, C, and D and magnesium, whose percentages varied little between them. Exceptions were observed for magnesium, 60% mismatch in the North between men 19 to 30 years of age compared to mismatch of 70% or more in all other regions; and pyridoxine, whose inadequacy in the South and Southeast was approximately 30% lower than in the Northeast and Midwest, all referring to the age group 19-59 years.

Even in this age group, the analyzes stratified fi ed pointed to some nutrients that appear important prevalence of inadequacy. For example, to iron intake it was observed that 32% of women in the Northern Region had inadequate consumption. For thiamine, there was prevalence of inadequacy over 40% in the Central West Region and 45% in the Northeast among women. In folate analysis, the prevalence of inadequacy was 54% and 43% for the North and Northeast regions, respectively, in females. Also, the analysis revealed differences between the proportion of individuals with excessive sodium intake: 64% among women in the South and 89% among men of the Northeast, South, Southeast and Midwest.

As for individuals aged 60 years or older, it was observed in the analysis for the folate intake, the inadequacy percentage was higher than 40% in the North, Northeast and Midwest. Another nutrient that appears inappropriate in this analysis is copper for older women with inadequate 41% and 52% in the Northeast and North, respectively.

The results for the prevalence of inadequate nutrient intake are similar to those observed in the Health Survey of São Paulo (VERLY JUNIOR et al., 2011 and Pinheiro et al., 2011).

A positive marker diet is the amount of protein consumed, which averages by gender and age are the nutrients section. The average consumption are all greater than 15% from protein and energy lower limit of 10% of energy from protein occurred in only 7.6% of the population.

The saturated fat, added sugar, sodium and fi bras are often used as markers quality of the diet. For saturated fat, added sugar and fi arms, the adequacy level is fi ned using breakpoints for consumption in relation to total caloric intake, which has the advantage of being quality indicators which are independent of the total power consumption. The cutoff points for saturated fat, added sugar and sodium are speci fi ed in the data analysis section.

The overall prevalence of free sugar intake (adding sugar added to sugar from the juice) above the limit recommended by the Ministry of Health of 10% of total energy intake was 61%.

The prevalence of saturated fat intake above the recommended limit of 7% (Sposito et al.) The total energy consumption was 82% in the population and the percentage of the population ingesting lower arms fi or equal to 12.5 g per 1 000 kcal was 68%. The prevalence values by age group are shown in Table 2.23. It is observed that for teens these prevalence is even higher, especially among girls. However, among the elderly, the prevalence of saturated fat intake was above the recommended greater than 80%.

Table 2:23 - Prevalence of inadequate consumption of sugar-free, saturated fat and fiber, by age group and sex - Brazil - 2008-2009 period

nutrients	sugar-free consumption of inadequate Prevalence, saturated fat and fiber (1), by age group and sex			
	10 to 13 years	14 to 18	19 to 59	60 and over
sugar free	80.0	74.0	67.0	50.0
Saturated fat	83.0	80.0	82.0	80.0
fibers	78.0	77.0	71.0	60.0
	Female, male			
sugar free	82.0	83.0	67.0	53.0
Saturated fat	89.0	90.0	87.0	84.0
fibers	82.0	86.0	75.0	61.0

Source: IBGE, Research Board, Work Coordination and Income, Expenditure Survey 2008-2009.

(1) Over 10% of the total energy for free sugar, up to 7% saturated fat and less than or equal to 12.5 g per 1 000 kcal for fibers.

3 consumption of food and nutrients

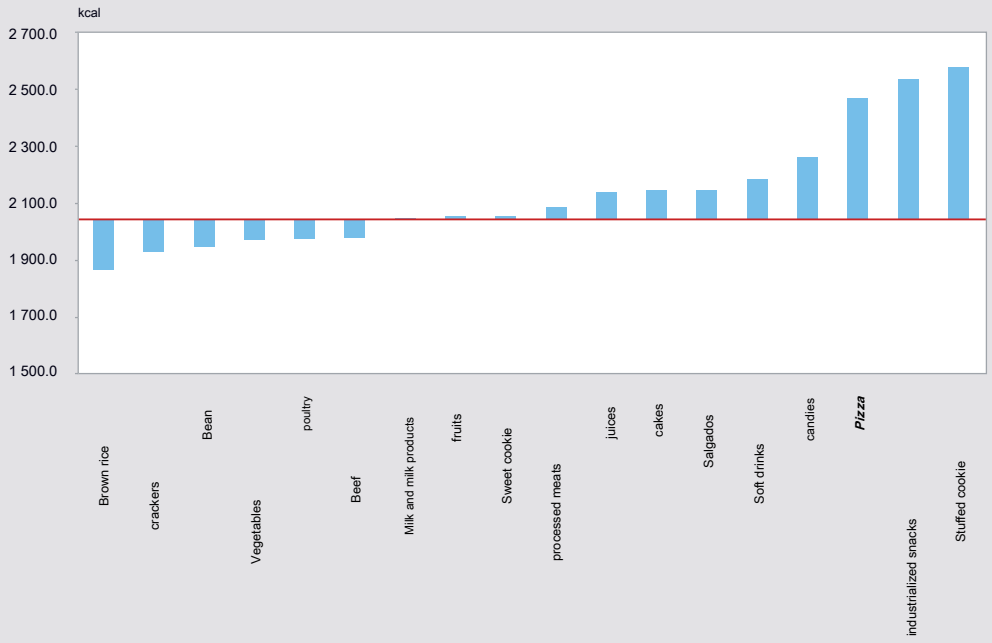
This section has combined the analysis of food consumption with markers nutrient intake of diet quality and importance of micronutrients for public health activities, such as iron, folic acid, vitamin A and vitamin C.

In order to assess which food groups would be better adequacy markers or inadequate diet we used the population means and mean values above and below the population mean calculated for various nutrients, within each group of individuals who reported consuming each of the selected food. The groups formed from each selected feed are not exclusive, and may be the same individuals present in several groups, depending on the food they consume reported.

With regard to energy consumption, the groups of individuals who reported consuming Oreo, industrialized snacks, ***Pizza,*** sweets and soft drinks had the highest average power consumption when compared to the population mean. On the other hand, the average energy intake of individuals who reported consumption of brown rice, crackers and beans was associated to lower average power consumption. (Chart 3.1). Therefore, the food markers of an unhealthy diet, high in sugars and fats as ***fast-food,*** sweets and soft drinks were the most associated to higher energy consumption values of the population.

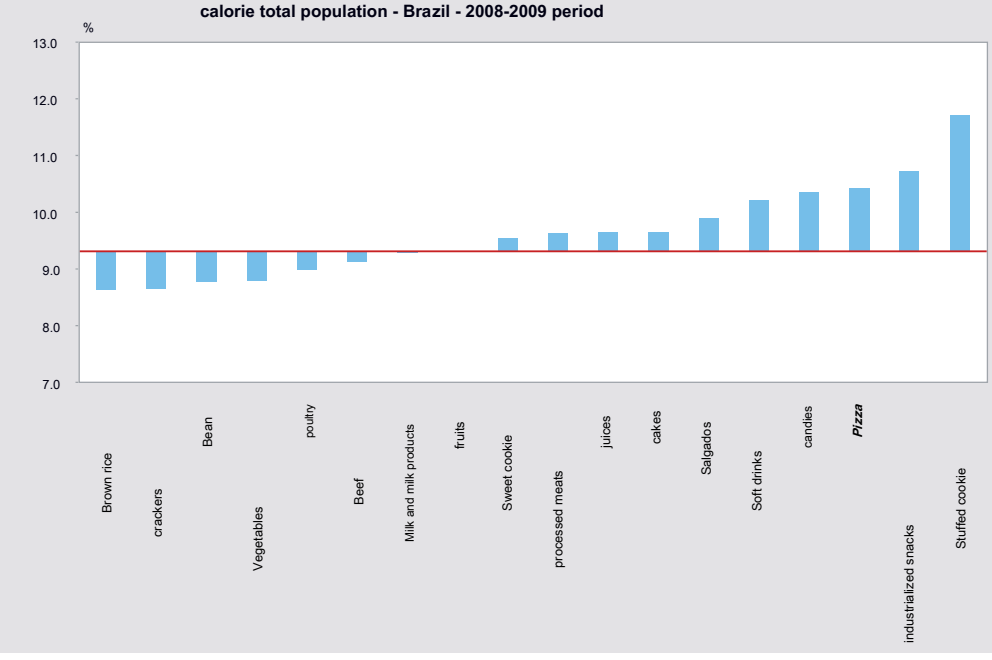
The saturated fat percentage is another diet quality marker and the maximum recommended is 7% of energy consumption (Sposito et al., 2007). The average percentage of saturated fat consumption relative to power consumption in the total population was approximately 9%, and the consumption of filled biscuit, snack foods processed, ***Pizza,*** candy, and soda was associated with higher average percentage contribution of saturated fat to total energy consumption, compared to the general population average. In contrast, the consumption of rice, crackers, beans and vegetables associouse to lower average values of percentage contribution of saturated fat to total energy consumption (Chart 3.2).

Graph 3.1 - Average total energy intake in the groups of people who consume foods selected, compared to the average total energy intake of the population - Brazil - 2008-2009 period



Source: IBGE, Research Board, Work Coordination and Income, Expenditure Survey 2008-2009.

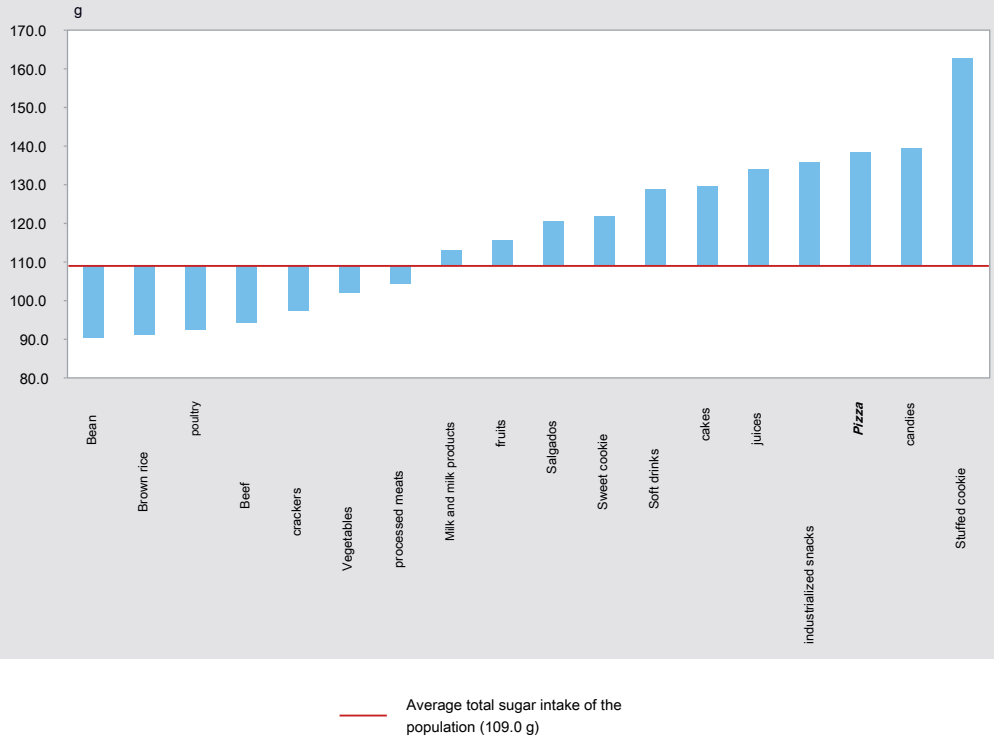
Chart 3.2 - saturated fat contribution to Average caloric intake Overall, the groups of people who consume foods selected, compared with saturated fat contribution of average consumption calorie total population - Brazil - 2008-2009 period



Source: IBGE, Research Board, Work Coordination and Income, Expenditure Survey 2008-2009.

The high consumption of foods with added sugars can replace and / or reduce the consumption of foods important to a healthy diet. Considering the population average consumption of stuffed cookie, candy, ***Pizza,*** industrialized snacks, juice, cake, soda, sweet biscuit and salty were related to the high average sugar consumption (in grams), while the consumption of beans, brown rice, poultry, beef, salt and vegetable biscuit and vegetables were food consumption which were related to the lowest average consumption of sugar (grams) (Chart 3.3).

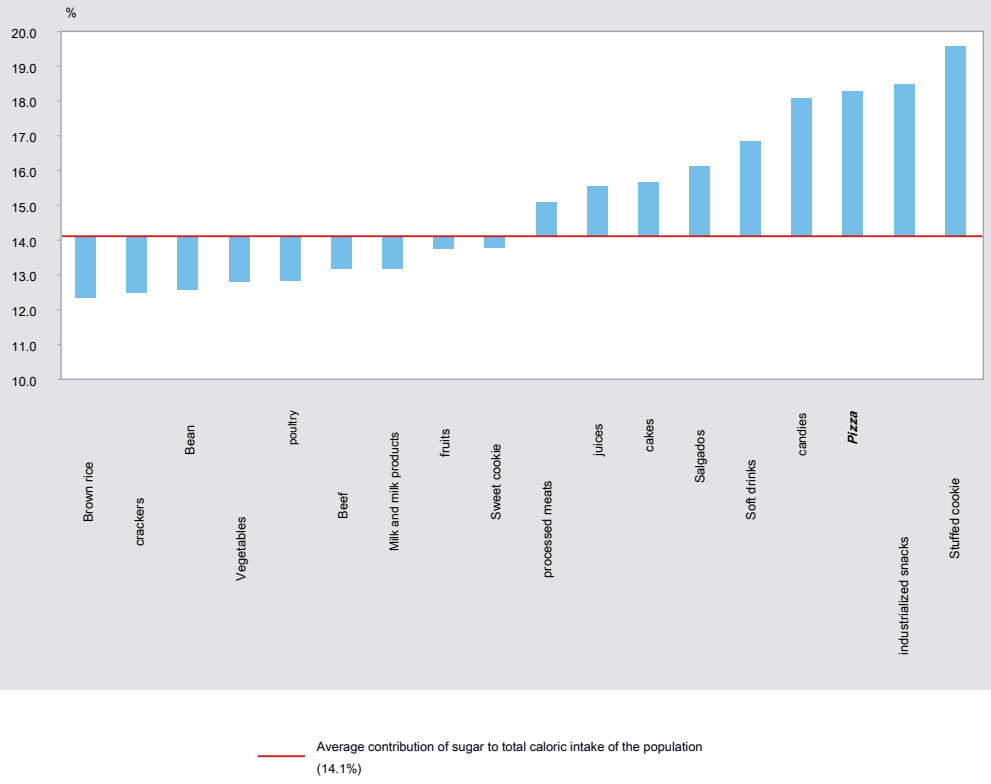
Figure 3.3 - Average sugar intake, in groups of people consuming the selected foods, compared with the average intake sugar population - Brazil - 2008-2009 period



Source: IBGE, Research Board, Work Coordination and Income, Expenditure Survey 2008-2009.

Sugar intake should not exceed 10% of total energy consumption (WHO, 2003). When considering the sugar contribution to the total energy consumption, whose average population was 14%, it is observed that the consumption of Oreo, industrialized snacks, ***Pizza,*** sweets, soft drinks, snacks, cake and juice related to the higher average sugar contribution to total energy consumption. Among those who reported consumption of Oreo, the sugar contribution to energy consumption was almost 20%. The consumption of brown rice, crackers, beans, vegetables and poultry was related to lower average percentage of sugar contribution to the total energy intake (Figure 3.4).

Figure 3.4 - Average sugar contribution to the total calorie intake, in groups of people who consume foods selected, compared with the average contribution of sugar for consumption calorie total population - Brazil - 2008-2009 period

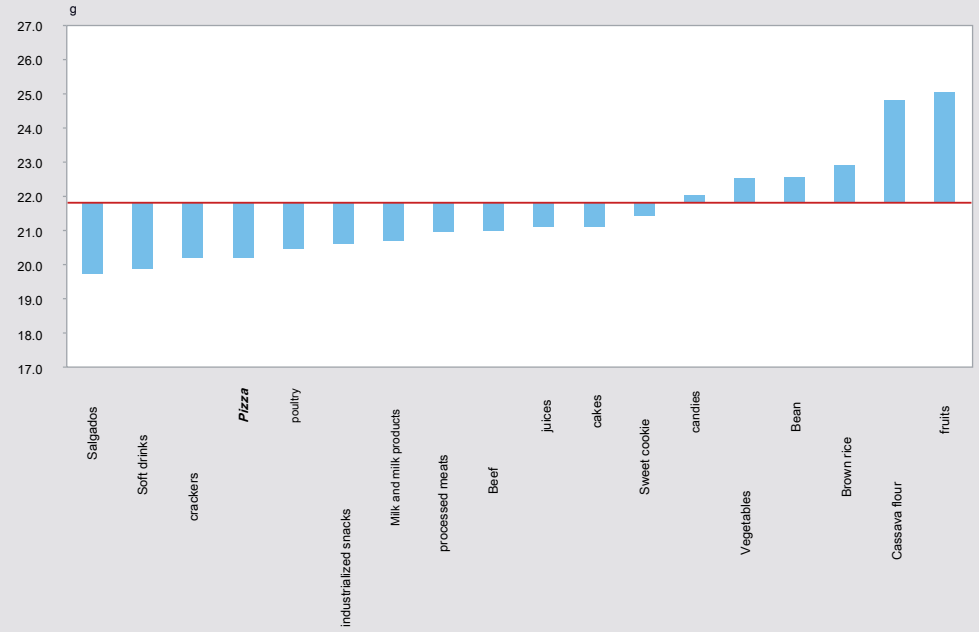


Source: IBGE, Research Board, Work Coordination and Income, Expenditure Survey 2008-2009.

The Ministry of Health's recommendation for bras fi intake is 12.5g per 1000 kcal. The reduced intake fi arms reflects feed based on cereals re fi births and decreased amounts of fruits, vegetables and whole grains. The average consumption of fi bras of the population was 22 grams, and the consumption of fruits, cassava flour, rice, beans and vegetables was associated with high consumption of fi bras. On the other hand, those who reported consumption of salty, soft drinks, crackers and ***Pizza*** They were those with the lowest average consumption of arms fi (Chart 3.5).

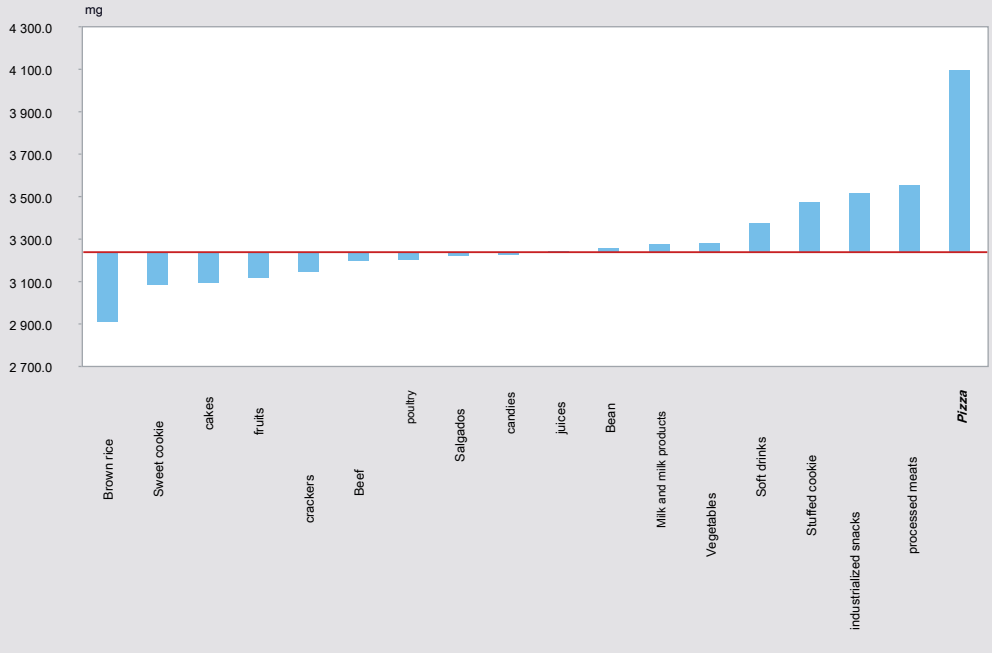
Sodium is considered an important marker of food quality. The Ministry of Health recommends that the content of this nutrient in the diet does not exceed 2300 mg for adults. However, the population average sodium intake in Brazil exceeds 3 200 mg. consumption ***Pizza,*** processed meats, processed chips, sandwich cookies and soda was related to the high sodium intake. On the other hand, referring to the consumption of rice was associated with an average sodium intake of 900 mg of 2 order (graph 3.6).

Figure 3.5 - Average total fiber intake, in groups of people who consume foods selected, compared to the average Total fiber intake of the population - Brazil - 2008-2009 period



Source: IBGE, Research Board, Work Coordination and Income, Expenditure Survey 2008-2009.

Figure 3.6 - average sodium intake in groups of people who consume foods selected, compared to the average sodium intake of the population - Brazil - 2008-2009 period



Source: IBGE, Research Board, Work Coordination and Income, Expenditure Survey 2008-2009.

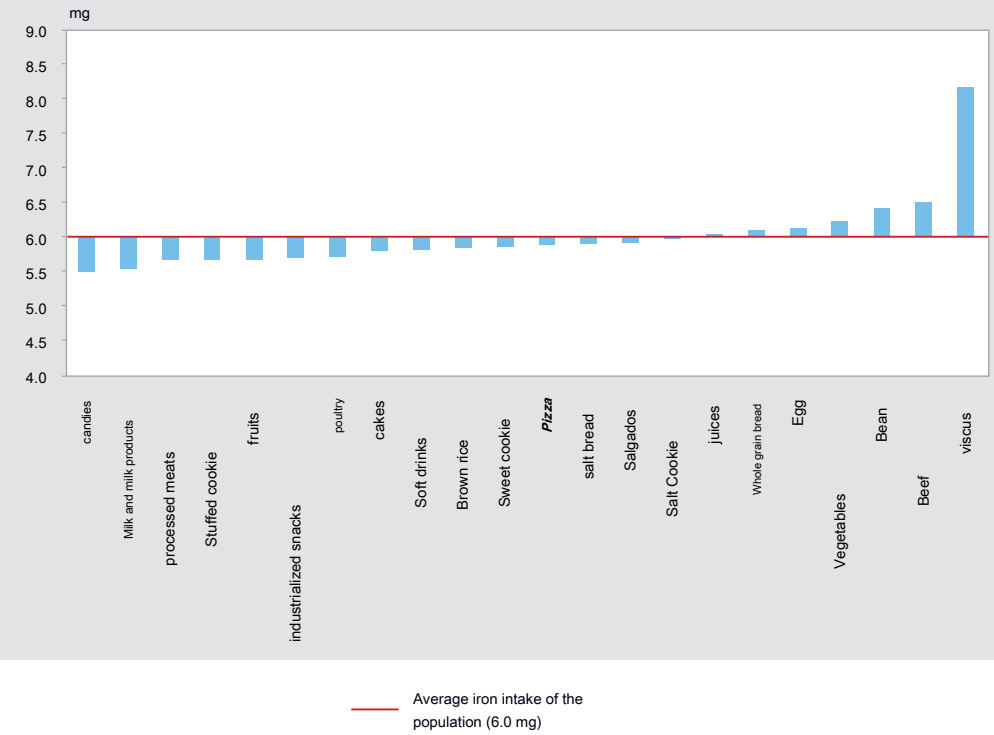
For micronutrients, it was observed that the consumption of viscera was associated with higher intake of iron (Chart 3.7), vitamin A (Chart 3.8) and folate (Chart 3.9) as was to be expected given the large amount these nutrients in its composition. However, the prevalence in the population viscera consumption is very low, less than 3%. The association between the consumption of ***Pizza*** salt and bread associated with folate intake is related probably to the forti fi cation of flour this nutrient (Chart

3.9). The filled biscuit consumption was associated with reduced consumption of Vitamin A (Chart 3.8) and consumption of soda, ***Pizza,*** sandwich cookies and processed meats associated with a low average intake of vitamin C (Chart 3.10).

The high consumption of sugars and fats present in food characterized as ***fast food*** and sweets and soft drinks were the most associated with high intake of energy. Among the groups studied food, Oreo stood out as one of the most important unhealthy consumption markers, associating the reduced intake of micronutrients (Chart 3.7 to cos

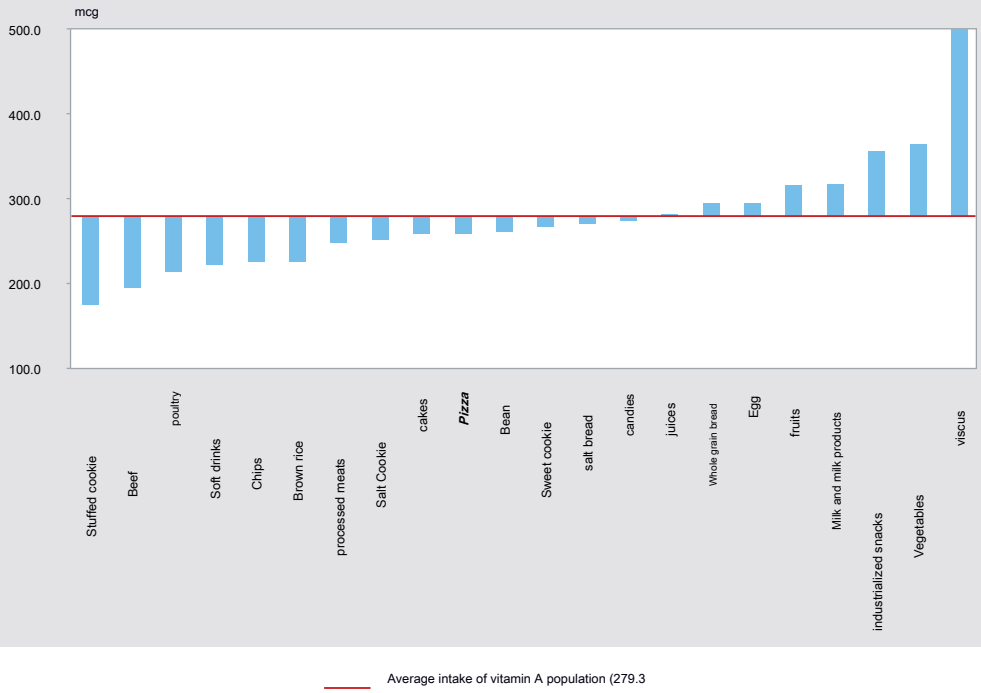
3.10), and the high total energy consumption (Chart 3.1) energy from saturated fat (Chart cos 3.2) and sugar (Chart cos 3.3). The consumption of soft drinks, candy, ***Pizza*** industrialized snacks and also excelled as unhealthy diet marker, particularly related to reduced intake fi arms (Chart 3.5) and high sodium intake (Chart 3.6). On the other hand, the consumption of rice and beans was associated with positive aspects of healthy food consumption for all analyzed items.

Figure 3.7 - Average iron intakes in groups of people who consume foods selected, compared to the average
Iron intake of the population - Brazil - 2008-2009 period



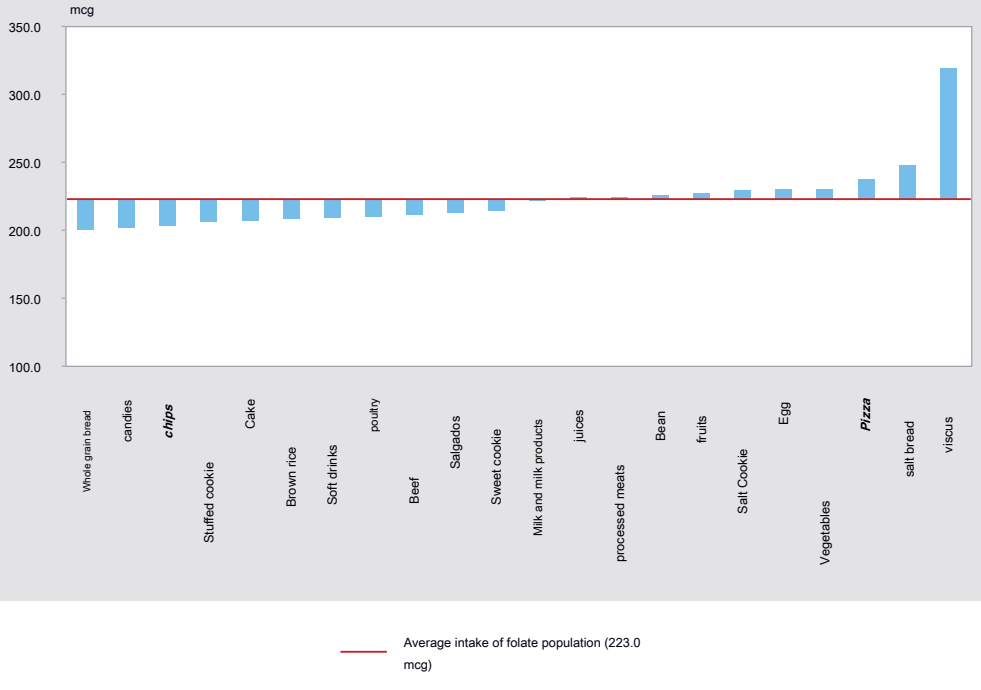
Source: IBGE, Research Board, Work Coordination and Income, Expenditure Survey 2008-2009.

Chart 3.8 - Average intake of vitamin A, in groups of people who consume foods selected, compared to the average
Vitamin A intake of the population - Brazil - 2008-2009 period



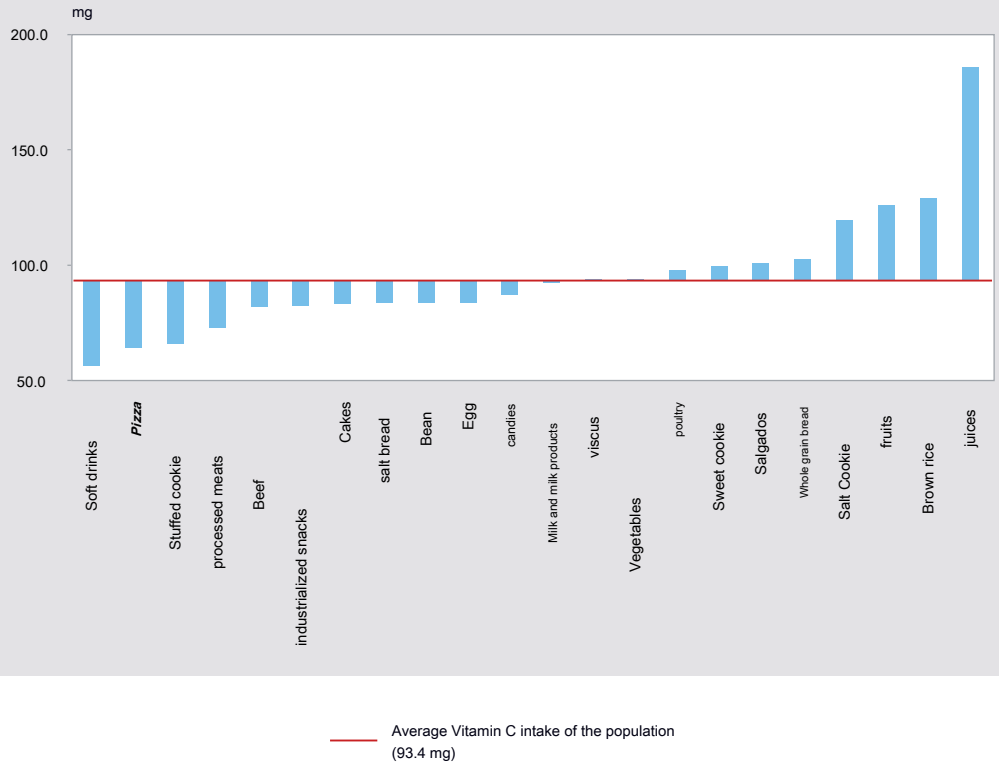
Source: IBGE, Research Board, Work Coordination and Income, Expenditure Survey 2008-2009.

Graph 3.9 - Average folate intake in groups of people who consume foods selected, compared to the average
folate intake of the population - Brazil - 2008-2009 period



Source: IBGE, Research Board, Work Coordination and Income, Expenditure Survey 2008-2009.

Figure 3.10 - Average intake of vitamin C, in groups of people who consume foods selected, compared to the average
Vitamin C intake of the population - Brazil - 2008-2009 period



Source: IBGE, Research Board, Work Coordination and Income, Expenditure Survey 2008-2009.

fi nal considerations

This publication presents estimates of usual consumption of food, energy and 32 nutrients and inadequate prevalence of consumption of selected nutrients, estimated based on the recommendations proposed in the dietary guidelines of the Ministry of Health and the recommendations of the Institute of Medicine of the United States.

The food consumption data were obtained by recording food, beverages and preparations consumed inside and outside of homes in two non-consecutive days, on a random sample of Brazilian with 10 or more years of age. Data are presented for the Major Regions, the situation of the household (urban and rural), and stratified by sex and fi ed for teens, adults and seniors.

The results show that food consumption combines traditional Brazilian diet of rice and beans - more such items in research and combination of good nutrition - with reduced content of food nutrients and high in calories. For example, there is far short of consumption recommended for fruits and vegetables and high intake of drinks with added sugar, such as juices, soft drinks and soft drinks, which are particularly referred to by

adolescents. The median consumption of juices and soft drinks is 122 ml per day, with an average consumption of alcoholic beverages among adolescents more than twice the average for adults and the elderly.

Less than 10% of the population reaches the recommendations of consumption of fruits and vegetables; milk consumption is also far below the recommended, which translates into a high prevalence of inadequate consumption of vitamins and calcium.

Excessive consumption of sugar was reported by 61% of the population, the prevalence of excessive consumption of saturated fat (greater than 7% of energy consumption) was 82% of the population, the percentage of the population with consumption below the recommended fi arms it was 68% and more than 70% of the population consumes quantities exceeding the maximum tolerable intake for sodium, con fi rming the large percentage of inadequate nutrition of the population.

A positive score is the amount of diet consumed proteins. The average consumption of all age groups were greater than 15% of total caloric consumption.

Food items considered healthy such as beans, bean based meals, corn and corn-based preparations are best eaten in the lower income ranges. The average consumption of sweet potatoes ***per capita*** It is also more than double in the smaller income compared to higher income, while chips are most commonly used in most income class. On the other hand, some negative markers of diet quality, as consumption of sweets, soft drinks, ***pizzas*** and fried and baked snacks, are reduced to the lowest income category. In rural areas, the average consumption ***per capita*** daily were much higher for rice, beans, sweet potato, cassava, cassava flour, mango, tangerine, and fish. In contrast, in urban areas, the highlights were processed and ready-to-eat products such as bread, sandwich cookies, sandwiches, snacks, ***pizzas,*** and soft drinks, juices and beer, featuring a diet with high energy content.

Among adolescents there is the high frequency of consumption of biscuits, sausage, sausage, bologna, sandwiches and savory and values ***per capita*** indicate a lower consumption of beans, salads and vegetables compared to adults and the elderly.

The average power consumption outside the home accounted for approximately 16% of total caloric intake and was higher in urban areas in the Southeast Region, male and individuals in the family income range ***per capita*** higher. The food away from home is characterized by significant share of soft drinks, beer, sandwiches, snacks and processed snacks.

Food groups associated with the highest average power consumption items are also associated with higher consumption of saturated fat, sugar, salt and minor amounts of fi arms. On the other hand, those who reported consumption of rice and beans had an average calorie intake below the average population.

Among the groups studied food, Oreo stood out as one of the most important markers unhealthy diet, followed by soft drinks, sweets, ***Pizza*** and industrialized snacks.

The prevalence of inadequate micronutrient intake were higher in all major regions of the country and re fl ect the low quality of Brazilian diet. Corrections in the diet would achieve the recommendations for most micronutrients. These modi fi cations include swapping high calorie foods and low in nutrients fruits, vegetables, legumes, milk, whole grains, oilseeds, offal, fish, all produced in the country. In short, the food consumption in Brazil is mainly made up of foods high energy content and features low nutrient content, con fi gurando a risk for diet dé fi cits in important nutrients, obesity and many chronic diseases.