

1       **PREVALENCE AND FACTORS ASSOCIATED WITH FOOD INSECURITY IN**  
2       **THE CONTEXT OF THE ECONOMIC CRISIS IN BRAZIL**

3  
4                   **Narithania S. Costa<sup>a</sup>**

5                   Master in Nutrition

6                   [narithaniacosta@gmail.com](mailto:narithaniacosta@gmail.com)

7                   Author name for PubMed indexing: **Costa, N. S.**

8  
9                   **Mayara O. Santos<sup>a</sup>**

10                  Graduate student in Nutrition

11                  [may-oas@hotmail.com](mailto:may-oas@hotmail.com)

12                  Author name for PubMed indexing: **Santos, M. O.**

13  
14                  **Cícero Pérciles O. Carvalho<sup>b</sup>**

15                  Associate Professor

16                  [cicerocarvalho@uol.com.br](mailto:cicerocarvalho@uol.com.br)

17                  Author name for PubMed indexing: **Carvalho, C. P.**

18  
19                  **Monica L. Assunção<sup>a</sup>**

20                  Assistant Professor

21                  [monica.lopesassuncao@gmail.com](mailto:monica.lopesassuncao@gmail.com)

22                  Author name for PubMed indexing: **Assunção, M. L.**

23  
24                  **Haroldo S. Ferreira<sup>a\*</sup>**

25                  Full Professor

26                  [haroldo.ufal@gmail.com](mailto:haroldo.ufal@gmail.com)

27                  Author name for PubMed indexing: **Ferreira, H. S.**

28  
29       <sup>a</sup>       Faculty of Nutrition  
30       Federal University of Alagoas  
31       Campus A. C. Simões, Avenida Lourival Melo Mota, s/n, Cidade Universitária,  
32       CEP 57072-900, Maceió, AL, Brazil.

33  
34       <sup>b</sup>       Faculty of Economics, Business and Accounting  
35       Federal University of Alagoas  
36       Campus A. C. Simões, Avenida Lourival Melo Mota, s/n, Cidade Universitária,  
37       CEP 57072-900, Maceió, AL, Brazil

38  
39       \*corresponding author: Haroldo S. Ferreira  
40       Av. Pilar, 550, Cruz das Almas, Maceió – AL, Brazil  
41       Email address: [haroldo.ufal@gmail.com](mailto:haroldo.ufal@gmail.com)  
42       Telephone: 55-82-98853-8243  
43       Fax numbers: 55-82-3214-4460

44  
45       **Word count** (introduction through discussion): 4,497

46       **Number of figures:** 1

47       **Number of tables:** 3

48       **OSM submitted:** 0

49       **Running title:** Food Insecurity in Alagoas

51 **List of abbreviations and their definitions:**

<b>Abbreviation</b>	<b>Definition</b>
ABEP	Brazilian Association of Research Companies (Associação Brasileira de Empresas de Pesquisa)
BMI	Body Mass Index
BRL	Brazilian Real
CAGED	General Cadastre for Employed and Unemployed (Cadastro Geral de Empregados e desempregados)
CPI	National Consumer Price Index
EBIA	Brazilian Food Insecurity Measurement Scale (Escala Brasileira de Insegurança Alimentar)
IBGE	Brazilian Institute of Geography and Statistics (Instituto Brasileiro de Geografia e Estatística)
FI	Food Insecurity
PNAD	National Household Sample Survey
PR	Prevalence ratio

52

53 **Financial support:** National Council for Scientific and Technological Development – CNPq  
54 (process number 474381/2011-0) and Research Support Foundation of the State of Alagoas -  
55 FAPEAL (process number 60030 000716/2013).

56

57 **Conflict of Interest and Funding:** The authors declare that there are no conflict of interest.

58

59 **Collaborators**

60 N. S. Costa worked on the outlining and design of the research, collection, tabulation, analysis  
61 and interpretation of the data, as well as on the elaboration of the preliminary version and  
62 final revision of the article. M. O. A. Santos contributed in the data collection and tabulation,  
63 as well as in the critical review of the preliminary version of the article. C. P. O. Carvalho and  
64 M. L. Assunção contributed in the project design and in the critical revision of the final  
65 version of the article. H. S. Ferreira participated in the research design, sample outlining and  
66 final review of the article. All authors have approved the final version of the article.

67

68 Article based on the Master's Dissertation submitted by Narithania de Souza Costa.

69

70  
71  
72

## ABSTRACT

73 **Objective:** To identify the prevalence of and factors associated with food insecurity (FI) in  
74 Alagoas, one of the poorest states in Brazil, and to discuss the results in the context of the  
75 national economic crisis.

76 **Methods:** Cross-sectional study with a probabilistic sample of 3,366 families. The FI was  
77 identified based on the Brazilian Food Insecurity Measurement. The associations with  
78 independent variables that achieved  $p < 0.2$  (chi-square) in the crude analysis were submitted  
79 to multivariable analysis.

80 **Results:** The observed prevalence of FI was 58.3% (33.1%, 17.9% and 7.3% for the mild,  
81 moderate and severe forms, respectively), a number considerably higher than the 34.6% found  
82 in 2013 by the Brazilian Institute of Geography and Statistics before the worsening of the  
83 economic crisis. The factors independently associated with FI in this study included the  
84 following: the head of the family was female, the head of the family had no income, the  
85 housewife was overweight, the number of family members was  $\geq 4$ , the household income was  
86  $\leq 1$  minimum wage, the family belonged to the lower economic classes (D or E), the family  
87 was a *Bolsa Família* Program user, the family resided in a non-masonry house, the family did  
88 not reside in their own house and the number of rooms of the house was  $\leq 4$ .

89 **Conclusion:** The prevalence of FI in Alagoas is very high, and considering previous studies,  
90 there was a marked increase in FI during the Brazilian economic crisis. All associated factors  
91 are related to the greater social vulnerability of the family. The present data point to the need  
92 to strengthen public policies for health promotion, education, employment, and income and to  
93 ensure the human right to adequate food, with the aim of reducing social vulnerability within  
94 the family in a sustainable way. Additionally, this study contributes to understanding how  
95 national conditions can influence household-level food insecurity.

96

97 **Keywords:** Risk Factors; Socioeconomic Factors; Nutritional Status; Public Policies; Health  
98 Surveys; Cross-Sectional Studies

99

100 **Introduction**

101           Access to adequate food and nutrition is one of the fundamental human rights <sup>1</sup>, and  
102 according to the Brazilian Federal Constitution <sup>2</sup>, it is the duty of the government to guarantee  
103 this right to all citizens by adequately assisting the most vulnerable individuals and by  
104 ensuring that in the long-term, everyone can have access to adequate food by their own means  
105 <sup>3</sup>, which is a condition that largely depends on the government economic stability. In this  
106 respect, the Brazilian political and economic crisis is considered a matter of great concern.  
107 The Brazilian economy has been officially in recession since the second quarter of 2014 <sup>4, 5</sup>.  
108 During this period, the National Congress approved the impeachment of the President of the  
109 Republic with the installation of a new government, which implemented profound changes in  
110 economic policy that were justified by the new managers as being necessary to resume  
111 economic growth. In this period, there was an increase in the unemployment rate and in the  
112 cost of food, as well as cuts in the budget of social programs. Under such circumstances,  
113 continuous monitoring of the FI situation is important at both the national and local level <sup>6, 7</sup>.

114           The difficulty of regular and permanent access to food by a large part of the  
115 population can be considered a food insecurity (FI) situation, a complex and multidimensional  
116 phenomenon that develops as a continuous and differentiated step-by-step process, which  
117 ranges from the concern about the lack of food to qualitative changes in feeding and, finally,  
118 in hunger itself <sup>8, 9</sup>.

119           Families subjected to FI are more likely to be exposed to inadequate food consumption,  
120 not only from a quantitative point of view but also in terms of food variety and quality <sup>10</sup>. This  
121 situation is associated with various forms of nutritional disorders (specific micronutrient  
122 deficiencies, undernutrition and obesity), which are common conditions in regions undergoing  
123 nutritional transition <sup>11, 12</sup>. Nutritional deficiencies may reduce the immunological competence

124 of individuals and favor the development of infectious diseases or, in the case of obesity,  
125 increase the susceptibility to chronic non-transmissible diseases<sup>13-15</sup>.

126 The FI condition is a problem that afflicts families throughout Brazil. However, the  
127 problem is more acute for people in higher social vulnerability<sup>1, 16</sup>. In this aspect, the State of  
128 Alagoas is one of the poorest Brazilian states and is characterized by presenting the worst  
129 social indicators in relation to other states, such as the illiteracy rate, precarious infrastructure  
130 of basic sanitation services and high income disparity<sup>17</sup>. Since 2000, Alagoas has been ranked  
131 as the leading state with the worst Human Development Index<sup>18</sup>.

132 Given this, it is plausible to assume that the presence of historically unfavorable  
133 socioeconomic factors may contribute to a greater exposure of the population to FI. However,  
134 according to data from the National Household Sample Survey (PNAD – Pesquisa Nacional  
135 de Amostra de Domicílios) in 2013, Alagoas was in an intermediate position in this regard.  
136 While states such as Maranhão and Piauí had a prevalence of 60.9% and 55.6%, respectively,  
137 the FI prevalence in Alagoas was 34.6%. In contrast, substantially lower values were  
138 observed in more economically developed states, such as Espírito Santo (10.4%), Santa  
139 Catarina (11.1%) and São Paulo (11.6%)<sup>16</sup>. Thus, there is a high level of heterogeneity and  
140 wide inequalities between the Brazilian regions and states<sup>6</sup>.

141 It is possible that the public investments in assistance programs have contributed to the  
142 promotion of food security in Alagoas, since due to the greater social vulnerability of its  
143 population, it received priority attention from the federal government<sup>19</sup>. This was part of the  
144 implementation of public policies for guaranteeing constitutional rights, particularly those  
145 related to poverty eradication, such as the *Bolsa Família* Program, which is the largest  
146 conditional cash transfer program in the world<sup>6</sup>. According to IBGE (Brazilian Institute of  
147 Geography and Statistics), there were 841,117 families in Alagoas<sup>20</sup>, of which 439,655 were  
148 beneficiaries of the *Bolsa Família* in 2014<sup>19</sup>, that is, approximately 52.3% of the population

149 had this support for family subsistence. However, due to the economic crisis established in  
150 recent years, the budget of this program has been reduced <sup>19</sup>, which increased the number of  
151 families subjected to food insecurity.

152 This study aimed to identify the prevalence and factors associated with food insecurity  
153 in the State of Alagoas and discuss the results in the context of the recent economic crisis that  
154 has been established in the country in the last years.

155

## 156 **Methods**

### 157 Type of study and sample planning

158 This was a cross-sectional study with a representative probabilistic sample of the  
159 population from the state of Alagoas (in the Northeast Region of Brazil), one of the 27  
160 Brazilian states (including the Federal District). Brazil is a country of continental dimensions  
161 with approximately 200 million inhabitants, over 80% of whom live in urban areas. The 27  
162 states of Brazil are grouped into five regions: North, Northeast, Midwest, Southeast and  
163 South. The last two regions are the richest and most developed, while the North and Northeast  
164 regions are considerably poorer. The smallest administrative divisions in the country are  
165 municipalities, encompassing both urban and rural areas <sup>21</sup>. Alagoas has 102 municipalities  
166 and an estimated population of 3,358,963 inhabitants <sup>22</sup>.

167 The variable of interest used to calculate the sample size was FI, for which the study  
168 considered the prevalence of 34.7% (all levels of FI) that was found for Alagoas in the last  
169 survey conducted by the Brazilian Institute of Geography and Statistics (IBGE) <sup>16</sup>. The study  
170 population was estimated to be 841,117 families <sup>20</sup>. The margin of error assumed was 2.0%.  
171 The study also considered a sample formed from 120 conglomerates (census tracts, a  
172 geographic region defined by IBGE for census purposes consisting of approximately 300  
173 families) and the value of 1.5 to correct the effect of the complex design. For a 95%

174 confidence interval (CI95%), it would be necessary to have 3,360 families in the study. To  
175 this amount, a total of 10% was added to cover possible sample losses (closed or empty  
176 houses and refusals), totaling a sample number of 3,696 families. Therefore, in the case of  
177 sample losses there was no need for replacement (provided that the losses were less than  
178 10%). The calculations were performed using the StatCalc tool from Epi-info, version 7.1.4.

179 To attain the required number of families, a multiple stage process was adopted in four  
180 steps. In the first stage, 30 out of the 102 municipalities of Alagoas were selected by using a  
181 random sampling method with proportional probability to the number of inhabitants. This was  
182 conducted as follows: All municipalities, listed in a worksheet by geographic region, were  
183 arranged in alphabetical order. In a second column, their respective populations were indicated,  
184 allowing the accumulated population to be calculated, which was annotated in a third column  
185 following the same sequence of municipalities. Then, the sampling jump was calculated (total  
186 population/number of municipalities to be selected ( $3,120,494/30=104.016$ )). To select the first  
187 municipality, a random number between 1 and 104.016 was defined. This was achieved using  
188 the Excel™ software with the following command: =RANDBETWEEN (1;104016). Then, we  
189 evaluated the column referring to the accumulated population, which municipality covered the  
190 number drawn. This was the first municipality selected. From this value, the sampling jump  
191 (104.016) was systematically added, and in each step, a new municipality was selected. Due to  
192 its larger population, Arapiraca was selected twice, and Maceió, the state capital, which consists  
193 of a third of the population of Alagoas, was drawn ten times.

194 In the second step, four census tracts by municipality were chosen by a simple drawing,  
195 respecting the proportion between urban and rural sectors. For the cities of Maceió and  
196 Arapiraca, the census sectors were organized in a list and the drawing was by systematic  
197 sampling.

198 In a third step, one block in each census tracts was randomly selected; finally (step 4),  
199 in each block a starting point (a corner) was randomly chosen, from which, moving in a  
200 counterclockwise direction, 31 consecutive households were visited.

201 In urban areas, the blocks were identified in the maps of the respective census tracts.  
202 In rural areas, due to the geographical peculiarities, there was no draw of a block/corner, but  
203 instead, the first 31 families that were randomly located by the interviewer team were eligible  
204 for the study.

205 This sampling scheme gave every individual in the Alagoas population the same  
206 chance of being selected.

207

#### 208 Data collection

209 The data collection, preceded by training, a pilot study (conducted at the end of 2013,  
210 in a municipality not drawn to compose the study) and a test of the forms prepared for the  
211 research, was conducted through household visits from April 2014 to March 2015. The  
212 interviews were carried out with the woman identified as the housewife or, in her absence,  
213 with someone who knew the usual family eating habits. The field team was composed of a  
214 general coordinator, a supervisor, two anthropometrists and twelve interviewers. The  
215 coordinator was responsible for logistical and administrative matters, while the supervisor  
216 systematically ensured the quality of the data obtained. Following the sequence of questions  
217 contained in structured forms, socioeconomic, demographic, environmental and  
218 anthropometric variables were obtained.

219 The dependent variable was food insecurity, which was defined according to the  
220 Brazilian Food Insecurity Measurement Scale (Escala Brasileira de Insegurança Alimentar -  
221 EBIA); this form consisted of 15 closed questions about the family experience on food in the  
222 last three months, and allowed the possibility, according to the number of positive answers, of



223 categorizing families into strata according to food insecurity situation. Each positive answer  
224 represented a point, and the sum of the scores was used to rank the household with children  
225 (WC) and without children (NC) into four categories: food security (0 points WC or NC),  
226 mild food insecurity (1-5 WC or 1-3 NC), moderate food insecurity (6-10 WC or 4-6 NC) and  
227 severe food insecurity (11-15 WC or 7-9 NC)<sup>23</sup>.

228 Three surveys on the prevalence of FI were conducted in Brazil at the time of the  
229 PNAD, which occurred in 2004, 2009 and 2013<sup>16, 24</sup>. PNAD data allowed disaggregation by  
230 Brazilian regions, states and urban and rural areas. Therefore, the specific data for the state of  
231 Alagoas were used in order to make comparisons with the results obtained in this  
232 investigation. As in this survey, the PNAD also used a four-stage complex probabilistic  
233 household sample, and both samples were representative of the universe of residential  
234 households in Alagoas.

235 The socioeconomic and demographic variables considered in the study were as  
236 follows: number of family members, sex, color/race, the education status of the head of the  
237 family, the work and income status of the head of the family, family income, economic class  
238 and family participation in the *Bolsa Família* Program.

239 The criterion proposed by the Brazilian Association of Research Companies (ABEP)  
240 was used to classify the families according to economic class. This method consisted of a points  
241 system based on the ownership of consumer goods, number of monthly employees, education  
242 status of the head of the family, and access to public services. The classification was performed  
243 through the sum of the scores obtained, with seven possible classes (A, B1, B2, C1, C2, D and  
244 E), of which class A was the highest level and class E was the lowest economic level<sup>25</sup>.

245 Among the environmental variables, the following were studied: the home situation  
246 (rural or urban), the type of house (masonry or non-masonry), the type of house occupation  
247 (own house or other means), the number of rooms and the destination of garbage.

248           The anthropometric evaluation was performed on the women (20 to 49 years) residing in  
249   the households. If there were two or more women, only one of them, chosen at random, was  
250   evaluated. The weight was verified in a digital scale (MS6121R, Charder®) that was equipped  
251   with a capacity of 250 kg and a precision of 100 g and was calibrated daily against a standard  
252   weight. To measure height, a portable stadiometer (213, Seca®) equipped with a measuring  
253   tape with a sensitivity of 0.1 cm was used. The nutritional status of the women was evaluated  
254   using the Body Mass Index (BMI), classifying them under the following conditions: low weight  
255   (BMI < 18.5 kg/m<sup>2</sup>), eutrophy (18.5 to 24.9 kg/m<sup>2</sup>) and overweight (BMI ≥ 25 kg/m<sup>2</sup>)<sup>26</sup>.

256  
257   Statistical analysis

258           The data were entered in a separate double-entry system, in a form generated by the  
259   Epi-Info software version 3.5.4 (CDC, Atlanta, USA), which allowed the comparison between  
260   the respective spreadsheets for identification and correction of possible typing errors.

261           In the descriptive analysis, absolute and relative frequency were used. The prevalence  
262   of food insecurity was compared according to the different categories of the independent  
263   variables, with the statistical significance of the differences investigated with chi-square test.

264           The prevalence ratio (PR) and its 95% confidence interval, calculated by Poisson  
265   regression with robust variance adjustment, were used as a measure of association. The  
266   associations that obtained  $P < 0.2$  in the crude analysis were subjected to multivariable  
267   analysis. In the final model, the only remaining variables were those significantly associated  
268   with FI ( $P < 0.05$ ). The exclusion of non-significant variables occurred through backward  
269   processing. The calculations were performed using Stata software, version 13.0.

270  
271   Ethical aspects

272           This study was part of the project "II Diagnosis of Health of the Maternal and Child  
273   Population of the State of Alagoas", approved by the Research Ethics Committee of the

274 Federal University of Alagoas. Data collection was only performed in households where the  
275 Free and Informed Consent Term was signed.

276

## 277 **Results**

278 As defined in the sampling plan, 3,720 households were selected for the study;  
279 however, 354 (9.5%) of the household were considered missing: 106 (2.8%) houses closed or  
280 empty and 248 (6.7%) refusals to participate in the survey. A total of 3,366 families were  
281 investigated, of which 58.3% had some degree of food insecurity, and among these, 33.1%  
282 had a mild, 17.9% had a moderate and 7.3% had a severe degree of FI.

283 The prevalence of FI was even higher among families who had residents under 18  
284 years of age (Table 1) than that of those families who did not have individuals in this age  
285 group (62.2% vs. 45.5%; PR: 1.37; 95% CI: 1.26 - 1.48).

286 As expressed in Table 1, slightly more than half of the families (52.2%) were members  
287 of the *Bolsa Família* Programme and were characterized by a higher prevalence of FI than  
288 were non-users (70.8% vs. 44.8%; RP: 1.58; 95% CI: 1.48 - 1.68).

289 The predominant sex of the head of the families was male (65.9%). It was also  
290 observed that, in the female-headed households, the occurrence of FI was more frequent  
291 (64.2% vs. 55.2%; RP: 1.16; 95% CI: 1.10 - 1.23).

292 The overweight prevalence among women was 62.4%, a condition that was more  
293 prevalent among those families in situations of FI (60.7% vs. 54.1%; PR: 1.12; 95% CI: 1.05 -  
294 1.19).

295 After the adjusted analysis (Table 2), the following variables were significantly  
296 associated with food insecurity: the head of the family was female and had no work or income,  
297 the women were overweight, the number of people in the family was  $\geq 4$ , the monthly family  
298 income was  $\leq 1$  minimum wage, the family belonged to the D/E economic classes, the family

299 was a *Bolsa Família* Programme user, the family resided in a non-masonry house, the families  
300 did not reside in a their own house, and the number of rooms in the house was  $\leq 4$ .

301 Comparing these results with those obtained in other surveys conducted in the state of  
302 Alagoas in 2004, 2009 and 2013<sup>24 16</sup> by the PNAD/IBGE (Figure 1), there was a pronounced  
303 upward trend in the prevalence of FI, particularly among mild cases.

304 Table 3 presents some economic indicators related to the state of Alagoas, where there  
305 was a decrease in the number of formal jobs, as well as in the number of *Bolsa Família* Program  
306 users, and an increase in the unemployment rate and in the cost of the basic food basket, with a  
307 concomitant increase in the commitment of family income to purchase of foodstuffs.

308

### 309 **Discussion**

310 The EBIA, like other scales established with the same objective, measures the FI at the  
311 household level<sup>27</sup>, which is a condition associated with greater susceptibility to the  
312 development of diseases that results from the lack of access to adequate food. Periods of  
313 economic, political and social instability tend to affect the diet of the population and to  
314 promote FI at the household level, especially among the most disadvantaged population  
315 groups<sup>28</sup>. As shown, the prevalence of FI in the families studied (58.3%) was higher than that  
316 found in PNAD-2013 (34.6%)<sup>16</sup>.

317 The Brazilian economy has been officially in recession since the second quarter of  
318 2014<sup>4, 5</sup>, such that Brazil is facing the worst economic crisis of the last hundred years<sup>7</sup>, and  
319 has been characterized, among other indicators, by the growth of the unemployment rate and a  
320 food price increase<sup>17</sup>.

321 According to IBGE, the unemployment rate in Brazil increased from 6.5% in the last  
322 quarter of 2014 to 9.0% in the same period of 2016. In Alagoas, this rate was higher than the  
323 national average, varying from 9.4% in 2014 to 11.3% in 2015<sup>17</sup>. It is worth noting that

324 Alagoas, which has one of the lowest average family income rates in Brazil, experienced a  
325 reduction of approximately 34.0% in this indicator in the third quarter of 2015, in relation to  
326 the national average (Brazilian Real – BRL: 1,956.00 vs. 1,283.00)<sup>17</sup>. On December 31,  
327 2014, 1 US dollar was worth 2.66 BRL.

328         The state has also been experiencing an increase in the level of unemployment since  
329 2013. In 2015, 4,305 jobs were lost. This result was mainly due to the fall in productivity of  
330 the manufacturing industry due to the influence of seasonal factors related to sugar-alcohol  
331 production<sup>29,30</sup>.

332         The National Consumer Price Index showed an 11.3% increase in food and beverage  
333 prices in 2015, representing an influence of 30.6% in relation to other expenses that compose  
334 the Index (housing, household goods, clothing, transportation, health and personal care,  
335 personal expenses, education and communication), and this increase in food and beverage  
336 prices was the highest that compromised the family budget<sup>31</sup>.

337         In the city of Maceió, capital of Alagoas, the Consumer Price Index for food and  
338 beverage group was higher than that found nationally (14.9%) and has increased in recent  
339 years, as shown in Table 3. This fact has generated an increase in the commitment of the  
340 family income to the purchase of food from 34.6% in 2014 to 37.2% in 2015. In this context,  
341 the cost of the basic food basket, namely, the basic foodstuffs usually consumed by the  
342 families, increased from BRL 250.74 to BRL 293.10 during the same period<sup>32</sup>.

343         Within the scope of public policies, the budget allocated to food security actions in  
344 Alagoas was reduced to 39.8% from 2014 to 2015 (BRL 490,055.97 vs. BRL 294.830,36)<sup>19,33</sup>,  
345 resulting in a drop in investments in this area of and, consequently, a reduction in the number of  
346 user families from 439,655 in 2014 to 418,405 in 2015<sup>19</sup>.

347         As mentioned above, more than half the population studied here was a member of the  
348 *Bolsa Família* Program. In this regard, due to the political crisis that Brazil faced in its recent

349 history, which resulted in the replacement of the Federal Government, Brazilian press  
350 agencies (radio, newspapers, TV and Internet sites) have frequently disclosed information  
351 about the cuts in the budgets of social programs, resulting in the exclusion of thousands of  
352 beneficiaries. Obviously, this creates a situation of insecurity for those families that depend  
353 on this income to guarantee access to food. As demonstrated, families using the *Bolsa Família*  
354 Program had a higher prevalence of FI compared to non-users. In addition, this aspect  
355 demonstrates that the Program is correct in regarding its focus on the target population, since  
356 it is, in fact, serving the public with greater social vulnerability.

357         It is important to highlight that the prevalence of severe food insecurity now observed in  
358 Alagoas (7.3%) was more than twice as high as that found in 2013 in Brazil (3.2%), whereas  
359 moderate FI (17.9%) was more than three times the national prevalence (4.6%) (PNAD, 2013).  
360 These categories of food insecurity are associated with changes in the usual diet due to a  
361 disruption in feeding patterns, thus reducing the availability of food at home<sup>16</sup>. These findings  
362 are worrisome due to the unfavorable evolution of economic indicators presented<sup>3, 29, 31, 32</sup>,  
363 since they have a direct relationship with access to nutritionally adequate food. Therefore, if  
364 these trends are maintained, there is a possibility of regression to the situation experienced in  
365 the country a few years ago, when short stature in children (indicative of chronic malnutrition  
366 and hunger) was a serious and shameful public health problem<sup>34</sup>.

367         The economic crisis has increased unemployment in Brazil, and actions triggered by  
368 the current government, under the umbrella of the fiscal adjustment, can put Brazil back to the  
369 United Nations hunger map. These included the exclusion of people from the *Bolsa Família*  
370 Program and the cuts in the budget of the family agriculture program, which has prevented  
371 hundreds of thousands of people from having enough income to buy food<sup>35</sup>. The data  
372 obtained in this study unequivocally point to the real possibility that Brazil can return to the

373 hunger map. This is a matter of great concern and should reorient the strategies currently  
374 adopted by the federal government on the pretext of adjusting the Brazilian economy.

375         The data presented in Figure 1 show an increase in the prevalence of FI of almost 70%  
376 in relation to the data obtained in the previous year by the PNAD-2013<sup>16</sup>. Our study detected  
377 the effect caused by the beginning of the political and economic crisis in our country<sup>4, 5</sup>;  
378 however, the PNAD occurred before such circumstances. Analyzing Figure 1, it is possible to  
379 notice that the category of FI that rose more expressively was the mild FI, which reflects the  
380 concern of the population with the possibility of losing employment, with the elevation food  
381 prices, with the loss of access to social policies, etc.

382         In general, households experiencing mild FI without the experience of hunger in the  
383 household<sup>6</sup> express concerns about running out of food, having to reduce their dietary  
384 quality, or having to practice unusual coping strategies to access food. However, as our study  
385 was carried out in the initial phase of the political-economic crisis in Brazil, it is very likely  
386 that further investigations will detect a worsening situation with increases also in the category  
387 of severe FI, in which the affected families already survived the tragedy of hunger.

388         Regarding the factors associated with FI in the present study, it was verified that all  
389 factors were related to the greater social vulnerability of the family.

390         According to Anschau et al.<sup>36</sup>, the presence of residents under 18 years of age and the  
391 highest number of household members were associated with a higher frequency of food insecurity  
392 in beneficiaries of income transfer programs, thus corroborating with the results of the present  
393 study and other surveys conducted at national level or in specific populations<sup>16, 37</sup>. This  
394 relationship can be explained by the fact that families with a larger number of individuals need  
395 more resources to buy food, and family growth is not always accompanied by increased income<sup>36</sup>.

396         Another point to highlight is the association between FI and the family reference  
397 person. According to the PNAD-2013<sup>16</sup>, the prevalence of moderate or severe food insecurity

398 was higher among households whose reference person was female, as seen in other studies <sup>36</sup>,  
399 <sup>38</sup>. This suggests that differences in the insertion and valorization forms of women in the labor  
400 market reflect lower wages when compared with the wages of men <sup>39</sup>. Therefore, gender issue  
401 must also be considered in the public policies for promoting food security.

402 In addition to the gender condition, a higher prevalence of FI was observed when the  
403 head of household had no job or income, a fact linked to greater economic instability that  
404 negatively influences access to food, especially those with better nutritional quality <sup>36</sup>. A  
405 similar situation was observed in families with a monthly income lower than the minimum  
406 wage, which this association is well documented in the literature <sup>40, 41</sup>. In the same area, the  
407 prevalence of FI was 29% higher among families belonging to the D/E economic classes  
408 when compared to the classes of higher purchasing power, thus confirming findings in  
409 previous studies that demonstrated that the lower the average income of a given economic  
410 class the higher the exposure to food insecurity <sup>36, 37</sup>.

411 Some living conditions, such as residing in a non-masonry house, not residing in one's  
412 own home and residing in a house with a small number of rooms, were also strongly  
413 associated with FI. Previous studies have found similar results <sup>41, 42</sup>.

414 The assessment of the nutritional status is a complementary measure to the assessment  
415 of food insecurity, since, in isolation, it does not cover multiple dimensions related to the  
416 problem due to the diversity of factors involved in its genesis and its diverse consequences <sup>43</sup>.  
417 In this study, the overweight prevalence in women has been shown to be associated with FI,  
418 corroborating the evidence that compromising the food available to families has been  
419 reflected in the nutritional status of its components <sup>44</sup>. Possible explanations for this  
420 association include the increase in the consumption of low-cost foodstuffs with high caloric  
421 density, sedentary lifestyle, the presence of eating disorders due to anxiety, the uncertainty  
422 associated with involuntary food restriction and the metabolic adaptations to undernutrition in



423 early life, even in the intrauterine period<sup>11,27</sup>. As emphasized by Kepple and Segall-Corrêa<sup>27</sup>,  
424 food insecurity may not exclusively be expressed in the form of malnutrition, as there is  
425 evidence, observed in the present study, of its association with being overweight.

426 Currently, the prevalence of obesity and its comorbidities has been growing in Brazil<sup>45</sup>,  
427 becoming a relevant issue for the planning of public policies, since obesity is not always an  
428 opposite problem to hunger but a consequence of it, particularly among the poorest families.

429 Given the high prevalence of food insecurity and its association with unfavorable  
430 demographic, socioeconomic and environmental conditions, the need for systematic  
431 monitoring of the situation is reinforced by the oscillations in the political and economic  
432 situation of the government, which have shown unfavorable evolution and have probably  
433 contributed to the increase in the prevalence of food insecurity.

434 It is concluded that the prevalence of FI in Alagoas is very high, and considering  
435 previous studies, there was a marked increase in this prevalence during the Brazilian  
436 economic crisis. All associated factors are related to the greater social vulnerability of the  
437 family. The present data point to the need to strengthen public policies for health promotion,  
438 education, employment, and income and for ensuring the human right to adequate food, with  
439 the aim of reducing social vulnerability within the family in a sustainable way. Additionally,  
440 this study contributes to understanding how national conditions can influence household-level  
441 food insecurity.

442 **References**

- 443 **1.** Valente FLS. Fome, desnutrição e cidadania: inclusão social e direitos humanos.  
444 *Saúde e Sociedade*. 2003;12:51-60.
- 445 **2.** Brazil. Constitutional Amendment No 64 of 4th February 2010. That changes the  
446 Article 6th of the Brazilian Federal Constitution, including access to food as a social  
447 right. Vol 4. Brasília: Diary of Congress; 2010:448.
- 448 **3.** Conselho Nacional de Segurança Alimentar e Nutricional. *A Segurança Alimentar e*  
449 *Nutricional e o Direito Humano à Alimentação Adequada no Brasil*. Brasília:  
450 CONSEA; 2010.
- 451 **4.** Barbosa Filho FH. A crise econômica de 2014/2017. *Estudos Avançados*. 2017;31:51-  
452 60.
- 453 **5.** Paula LF, Pires M. Crise e perspectivas para a economia brasileira. *Estudos*  
454 *Avançados*. 2017;31:125-144.
- 455 **6.** Gubert MB, Santos SMC, Santos LMP, Pérez-Escamilla R. A Municipal-level  
456 analysis of secular trends in severe food insecurity in Brazil between 2004 and 2013.  
457 *Global Food Security*. 2017/04/10/ 2017.
- 458 **7.** Watts J. Brazil's health system woes worsen in economic crisis. *Lancet*. Apr 16  
459 2016;387(10028):1603-1604.
- 460 **8.** Gubert MB, Benicio MH, da Silva JP, da Costa Rosa TE, dos Santos SM, dos Santos  
461 LM. Use of a predictive model for food insecurity estimates in Brazil. *Arch Latinoam*  
462 *Nutr*. Jun 2010;60(2):119-125.
- 463 **9.** Cotta RM, Machado JC. [The Bolsa Familia cash transfer program and food and  
464 nutrition security in Brazil: a critical review of the literature]. *Rev Panam Salud*  
465 *Publica*. Jan 2013;33(1):54-60.
- 466 **10.** Burity V, Franceschini T, Valente F, Recine E, Leão M, Carvalho MdF. *Direito*  
467 *Humano à Alimentação Adequada no Contexto da Segurança Alimentar e Nutricional*;  
468 2010.
- 469 **11.** Schlüssel MM, Silva AA, Perez-Escamilla R, Kac G. Household food insecurity and  
470 excess weight/obesity among Brazilian women and children: a life-course approach.  
471 *Cad Saude Publica*. Feb 2013;29(2):219-226.
- 472 **12.** Gubert MB, Spaniol AM, Bortolini GA, Perez-Escamilla R. Household food  
473 insecurity, nutritional status and morbidity in Brazilian children. *Public Health Nutr*.  
474 Aug 2016;19(12):2240-2245.
- 475 **13.** Kac G, Velasquez-Melendez G, Schlüssel MM, Segall-Correa AM, Silva AA, Perez-  
476 Escamilla R. Severe food insecurity is associated with obesity among Brazilian  
477 adolescent females. *Public Health Nutr*. Oct 2012;15(10):1854-1860.
- 478 **14.** Gubert MB, Spaniol AM, Segall-Correa AM, Perez-Escamilla R. Understanding the

- 479 double burden of malnutrition in food insecure households in Brazil. *Matern Child*  
480 *Nutr.* Jul 2017;13(3).
- 481 **15.** Lang RMF, Almeida CCB, Taddei JAAC. Segurança alimentar e nutricional de  
482 crianças menores de dois anos de famílias de trabalhadores rurais Sem Terra. *Ciência*  
483 *& Saúde Coletiva.* 2011;16:3111-3118.
- 484 **16.** Instituto Brasileiro de Geografia e Estatística - IBGE. *Pesquisa Nacional por Amostra*  
485 *de Domicílios - Segurança Alimentar 2013.* Rio de Janeiro: IBGE; 2014.
- 486 **17.** Instituto Brasileiro de Geografia e Estatística - IBGE. Pesquisa Nacional por Amostra  
487 de Domicílios Contínua - Trimestral. *IBGE.* Available at:  
488 [http://www.ibge.gov.br/home/estatistica/indicadores/trabalhoerendimento/pnad\\_continua/default](http://www.ibge.gov.br/home/estatistica/indicadores/trabalhoerendimento/pnad_continua/default). Accessed August 20, 2017.
- 490 **18.** PNUD (Programa das Nações Unidas para o Desenvolvimento). Atlas do  
491 Desenvolvimento Humano no Brasil, 2013. Brasília, DF: PNUD; 2016.
- 492 **19.** Brasil. Ministério do Desenvolvimento Social e Combate à Fome. Cadastro Único  
493 para Programas Sociais. *MDS.* Available at:  
494 <http://cadastrounicov7.blogspot.com.br/2012/05/sagi-relatorios.html>. Accessed 26 de  
495 fevereiro de 2017.
- 496 **20.** Instituto Brasileiro de Geografia e Estatística - IBGE. 2010 Population Census:  
497 Families. *IBGE.* Available at:  
498 [http://www.ibge.gov.br/estadosat/temas.php?sigla=al&tema=censodemog2010\\_famil](http://www.ibge.gov.br/estadosat/temas.php?sigla=al&tema=censodemog2010_famil).  
499 Accessed August 20, 2017.
- 500 **21.** Paim J, Travassos C, Almeida C, Bahia L, Macinko J. The Brazilian health system:  
501 history, advances, and challenges. *Lancet.* May 21 2011;377(9779):1778-1797.
- 502 **22.** Instituto Brasileiro de Geografia e Estatística - IBGE. Population estimated - 2016.  
503 *IBGE.* Available at: <http://www.ibge.gov.br/estadosat/perfil.php?sigla=al>. Accessed  
504 August 20, 2017.
- 505 **23.** Perez-Escamilla R, Segall-Correa AM, Kurdian Maranhã L, Sampaio Md Mde F,  
506 Marin-Leon L, Panigassi G. An adapted version of the U.S. Department of Agriculture  
507 Food Insecurity module is a valid tool for assessing household food insecurity in  
508 Campinas, Brazil. *J Nutr.* Aug 2004;134(8):1923-1928.
- 509 **24.** Instituto Brasileiro de Geografia e Estatística - IBGE. Pesquisa Nacional por Amostra  
510 de Domicílios - Segurança Alimentar 2004/2009. *IBGE.* Available at:  
511 <http://biblioteca.ibge.gov.br/visualizacao/livros/liv47241.pdf>.
- 512 **25.** Associação Brasileira de Empresas de Pesquisa. Critério de Classificação Econômica  
513 do Brasil. *ABEP.* Available at: <http://www.abep.org/criterio-brasil>. Accessed February  
514 27, 2017.
- 515 **26.** World Health Organization. *Physical Status: The use and interpretation of*  
516 *anthropometry. Technical Report Series, 854. Geneva; 1995.*

- 517 **27.** Kepple AW, Segall-Corrêa AM. Conceituando e medindo segurança alimentar e  
518 nutricional. *Ciência & Saúde Coletiva*. 2011;16:187-199.
- 519 **28.** Dore AR, Adair LS, Popkin BM. Low income Russian families adopt effective  
520 behavioral strategies to maintain dietary stability in times of economic crisis. *J Nutr*.  
521 Nov 2003;133(11):3469-3475.
- 522 **29.** Brasil. Ministério do Trabalho e Emprego. Cadastro Geral de Empregados e  
523 Desempregados - CAGED. *Ministério do Trabalho e Emprego*. August 19, 2017.  
524 Available at: <http://pdet.mte.gov.br/caged?view=default>. Accessed August 19, 2017.
- 525 **30.** Brasil. Sistema IBGE de Recuperação Automática - SIDRA. Instituto Brasileiro de  
526 Geografia e Estatística. Disponível em: <<https://sidra.ibge.gov.br/home/ipca15/brasil>>.  
527 Acesso em: 18 de Dez. 2016.
- 528 **31.** Instituto Brasileiro de Geografia e Estatística - IBGE. Índice Nacional de Preços ao  
529 Consumidor - INPC. Sistema IBGE de Recuperação Automática - SIDRA. *IBGE*.  
530 Available at:  
531 <http://www.sidra.ibge.gov.br/bda/precos/default.asp?t=2&z=t&o=20&u1=1&u2=1&u3=1>.  
532 Accessed August 19, 2017.
- 533 **32.** Governo de Alagoas. Índice de Preço ao Consumidor de Maceió - IPC. Maceió, AL:  
534 Secretaria de Estado do Planejamento, Gestão e Patrimônio; 2016.
- 535 **33.** Brasil. Câmara Interministerial de Segurança Alimentar e Nutricional. MapaSAN.  
536 Brasília, DF: Câmara Interministerial de Segurança Alimentar e Nutricional; 2015.
- 537 **34.** Coutinho JG, Gentil PC, Toral N. [Malnutrition and obesity in Brazil: dealing with the  
538 problem through a unified nutritional agenda]. *Cad Saude Publica*. 2008;24 Suppl  
539 2:S332-340.
- 540 **35.** Civil Society Working Group for the 2030 Agenda. Spotlight synthesis report of the  
541 2030 sustainable development agenda in Brazil. Available at:  
542 <https://brasilnaagenda2030.org>. Accessed September 3, 2017.
- 543 **36.** Anschau FR, Matsuo T, Segall-Corrêa AM. Insegurança alimentar entre beneficiários  
544 de programas de transferência de renda. *Revista de Nutrição*. 2012;25:177-189.
- 545 **37.** Salles-Costa R, Pereira RA, Vasconcellos MTL, et al. Associação entre fatores  
546 socioeconômicos e insegurança alimentar: estudo de base populacional na Região  
547 Metropolitana do Rio de Janeiro, Brasil. *Revista de Nutrição*. 2008;21:99s-109s.
- 548 **38.** Santos JV, Gigante DP, Domingues MR. Prevalência de insegurança alimentar em  
549 Pelotas, Rio Grande do Sul, Brasil, e estado nutricional de indivíduos que vivem nessa  
550 condição. *Cadernos de Saúde Pública*. 2010;26:41-49.
- 551 **39.** Monteiro F, Schmidt ST, Costa IB, Almeida CCB, Matuda NS. Bolsa Família:  
552 insegurança alimentar e nutricional de crianças menores de cinco anos. *Ciência &*  
553 *Saúde Coletiva*. 2014;19:1347-1358.
- 554 **40.** Aires JS, Martins MC, Joventino ES, Ximenes LB. (In) Segurança alimentar em

- 555 famílias de pré-escolares de uma zona rural do Ceará. *Acta Paulista de Enfermagem*.  
556 2012;25:102-108.
- 557 **41.** Vianna RPT, Segall-Corrêa AM. Insegurança alimentar das famílias residentes em  
558 municípios do interior do estado da Paraíba, Brasil. *Revista de Nutrição*.  
559 2008;21:111s-122s.
- 560 **42.** Ferreira HS, Souza MEDCA, Moura FA, Horta BL. Prevalência e fatores associados à  
561 Insegurança Alimentar e Nutricional em famílias dos municípios do norte de Alagoas,  
562 Brasil, 2010. *Ciência & Saúde Coletiva*. 2014;19:1533-1542.
- 563 **43.** Corrêa AMS. Insegurança alimentar medida a partir da percepção das pessoas.  
564 *Estudos Avançados*. 2007;21:143-154.
- 565 **44.** Townsend MS, Peerson J, Love B, Achterberg C, Murphy SP. Food insecurity is  
566 positively related to overweight in women. *J Nutr*. Jun 2001;131(6):1738-1745.
- 567 **45.** Malta DC, Andrade SC, Claro RM, Bernal RT, Monteiro CA. Trends in prevalence of  
568 overweight and obesity in adults in 26 Brazilian state capitals and the Federal District  
569 from 2006 to 2012. *Rev Bras Epidemiol*. 2014;17 Suppl 1:267-276.
- 570

## Figure Legend

**Figure 1 - \*** FI (Total)=Mild, moderate and severe food insecurity.  
Source: 2004<sup>24</sup>, 2009<sup>24</sup>, 2013<sup>16</sup> and 2014/2015 (this work).

**Table 1** - Distribution of food insecurity among families in the population of Alagoas (2014/2015), according to demographic, socioeconomic, environmental and anthropometric variables.

Variables	n	%	Food insecurity (%)			Total
			Mild	Moderate	Severe	
<b>Gender of the head of the family</b>						
Male	2,219	65.9	32.3	16.8	6.1	55.2
Female	1,146	34.1	34.7	19.8	9.7	64.2*
<b>Color/race of the head of the family</b>						
White	941	28.3	34.1	15.3	5.7	55.1
Non-white	2,386	71.7	32.9	18.6	8.0	59.5*
<b>Education of the head of the family</b>						
> 4	1,971	60.1	33.1	15.0	4.5	52.6
≤ 4	1,308	39.9	33.0	22.1	11.2	66.3*
<b>Head of the family without work/income</b>						
No	3,043	91.1	32.9	17.4	6.6	56.9
Yes	298	8.9	34.6	22.8	13.1	70.5*
<b>Women's BMI (kg/m<sup>2</sup>)</b>						
Low weight (< 18.5)	89	2.8	37.1	9.0	6.7	52.8
Eutrophy (18.5 a 24.9)	1,098	34.8	31.8	15.7	6.7	54.2
Overweight (≥ 25)	1,965	62.4	33.7	19.3	7.6	60.6* <sup>c</sup>
<b>Number of residents</b>						
< 4	1,332	39.6	32.1	14.7	5.7	52.5
≥ 4	2,034	60.4	33.8	19.9	8.4	62.1*
<b>Family income (in number of minimum wages)<sup>a</sup></b>						
> 1	2,249	72.0	33.2	15.8	4.8	53.8
≤ 1	873	28.0	32.8	24.5	14.4	71.7*
<b>Economic class<sup>b</sup></b>						
A1 to C2	1,641	48.8	31.4	11.0	3.2	45.6
D-E	1,725	51.2	34.8	24.4	11.2	70.4*
<b>Bolsa Família Programme User</b>						
No	1,609	47.8	29.8	10.5	4.4	44.7
Yes	1,754	52.2	36.2	24.6	10.0	70.8*
<b>House situation</b>						
Urban	2,659	79.0	33.7	17.3	6.7	57.7
Rural	707	21.0	30.8	19.8	9.6	60.2
<b>Type of home</b>						
Masonry	3,339	99.3	33.2	17.1	7.3	58.1
Non-masonry	24	0.7	20.8	50.0	16.7	87.5*
<b>Type of domicile occupation</b>						
Own	2,092	62.2	31.3	15.8	6.3	53.4
Other means	1,271	37.8	36.2	21.2	9.0	66.4*
<b>Number of rooms in the house</b>						
> 4	2,819	83.9	32.9	16.6	6.3	55.8
≤ 4	512	16.1	34.5	24.5	12.7	71.7*
<b>Garbage destination</b>						
Public Collection	2,964	88.1	33.5	17.3	6.7	57.5
Other	399	11.9	30.6	21.5	12.0	64.1*
<b>Residents under 18 years of age</b>						
Yes	2,577	76.6	35.0	19.0	8.2	62.2
No	789	23.4	26.9	14.2	4.4	45.5*

<sup>a</sup>Minimum wage at the time of the study: BRL 724.00. (1 USD=2.66 BRL on December 31, 2014).

<sup>b</sup>Criterion of Economic Classification of the Brazilian Association of Research Companies<sup>25</sup>.

<sup>c</sup>Comparing the overweight category with the sum of the low weight and eutrophic categories.

\* Statistically significant difference ( $P < 0.05$ ).

**Table 2** – Distribution of food insecurity in families of the Alagoas population (2014/2015) according to sociodemographic, environmental and anthropometric variables: Crude and adjusted prevalence ratios (PR) and respective 95% confidence intervals (95% CI).

Variable	Crude Analysis		Adjusted Analysis	
	PR (95% CI)	<i>P</i>	PR (95% CI)	<i>P</i>
Female head of the family	1.16 (1.10-1.23)	< 0.001	1.15 (1.08-1.22)	< 0.001
Head of the family does not belong to the white color/race	1.08 (1.01-1.15)	0.024	-	-
Education of the head of the family ≤ 4 years	1.26 (1.19-1.33)	< 0.001	-	-
Head of the family without work or income	1.24 (1.14-1.34)	< 0.001	1.12 (1.03-1.23)	0.008
Women considered overweight (BMI ≥ 25 kg/m <sup>2</sup> )	1.12 (1.05-1.19)	< 0.001	1.14 (1.07-1.21)	< 0.001
Number of family members ≥ 4	1.18 (1.11-1.26)	< 0.001	1.22 (1.14-1.30)	< 0.001
Monthly family income ≤ 1 minimum wage <sup>a</sup>	1.33 (1.26-1.41)	< 0.001	1.16 (1.09-1.24)	< 0.001
D-E Economic Classes	1.54 (1.45-1.64)	< 0.001	1.29 (1.20-1.38)	< 0.001
Bolsa Família Programme user	1.58 (1.48-1.68)	< 0.001	1.41 (1.31-1.51)	< 0.001
Family resides in rural area	1.04 (0.97-1.11)	0.232	-	-
Domicile with construction material other than masonry	1.51 (1.29-1.76)	< 0.001	1.33 (1.14-1.54)	< 0.001
The family does not own its home	1.24 (1.18-1.31)	< 0.001	1.21 (1.14-1.28)	< 0.001
Number of rooms at home ≤ 4	1.29 (1.21-1.37)	< 0.001	1.13 (1.06-1.21)	< 0.001
Garbage destination other than public collection	1.11 (1.03-1.51)	0.007	-	-

<sup>a</sup> Minimum wage at the time of the study: BRL 724.00 (1 USD=2.66 BRL on December 31, 2014).



**Table 3 – Selected economic indicators of Alagoas, Brazil, 2013 to 2015.**

<b>Indicators</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Formal employment balance <sup>29</sup>	-628	-2,362	-4,305
Unemployment rate of persons aged $\geq$ 14 years (%) <sup>30</sup>	9.3	9.4	11.3
Families receiving Bolsa Familia Programme <sup>19</sup>	438,656	439,655	418,405
Consumer Price Index - IPC (%) <sup>32</sup>	12.2	9.5	14.9
<b><i>Basic Food Basket</i> <sup>a 32</sup>:</b>			
Salary Compromise (%)	35.8	34.6	37.2
Average Amount Expended (BRL)	243.06	250.74	293.10

<sup>a</sup>The basic foodstuffs usually consumed by the families.

BRL=Brazilian Real (R\$). 1 USD=2.66 BRL on December 31, 2014.

**Figure 1** – Food insecurity in Alagoas, Brazil, 2004 to 2014/2015.

