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**THROUGH THEIR EYES: EXPERIENCES OF FOOD INSECURITY AMONG  
PUBLIC ELEMENTARY SCHOOL STUDENTS IN APARECIDA DE GOIÂNIA,  
BRAZIL**

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ENTRE ESTUDANTES DO ENSINO FUNDAMENTAL DA REDE PÚBLICA EM  
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## RESUMO

A insegurança alimentar infantil é geralmente avaliada por meio de pesquisas domiciliares, baseando-se principalmente nos relatos de pais ou responsáveis. No entanto, atualmente não existe uma ferramenta amplamente aceita que avalie diretamente a insegurança alimentar vivenciada por crianças com menos de 15 anos. Esta dissertação busca preencher essa lacuna por meio de um estudo em três partes realizado em Aparecida de Goiânia, Brasil. O primeiro capítulo apresenta uma revisão de literatura que contextualiza a insegurança alimentar em nível global e local, destacando a influência de fatores socioeconômicos e políticos no acesso à alimentação. Também enfatiza a importância do Programa Nacional de Alimentação Escolar (PNAE) e as limitações de utilizar apenas os relatos dos cuidadores para avaliar a situação alimentar das crianças. O segundo capítulo, apresentado em formato de artigo, explora as experiências diretas de 173 alunos do ensino fundamental (com idades entre 6 e 14 anos), utilizando um questionário adaptado da United Nations Children's Fund (UNICEF) e voltado à perspectiva infantil. Os dados foram coletados ao longo de quatro meses em 2024, por meio de entrevistas presenciais conduzidas por uma equipe de especialistas em educação alimentar de uma organização local e pelas autoras da pesquisa. Os resultados revelaram que 14,5% das crianças vivenciavam insegurança alimentar grave, 39,9% moderada, 39,3% leve e apenas 6,4% eram consideradas seguras em relação à alimentação. Verificou-se uma relação entre a classificação de segurança alimentar e a frequência das refeições: os alunos considerados seguros tendiam a fazer quatro ou mais refeições por dia, enquanto aqueles em situação grave relataram um consumo significativamente menor, especialmente aos fins de semana. A sensação de fome antes de dormir também foi significativamente mais alta entre os alunos em situação de insegurança alimentar. O terceiro capítulo apresenta uma análise comparativa entre as respostas das crianças e de seus responsáveis. Em uma subamostra de 29 pares de pais e filhos, 62% apresentaram discrepância na classificação da insegurança alimentar, sendo que as crianças frequentemente relataram condições mais graves do que seus cuidadores. Os dados dos pais também forneceram contexto demográfico adicional, incluindo raça, estado civil e renda, e os resultados indicaram correlações entre os níveis de insegurança alimentar e esses fatores socioeconômicos. As disparidades raciais foram notáveis, com estudantes e pais negros apresentando os níveis mais altos de insegurança alimentar. No conjunto, a dissertação reforça o valor de incluir as vozes das crianças em pesquisas sobre insegurança alimentar. Os resultados sugerem que avaliações baseadas apenas nos relatos dos cuidadores podem subestimar a gravidade da insegurança alimentar infantil. Além disso, fatores como renda, raça

e dinâmica familiar influenciam de formas distintas as percepções e vivências relacionadas à alimentação. Ao combinar dados de crianças e adultos, este estudo oferece uma visão mais completa da insegurança alimentar nas escolas públicas brasileiras e defende a ampliação do uso de ferramentas inclusivas em futuras pesquisas nacionais e internacionais.

Palavras-chave: Insegurança Alimentar, PNAE, Ensino Fundamental, Questionário, Crianças

## ABSTRACT

Childhood food insecurity is typically assessed through household surveys, often relying on caregiver reports rather than children's perspectives. However, there is currently no globally accepted tool designed to evaluate childhood food insecurity directly from children under 15. This dissertation addresses that gap through a three-part study carried out in Aparecida de Goiânia, Brazil. The first chapter presents a literature review that contextualizes food insecurity both globally and locally, emphasizing the influence of socioeconomic and political factors on access to food. It also highlights the significance of Brazil's National School Feeding Program (PNAE) and the limitations of using only parental reports to assess children's food insecurity. The second chapter, presented in article format, explores the direct experiences of 173 elementary school students (ages 6–14) using a child-centered food insecurity questionnaire adapted from UNICEF. Data were collected over a four-month period in 2024 through in-person interviews led by a local nonprofit organization and the research team. Findings revealed that 14.5% of the children were experiencing severe food insecurity, 39.9% moderate, 39.3% mild, and only 6.4% were food secure. There was a clear relationship between food security and meal frequency: students classified as food secure were more likely to consume four or more meals daily, while those with severe food insecurity reported consuming fewer meals, especially on weekends. Hunger before bedtime was also significantly higher among students experiencing food insecurity. The third chapter presents a comparative analysis of child versus parent responses. Among a subsample of 29 matched parent-child pairs, 62% showed disagreement in food insecurity classification, with children often reporting more severe conditions than their caregivers. Parent data also provided additional demographic context, including race, marital status, and income, and results indicated correlations between food insecurity levels and socioeconomic indicators. Racial disparities were notable, with Black students and parents reporting the highest levels of food insecurity. Altogether, the dissertation highlights the value of incorporating children's voices into food insecurity research. The findings suggest that caregiver-only assessments may underestimate childhood food insecurity and that factors such as income, race, and household dynamics influence perceived and experienced food insecurity in different ways. By combining child and adult data, this study provides a more comprehensive picture of food insecurity in Brazilian public schools and calls for the expansion of child-inclusive tools in future national and international research.

Key Words: Food Insecurity, PNAE, Elementary Education, Survey, Children

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## CHAPTER 1 – INTRODUCTION

### 1.1 Introduction

The Food and Agriculture Organization of the United Nations defines food insecurity as “when people do not have consistent physical, social, and economic access to enough safe and nutritious food to support a healthy life” (FAO, 2021). In recent years, global challenges such as the COVID-19 pandemic, climate change, and the growing social and economic disparities between classes have exacerbated this issue, rendering food insecurity a pressing concern across both developed and developing nations. This phenomenon is not restricted to impoverished or economically underdeveloped regions but increasingly affects populations across a spectrum of socioeconomic conditions.

While food insecurity is a global challenge, its prevalence and impact vary significantly by country. In Brazil, the scale of the food insecurity crisis is particularly severe. According to the Brazilian Institute of Geography and Statistics via the Continuous National Household Sample Survey (PNAD-Contínua), 27.6% of Brazilians lived with some level of food insecurity in 2023 (IBGE, 2024b).

Countries around the world have various ways of combating food insecurity. In Brazil, as of 2020 the School Feeding Program, PNAE (Programa Nacional de Alimentação Escolar), feeds over 40 million public school students every day with well balanced meals at no cost to the students (FNDE, [s.d.]). PNAE is one of the largest, most well-established school feeding programs in the world, and is the only universal feeding program that serves in all regions of the country (FNDE, [s.d.]). Among the majority of the recipients of the daily school meals are children.

Children are amidst the most vulnerable demographic groups affected by food insecurity, as they are largely dependent on the decisions made by parents, caregivers, schools, and government policies. Given their reliance on these external actors, children often suffer the consequences of inadequate responses to food insecurity. Thus, it is imperative to investigate how food insecurity is experienced by children, particularly those in elementary schools, as they represent a crucial subset of the population.

This quantitative research explores how public-school children ages 6-14 experience food insecurity, capturing their perspectives firsthand. By focusing on childhood food

insecurity in Aparecida de Goiânia, Goiás, Brazil, this dissertation deepens our understanding of how food insecurity is assessed, factors associated with food insecurity, and its real-life impact on children. Additionally, by surveying both elementary school students (ages 6–14) and their parents, this study aims to offer a comprehensive analysis of food insecurity, incorporating perspectives from both children and adults. The following research enhances the understanding of how food insecurity manifests in Brazil and takes a critical analysis of how surveying across age groups addresses this crucial issue.

## **1.2 Literature Review**

### **1.2.1 Defining Food Insecurity**

Food security—access by all people at all times to enough food for an active, healthy life—is one of several conditions necessary for a population to be healthy and well nourished (Coleman-Jensen *et al.*, 2019). In this sense, a lack of access to sufficient, safe, and nutritious food for maintaining a healthy lifestyle indicates a certain level of food insecurity. This concept, however, is more complex than merely the absence of food; it encompasses several dimensions, including dietary, nutritional, social, economic, and cultural factors.

Food insecurity has evolved into a pressing global issue over recent decades. Across various cultural contexts, there are multiple definitions of what food security and insecurity entails. In Brazil, the definition of food security is broader than that of the United Nations. For the United Nations, a person is food insecure when they lack regular access to enough safe and nutritious food for normal growth and development and an active and healthy life (FAO, 2025). According to the Organic Law on Food and Nutrition Security (LOSAN) in Brazil (Law No. 11,346 of September 15, 2006), Food and Nutrition Security (FNS) is understood as the realization of everyone's right to regular and permanent access to quality food in sufficient quantity, without compromising access to other essential needs, based on health-promoting eating practices that respect cultural diversity and are environmentally, culturally, economically and socially sustainable (Conselho Federal de Nutrição, 2006).

Food insecurity affects individuals and communities across a spectrum of contexts—urban, rural, developed, and developing (Hallward *et al.*, 2023), and is especially prevalent

among low-income families with children (Thomas; Miller; Morrissey, 2019). Food insecurity can be aligned with the concept of food poverty, which describes the inability to afford or access a healthy diet. It represents both an immediate crisis—lacking food to meet daily nutritional needs—and a longer-term problem, where reliance on cheap, poor-quality foods leads to malnutrition and health deterioration (Furey *et al.*, 2019). This, in turn, has a significant impact on public health, contributing to a range of chronic conditions such as obesity, diabetes, and heart disease, particularly when food-insecure individuals are forced to prioritize caloric intake over nutritional quality.

Food insecurity extends beyond the immediate experience of hunger. It involves a continuum that ranges from the anxiety of running out of food, to compromising on food quality, to an outright lack of access to food. Thus, addressing food insecurity requires both short-term measures, such as emergency food assistance, and long-term strategies to tackle the systemic drivers of inequality and poverty that underlie the issue. Evaluation is a foundational step in implementing strategies to combat food insecurity.

### **1.2.2 Evaluating Food Insecurity**

Food insecurity evaluation involves assessing and measuring the extent, severity, and impact of food insecurity in a given population. It helps policymakers, governmental organizations, and the day-to-day population have a better understanding of what causes food insecurity and how to effectively address the root of the issue through interventions and policies. Because it is a complex, multidimensional concept, measuring food insecurity has been an ongoing challenge for researchers and practitioners alike (Coates, Swindale e Bilinsky, 2007). Thus, organizations have been working diligently to construct various ways of evaluating food insecurity.

There has been a significant increase in food insecurity evaluation in recent years due to an increase in awareness of the issue, education about what food insecurity entails and how it affects populations. A variety of surveys that can provide a better picture for how many people live with food insecurity have been introduced in recent years. One of the most prominent methods of evaluating food insecurity is household surveys. The national and global organizations that measure food insecurity in households use myriad surveys and questionnaires. Some of the primary household surveys used on a global scale include the

Household Food Insecurity Access Scale (HFIAS) created by USAID (Coates; Swindale; Bilinsky, 2007), the Latin American and Caribbean Food Security Scale (ELCSA) (Huffman e Nájera, 2023), the Household Hunger Scale (HHS), and the Food Insecurity Experience Survey (FIES). In Brazil, a commonly used survey is known as EBIA, or the Brazilian Food Insecurity Scale, which was part of the most recent data collection from IBGE via the Continuous National Household Sample Survey (PNAD-Contínua).

While similar in practice, each survey reveals slightly different data and determinants when it comes to food insecurity. In one study, the HFIAS and the HHS were the two surveys used to check whether determinants and status of household food security differ between the two measures (Kolog; Asem; Mensah-Bonsu, 2023). The authors found that factors such as household size, access to good roads, access to formal cooperative and availability of paid jobs were found to be significant determinants of household food security with the HFIAS, while gender of household head and distance to market were significant determinants of food security in the HHS model (Kolog; Asem; Mensah-Bonsu, 2023). While each survey differs slightly in methodology and questions, these surveys are excellent resources for determining food insecurity within communities. However, the population that is consistently left out of the data responses from these surveys is children.

There is no globally accepted food insecurity experience survey for children (Frongillo *et al.*, 2022). Despite increasing research on food insecurity worldwide, standardized tools for directly capturing children's experiences remain limited. For example, the USDA 2018 survey found that children were food insecure at times during 2018 in 7.1 percent of U.S. households with children, meaning these households with food insecurity among children were unable to provide adequate, nutritious food for their children (Coleman-Jensen *et al.*, 2019). This statistic was reported by the heads of households on behalf of these children, not the children themselves. Additionally, when asked in the FAO's Frequently Asked Questions page if the FIES measures food insecurity of children, the response was listed as "while food insecurity among children cannot be directly measured using the FIES survey module, it is possible to estimate the percentage of children living in food insecure households" (FAO).

This methodology can lead to inaccurate reporting of a child's own experience, as parents, particularly mothers, are often thought to shield or buffer their children from the effects of food insecurity; but research has shown that they may not always be able to fully protect their children (Landry *et al.*, 2019). According to subsequent investigations in which children and adolescents aged 6-17 years were interviewed, several subconstructs of their experience with food insecurity were revealed: children and adolescents are aware of food insecurity

cognitively, emotionally, and physically and take responsibility for it by participating in adult strategies for managing food resources, initiating their own strategies for making food resources stretch, and generating resources in terms of food or money for food on their own (Frongillo *et al.*, 2022). Therefore, it is of the utmost importance to analyze the child's perspective of their own experience with food insecurity.

### **1.2.3 Factors That Impact Food Insecurity**

Food insecurity, increasingly recognized as a critical indicator of household and child malnutrition, has become essential for understanding health disparities across different demographic groups (Kursmark; Weitzman, 2009). Research shows that food insecurity disproportionately affects specific racial and ethnic groups, intensifying existing inequalities (Dong *et al.*, 2023). In Brazil, for example, Afro-descendant populations represent the largest share of those living in poverty, while Indigenous communities experience the highest levels of extreme poverty (Tsakok; Mengoub, 2021). These socioeconomic inequalities are also reflected in public food assistance programs. A study by Locatelli and collaborators found that Brazilian students who are male, identify as brown or black, live outside of urban centers, work, or have mothers with less formal education are more likely to rely on school meals (Locatelli; Canella; Bandoni, 2017). Together, these findings highlight how systemic racial and socioeconomic disparities shape access to food and heighten vulnerability to food insecurity.

#### **1.2.3.1 Environmental Factors**

Environmental issues, particularly climate change, are critical factors that exacerbate food insecurity worldwide. Climate change has led to an increase in natural disasters, which disproportionately affect children in low- and middle-income countries (Edwards; Gray; Borja, 2021). Latin American countries, including Brazil, face challenges in establishing policies to protect food production from climate impacts, an urgent issue given the region's biodiversity and essential role in global carbon capture. Studies from various regions illustrate the link between exposure to climate disasters and food insecurity: for instance, in the Philippines, household heads with school-aged children reported that disaster exposure was correlated with severe food insecurity (Edwards; Gray; Borja, 2021).

The intensifying frequency and severity of climate events are creating irreversible consequences for natural and human systems, pushing them beyond adaptive capacities (Demisse; Bazezew; Bantigegegn, 2024). Climate hazards have led to declines in agricultural yields, impacted sanitation, increased water scarcity, and intensified resource conflicts, as documented in the Intergovernmental Panel on Climate Change report (IPCC, 2023). Climate change is increasing the vulnerability of farming, particularly countries' crop sectors, with more frequent occurrences of heavy rainfall, floods, drought, storms, cyclones, and riverbank erosion (Chen *et al.*, 2021). Moreover, the effect of climate variability on agricultural yield and food security is a major worldwide concern, as agriculture is one of the most vulnerable and sensitive sectors to climatic conditions (Edame *et al.*, 2011). In countries like Bangladesh, where agriculture is a primary source of employment (41% of the population), farmers are considered the core of the agricultural system, playing a vital role in sustainable production and food security (Ahmed, 2024).

In Brazil, environmental policies under President Bolsonaro exacerbated the risk to food security. His administration's 2019 pledge to increase agricultural development in the Amazon further endangered Brazil's food security by weakening environmental protections and law enforcement against illegal logging, undermining sustainable food production and conservation efforts (Borunda, 2019). Additionally, when INPE (National Institute for Space Research) released preliminary data that indicated an 88% increase in deforestation in June 2019 compared to the same month in the previous year, Bolsonaro claimed that INPE scientists fabricated the data "at the service of some nongovernmental organization" (Deutsch; Fletcher, 2022).

#### 1.2.3.2 Socioeconomic Factors

Alongside environmental factors, various socioeconomic variables significantly influence food insecurity, shaping both its prevalence and severity. In Brazil, the period from 2003 to 2013 saw substantial improvements in poverty and inequality, leading to a decrease in food insecurity (FAO, 2015). During this time, 24.6 million people escaped poverty, with the poverty rate dropping from 25% in 2001 to 11% in 2013, and 7.4% in 2014, based on the administrative poverty level used in the Bolsa Familia Program (PBF) at BRL 140 per capita per month (Tsakok; Mengoub, 2021). The PBF now provides families with financial assistance

at a rate of 218 BRL per capita per month (Brasil, 2025a); and regular school attendance by the children of the household is one of the requirements for participation in the Bolsa Família program. A minimum monthly attendance rate of 85% is required for students aged 6 to 15, and 75% for youth aged 16 and 17.

In more recent years, the dual shocks of economic crisis and the COVID-19 pandemic have highlighted the vulnerability of lower-income households, which are disproportionately affected by food insecurity. According to Tsakok and Mengoub's 2020 policy report on Brazilian agriculture, the economic stagnation Brazil experienced post-2013 has severely impacted food security, as households' ability to access nutritious and sufficient food becomes increasingly strained (Tsakok; Mengoub, 2021).

In Brazil, the gender and racial disparities in food insecurity also reflect broader socioeconomic inequalities. In the 2023 National Household Sample Survey (PNAD Contínua), in 48.3% of households the head of the household was male, and in 51.7% of households the head was female. However, among food-insecure households, 59.4% were headed by women, compared to 40.6% headed by men, revealing a significant gender gap in food insecurity (IBGE, 2024b). This disparity underscores the economic challenges women face, particularly single mothers and female-headed households, which are more vulnerable to income shocks and food scarcity.

Racial disparities are equally pronounced. In 42% of households, the head was white, 12% were Black, and 44.7% were Brown/mixed-race (Pardo). Among food-insecure households, however, 29% were headed by white individuals, 15.2% by Black individuals, and 54.5% by Brown individuals (IBGE, 2024b). This shift in demographic representation indicates that Black and Brown communities in Brazil, often marginalized in terms of access to resources and opportunities, are disproportionately affected by food insecurity.

Economic indicators further illustrate the link between poverty and food insecurity. For example, in households experiencing moderate or severe food insecurity, 50.9% had per capita income below half the minimum wage (IBGE, 2024b). This income level severely limits access to a diverse, nutritious diet, and exacerbates the challenge of escaping food insecurity. As Brazil continues to grapple with socio-economic disparities, especially in rural and marginalized communities, food insecurity remains a critical issue, influenced by both income and broader structural inequalities. These socioeconomic factors, therefore, remain central to understanding and addressing the persistent problem of food insecurity in the country.

To both support local agricultural enterprises and provide locally sourced food to the students, the Brazilian Federal Government passed Law No. 11,947, enacted on June 16, 2009,

which mandates that at least 30% of the funds transferred by the National Fund for Educational Development (FNDE) to states, municipalities, and the Federal District for the National School Feeding Program (PNAE) must be used to purchase food products directly from family farming and rural family entrepreneurs or their organizations (Brasil, 2014). Priority is given to agrarian reform settlements, traditional Indigenous communities, and quilombola communities. Brazil strives to engage familial agricultural enterprises (AF) via the implementation of the PAA. The Food Acquisition Program (PAA) aims to strengthen family farming by generating employment, income, and fostering local economic development while also promoting food access and helping to reduce food and nutritional insecurity (Brasil, 2024a). This act not only provides income to local agricultural workers, but allows public school students access to quality, local food sources.

#### **1.2.4 The COVID-19 Pandemic**

As in the case of pre-existing socioeconomic disparities, the COVID-19 pandemic further exacerbated the vulnerabilities of marginalized communities, intensifying food insecurity among those already at risk. Certain populations, including low-income communities, racial/ethnic minorities, immigrants and those with a lower education status, have borne a disproportionate share of the negative impacts of COVID-19 (Jowell *et al.*, 2023). The Covid-19 crisis quickly developed into a deep, global and enduring politico-economic crisis that involved a rapid disarticulation of the production, processing, distribution and consumption of food on an unprecedented scale (Ploeg, van der, 2020). These disruptions contributed to a sharp global increase in food insecurity.

In Chile, for example, a study comparing food security levels before and during the pandemic showed a marked increase in moderate to severe food insecurity, rising from 30% in 2017 to 49% in 2020 (Giacoman; Herrera; Ayala Arancibia, 2021). In Brazil, the government suspended in-person schooling in March 2020, yet no contingency plan was put in place to ensure continued school feeding (Rodrigues *et al.*, 2022). Financial access to food was also severely compromised during the health emergency caused by COVID-19 in Brazil, exacerbating existing vulnerabilities in food security (Rodrigues *et al.*, 2022).

Poverty was already widespread in Brazil pre-pandemic, and despite recent progress of a 27.5% poverty rate in 2023, the lowest since 2012 (Brasil, 2024c), the scale of inequality

remains one of the highest in the world. The pandemic's impacts exacerbated these challenges, with lower-income households hit hardest while the upper income quintile was relatively unaffected. Regionally, the burden was also uneven throughout the pandemic: Brazil's poorest region, the Northeast, along with the North and Center-West regions suffered 8%-10% of income loss, while the wealthier regions of the South and Southeast were least affected, with an income loss of 6%-7% (Tsakok; Mengoub, 2021). This had severe implications for food security, particularly as the COVID-19 pandemic intensified an already critical food insecurity crisis: by 2020, 19.1 million people in Brazil experienced severe food insecurity, nearly double the 10 million recorded in 2018 (Rede PENSSAN, [s.d.]). In 2022, the number of people experiencing severe food insecurity increased to a staggering 31.1 million.

During the COVID-19 pandemic, the National School Feeding Program (PNAE) in Brazil faced significant challenges in ensuring proper nutrition for students. Following the guidelines of the Brazilian Food Guide, Resolution FNDE No. 002/2020 required at least 75% of school meals to consist of fresh or minimally processed foods while limiting processed foods to 20% and culinary ingredients to 5% (Carmo Freitas; Monteiro Brito; Prado Alexandre-Weiss, 2022). Law No. 13,987, published on April 7, 2020, authorized, on an exceptional basis, the distribution of food products purchased with PNAE funds to the parents and/or guardians of students in public basic education schools during the suspension of classes due to emergencies or public crises. To guide executing entities on food distribution to students, Resolution CD/FNDE No. 02 was published on April 9, 2020, outlining the implementation of PNAE and establishing safety measures for handling, assembling, and distributing food kits. However, implementing these regulations was difficult due to school closures. The Collaboration Center for School Food and (CECANE) organized virtual events addressing challenges like food procurement, family farming, and students' right to adequate nutrition. Research conducted with 189 municipalities revealed difficulties in food kit composition, limited municipal funding, and disruptions in family farming contracts. Logistical issues also led to an increased reliance on ultra-processed foods.

The COVID-19 crisis highlighted vulnerabilities within the globalized food system, straining food insecurity support structures worldwide. For example, in Brazil the PNAE food assistance program for elementary school students was put on pause in the beginning of 2020 and replaced with a monthly food basket program (Rodrigues *et al.*, 2022). In one Brazilian research study, the authors conducted household surveys with families whose public-school children receive daily meals through PNAE. The survey collected data about their experience

with food insecurity during the COVID-19 pandemic. According to the results of the study, the PNAE was deemed essential to guaranteeing the human right to adequate food for public-school students during and after the pandemic (Rodrigues *et al.*, 2022). These findings underscore the pandemic's profound impact on global food systems and reveal how rapidly food insecurity can intensify for vulnerable populations worldwide.

### **1.2.5 Possible Effects and Consequences of Food Insecurity**

Food insecurity may negatively affect children's acute and chronic health in both direct and indirect ways (Thomas; Miller; Morrissey, 2019). Researchers frequently cite early work finding food insecurity to be associated with a slew of negative outcomes for children, including worse general health, increased use of emergency department services, worse academic performance, poorer social outcomes, and anxiety and depression (Cook *et al.*, 2004). Children who experience food insecurity have a notably higher risk of suffering from a range of impacts to their general health, mental health, weight, academic performance, social connection, and others.

For members of food-insecure households, health outcomes are often considerably worse. Of particular concern is when food insecurity occurs in households with children, as it is associated with lower fruit consumption, iron-deficient anemia, lower learning and social development, and mental health disorders" (Burke *et al.*, 2021). According to one study in which the authors compared children with various health conditions and their experiences with food insecurity, compared to rates had they not been food insecure, children in food-insecure households had rates of lifetime asthma diagnosis and depressive symptoms that were 19.1% and 27.9% higher, rates of foregone medical care that were 179.8% higher, and rates of emergency department use that were 25.9% higher (Thomas; Miller; Morrissey, 2019).

The pathways from food insecurity to child mental distress are likely to be complex (Pryor *et al.*, 2023). For example, food insecurity may lead to parental psychological distress, which in turn can adversely affect the home environment and subsequently impair a child's emotional development (Gill; Koleilat; Whaley, 2018). Additionally, nutrition scientists highlight that diets high in processed, high-fat, and high-sugar foods—often more accessible to food-insecure families—are linked to increased rates of common mental disorders like depression and anxiety in adolescence and adulthood (Marx *et al.*, 2017). Very low food security, marked by reduced food quality, quantity, or disrupted eating patterns, can further

impair immune function and lead to unhealthy weight outcomes (Dinour; Bergen; Yeh, 2007). Research indicates that students from food-insecure households perform worse academically, are more likely to repeat a grade, and experience limited intellectual stimulation compared to their food-secure peers (Tamiru e Belachew, 2017). Similarly, in the study *Household food insecurity and early childhood development: Systematic review and meta-analysis*, household food insecurity was associated with developmental risk and poor math skills in studies conducted in high income countries and with poor vocabulary skills in studies conducted in both high income countries and low to middle income countries (Oliveira, de *et al.*, 2020).

While adults facing food insecurity commonly suffer from depression and anxiety, children incur an additional risk of developing hyperactivity and externalizing/internalizing problems (Cain *et al.*, 2022). In a 2019 study, the authors found that exposure to hunger early in life is associated with a higher probability of being overweight, having difficulty with daily living activities, and a higher risk of depression in old age (Cui; Smith; Zhao, 2020). Nikolaus and collaborators further establish that food insecurity in young adulthood is associated with increased diabetes risk from young to middle adulthood, even after accounting for sociodemographic factors (Nikolaus *et al.*, 2022). These findings underscore the widespread and long-lasting effects of food insecurity, highlighting the urgency of addressing this issue to safeguard children's health, development, and future well-being.

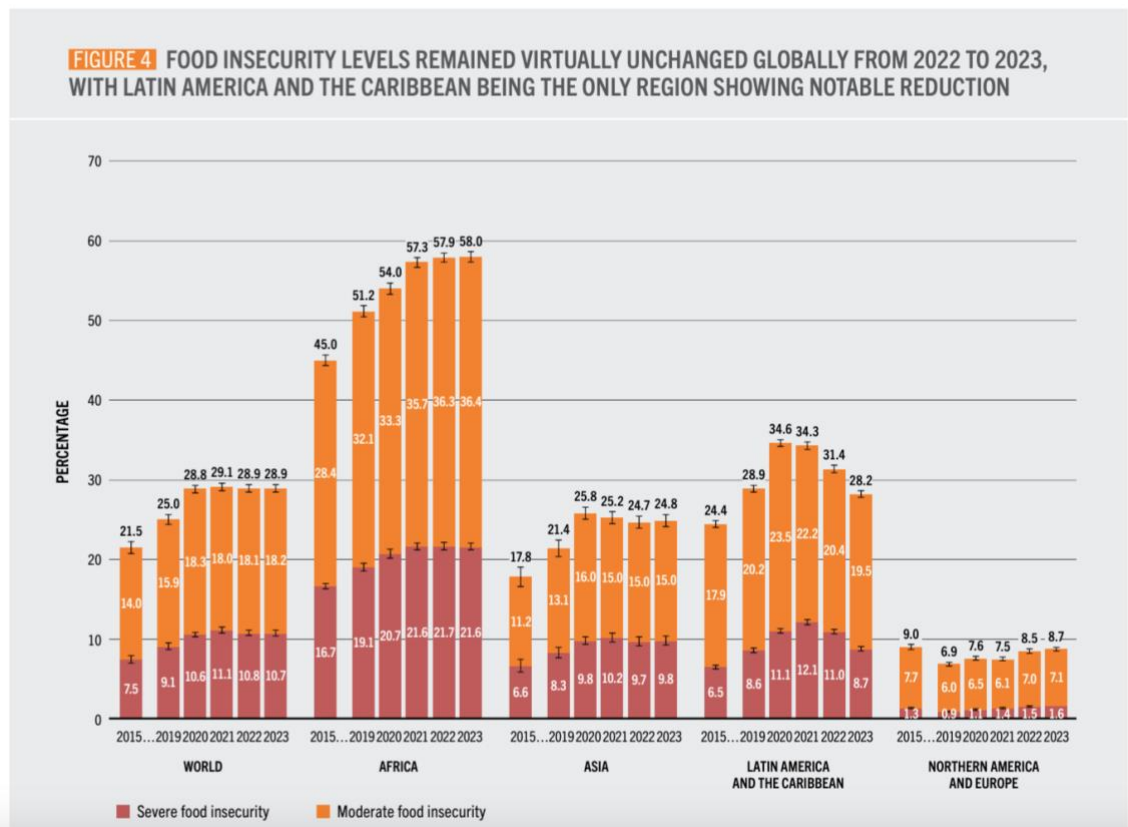
### **1.2.6 Political Impacts on Food Insecurity in The Region**

In 2021, the administration under President Jair Bolsonaro renamed the "Food Acquisition Program" to the "Feed Brazil Program," which resulted in a drastic reduction in food assistance. The program's funding dropped to just R\$2.6 million in 2023, marking a 76% decrease in food distribution from 2011 levels (491,260 tons in 2011 compared to 114,043 tons in 2021) (Croquer, 2022). By mid-2022, when 33 million Brazilians were facing hunger, only 11,460 tons of food had been donated comparing with the 500,000 tons the program donated at its peak (Croquer, 2022).

The rise of far-right governance across Latin America has had significant implications for food insecurity in the region. Several countries in Latin America experienced periods of economic and social progress during the early 2000s, driven by left-leaning governments that implemented social safety nets, conditional cash transfer programs, and poverty alleviation initiatives. These policies led to measurable reductions in food insecurity and poverty.

However, the shift towards far-right and neoliberal governance in the 2010s marked a reversal of these gains, as demonstrated in Figure 1.

**Figure 1** – Food Insecurity Levels Remained Virtually Unchanged Globally From 2022 To 2023, With Latin America and The Caribbean Being the Only Region Showing Notable Reduction



Fonte: FAO, I. U. W. and WHO (2024).

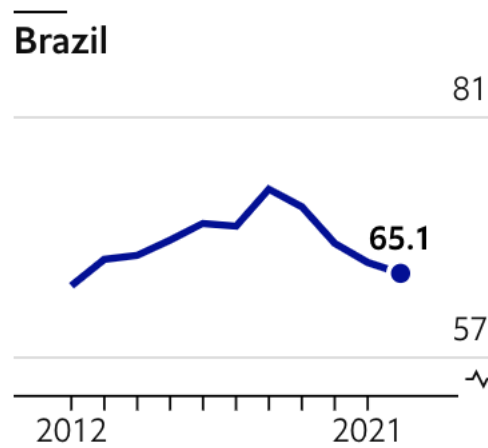
In Brazil, Souza and collaborators agree that the downward trend in food insecurity in the mid 2010s was a result from Family Grant Program (PBF), a conditional cash transfer program for families experiencing financial difficulties (Souza e Silva, 2020). The well-validated Brazilian Food Insecurity Scale (EBIA) documented major reductions in moderate/severe food insecurity between 2004 and 2014 likely because of economic growth in the context of equitable social and economic policies (Pérez-Escamilla; Salles-Costa; Segall-Corrêa, 2024). Coinciding with a change in political administrations, in about 2015, food insecurity rates started to rapidly rebound, with the food insecurity crisis becoming substantially worse during the COVID-19 pandemic because equitable social policies were

weakened or eliminated during the economic recession and political crisis preceding it (Pérez-Escamilla; Salles-Costa; Segall-Corrêa, 2024). This statistic is demonstrated in Figure 2, the GFSI indicator for Brazil.

In The United Nations 2014 report, *The State of Food Insecurity in the World*, it was revealed that Brazil was removed from the World Hunger Map after an 82% reduction in undernourishment between 2002 and 2013 (FAO, 2014). According to the FAO, several key factors were decisive for the results. First, there was an increased food supply; in 10 years, calorie availability for the population grew by 10%. Next, there was increased income, with a 71.5% real growth in the minimum wage and the creation of 21 million jobs. Then, the creation of the Federal Government's Income Access Program, followed by 43 million children and young people receiving meals. Lastly, governance, transparency, and social participation, with the re-establishment of the National Food and Nutritional Security Council (CONSEA) (FAO, 2014).

In a commemorative ceremony to celebrate the removal of Brazil from the World Hunger Map, Tereza Campello, the minister of Social Development and Fight Against Hunger of Brazil at the time, stated "For a country to successfully fight hunger, it must put the poor at the center and make it a priority. If the fight against hunger is not treated as essential, it will never end." According to Campello, the success was not the result of a single action but rather a set of converging initiatives. "To achieve results like these, we had to coordinate various sectors. No single program can do it alone. It's the combination of several factors working together that leads to success," she said (Casa Civil, 2014). These results are demonstrated in Figure 2, where there is a notable increase in food security from 2012 that rapidly downturns to a decrease in 2018.

**Figure 2** – Rate of Food Security in Brazil from 2012-2022 based on the Global Food Security Index



Fonte: Economist Impact (2022).

Eight years later, the commemorations and congratulations ended, and Brazil has returned to the World Hunger Map. In 2022, Tereza Campello stated that “the Bolsonaro government dismantled the strategic initiatives that ensured Brazil's removal from the Hunger Map” (Oliveira; Stropasolas, 2022), to which it returned in July of 2022, as per the report from the United Nations' Food and Agriculture Organization (FAO, 2014). The former minister also highlighted that the government made it impossible to improve the population’s income, one of the main factors contributing to the rise in hunger, and disorganized all the support systems for family farming. Campello stated, "This government has no commitment to the social agenda. It's not on the government's horizon. According to Bolsonaro, there is no hunger in Brazil, which is even counterintuitive. Just walk the streets and see people asking for food; the data is right in front of us," (Oliveira; Stropasolas, 2022).

Bolsonaro’s denial of Brazil’s hunger reality remained apparent in his political moves as well. On August 12, 2022, Bolsonaro vetoed for the second time a proposal to increase the budget for Brazil’s National School Meal Program (PNAE), a 34% adjustment approved by Congress in the 2023 Budget Guidelines Law (LDO). This adjustment was intended to cover the inflation gap from the past five years (Observatório da Alimentação Escolar, 2022). The 1988 constitution guaranteed the universal right to free school meals for all students enrolled in public school via PNAE, which serves an estimated 40 million Brazilian students every day (Sidaner; Balaban; Burlandy, 2013). Bolsonaro justified the veto by stating that increasing funds for school meals could drain resources from other programs and exceed the spending

limit imposed by Constitutional Amendment No. 95 (Observatório da Alimentação Escolar, 2022). The actions of the previous presidential administrations in the past few decades have had a colossal role in shaping the status of food insecurity in Brazil today.

### **1.2.7 Food Insecurity in Brazil**

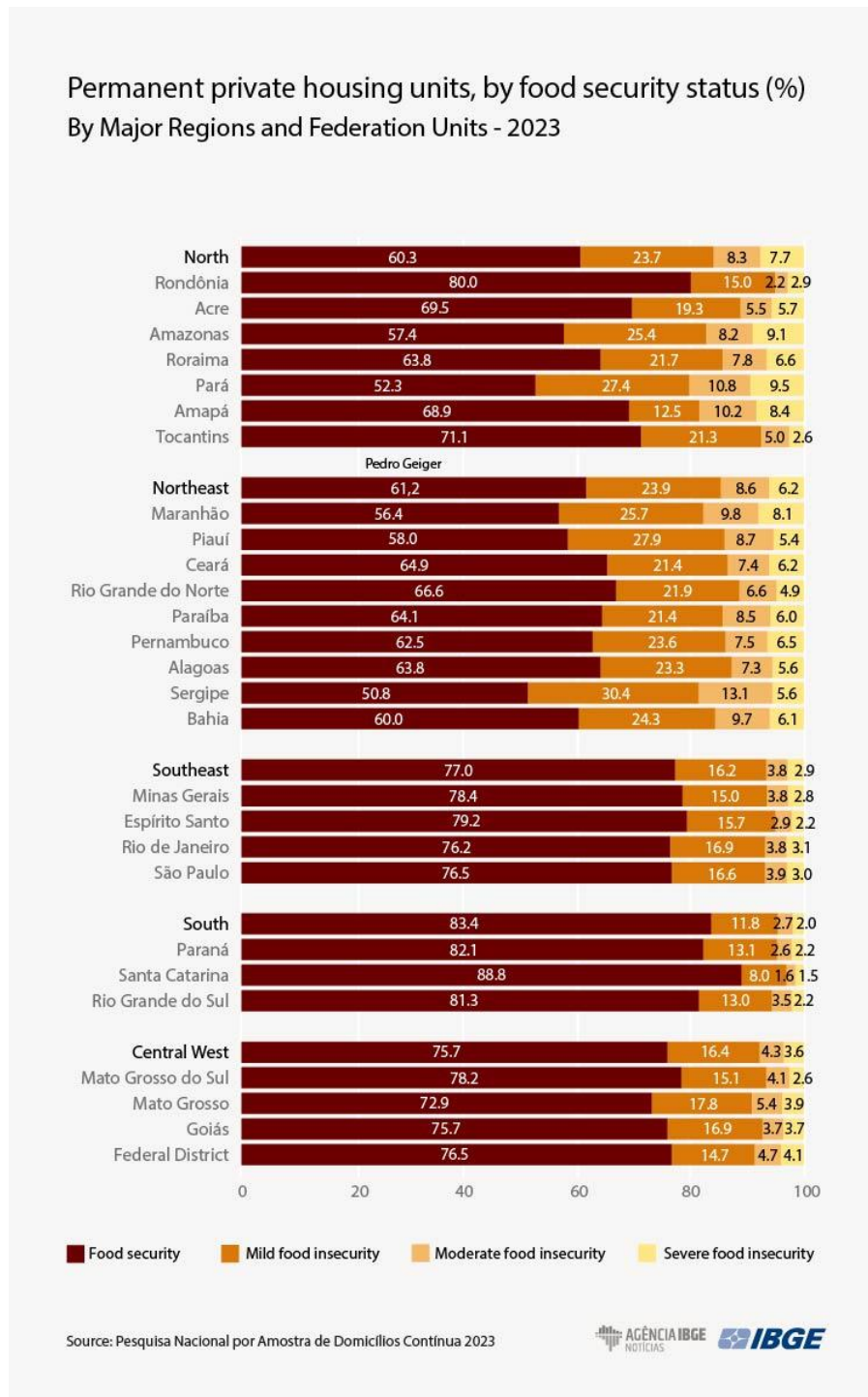
Law 11.346/2006, known as the Organic Law on Food and Nutritional Security (LOSAN), defines food as a fundamental right for human beings in Brazil, in an equal and non-discriminatory manner, ensuring continuous and lasting access to quality food in sufficient quantity (Conselho Federal de Nutrição, 2006). It considers environmental, social, cultural, and economic perspectives, while respecting the food sovereignty of individuals (Silva *et al.*, 2023). However, even though food is defined as a human right in Brazil, many Brazilians frequently lack reliable access to it, particularly those within the most vulnerable socioeconomic groups.

Among the most vulnerable groups in Brazil are Indigenous populations, quilombolas (descendants of enslaved Africans), and residents of favelas. These groups are particularly susceptible to food insecurity, facing systemic inequities that exacerbate their vulnerability. In January 2023, teams from the Ministry of Health found many members of the Yanomami territory in a serious state of health crisis due to severe malnutrition, as well as many cases of malaria, acute respiratory infection, and other diseases (Ministério da Saúde, 2023b). According to Gubert and collaborators, between 2004 and 2013 the rate of food insecurity was higher among Black and Brown individuals than white individuals in Brazil (Gubert *et al.*, 2017). The lack of access to land, infrastructure, and resources, along with social exclusion, contributes to their heightened risk of food insecurity, making them disproportionately affected by crises such as economic downturns and environmental disasters.

There are multiple organizations that evaluate household and individual levels of food insecurity in Brazil, PENSSAN and IBGE being two of the most prominent contributors. The Brazilian Institute of Geography and Statistics (IBGE) analyzes food security in Brazil through the National Household Sample Survey - PNAD (IBGE, 2024b). In 2023, 27.6% (or 21.6 million) of households in Brazil experienced food insecurity, with 18.2% (or 14.3 million) facing mild food insecurity, 5.3% (or 4.2 million) facing moderate food insecurity, and 4.1% (or 3.2 million) facing severe food insecurity. The North (60.3%) and Northeast (61.2%) regions had the lowest proportions of food-secure households, while the Central-West (75.7%),

Southeast (77.0%), and South (83.4%) had the highest, as demonstrated in Figure 3 (IBGE, 2024b). The proportion of households with moderate or severe food insecurity in urban areas (8.9%) was lower than in rural areas (12.7%) (IBGE, 2024b). In previous years, the 2017-2018 survey had found 36.7% of households to be food insecure, with 24.0% experiencing mild food insecurity, 8.1% moderate, and 4.6% severe (IBGE, 2024b).

**Figure 3 – Household Food Insecurity by Region and State in Brazil via the 2023 PNAD Contínua Survey**



Fonte: IBGE (2024b).

The North and Northeast regions have continuously experienced the highest prevalence of severe food insecurity which had worsened even more by 2018, erasing the previous advances made in prior years (Salles-Costa *et al.*, 2022). It was noticeable that just under half

of residents in the North and Northeast regions had full and regular access to food (Salles-Costa *et al.*, 2022). The North region includes the states covered by the Amazon rainforest, which is the area in the country with the highest proportion of traditional communities. The North also includes many communities founded by enslaved people who fled enslavement, known as quilombos (Salles-Costa *et al.*, 2022). While there is comparative data throughout the years for various regions of Brazil, the current situation of hunger in the Brazilian federative units is uncertain, given the lack of direct and recent calculation at the municipal level (Silva Batista; Lins; Espinoza, 2023).

### **1.2.8 Brazil's School Meal Program: PNAE**

Among the Brazilian public policies that seek to diminish food insecurity is the universal school meal policy. There is frequent discourse between policymakers and governments worldwide about whether school feeding programs should be universal or targeted for those who need it (Cohen *et al.*, 2021). For Brazilians, the answer is clear: the PNAE is the only program that guarantees universal free meals for all levels of education, from kindergarten to high school in Brazilian public schools (Bandoni *et al.*, 2024). PNAE positively affects the overall quality of diet, increases the consumption of food, promotes healthy eating habits, and decreases the consumption of unhealthy food. According to the Minister of Education, Camilo Santana, PNAE is an important policy to combat food insecurity (Raes, 2024). “In some schools and municipalities, often the only meal a child gets in a day is the one offered at school. This is a cruel reality. We must be outraged every day and not accept that in a country as large as Brazil, there are still people going hungry” (Raes, 2024).

In addition to combatting childhood hunger, Brazil's PNAE became a public policy subsidiary of familiar agriculture through the Law 11,947 of 2009, which requires the minimal investment of 30% of PNAE funds to purchase food from family farmers (Martinez, Lourdes Saturnino Gomes, de e Marini, 2023). In 2015, PNAE purchased 457 million USD worth of food from family-owned farms (Berchin *et al.*, 2019)

The National School Feeding Program (PNAE) in Brazil began in the 1940s in response to widespread malnutrition, but it was only implemented in the 1950s with international support, including UNICEF's donation of powdered milk (Goes, 2022). Initially managed by the federal government, the program's structure changed over the years, undergoing multiple

name changes and expansions (FNDE, [s.d.]). In 1988, the Brazilian Constitution guaranteed school meals as a legal right, and in 1994, decentralization shifted responsibility to municipal and state governments, allowing for broader and more efficient distribution (Goes, 2022). By 1998, over 70% of municipalities were participating, with streamlined processes ensuring faster access to resources nationwide (Goes, 2022).

The National School Feeding Program (PNAE) in Brazil has achieved major milestones, including the mandate that 70% of federal funds be used for local foods that align with regional diets, boosting local economies (FNDE, [s.d.]). The creation of the School Feeding Council (CAE) in all municipalities enhanced oversight and community involvement. Collaborating Centers for School Food and Nutrition (CECANE) drive research and training by providing technical, scientific, and operational assistance for the implementation of PNAE in municipalities. In 2013, PNAE expanded to include students in specialized, youth, and adult education (FNDE, [s.d.]).

Today, PNAE supports diverse dietary needs by providing differentiated per capita funding, prioritizing products from family farms, indigenous and quilombola communities, and agrarian settlements. Since 2012, increased funding for young children and improved project selection for family farmers have strengthened early education nutrition and local food sourcing. In 2020, Resolution No. 6 emphasized unprocessed foods to promote student health and restricted ultra-processed items. During the COVID-19 pandemic and recent floods, PNAE adapted by distributing food and extra funding in emergencies (FNDE, [s.d.]). PNAE remains vital for food security, cultural respect, and food & nutrition education, prioritizing student needs based on age, health, and vulnerability.

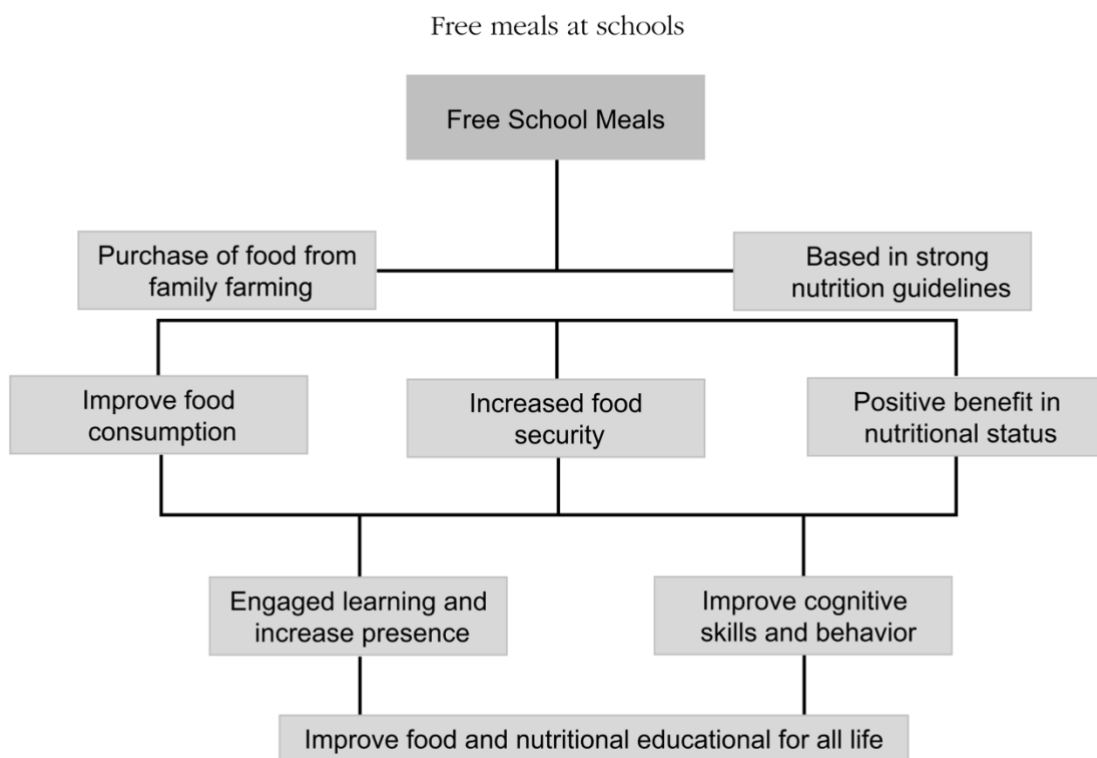
The most recent resolution to PNAE legislation, *CD/FNDE Resolution No. 3/2025*, introduces key changes to PNAE, increasing investment in family farming, enhancing financial oversight through empowered School Food Councils (CAE), tightening restrictions on ultra-processed foods for healthier school meals (maximum of 15% ultra-processed in 2025 and decreasing to 10% in 2026), and enforcing stricter penalties for non-compliance, ensuring transparency and quality nutrition for students (Brasil, 2025b). Adding onto the 30% familial agriculture legislation, with the new resolution at least 50% of purchases from small family farms must be made in the name of a female producer. In the event of a selection tie between companies, those with a higher number of registered female producers will be given priority.

PNAE – coordinated by the Ministry of Education (MEC) through the National Fund for the Development of Education (FNDE) – was one of the successful Brazilian initiatives presented in the Global Alliance Against Hunger and Poverty (Raes, 2024). Brazil's experience

with PNAE, which is one of the largest school feeding programs in the world, was shared with governments, international organizations, knowledge institutions, funds, development banks, and philanthropic institutions (Raes, 2024). Figure 5 demonstrates a more detailed sequence of PNAE’s timeline.

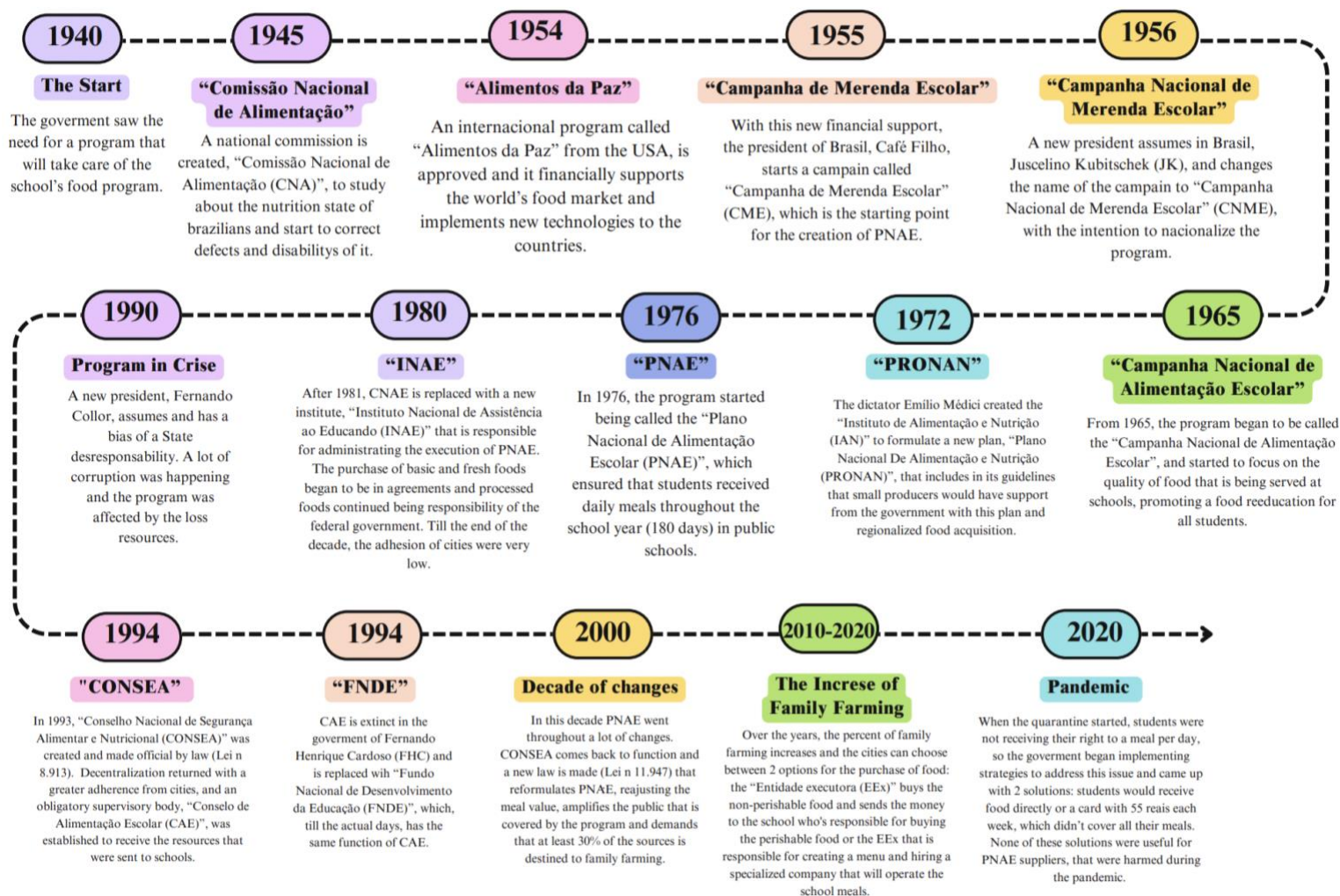
According to a quantitative study in the United Kingdom, the majority of participants in a survey about parental perceptions of household food security reported that food was available for their children when they were hungry, both meals and snacks, but this was facilitated by the provision of free school meals (Hevesi; Downey; Harvey, 2024), demonstrating the essential role that school meal programs play in the fight against food insecurity. The authors of the article *It is time: free meals at schools for all* (UNICEF Data and Analytics Section Division of Data, [s.d.]) developed a theoretical framework to demonstrate the benefits that school meal programs have on combatting food insecurity as demonstrated in Figure 4.

**Figure 4** – Conceptual framework of the benefits of free school meals



Fonte: Bandoni *et al.* (2024).

Figure 5 – Timeline of PNAE



Fonte: Elaboração Própria

### 1.2.9 Parent/Guardian Reports of Household Food Insecurity

Much of prior research into the conceptualization, assessment, and impact of child food insecurity has typically been derived from the primary food decision maker within the household, the majority of whom are mothers (Landry *et al.*, 2019). However, the use of parental or maternal report as a proxy for child reporting of child-level food insecurity is potentially inaccurate (Landry *et al.*, 2019). What children experience of food insecurity may be conceptually distinct from what adults experience, stemming from children's developmental vulnerability, limitation in managing financial resources, lack of independence, difficulty in preparing food when alone, and inexperience handling scarce moments (Bernal *et al.*, 2012). Children experience cognitive, emotional, and physical awareness of food insecurity, participate in parental management strategies, and initiate their own strategies to manage food insecurity and generate resources (Fram *et al.*, 2011a).

Parent reported data for childhood food insecurity becomes problematic and potentially inaccurate for many reasons. The use of parental reports rather than child reports in food insecurity research is undergirded by 2 assumptions that emerged in early interviews with mothers in food-insecure households (Fram *et al.*, 2011a). The first assumption is that mothers manage the household food environment and the ways that food insecurity is experienced by other family members (Fram *et al.*, 2011a). According to mothers' narratives, when food becomes scarce, the mother employs a sequence of strategies to manage increasingly severe situations with an overall function of protecting children from hunger except in the most extreme situations (McIntyre *et al.*, 2003). The second assumption is that all household members experience food hardships in terms of the components that mothers have identified: quality of food, quantity of food, social acceptability of methods of acquiring food, uncertainty, and limiting of choices (Fram *et al.*, 2011a). Taken together, these 2 assumptions support a research perspective that minimizes potential problems with parent reporting of child hunger (Fram *et al.*, 2011a).

In regard to child versus parent perspectives, there are a few research studies that discuss this dichotomy. In the study *Development, Validity, and Cross-Context Equivalence of the Child Food Insecurity Experiences Scale for Assessing Food Insecurity of School-Age Children and Adolescents* by Frongillo and collaborators, the authors were able to successfully evaluate childhood experiences of food insecurity from a wide range of countries worldwide for children

ages 5-18 (Frongillo *et al.*, 2022). With the results of the study, the authors concluded that “children and adolescents are aware of food insecurity cognitively, emotionally, and physically”. However, this study did not include Brazil or a comparative analysis between child and parent perspectives. In one research article carried out in the United States entitled *Child Compared with Parent Perceptions of Child-Level Food Security*, a different parent survey was used (Household Food Security Survey) and the ages of the children spanned only from 3<sup>rd</sup>-5<sup>th</sup> grade (ages 8-12) (Landry *et al.*, 2019). In the Brazilian-led study *The Contribution Of School Meals To Food Security Among Households With Children And Adolescents In Brazil*, the authors asked children about their frequency of school meals consumed, while comparing that data with the parent perception of their experience with food insecurity. Therefore, the children reported on their consumption of school meals, but not on their experience with food insecurity.

The author has not identified any studies in Brazil that examine elementary school children's experiences with food insecurity from the children's own perspective, nor any that compare child and parent perspectives on the children's experiences with food insecurity. The majority of studies on childhood food insecurity worldwide focus on the head of household's perspective rather than the child's, with only a few recent studies adopting a child-centered approach.

### **1.3 Objectives**

#### **1.3.1 General Objective**

The current research project has the general objective of understanding food insecurity experienced by a variety of students and families from various socioeconomic backgrounds in Aparecida de Goiânia, Goiás, Brazil. The study sampled 173 students in 2 public elementary schools to gain a better picture of what children in Aparecida de Goiânia are experiencing regarding food insecurity. It is imperative to capture children's perspectives, as physical, mental, and emotional health concerns related to food insecurity can be hidden or difficult to uncover without the child's perspective.

### 1.3.2 Specific Objectives

- To assess the prevalence and severity of food insecurity among elementary school students in Aparecida de Goiânia using a child-centered questionnaire adapted from international guidelines.
- To analyze the relationship between students' food insecurity levels and their meal consumption patterns, including frequency of meals on school versus weekend days and experiences of hunger before sleep.
- To compare food insecurity classifications reported by children with those reported by their parents or caregivers, identifying areas of agreement and discrepancy within the same household.
- To examine how socioeconomic factors such as income, race, and marital status relate to reported food insecurity among both children and parents, highlighting patterns of vulnerability.
- To advocate for the inclusion of children's direct perspectives in food insecurity research and public policy, reinforcing the limitations of caregiver-only assessments and the need for more inclusive evaluation tools.

## CHAPTER II – ARTICLE 1: FROM THEIR EYES: EVALUATING CHILDHOOD PERSPECTIVES OF THEIR OWN EXPERIENCE WITH FOOD INSECURITY

### 2.1 Introduction

Food security—defined as access by all people at all times to enough food for an active, healthy life—is one of several conditions necessary for a population to be healthy and well nourished (Coleman-Jensen *et al.*, 2019). In this sense, a lack of access to sufficient, safe, and nutritious food for maintaining a healthy lifestyle indicates a certain level of food insecurity. This concept, however, is more complex than merely the absence of food; it encompasses several dimensions, including dietary, nutritional, social, economic, and cultural factors.

Food insecurity has evolved into a pressing global issue over recent decades and affects individuals and communities across a spectrum of contexts—urban, rural, developed, and developing (Hallward *et al.*, 2023). Food insecurity is especially prevalent among low-income families with children (Thomas; Miller; Morrissey, 2019). Food insecurity can be aligned with the concept of food poverty, which describes the inability to afford or access a healthy diet. It represents both an immediate crisis—lacking food to meet daily nutritional needs—and a longer-term problem, where reliance on cheap, poor-quality foods leads to malnutrition and health deterioration (Furey *et al.*, 2019). This, in turn, has a significant impact on public health, contributing to a range of chronic conditions such as obesity, diabetes, and heart disease, particularly when food-insecure individuals are forced to prioritize caloric intake over nutritional quality.

Food insecurity extends beyond the immediate experience of hunger. It involves a continuum that ranges from the anxiety of running out of food, to compromising on food quality, to an outright lack of access to food. Thus, addressing food insecurity requires both short-term measures, such as emergency food assistance, and long-term strategies to tackle the systemic drivers of inequality and poverty that underlie the issue. A key component in combatting food insecurity is evaluation—assessing its extent, severity, and impact on different populations. Effective measurement helps policymakers, organizations, and researchers develop targeted interventions to mitigate food insecurity’s root causes.

Because it is a complex, multidimensional concept, measuring food insecurity has been an ongoing challenge for researchers and practitioners alike (Coates; Swindale; Bilinsky, 2007). Thus, organizations have been working diligently to construct various ways of evaluating food insecurity on a national and global scale. Increased awareness in recent years has led to the introduction of diverse household surveys that provide a clearer picture of food insecurity prevalence. Some of the primary household surveys used on a global scale include the Household Food Insecurity Access Scale (HFIAS) created by USAID (Coates; Swindale; Bilinsky, 2007), the Latin American and Caribbean Food Security Scale (ELCSA) (Huffman; Nájera, 2023), the Household Hunger Scale (HHS) and the Food Insecurity Experience Survey (FIES). While similar in practice, each survey reveals slightly different data and determinants when it comes to food insecurity. In one study, the HFIAS and the HHS were the two surveys used to check whether determinants and status of household food security differ between the two measures (Kolog; Asem; Mensah-Bonsu, 2023). The authors found that factors such as household size, access to good roads, access to formal cooperative and availability of paid jobs were found to be significant determinants of household food security with the HFIAS, while gender of household head and distance to market were significant determinants of food security in the HHS model (Kolog; Asem; Mensah-Bonsu, 2023). Despite these methodological differences, these tools remain essential for identifying food-insecure populations. However, the population that is consistently left out of the data responses from these surveys is children.

Currently, no globally accepted food insecurity survey specifically captures children's experiences (Frongillo *et al.*, 2022). Most surveys rely on household heads, often parents, to report food insecurity for all members, including children. For example, the USDA's 2018 survey estimated that 7.1% of U.S. households with children experienced food insecurity, but these findings were based on parental responses rather than direct input from children (Coleman-Jensen *et al.*, 2019). Additionally, when asked in the FAO's Frequently Asked Questions page if the FIES measures food insecurity of children, the response was listed as "while food insecurity among children cannot be directly measured using the FIES survey module, it is possible to estimate the percentage of children living in food insecure households" (FAO).

This methodology can lead to inaccurate reporting of a child's own experience, as parents, particularly mothers, are often thought to shield or buffer their children from the effects of food insecurity; but research has shown that they may not always be able to fully protect their children

(Landry *et al.*, 2019). According to subsequent investigations in which children and adolescents aged 6-17 years were interviewed, several subconstructs of their experience with food insecurity were revealed: children and adolescents are aware of food insecurity cognitively, emotionally, and physically. They take responsibility for it by participating in adult strategies for managing food resources, initiating their own strategies for making food resources stretch, and generating resources in terms of food or money for food on their own (Frongillo *et al.*, 2022). This underscores the need for research that directly examines children's own experiences with food insecurity.

While food insecurity is a global challenge, its prevalence and impact vary significantly by country. According to the Brazilian Food Insecurity Scale (EBIA), 27.6% (21.6 million) of private households in Brazil experienced some degree of food insecurity in 2023 (IBGE, 2024c). Among these, 18.2% (14.3 million) experienced mild food insecurity, 5.3% (4.2 million) moderate, and 4.1% (3.2 million) severe. Notably, although women were slightly more likely to be household heads overall (51.7% compared to 48.3% for men), this trend reversed in food-secure households, where men accounted for 51.3%. In contrast, in food-insecure households, 59.4% had a female head, with the largest disparity occurring in moderate food insecurity cases, where 60.6% of affected households were female-led.

Racial and ethnic disparities further compound food insecurity in Brazil. Understanding food insecurity is essential for addressing health disparities across demographic groups (Kursmark; Weitzman, 2009). Studies indicate that food insecurity significantly contributes to racial and ethnic health disparities, with certain groups disproportionately affected (Dong *et al.*, 2023). For instance, in Brazil, Afro-descendants make up the largest segment of the impoverished population, while indigenous communities face the highest levels of extreme poverty (Tsakok; Mengoub, 2021), attributing to disproportionately inadequate food consumption. In the 2023 survey, while 42.0% of household heads were white, 12.0% Black, and 44.7% mixed-race (*pardo*), food-insecure households had a significantly lower percentage of white heads (29.0%) and a higher share of Black (15.2%) and mixed-race (54.5%) heads of household. Among households facing severe food insecurity, 58.1% were led by mixed-race individuals—more than double the percentage of white heads of household (23.4%)(IBGE, 2024c). Furthermore, disparities are evident within school meal program participation: Locatelli and collaborators found that Brazilian students who are

male, identify as Brown or Black, live outside of urban centers, work, or have mothers with less formal education are more likely to rely on school meals (Locatelli; Canella; Bandoni, 2017).

In Brazil, the School Feeding Program PNAE (Programa Nacional de Alimentação Escolar), feeds over 40 million public school students every day with well balanced meals at no cost to the students (FNDE, [s.d.]). PNAE is one of the largest, most well-established school feeding programs in the world, and is the only universal feeding program that serves in all regions of the country. Among the majority of the recipients of the daily school meals are children.

In this context, the following research seeks to explore the impact of food insecurity on children in Brazil, focusing on those from diverse socioeconomic backgrounds. By surveying elementary school students (ages 6–14), this study aims to offer a comprehensive analysis of food insecurity from children’s perspectives.

## **2.2 Methods and Materials**

There are a few works that were referenced in the creation and implementation of this research. The first one utilized was that of Frongillo and colleagues, entitled *Development, Validity, and Cross-Context Equivalence of the Child Food Insecurity Experiences Scale for Assessing Food Insecurity of School-Age Children and Adolescents* (Frongillo *et al.*, 2022). This study determined that children ages 5-18 are capable of assessing their own status of food insecurity. For the current study, children between the ages of 6-14 were invited to participate, since standardized surveys already exist for adolescents aged 15 and older. The authors of the present research utilized the food insecurity answer codification method created by Frongillo and collaborators.

The research was conducted in two public municipal elementary schools in Aparecida de Goiânia, Goiás, Brazil. Due to the scarcity of data on food insecurity from primary school children’s perspectives, the study focused on students aged 6–14, from grades 1–8. There are two periods of school time in Brazil, morning and afternoon. All students sampled only attended one period (either morning or afternoon). The Aparecida de Goiânia Secretary of Education granted approval for conducting the survey in 10 municipal schools, of which 2 were ultimately selected based on the availability and willingness of school administrators to participate.

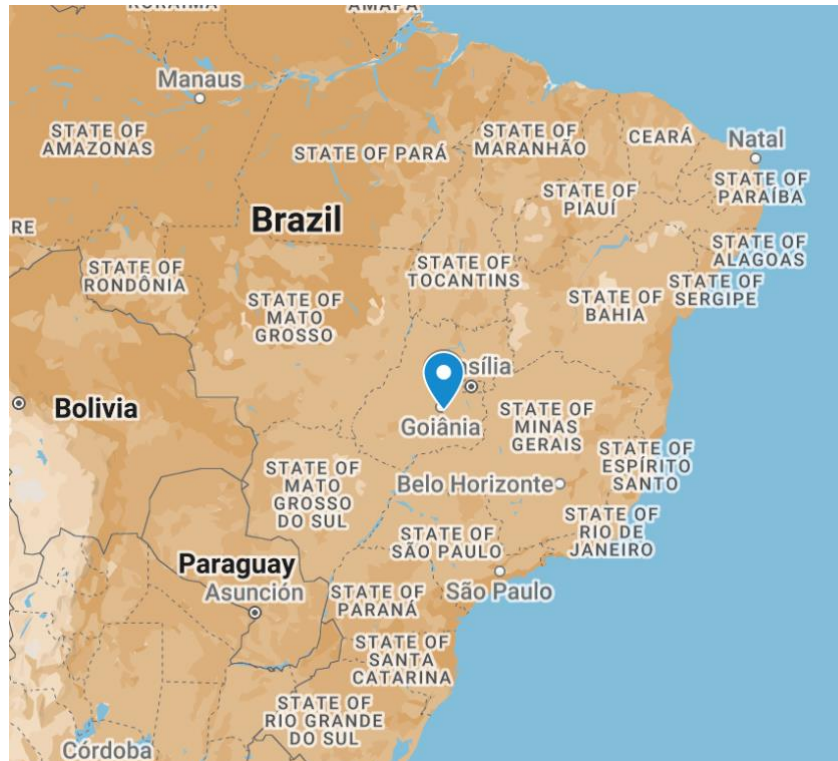
### 2.2.2 Aparecida de Goiania

The data collected for this project came from community members of the city Aparecida de Goiânia. Aparecida de Goiânia is located just south of the capital city of the state of Goiás, Goiânia and 220 kilometers south of the nation's capital, Brasília. Aparecida de Goiânia has a population of 527.796, a population density of 1,885.30 people/km<sup>2</sup>, and a school attendance rate of 95,3% for children ages 6-14 (IBGE, 2022).

Goiás is located in the Central-West region of Brazil (Figure 6). The economy of Goiás is composed of several segments in which agriculture stands out – the state is the largest national producer of sorghum and is the country's third-largest producer of soybeans, corn, beans, sugar cane and cotton (Federal University of Goiás, 2021). Livestock is also a prominent export in the production of cattle, pigs, horses, milk and eggs (Federal University of Goiás, 2021). Additionally, the agro-industry has acquired more space in the state due to the privileged location of Goiás within the national territory and the exploration of some raw materials (Federal University of Goiás, 2021).

According to the database Sebrae, in 2022, 40.3% of the work force in Aparecida de Goiânia were women, with an average salary of R\$ 2,434.58 per person while 59.7% were men with an average salary of R\$ 2,743.46 (Sebrae, 2022). In 2022, 127,259 employees were reported, with 41.1% in Services, 27.2% in Industry, and 22.1% in Commerce (Sebrae, 2022). The average monthly salary in Aparecida de Goiânia is higher on average in comparison to the state of Goiás (R\$2,017) and the average monthly salary nationally for Brazil (R\$1,893) (IBGE, 2024a).

**Figure 6 – Aparecida de Goiânia in Relation to Brazil Map**



Fonte: Google Maps.

### 2.2.3 Child Questionnaire

The survey created and utilized in this research consists of two sections. Section one includes questions developed by the authors to assess discrepancies between students' profiles and their respective levels of food insecurity. This section gathers information on age, grade level, meal consumption at school and home, and experiences of hunger before sleep. Section two contains 10 standardized questions from the United Nations document *How to Measure Child Experiences of Food Insecurity?*. All participants responded to these 10 questions (section two) and section one as part of the same survey. The responses from section two were used to determine each participant's level of food insecurity, based on the frequency of food-related hardships reported over the past 12 months.

#### Childhood Food Insecurity Survey

##### Section 1

1. What is your name?

2. How old are you?
3. Which grade are you in?
4. Have you ever experienced hunger when it was time for you to sleep?
5. How many times per day do you typically eat during the school week?
6. How many times per day do you typically eat on a weekend day?

## Section 2

For the following 10 questions, think about the questions in reference to the past 12 months.

Answer options: many times, sometimes, never, I don't know.

1. Did you worry that food at home would run out before your family was able to get more?
2. Did you worry about how hard it is for your parents/guardians to get enough food for your family?
3. Were you not able to get the food you wanted because there wasn't enough money?
4. Has the size of your meal been cut because your family didn't have enough food?
5. Were you hungry but didn't eat because your family didn't have enough food?
6. Did you skip a meal because your family didn't have enough food?
7. Did you feel tired or weak because your family didn't have enough food to eat?
8. Did you feel embarrassed or ashamed because your family didn't have enough food?
9. Did you feel sad or mad because your family didn't have enough food?
10. Did you feel embarrassed or ashamed about any of the things you or your family had to do to get enough food?

### 2.2.3.1 Classifying Food Insecurity in Child Questionnaire Respondents

Section one of the survey was used for analytical purposes and did not have coded answers. Each answer to section two of the survey was coded with 0 points for answering never or I don't know, 1 point for answering sometimes, and 2 points for answering many times. This point code system was adopted from the study by Frongillo and collaborators, *Development, Validity, and Cross-Context Equivalence of the Child Food Insecurity Experiences Scale for Assessing Food Insecurity of School-Age Children and Adolescents* (Frongillo *et al.*, 2022).

The classification of the participants' answers was based on the four categories used by the Brazilian Food Insecurity Scale, EBIA (Ministério da Saúde, 2023a), and based on the criteria in

the study *Child Compared with Parent Perceptions of Child-Level Food Security* (Landry *et al.*, 2019): food security (0 points), mild food insecurity (1-3 points), moderate food insecurity (4-7 points), and severe food insecurity (8-20 points).

### **2.3 Collection of Data**

The data collection process for this research was carefully designed to ensure accuracy, ethical compliance, and respect for the participating students and their families. It involved several key steps, beginning with ethical approvals, which were obtained through a rigorous review process by the Ethics Committee at the Universidade Federal de Goiás (UFG). The committee granted initial approval in April 2024, followed by modifications in June and August 2024, which included adjustments to questions and the online guardian consent form to streamline the process. Authorization was secured from the Secretary of Education of Aparecida de Goiânia, granting access to ten municipal elementary schools. From these, two schools were selected based on the availability of school administrators to collaborate.

Parental consent played a critical role in the research process. A comprehensive consent form, included in Annex 5, outlined the study's objectives, methodology, and participants' rights, ensuring transparency and informed decision-making. Multiple strategies were employed to maximize participation. These included direct distribution of consent forms to students' take-home folders, in-person outreach at school gates to address parents' questions, and the use of a Google Forms link shared via school WhatsApp groups. Students were excluded from the study if parental consent was not obtained, if they personally declined to participate, or if they were absent on the day of data collection. Participant consent forms were given to students who were granted parental consent to participate on the day of the interviews.

The surveys were collected via one on one in person interviews. All interviews took place in person at the school libraries. Participants sat one on one with an interviewer with 2 meters of space in between each participant to provide privacy. To ensure consistency and ethical adherence during data collection, all interviewers underwent thorough training. At School A, data collection was facilitated by members of the local non-profit organization EcomAmor, who participated in a full-day workshop led by EcomAmor staff and the research team. This training covered ethical considerations, survey methodology, and effective communication techniques, supplemented by

online seminars and role-playing exercises. At School B, data collection was conducted directly by the authors, who followed the same protocols. Interviewers ensured confidentiality and sensitivity, with at least one school staff member present during interviews for additional oversight.

## 2.4 Results

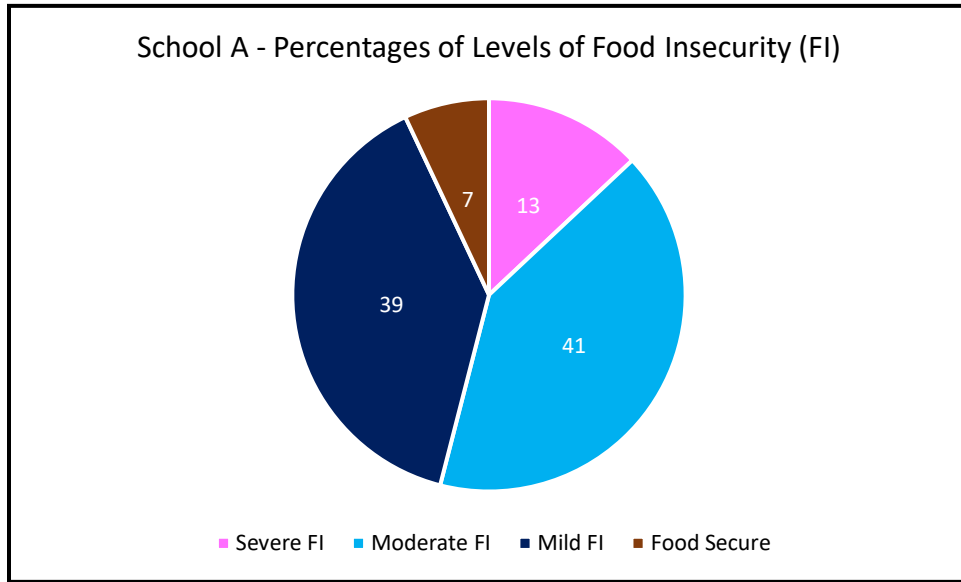
The results of the questionnaires were analyzed using Microsoft Excel to assess the levels of food insecurity among the sampled students. At School A, a total of 131 students participated in the study. Among these, based on the results of section two, 17 students were classified as experiencing severe food insecurity, 54 as moderate food insecurity, 51 as mild food insecurity, and 9 as food secure. At School B, 42 students completed the questionnaire, with 8 students classified as experiencing severe food insecurity, 15 as moderate food insecurity, 17 as mild food insecurity, and 2 as food secure.

Combining the data from both schools, the total sample consisted of 173 students. Among them, 25 students (14.5%) were categorized as experiencing severe food insecurity, 69 students (39.9%) as moderate food insecurity, 68 students (39.3%) as mild food insecurity, and 11 students (6.4%) as food secure (Table 1). Each school’s results are specified in Figure 7 and Figure 8. These results highlight the varying degrees of food insecurity experienced by the students in this study.

**Table 1** – Food Insecurity Classifications by School

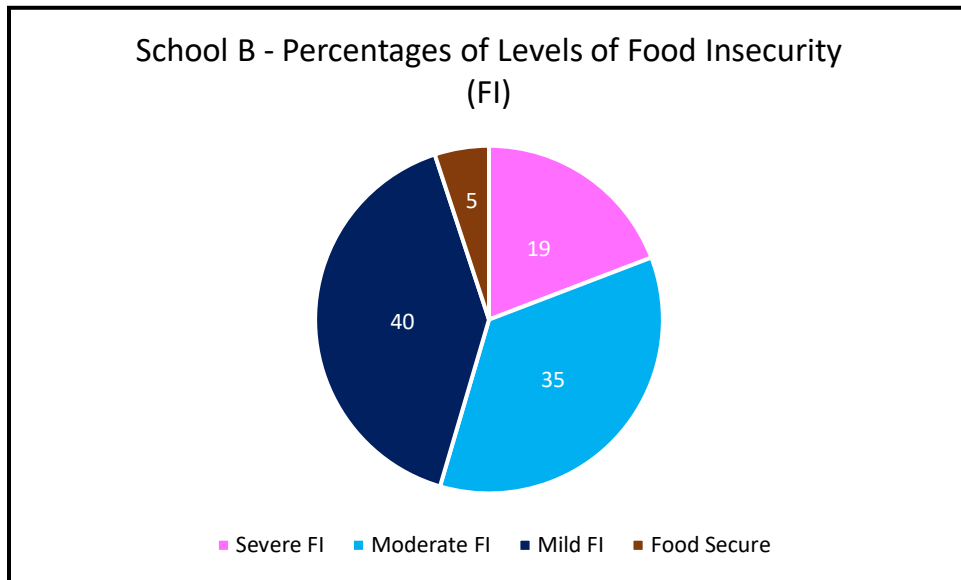
Food Insecurity Level	School A	School B	Total (n)	Total (%)
Severe	17	8	25	14.5
Moderate	54	15	69	39.9
Mild	51	17	68	39.3
Food Secure	9	2	11	6.4
Total Students	131	42	173	100

**Figure 7 – School A Childhood Food Insecurity Survey Results**



Fonte: Elaboração Própria

**Figure 8 – School B Childhood Food Insecurity Survey Results**



Fonte: Elaboração Própria

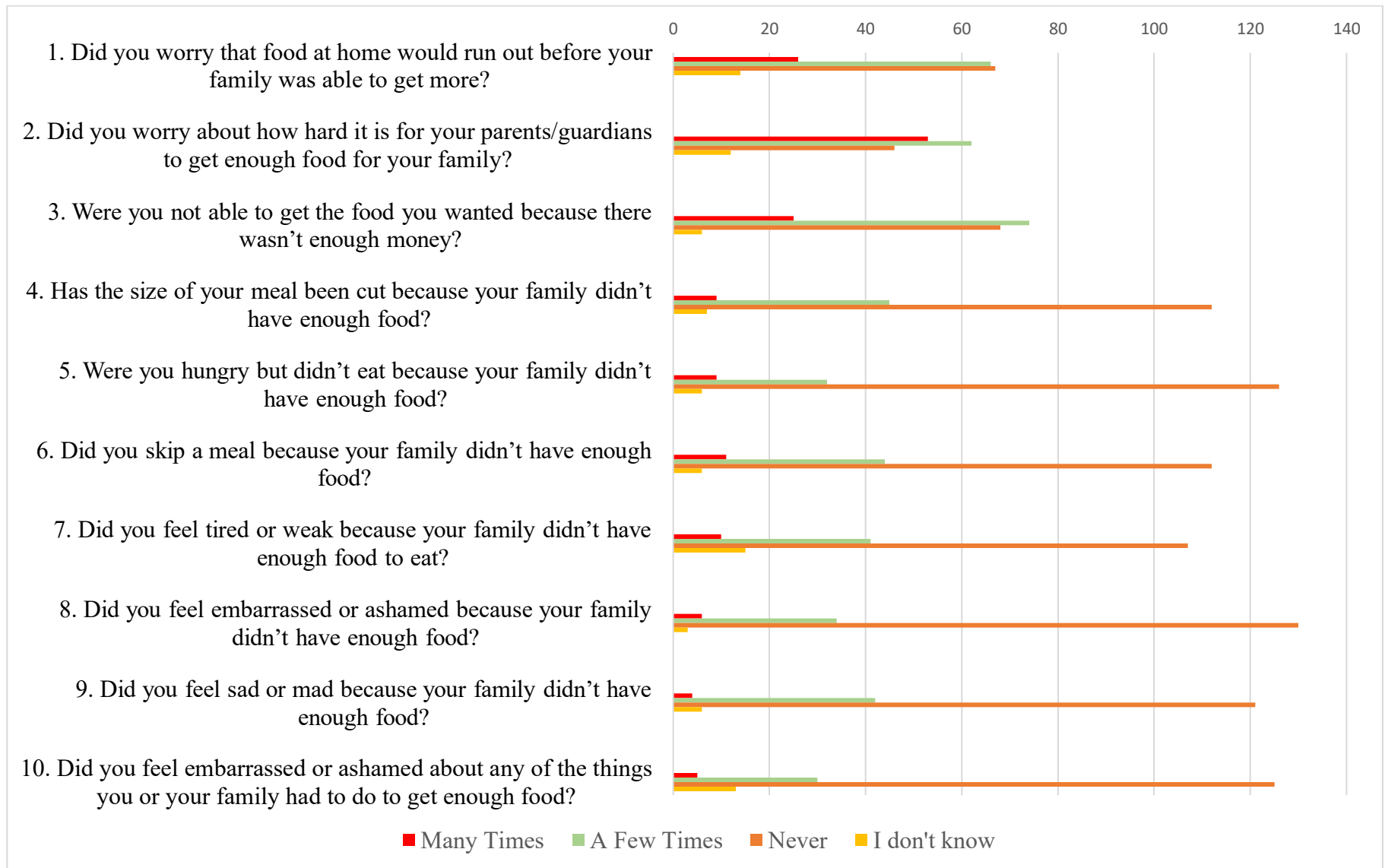
For each question in section two, results were analyzed by individual responses to each question (Table 2). The questions at the beginning of section two had higher amounts of “many times” or “a few times” responses than the questions towards the end of the section. For example, question 2 was “Did you worry about how hard it is for your parents/guardians to get enough food

for your family?”, which received 53 “many times” responses. Meanwhile, question 10 “Did you feel embarrassed or ashamed about any of the things you or your family had to do to get enough food?” only received 5 “many times” responses. Similarly, the number of students that answered “never” increased as the survey continued. Questions 1 and 2 had 67 and 46 “never” responses, while questions 9 and 10 had 121 and 125. This is likely because the questions in section two are designed to increase in severity as the questions progress (Figure 9).

Question	Many times		A few times		Never		I don't know	
	n	%	n	%	n	%	n	%
1. Did you worry that food at home would run out before your family was able to get more?	26	15	66	38	67	39	14	8
2. Did you worry about how hard it is for your parents/guardians to get enough food for your family?	53	31	62	36	46	27	12	7
3. Were you not able to get the food you wanted because there wasn't enough money?	25	14	74	43	68	39	6	3
4. Has the size of your meal been cut because your family didn't have enough food?	9	5	45	26	112	65	7	4
5. Were you hungry but didn't eat because your family didn't have enough food?	9	5	32	18	126	73	6	3
6. Did you skip a meal because your family didn't have enough food?	11	6	44	25	112	65	6	3
7. Did you feel tired or weak because your family didn't have enough food to eat?	10	6	41	24	107	62	15	9
8. Did you feel embarrassed or ashamed because your family didn't have enough food?	6	3	34	20	130	75	3	2
9. Did you feel sad or mad because your family didn't have enough food?	4	2	42	24	121	70	6	3
10. Did you feel embarrassed or ashamed about any of the things you or your family had to do to get enough food?	5	3	30	17	125	72	13	8

**Table 2** – Responses to Each Question in Section Two: Evaluating Food Insecurity Level

**Figure 9 – Responses to Each Question in Section 2: Childhood Food Insecurity Experience**



Fonte: Elaboração Própria

In section one of the survey, there are questions regarding meal consumption and hunger before sleeping. For question 4 of section one, “have you experienced hunger when it was time for you to sleep”, possible answers were “yes”, “no”, or “I don’t know”. The majority of respondents answered “yes” with 100, followed by “no” with 65 and “I don’t know” with 8. These results indicate a majority of students experiencing hunger before bedtime. The results were analyzed comparatively with the answers for section two of the survey (food insecurity level) in Table 3, as well as for meal consumption on a school day (Table 4) versus a weekend day (Table 5).

For question 5 of section one inquiring about school day meal consumption, 32 respondents said they consumed 0-1 meals per day, 69 said 2-3, 71 said 4+, and 1 responded “I don’t know”. Question 6 resulted in 16 students reporting 0-1 meals consumed, 65 reporting 2-3, 86 answering 4+, and 6 stating “I don’t know” about meal consumption on a weekend day.

The results on hunger before bed in the context of meal consumption revealed that 73% of students classified as food secure reported not experiencing hunger before bed. However, the majority response shifted from “no” among food secure students to “yes” across all levels of food insecurity. These results are demonstrated in Table 3.

Table 6 depicts the responses for the average consumption of meals on a school day by food insecurity classification. It is important to note that the percentage of students classified as food secure that eat 4+ meals per day was at 60%, the highest of any category. In the mild food insecurity category, that majority number dropped to 40% of the students consuming 4+ meals per day, and in moderate food insecurity the majority of students sampled responded with 45% consuming 4+ meals per day. In the severe food insecurity population, the majority of respondents did not answer as having eaten 4+ meals per day, but actually 2-3 meals per day at 44%, and 24% consuming 0-1.

Table 7 demonstrates the responses for the average consumption of meals on a weekend day by food insecurity classification. While the 4+ consumption of meals on a weekend day remains the majority for all 4 categorizations of food insecurity, it is important to highlight that the percentage of students that consumed 0-1 meal per day more than doubled from moderate at 7%, mild at 7%, and food secure at 9%, to 20% at severe food insecurity.

**Table 3 – Hunger Before Bed in Relation to Food Insecurity (FI) Level**

<b>FI Level</b>	<b>Food Secure</b>		<b>Mild FI</b>		<b>Moderate FI</b>		<b>Severe FI</b>		<b>Total</b>	
<b>Hunger Before Bed?</b>										
	<b>%</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>n</b>
I don't know	18	2	3	2	3	2	8	2	4	8
No	73	8	46	31	29	20	24	6	38	65
Yes	9	1	51	35	68	47	68	17	58	100

**Table 4 – Hunger Before Bed in Relation to School Day Meal Consumption**

<b>Meals Consumed on School Day</b>	<b>0-1</b>		<b>2-3</b>		<b>4+</b>		<b>I don't know</b>		<b>Total</b>	
<b>Hunger Before Bed?</b>										
	<b>%</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>n</b>
I don't know	6	2	3	2	6	4	-	-	5	8
No	53	17	28	19	41	29	-	-	37	65
Yes	41	13	70	48	54	38	100	1	58	100

**Table 5 – Hunger Before Bed in Relation to Weekend Day Meal Consumption**

<b>Meals Consumed on Weekend Day</b>	0-1		2-3		4+		I don't know		Total	
	%	n	%	n	%	n	%	n	%	n
<b>Hunger Before Bed?</b>										
I don't know	13	2	3	2	3	3	17	1	5	8
No	44	7	40	26	36	31	17	1	37	65
Yes	44	7	57	37	60	52	67	4	58	100

**Table 6 – Frequency of Meal Consumption on School Day in Relation to Food Insecurity (FI) Level**

<b>FI Level</b>	Food Security		Mild FI		Moderate FI		Severe FI		Total	
<b>Meals Consumed on School Day</b>	%	n	%	n	%	n	%	n	%	n
0-1	27	3	21	14	13	9	24	6	18	32
2-3	27	3	38	26	42	29	44	11	40	69
4+	60	5	40	27	45	31	32	8	41	71
I don't know	0	0	1	1	0	0	0	0	1	1

**Table 7 – Frequency of Meal Consumption on Weekend Day in Relation to Food Insecurity (FI) Level**

FI Level	Food Security		Mild FI		Moderate FI		Severe FI		Total	
	%	n	%	n	%	n	%	n	%	n
<b>Meals Consumed on Weekend Day</b>										
0-1	9	1	7	5	7	5	20	5	9	16
2-3	36	4	37	25	42	29	28	7	38	65
4+	55	6	51	35	48	33	48	12	50	86
I don't know	0	0	4	3	3	2	4	1	3	6

## 2.5 Discussion

The results from this study reveal important insights into the experiences of childhood food insecurity in Aparecida de Goiânia, Goiás, Brazil. When compared to the broader population in Goiás as reported by IBGE, the food insecurity levels observed in the children surveyed are notably higher. While the general population in Goiás reported 75.5% food security, only 6.4% of the children surveyed in this study were classified as food secure, with 14.4% experiencing severe food insecurity, 39.9% moderate food insecurity, and 39.3% mild food insecurity. These findings suggest a significant disparity between the overall food security status of the state's population and that of the children in these two public schools in Aparecida de Goiânia. In the PNAD Contínua Survey from 2023, there was a total of 78,322 participants that answered the Brazilian Food Insecurity Scale, providing a 0.037% sample size representative of the overall Brazilian population (SIDRA, 2023). For this study, the 173 students sampled out of the population of in Aparecida de Goiânia produced a similar percentage, representing 0.033% of the population.

The stark difference between the food security levels of children in the surveyed schools (only 6.4% food secure) and the general population in Goiás (75.5% food secure) raises important questions about regional disparities, urban poverty, and systemic challenges in Aparecida de Goiânia. This disparity can be attributed to several key factors. While Goiás as a state includes both urban and rural populations, the surveyed schools are in Aparecida de Goiânia, an urban area that might face different food accessibility challenges, such as high food prices, reliance on processed foods, and lack of fresh produce availability. Transport costs from rural to urban centers could add to the increased inaccessibility for this group of children. Additionally, the national and local economic landscape plays a role, with the agro-industry and agricultural production in Goiás potentially contributing to food security at a macro level, yet not necessarily reaching vulnerable communities within the state.

The majority of students who reported hunger before bed fell into the 2-3 meals per day category on school days (48 students) and the 4+ meals category on weekends (52 students). This indicates that while these students are eating more frequently than those in the 0-1 meal group, their intake may still be insufficient to meet their nutritional needs, leading to persistent feelings of hunger. The fact that many students that eat 2, 3, 4, or more meals per day and report going to bed hungry suggests that meal quantity alone may not be the issue—meal quality, portion sizes,

or meal timing could also be factors. Among students who consumed 4+ meals per day, the majority still reported experiencing hunger before bed (38 students on school days and 52 on weekends). This is especially relevant for the weekend answers, as the highest majority percentage of students from all three meal consumption categories was 60% for “yes” to experiencing hunger before bed – reported in the 4+ meal consumption category.

On weekends, hunger before bed is more common across all meal consumption frequencies. This could be due to several factors; the most compelling hypothesis being that the nutritional quality of the meals being served at home on weekends is not sufficient or robust for children to feel satisfied by the end of the day. Interestingly, the only category where the majority of students reported not having experienced hunger before bed was that of 0-1 meals on a school day. On the same note of evaluating the nutritional quality of children’s meals, the meals offered during the school day via PNAE adhere to a strict set of nutritional standards that provide a diverse food intake for students. For example, in addition to tight restrictions on ultra-processed foods, PNAE recommends that each part time student receive 280g of fruits and vegetables per week and each full-time student receive 520g via the school meals (Ministério da Saúde, 2023a). These recommendations and restrictions are not in place during the weekends, where the structure, frequency, and quality of students’ meals is dependent on their household. It is possible that some students rely on small, less nutritious meals or snacks throughout the day, leading to a lack of sustained energy and hunger before bedtime, especially on weekends.

It is important to note that for analyzing hunger before bed and meal consumption results, only one student responded with “I don’t know” regarding how many meals they consumed on a school day, as opposed to 6 that responded with “I don’t know” for how many meals they consumed on a weekend day. This supports that there is a certain level of food security imparted by the school meals that PNAE provides.

The current study has some limitations. Although the interviewers were trained on how to explain and give background to each question, the question about meal consumption could be interpreted in different ways depending on each respondent’s experience. The meal consumption questions could be better defined in future research and expanded to better understand what students constitute as a meal, the nutritional quality of them, and how meal consumption correlates with food insecurity. Furthermore, an additional limitation is the lack of current published research about meal consumption for elementary age public school students in Brazil, especially in relation

to PNAE and childhood food insecurity. Therefore, for comparative analysis purposes, the research does not have much to analyze adjacently.

In terms of policy implications, these results highlight the need for targeted interventions that directly address childhood food insecurity in public schools. Programs that provide access to community-based food assistance and nutritional education, with a specific focus on families with children, could play a crucial role in alleviating the immediate consequences of food insecurity. Furthermore, initiatives that aim to reduce underlying economic inequities and increase household income could help reduce the prevalence of food insecurity in the long term.

## **2.6 Conclusion**

In conclusion, the findings of this study reinforce the importance of directly assessing children's experiences with food insecurity. Data was collected and analyzed to understand the experiences of food insecurity for a group of public elementary school children in Aparecida de Goiânia. Overall, the data indicates that meal frequency is a key factor in food security, but it is not the only one. While increasing meal access is important, addressing the nutritional quality and adequacy of those meals is just as crucial in reducing childhood hunger and food insecurity. These findings suggest that simply eating more meals does not necessarily prevent hunger, which could be due to low nutritional value, unbalanced meals, or long gaps between meals. Further studies should be conducted to determine child meal consumption in relation to food insecurity status. The higher levels of food insecurity observed in Aparecida de Goiânia compared to the general population in Goiás call for targeted interventions to address the immediate and long-term consequences of food insecurity in vulnerable communities. Addressing food insecurity from the beginning of a child's life is crucial for promoting healthier, more equitable societies in Brazil and beyond.

## CHAPTER III – ARTICLE 2: COMPARING PARENT AND CHILD PERCEPTIONS OF FOOD INSECURITY

### 3.1 Introduction

Food parenting practices play a critical role in the development of children's eating and may be a mechanism in the link between food insecurity and children's health outcomes (Hevesi; Downey; Harvey, 2024). Childhood food insecurity has been extensively discussed within academic and scientific communities focused on food, hunger, and nutrition. However, the majority of studies that analyze childhood food insecurity utilize data obtained by parents or household caretakers (Bernal *et al.*, 2012). The global statistics about childhood food insecurity rates today do not directly involve children, lacking a multi-layered perspective on the differing levels of food insecurity experienced by individual household members.

There is no shortage of data about food insecure households with children in them. For example, the USDA measured statistics for food insecure households in the United States say that in 2023, 82.1% (29.7 million) of U.S. households with children under 18 were food secure, while 17.9% (6.5 million) experienced food insecurity (USDA, 2024). Among these, 9.0% (3.3 million) had food insecurity affecting only adults, and 8.9% (3.2 million) involved both children and adults. Severe food insecurity, where children experienced reduced food intake and disrupted eating patterns, occurred in 1.0% (374,000) of households. While this data gives a glance into the reality of food insecurity experienced by children, it does not include the child's perspective. The USDA reported that in the 1 percent of households experiencing severe food insecurity, caregivers reported that children were hungry, skipped a meal, or did not eat for a whole day because there was not enough money for food (USDA, 2024). This highlights the tendency to rely on caregivers to report on behalf of children when collecting data on childhood experiences with food insecurity.

There are a few exceptions to the parent-centered childhood food insecurity studies published in recent years. Frongillo and collaborators' *Development, Validity, and Cross-Context Equivalence of the Child Food Insecurity Experiences Scale for Assessing Food Insecurity of School-Age Children and Adolescents* created a survey and assessed food insecurity levels for children ages 5-18 in various countries. Landry and collaborators' *Child Compared with Parent*

*Perceptions of Child-Level Food Security* sampled 3<sup>rd</sup>-5<sup>th</sup> grade students and their parents in the United States. On an international scale, there still lacks a globally accepted survey for children to take regarding their own experience with food insecurity.

Adolescence is the second most important chance to intervene teen nutrition and nutrition related problems (Tamiru e Belachew, 2017). It is also a stage of friendliness to a new thought and a point when the lifestyle choices determine an adolescent's life course (Tamiru e Belachew, 2017). Therefore, for optimal cognitive and mental developments of young children and adolescents, there is a need for access to food rich in nutrients which can meet the dietary demands of these vulnerable group populations (Belachew *et al.*, 2011).

In Brazil, a commonly used survey is known as EBIA, or the Brazilian Food Insecurity Scale, which was part of the most recent data collection from IBGE via the Continuous National Household Sample Survey (PNAD-Contínua). In the survey, there is a section for food insecurity where the questions ask about the experience with food insecurity from the household's perspective. The section entitled *Food Insecurity Characteristics of Household Inhabitants* asks questions such as, "in the last three months, have the inhabitants of this household worried about food running out before being able to buy or receive more" (PNAD Contínua [s.d.]?)

This language excludes the possibility that members of the same household have different experiences with food insecurity. The sections of this survey are divided into "characteristics of food insecurity for household members", "for households with members older than 18 years of age" and "for households with members from 0-17 years of age". By one person responding on behalf of the entire family, household members that fall under the categories that are not surveyed do not have a representation in the data.

In 2023, this survey collection carried out by IBGE resulted in 27.6% (or 21.6 million) of households in Brazil reported experiences with food insecurity, with 18.2% (or 14.3 million) facing mild food insecurity, 5.3% (or 4.2 million) facing moderate food insecurity, and 4.1% (or 3.2 million) facing severe food insecurity. The 2017-2018 survey had found 36.7% of households to be food insecure, with 24.0% experiencing mild food insecurity, 8.1% moderate, and 4.6% severe (IBGE, 2024b). The proportion of households with moderate or severe food insecurity in urban areas (8.9%) was lower than in rural areas (12.7%) (IBGE, 2024b). The North (60.3%) and Northeast (61.2%) regions had the lowest proportions of food-secure households, while the Central-West (75.7%), Southeast (77.0%), and South (83.4%) had the highest (IBGE, 2024b). In

the state of Goiás where this research was applied, IBGE determined that 75.5% of the population was food secure, 16.9% mild food insecurity, 3.7% moderate food insecurity, and 3.7% severe food insecurity.

## **3.2 Methods and Materials**

### **3.2.1 Adult Questionnaire**

Due to its international acceptance and Portuguese translated questions, the survey utilized to measure adult/parent/guardian perceptions of household food insecurity was the Food Insecurity Experience Scale (FIES). The parents/guardians selected for this study responded to the FIES survey, which pertains to 8 questions about respondents' experiences regarding access to adequate food, difficulties in accessing food, and coping strategies due to lack of money or other resources during a reference period, in this case being 12 months. The authors included preliminary questions asking about age, race, marital status, and income to provide comparative analyses. The levels of food insecurity can be classified as food secure, mild food insecurity, moderate food insecurity, or severe food insecurity. The corresponding author received the certification and digital badge for administering the Food Insecurity Experience Scale in June 2023.

The following survey was administered to parents or guardians of the children that answered the child survey:

Preliminary Questions:

1. What is your age?

18-24

25-29

30-34

35-39

40-44

45-49

50-54

55-59

60+

2. Which race to you identify as?

Indigenous

Black

Asian

White

Other (please describe)

3. Are you married?

Yes

No

I don't know

4. What is your household's total monthly income?

Less than R\$1.000

1.001-1.500

1.501-2.000

2.001-2.500

2.500-3.000

3.001-3.500

3.501-4.000

4.001-4.500

4.501-5.000

5.001-5.500

5.501-6.000

6.001-6.500

6.501-7.000

7.000+

FIES Questions:

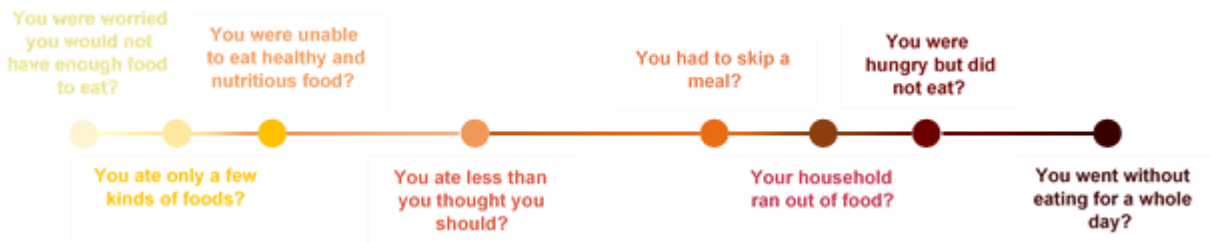
During the last 12 months, was there a time when, because of lack of money or other resources:

Possible answers: yes, no, I don't know, I prefer not to answer

1. You were worried you would not have enough food to eat?
2. You were unable to eat healthy and nutritious food?
3. You ate only a few kinds of foods?
4. You had to skip a meal?
5. You ate less than you thought you should?
6. Your household ran out of food?
7. You were hungry but did not eat?
8. You went without eating for a whole day?

The FIES is a statistical scale similar to other widely-accepted scales designed to measure unobservable traits such as aptitude/intelligence, personality, and a broad range of social psychology and health-related conditions (FAO, [s.d.]). Figures 10, 11, and 12 all demonstrate various measurements of severity of the classification of food insecurity in the adults that respond to the survey. In Figure 10, it is noted that the lighter in color and further to the left the question, the less severe the reality of food insecurity is classified. The darker in color and further to the right the question, the more severe the deemed reality.

**Figure 10** – Severity of Questions on Food Insecurity Experience Scale

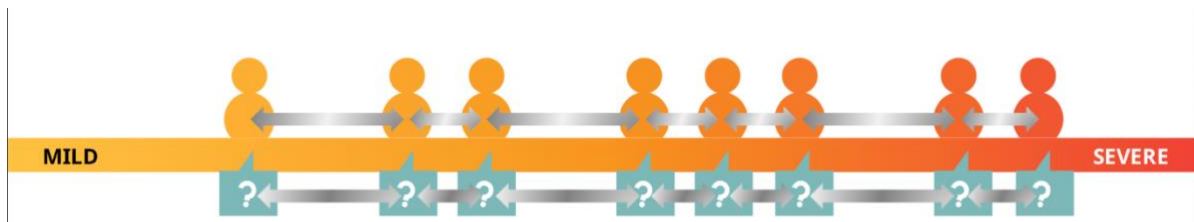


Fonte: (FAO, 2024b).

### 3.2.1 Classifying Food Insecurity in Adult Questionnaire Respondents

The food insecurity classification for parents comes from the United Nations FIES questionnaire. The responses were coded, where 0 is used for a "no" response and 1 is used for a "yes" response. The analysis does not produce an absolute scale of severity. Instead, it estimates the relative position of the items and respondents along a specific scale for the given dataset. The relative position of the items and respondents on the severity scale is expressed by their respective parameters.

**Figure 11** – Severity of Questions on Food Insecurity Experience Scale part two



Fonte: (FAO, 2024b)

**Figure 12** – Food Insecurity Questions and Classification on Scale



Fonte: (FAO, 2024b)

### 3.3 Child Questionnaire

The children of the parents that took the adult survey completed a survey adapted for children. This survey consists of two sections. Section one includes questions developed by the authors to assess discrepancies between students' profiles and their respective levels of food insecurity. This section gathers information on age, grade level, meal consumption at school and home, and experiences of hunger before sleep. Section two contains 10 standardized questions from the United Nations document *How to Measure Child Experiences of Food Insecurity*. All participants responded to these 10 questions (section two) and the preliminary questions (section one) in the same survey. The responses from section two were used to determine each participant's level of food insecurity, based on the frequency of food-related hardships reported over the past 12 months.

#### Childhood Food Insecurity Survey

##### Section 1

1. What is your name?
2. How old are you?
3. Which grade are you in?
4. Have you ever experienced hunger when it was time for you to sleep?
5. How many times per day do you typically eat during the school week?
6. How many times per day do you typically eat on a weekend day?

##### Section 2

For the following 10 questions, think about the questions in reference to the past 12 months.

Answer options: many times, sometimes, never, I don't know.

1. Did you worry that food at home would run out before your family was able to get more?
2. Did you worry about how hard it is for your parents/guardians to get enough food for your family?

3. Were you not able to get the food you wanted because there wasn't enough money?
4. Has the size of your meal been cut because your family didn't have enough food?
5. Were you hungry but didn't eat because your family didn't have enough food?
6. Did you skip a meal because your family didn't have enough food?
7. Did you feel tired or weak because your family didn't have enough food to eat?
8. Did you feel embarrassed or ashamed because your family didn't have enough food?
9. Did you feel sad or mad because your family didn't have enough food?
10. Did you feel embarrassed or ashamed about any of the things you or your family had to do to get enough food?

### **3.3 Collection of Data**

The guardian consent forms for participation were distributed during the parent/teacher conference day at School A, via communication with the parents/guardians as they entered and left the school. The consent form included consent for parent participation and child participation. The parent/guardian questionnaire was stapled to the back of the consent form. If the parent/guardian accepted participation in the study, they filled out the questionnaire.

The consent forms for parent/guardian participation at School B were distributed by the School Director, who sent the Google Form for consent via the parent WhatsApp groups. If the parent/guardian accepted participation, they were then prompted to the next page of the Google Form with the parent/guardian questionnaire.

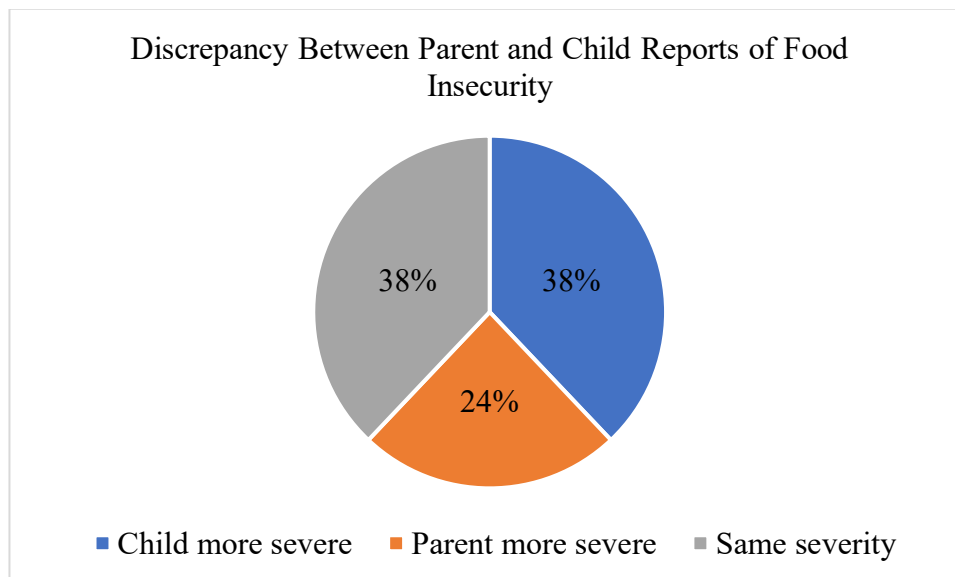
Participant consent forms were given to students who were granted parental consent to participate on the day of the interviews. The surveys were collected via one on one in person interviews. All interviews took place in person at the school libraries. Participants sat one on one with an interviewer with 2 meters of space in between each participant to provide privacy. To ensure consistency and ethical adherence during data collection, all interviewers underwent thorough training. At School A, data collection was facilitated by interns from the local non-profit organization EcomAmor, who participated in a full-day workshop led by EcomAmor staff and the research team. This training covered ethical considerations, survey methodology, and effective communication techniques, supplemented by online seminars and role-playing exercises. At School B, data collection was conducted directly by the authors, who followed the same protocols.

Interviewers ensured confidentiality and sensitivity, with at least one school staff member present during interviews for additional oversight.

### 3.4 Results

Of the 29 parent–child pairs surveyed, 18 cases (62%) showed a discrepancy between the food insecurity level reported by the parent and that reported by the child. Specifically, in 11 cases (38%), the child reported a more severe level of food insecurity than the caregiver. In 7 cases (24%), the caregiver reported a more severe level than the child, and 11 cases (38%) reflected identical responses (Figure 13). This points to a significant discrepancy between adult perceptions and children's lived experiences, with children more often describing greater hardship. This misalignment highlights how children's lived experiences with hunger may go unrecognized or underreported by adults in the household. It reinforces the need for incorporating children's direct voices into food insecurity assessments, especially in contexts where household dynamics, stigma, or differing perceptions of need may obscure the full picture (Frongillo *et al.*, 2019).

**Figure 13** – Discrepancy Between Parent and Child Reports of Food Insecurity



Fonte: Elaboração Própria

**Table 8 – Income, Race, and Marital Status Results by Kids and Parents Food Insecurity Level**

	Food Security Status									
	Food Secure		Mild		Moderate		Severe		Total	
	n	%	n	%	n	%	n	%	n	%
Household Income Range										
Parents										
Low	-	-	5	17%	3	10%	2	7%	10	34%
Middle	2	7%	4	14%	5	17%	-	-	11	38%
High	3	10%	3	10%	2	7%	-	-	8	28%
Total	5	17%	12	41%	10	34%	2	7%	29	100%
Kids										
Low	1	3%	3	10%	4	14%	2	7%	10	34%
Middle	1	3%	4	14%	6	21%	-	-	11	38%
High	-	-	3	10%	4	14%	1	3%	8	28%
Total	2	7%	10	34%	14	48%	3	10%	29	100%
Race										
Parents										
Black	2	7%	9	31%	6	21%	2	7%	19	66%
Indigenous	1	3%	-	-	-	-	-	-	1	3%
White	2	7%	3	10%	4	14%	-	-	9	31%
Total	5	17%	12	41%	10	34%	2	7%	29	100%
Kids										
Black	1	3%	7	24%	9	31%	2	7%	19	66%
Indigenous	1	3%	-	-	-	-	-	-	1	3%
White	-	-	3	10%	5	17%	1	3%	9	31%
Total	2	7%	10	34%	14	48%	3	10%	29	100%
Marital Status										
Parents										
No	1	3%	6	21%	2	7%	2	7%	11	38%
Yes	4	14%	6	21%	8	28%	-	-	18	62%

Total	5	17%	12	41%	10	34%	2	7%	29	100%
Kids										
No	1	3%	4	14%	5	17%	1	3%	11	38%
Yes	1	3%	6	21%	9	31%	2	7%	18	62%
Total	2	7%	10	34%	14	48%	3	10%	29	100%

For analytical purposes, household income was categorized into three brackets — low, middle, and high — based on the 2024 Brazilian minimum wage and national household income averages (GOV.BR, 2024b). This stratification enabled a more nuanced understanding of how economic conditions relate to perceived food insecurity among both parents and children.

In the low-income group, none of the parents reported being food secure. Instead, 5 parents reported mild food insecurity, 3 reported moderate insecurity, and 2 reported severe food insecurity. This group experienced the most pronounced levels of insecurity, with over half reporting moderate to severe conditions. In contrast, the middle-income group showed slightly improved outcomes: 2 parents were food secure, 4 reported mild insecurity, 5 moderate, and none reported severe insecurity. Although this group showed no cases of severe food insecurity, nearly half still experienced moderate levels. In the high-income group, outcomes improved further, with 3 parents classified as food secure, 3 as mild, 2 as moderate, and no cases of severe food insecurity. These results confirm a general trend: as income increases, the severity and prevalence of food insecurity decreases.

When analyzing the children’s self-reports, a different picture emerges — particularly at the more extreme ends of the spectrum. Children reported more cases of moderate and severe food insecurity than their parents did (14 vs. 10 moderate cases, and 3 vs. 2 severe cases). Conversely, parents tended to report more cases of food security and mild insecurity compared to their children (5 vs. 2 food secure; 12 vs. 10 mild). This discrepancy suggests that caregivers may underreport the severity of food insecurity experienced by children in their household — whether due to lack of awareness, differing perceptions, or reluctance to acknowledge hardship.

Breaking down the children’s data by income group further highlights this divergence. Among children in low-income households, 1 reported being food secure, 3 reported mild insecurity, 4 moderate, and 2 severe. This distribution closely mirrors the parental reports in this bracket, reinforcing the depth of need among the poorest families. In the middle-income category,

children reported 1 case of food security, 4 mild, and 6 moderate — notably, with no severe cases. This suggests that while moderate food insecurity is still prevalent, the absence of severe cases may indicate some buffering effect of slightly higher income. Interestingly, among high-income children, none reported being food secure. Instead, 3 reported mild food insecurity, 4 moderate, and 1 severe. While this may appear counterintuitive, it could reflect children’s sensitivity to food-related stress or dissatisfaction even in financially stable households — for example, in cases of food scarcity due to parental absence, dietary restrictions, or family dynamics.

Racial disparities in food insecurity were evident in both parent and child responses. Among parents who identified as Black, 2 reported being food secure (7%), 9 reported mild food insecurity (31%), 6 reported moderate (21%), and 2 reported severe (7%). While a portion of Black parents reported mild levels of food insecurity, over a quarter (28%) experienced moderate to severe insecurity. Indigenous parents, although representing only a small portion of the sample (n=1), reported being food secure. While this is a positive result, the sample size is too limited to draw meaningful conclusions. White parents showed a different distribution: 2 reported food security (7%), 3 mild insecurity (10%), 4 moderate (14%), and none reported severe food insecurity. This group had a lower proportion of respondents in the most severe categories and was the only group without any severe food insecurity cases among parents.

Children’s self-reports revealed slightly higher levels of food insecurity across most racial groups. Among Black children, 1 reported food security (3%), 7 mild food insecurity (24%), 9 moderate (31%), and 2 severe (7%). These figures closely mirror their parents’ reports, indicating internal consistency within the household assessments, though still concerning for the high levels of moderate and severe food insecurity (38% combined). As with the parents, the sole Indigenous child reported being food secure, again cautioning that broader trends cannot be inferred from a single case.

Interestingly, the white children’s reports deviated from those of their parents. None reported being food secure, 3 reported mild insecurity (10%), 5 moderate (17%), and 1 reported severe food insecurity (3%). Unlike white parents, who did not report any severe cases, the children’s responses indicate that some experiences may go unnoticed or unacknowledged by caregivers. This pattern reinforces the importance of including child self-reports in research and policy discussions — particularly when adult perceptions may underestimate or miss the child’s lived reality.

Taken together, these results highlight how food insecurity continues to intersect with racial identity, reflecting broader systemic inequalities. While food insecurity was present across all racial groups, Black families reported the highest rates of moderate and severe food insecurity. The data also underscores how parental perspectives may underrepresent the extent of hardship faced by their children, especially in white households. Therefore, race-specific approaches to food policy and program design may be necessary, particularly those that amplify children's voices and address structural inequalities rooted in Brazil's long-standing racial hierarchies.

Marital status appeared to be associated with notable differences in reported food insecurity. Among unmarried parents, only 1 (3%) reported being food secure, while 6 (21%) reported mild food insecurity, 2 (7%) moderate, and 2 (7%) severe. This means that nearly 64% of unmarried parents were experiencing at least mild food insecurity, with 18% experiencing moderate or severe levels. In contrast, married parents showed a more favorable distribution: 4 (14%) reported being food secure, 6 (21%) mild, and 8 (28%) moderate food insecurity. Notably, none of the married parents reported experiencing severe food insecurity, suggesting a protective effect associated with being in a partnered household — likely due to factors such as dual income, shared responsibilities, and greater household stability. Overall, 62% of the total parent sample was married, and this group made up the entirety of the food-secure and severe-free households.

Looking at the children's reports, the pattern remained similar but revealed greater severity. Children from unmarried households reported 1 case (3%) of food security, 4 (14%) mild, 5 (17%) moderate, and 1 (3%) severe. Compared to their parents, children indicated slightly more moderate and severe insecurity, reflecting again the tendency for children to experience or perceive food-related stress more acutely. Children from married households reported 1 case (3%) of food security, 6 (21%) mild, 9 (31%) moderate, and 2 (7%) severe — including some severe cases that married parents did not report at all. This indicates a gap in perception or recognition of food-related hardship even in more stable households.

Importantly, while no married parents reported severe food insecurity, their children still did. This mirrors the broader trend observed in the income and race categories, where children consistently reported higher levels of food insecurity than their caregivers. The data suggest that while marriage may serve as a socioeconomic buffer, it does not eliminate children's experiences of deprivation or concern related to food access.

### 3.5 Discussion

Together, these results underscore the need to understand how demographic factors intersect with food insecurity and how children's voices can reveal dimensions of hardship not always captured through adult reporting alone. They also point to important nuances: economic vulnerability does not operate in isolation, but is shaped by race, age, and family structure. The child's perspective remains essential for a fuller understanding of household food security conditions. Other factors such as food prices, debt, geographic access, or household priorities may influence actual food access (Fram *et al.*, 2011b). Structural inequalities, caregiving burdens, employment precarity, and racialized poverty intersect in ways that impact food access for children across household types (FAO, 2022) (Thomas; Miller; Morrissey, 2019).

## REFERENCES

- AHMED, M. R. Climate shocks' impact on agricultural income and household food security in Bangladesh: An implication of the food insecurity experience scale. **Heliyon**, v. 10, n. 4, p. e25687, 29 fev. 2024.
- BANDONI, D. H. *et al.* It is time: free meals at schools for all. **British Journal of Nutrition**, 2024.
- BELACHEW, T. *et al.* Food insecurity, school absenteeism and educational attainment of adolescents in Jimma Zone Southwest Ethiopia: A longitudinal study. **Nutrition Journal**, v. 10, n. 1, 2011.
- BERCHIN, I. I. *et al.* The contributions of public policies for strengthening family farming and increasing food security: The case of Brazil. **Land Use Policy**, v. 82, 2019.
- BERNAL, J. *et al.* Children live, feel, and respond to experiences of food insecurity that compromise their development and weight status in peri-urban Venezuela. **Journal of Nutrition**, v. 142, n. 7, p. 1343–1349, jul. 2012.
- BORUNDA, A. **See how much of the Amazon is burning, how it compares to other years** National Geographic, , 19 ago. 2019. Disponível em: <<https://www.nationalgeographic.com/environment/article/amazon-fires-cause-deforestation-graphic-map>>. Acesso em: 11 set. 2024
- CAIN, K. S. *et al.* Association of Food Insecurity with Mental Health Outcomes in Parents and Children. **Academic Pediatrics**, v. 22, n. 7, p. 1105–1114, 1 set. 2022.
- CARMO FREITAS, M. DO; MONTEIRO BRITO, S.; PRADO ALEXANDRE-WEISS, V. **EXTENSÃO E PESQUISA EM ALIMENTAÇÃO ESCOLAR NO BRASIL**. [s.l.] Universidade Federal da Bahia, 2022.
- CASA CIVIL. Relatório indica que Brasil saiu do Mapa Mundial da Fome em 2014 **GOV.BR** Brasília, 16 set. 2014. Disponível em: <<https://www.gov.br/casacivil/pt-br/assuntos/noticias/2014/setembro/relatorio-indica-que-brasil-saiu-do-mapa-mundial-da-fome-em-2014#:~:text=Combate%20%C3%A0%20fome-,Relat%C3%B3rio%20indica%20que%20Brasil%20saiu%20do%20Mapa%20Mundial%20da%20Fome,considerados%20em%20situa%C3%A7%C3%A3o%20de%20subalimenta%C3%A7%C3%A3o>>. Acesso em: 10 set. 2024

CHEN, M. *et al.* The link between climate change, food security and fertility: The case of Bangladesh. **PLoS ONE**, v. 16, n. 10 October, 2021.

COATES, J.; SWINDALE, A.; BILINSKY, P. **Food and Nutrition Technical Assistance Project (FANTA) Academy for Educational Development 1825 Connecticut Ave.** [s.l: s.n.].

COHEN, J. F. W. *et al.* Universal school meals and associations with student participation, attendance, academic performance, diet quality, food security, and body mass index: A systematic review. **Nutrients**, v. 13, n. 3, 2021.

COLEMAN-JENSEN, A. *et al.* **Household Food Security in the United States in 2018.** [s.l: s.n.]. Disponível em: <[www.ers.usda.gov](http://www.ers.usda.gov)>.

CONSELHO FEDERAL DE NUTRIÇÃO. **Segurança Alimentar e Nutricional.** [s.l: s.n.]. Disponível em: <<https://www.cfn.org.br/index.php/seguranca-alimentar-e-nutricional/>>. Acesso em: 17 fev. 2025.

COOK, J. T. *et al.* **Food insecurity is associated with adverse health outcomes among human infants and toddlers**Journal of Nutrition. **Anais...**2004

CROQUER, G. **Esvaziado, programa federal de aquisições de alimentos vê doações despencarem.** [s.l: s.n.]. Disponível em: <<https://g1.globo.com/economia/agronegocios/noticia/2022/11/12/esvaziado-programa-federal-de-aquisicoes-de-alimentos-ve-doacoes-despencarem.ghtml>>. Acesso em: 10 nov. 2024.

CUI, H.; SMITH, J. P.; ZHAO, Y. Early-life deprivation and health outcomes in adulthood: Evidence from childhood hunger episodes of middle-aged and elderly Chinese. **Journal of Development Economics**, v. 143, p. 102417, 1 mar. 2020.

DEMISSE, U.; BAZEZEW, A.; BANTIGEGEN, S. Rural households' resilience to the adverse impacts of climate variability and food insecurity in the North-eastern highlands of Ethiopia. **Heliyon**, v. 10, n. 12, p. e32960, 30 jun. 2024.

DEUTSCH, S.; FLETCHER, R. The 'Bolsonaro bridge': Violence, visibility, and the 2019 Amazon fires. **Environmental Science and Policy**, v. 132, 2022.

DINOUR, L. M.; BERGEN, D.; YEH, M. C. The Food Insecurity-Obesity Paradox: A Review of the Literature and the Role Food Stamps May Play. **Journal of the American Dietetic Association**, v. 107, n. 11, 2007.

DONG, L. *et al.* Food insecurity, sleep, and cardiometabolic risks in urban American Indian/Alaska Native youth. **Sleep Health**, v. 9, n. 1, 2023.

ECONOMIST IMPACT. **Country report: Brazil**. [s.l: s.n.].

EDAME, G. E. *et al.* Climate Change , Food Security and Agricultural Productivity in Africa : Issues and policy directions . **International Journal of Humanities and Social Science**, v. 1, n. 21, 2011.

EDWARDS, B.; GRAY, M.; BORJA, J. The influence of natural disasters on violence, mental health, food insecurity, and stunting in the Philippines: Findings from a nationally representative cohort. **SSM - Population Health**, v. 15, p. 100825, 1 set. 2021.

FAO. **Regional Overview of Food Insecurity Latin America and the Caribbean**. [s.l: s.n.].  
\_\_\_\_\_. **Voices of the Hungry, The Food Insecurity Experience Scale Eight Key Questions**. Disponível em: <<https://www.fao.org/in-action/voices-of-the-hungry/fies/en/>>. Acesso em: 5 mar. 2025a.

\_\_\_\_\_. **The Food Insecurity Experience Scale**. Disponível em: <<https://www.fao.org/in-action/voices-of-the-hungry/fies/en/>>. Acesso em: 19 nov. 2024b.

\_\_\_\_\_. **Hunger and food insecurity**. [s.l: s.n.]. Disponível em: <<https://www.fao.org/hunger/en/>>. Acesso em: 17 fev. 2025.

FAO. **The Food Insecurity Experience Scale Frequently Asked Questions-FAQs WHAT does the Food Insecurity Experience Scale measure?** [s.l: s.n.]. Disponível em: <<http://www.gallup.com/178667/gallup-world-poll-work.aspx>>.

FAO, I. U. W. AND WHO. **The State of Food Security and Nutrition in the World 2024**. [s.l.] FAO; IFAD; UNICEF; WFP; WHO;; 2024.

FEDERAL UNIVERSITY OF GOIÁS. **Brazilian Conference on Natural Products**, nov. 2021. Disponível em: <<https://2021.bcnp.com.br/about-goias-and-goiania/>>. Acesso em: 26 set. 2024

FNDE, M. OF E. **SCHOOL FEEDING IN TRADITIONAL COMMUNITIES: The quilombola PNAE**. [s.l: s.n.].

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, F. AND W. **The State of Food Insecurity in the World Strengthening the enabling environment for food security and nutrition**. Rome: [s.n.].

FRAM, M. S. *et al.* Children are aware of food insecurity and take responsibility for managing food resources. **Journal of Nutrition**, v. 141, n. 6, 2011a.

\_\_\_\_\_. Children are aware of food insecurity and take responsibility for managing food resources. **Journal of Nutrition**, v. 141, n. 6, p. 1114–1119, 1 jun. 2011b.

FRONGILLO, E. A. *et al.* Food Insecurity Is More Strongly Associated with Poor Subjective Well-Being in More-Developed Countries than in Less-Developed Countries. **Journal of Nutrition**, v. 149, n. 2, 2019.

FRONGILLO, E. A. *et al.* Development, Validity, and Cross-Context Equivalence of the Child Food Insecurity Experiences Scale for Assessing Food Insecurity of School-Age Children and Adolescents. **The Journal of Nutrition**, v. 152, n. 9, p. 2135–2144, 1 set. 2022.

FUNDO NACIONAL DE DESENVOLVIMENTO DA EDUCAÇÃO. **PNAE: O que é?**

Disponível em: <<https://www.gov.br/fnde/pt-br/aceso-a-informacao/acoes-e-programas/programas/pnae>>. Acesso em: 6 nov. 2024.

FUREY, S. *et al.* What predicts food insecurity? An online survey. **The Lancet**, v. 394, 2019.

GIACOMAN, C.; HERRERA, M. S.; AYALA ARANCIBIA, P. Household food insecurity before and during the COVID-19 pandemic in Chile. **Public Health**, v. 198, 2021.

GILL, M.; KOLEILAT, M.; WHALEY, S. E. The Impact of Food Insecurity on the Home Emotional Environment Among Low-Income Mothers of Young Children. **Maternal and Child Health Journal**, v. 22, n. 8, 2018.

GOES, V. **O que é o PNAE? Tudo que você precisa saber sobre a História e evolução do programa Nutale - O software da Alimentação Escolar**, , 18 out. 2022.

GOV.BR. **AQUISIÇÃO DE PRODUTOS DA AGRICULTURA FAMILIAR PARA O PROGRAMA NACIONAL DE ALIMENTAÇÃO ESCOLAR**. [s.l: s.n.]. Disponível em:

<[https://www.gov.br/fnde/pt-br/aceso-a-informacao/acoes-e-programas/programas/pnae/pnae-agricultura-familiar#:~:text=A%20Lei%20n%C2%BA%2011.947%2C%20de,local%20e%20pela%20agricultura%20familiar](https://www.gov.br/fnde/pt-br/aceso-a-informacao/acoes-e-programas/programas/pnae/pnae-agricultura-familiar#:~:text=A%20Lei%20n%C2%BA%2011.947%2C%20de,local%20e%20pela%20agricultura%20familiar.)>. Acesso em: 19 fev. 2025.

GOV.BR. **Programa de Aquisição de Alimentos (PAA)**. [s.l: s.n.]. Disponível em:

<<https://www.gov.br/secom/pt-br/aceso-a-informacao/comunicabr/lista-de-acoes-e-programas/programa-de-aquisicao-de-alimentos-paa>>. Acesso em: 19 fev. 2025a.

\_\_\_\_. Average per capita income in Brazil surges by 11.5% to reach 12-year high. 20 abr. 2024b.

\_\_\_\_. Pobreza cai para menor índice registrado desde 2012, indica IBGE. 24 abr. 2024c.

\_\_\_\_. **Programa Bolsa Família 20 Anos**. [s.l: s.n.]. Disponível em: <<https://www.gov.br/mds/pt-br/acoes-e-programas/bolsa-familia>>. Acesso em: 19 fev. 2025a.

\_\_\_\_. **RESOLUÇÃO CD/FNDE Nº 3, DE 4 DE FEVEREIRO DE 2025**. [s.l: s.n.]. Disponível em: <[https://www.in.gov.br/en/web/dou/-/resolucao-cd/fnde-n-3-de-4-de-fevereiro-de-2025-\\*611348521](https://www.in.gov.br/en/web/dou/-/resolucao-cd/fnde-n-3-de-4-de-fevereiro-de-2025-*611348521)>. Acesso em: 19 fev. 2025b.

GUBERT, M. B. *et al.* Household food insecurity in black-slaves descendant communities in Brazil: Has the legacy of slavery truly ended? **Public Health Nutrition**, v. 20, n. 8, 2017.

HALLWARD, L. *et al.* Associations between gender identity, eating disorder psychopathology, and food insecurity among Canadian adolescents and young adults during the COVID-19 pandemic. **Eating Behaviors**, v. 49, p. 101723, 1 abr. 2023.

HEVESI, R.; DOWNEY, M. R.; HARVEY, K. Living in food insecurity: A qualitative study exploring parents' food parenting practices and their perceptions of the impact of food insecurity on their children's eating. **Appetite**, v. 195, p. 107204, 1 abr. 2024.

HUFFMAN, C.; NÁJERA, H. On distinguishing food insecurity levels with the Latin American and Caribbean Food Security Scale. **Quality and Quantity**, v. 57, n. 1, 2023.

IBGE. **Cidades e Estados, Aparecida de Goiânia**. Disponível em:

<<https://www.ibge.gov.br/cidades-e-estados/go/aparecida-de-goiania.html>>. Acesso em: 27 out. 2024.

IBGE. IBGE releases per capita household income 2023 for Brazil and Federation Units. 28 fev. 2024a.

IBGE. Segurança alimentar nos domicílios brasileiros volta a crescer em 2023. **IBGE**, 25 abr. 2024b.

IBGE. 27,6% dos lares brasileiros vivem com insegurança alimentar. 25 abr. 2024c.

INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC). **Climate Change 2022 – Impacts, Adaptation and Vulnerability**. [s.l: s.n.].

JOWELL, A. H. *et al.* Mitigating childhood food insecurity during COVID-19: a qualitative study of how school districts in California's San Joaquin Valley responded to growing needs. **Public Health Nutrition**, v. 26, n. 5, 2023.

KOLOG, J. D.; ASEM, F. E.; MENSAH-BONSU, A. The state of food security and its determinants in Ghana: an ordered probit analysis of the household hunger scale and household food insecurity access scale. **Scientific African**, v. 19, p. e01579, 1 mar. 2023.

KURSMARK, M.; WEITZMAN, M. **Recent findings concerning childhood food insecurity** *Current Opinion in Clinical Nutrition and Metabolic Care*, 2009.

LANDRY, M. J. *et al.* Child Compared with Parent Perceptions of Child-Level Food Security. **Current Developments in Nutrition**, v. 3, n. 10, p. nzz106, 1 out. 2019.

LOCATELLI, N. T.; CANELLA, D. S.; BANDONI, D. H. Fatores associados ao consumo da alimentação escolar por adolescentes no Brasil: Resultados da PeNSE 2012. **Cadernos de Saude Publica**, v. 33, n. 4, 2017.

MARTINEZ, P.; LOURDES SATURNINO GOMES, M. DE; MARINI, F. S. **Public policies strengthen the relationship between family farming and food security in Brazilian schools – A case study of Paraíba state** *Heliyon*, 2023.

MARX, W. *et al.* Nutritional psychiatry: The present state of the evidence. **Proceedings of the Nutrition Society**, v. 76, n. 4, p. 427–436, 1 nov. 2017.

MCINTYRE, L. *et al.* Do low-income lone mothers compromise their nutrition to feed their children? **CMAJ. Canadian Medical Association Journal**, v. 168, n. 6, 2003.

MINISTÉRIO DA SAÚDE. **Insegurança Alimentar e Nutricional**. [s.l.: s.n.]. Disponível em: <<https://www.gov.br/saude/pt-br/assuntos/saude-brasil/glossario/inseguranca-alimentar-e-nutricional>>. Acesso em: 5 mar. 2025a.

\_\_\_\_\_. **Ministério da Saúde declara emergência em saúde pública em território Yanomami**. Brasília: [s.n.]. Disponível em: <<https://www.gov.br/saude/pt-br/assuntos/noticias/2023/janeiro/ministerio-da-saude-declara-emergencia-em-saude-publica-em-territorio-yanomami>>. Acesso em: 10 set. 2024b.

NATIONAL EDUCATION DEVELOPMENT FUND, M. OF E. **PNAE - Home**. Disponível em: <<https://www.gov.br/fnde/pt-br/aceso-a-informacao/acoes-e-programas/programas/pnae>>. Acesso em: 23 out. 2024.

NIKOLAUS, C. J. *et al.* Risk of Food Insecurity in Young Adulthood and Longitudinal Changes in Cardiometabolic Health: Evidence from the National Longitudinal Study of Adolescent to Adult Health. **The Journal of Nutrition**, v. 152, n. 8, p. 1944–1952, 1 ago. 2022.

OBSERVATÓRIO DA ALIMENTAÇÃO ESCOLAR. **Pela segunda vez, Bolsonaro negligencia alimentação escolar no orçamento federal**, 1 set. 2022. Disponível em: <<https://alimentacaoescolar.org.br/noticias/2022/09/01/pela-segunda-vez-bolsonaro-negligencia-alimentacao-escolar-no-orcamento-federal/>>. Acesso em: 10 set. 2024

OLIVEIRA, C.; STROPASOLAS, P. **“Ao deus-dará”**: com Bolsonaro, brasileiros passam fome e dependem de doações para comer. Disponível em:

<<https://www.brasildefato.com.br/2022/10/29/ao-deus-dara-com-bolsonaro-brasileiros-passam-fome-e-dependem-de-doacoes-para-comer>>. Acesso em: 10 set. 2024.

OLIVEIRA, K. H. D. DE *et al.* **Household food insecurity and early childhood development: Systematic review and meta-analysis** *Maternal and Child Nutrition* Blackwell Publishing Ltd, , 1 jul. 2020.

PÉREZ-ESCAMILLA, R.; SALLES-COSTA, R.; SEGALL-CORRÊA, A. M. Food insecurity experience-based scales and food security governance: A case study from Brazil. **Global Food Security**, v. 41, p. 100766, 1 jun. 2024.

PLOEG, J. D. VAN DER. From biomedical to politico-economic crisis: the food system in times of Covid-19. **Journal of Peasant Studies**, v. 47, n. 5, 2020.

PNAD CONTÍNUA. **CARACTERÍSTICAS DE SEGURANÇA ALIMENTAR DOS MORADORES DO DOMICÍLIO**. [s.l: s.n.].

PRYOR, L. *et al.* Childhood food insecurity, mental distress in young adulthood and the supplemental nutrition assistance program. **Preventive Medicine**, v. 168, 1 mar. 2023.

RAES. PNAE will be part of the Global Alliance Against Hunger and Poverty. 29 jul. 2024.

REDE BRASILEIRA DE PESQUISA EM SOBERANIA E SEGURANÇA ALIMENTAR E NUTRICIONAL. **VIGISAN National Survey of Food Insecurity in the Context of the Covid-19 Pandemic in Brazil**. [s.l: s.n.]. Disponível em:

<[https://olheparaafome.com.br/VIGISAN\\_AF\\_National\\_Survey\\_of\\_Food\\_Insecurity.pdf](https://olheparaafome.com.br/VIGISAN_AF_National_Survey_of_Food_Insecurity.pdf)>.

Acesso em: 21 jun. 2023.

RODRIGUES, E. C. *et al.* Home food insecurity during the suspension of classes in Brazilian public schools due to the COVID-19 pandemic. **Nutrition**, v. 93, p. 111448, 1 jan. 2022.

SALLES-COSTA, R. *et al.* National Trends and Disparities in Severe Food Insecurity in Brazil between 2004 and 2018. **Current Developments in Nutrition**, v. 6, n. 4, 2022.

SEBRAE. **Aparecida de Goiânia** Data MPE Brasil, , 2022. Disponível em:

<<https://datampe.sebrae.com.br/profile/geo/aparecida-de-goiania>>. Acesso em: 28 set. 2024

SIDANER, E.; BALABAN, D.; BURLANDY, L. The Brazilian school feeding programme: An example of an integrated programme in support of food and nutrition security. **Public Health Nutrition**, v. 16, n. 6, 2013.

SIDRA. **Tabela 9552 - Domicílios e moradores, por situação do domicílio e situação de segurança alimentar existente no domicílio.** [s.l: s.n.]. Disponível em: <<https://sidra.ibge.gov.br/tabela/9552>>. Acesso em: 5 mar. 2025.

SILVA BATISTA, J. V. DA; LINS, B. T.; ESPINOZA, F. BRAZIL: BETWEEN THE PUBLIC POLICIES AND THE HUNGER. **Interfaces Científicas - Direito**, v. 9, n. 2, 2023.

SILVA, T. T. M. DA *et al.* Pandemia e Insegurança Alimentar e Nutricional no Brasil: Uma Revisão Integrativa. **ID on line. Revista de psicologia**, v. 17, n. 67, 2023.

SOUZA, I.; SILVA, V. S. Food Insecurity and National School Feeding Program in Brazil – 2004 to 2013. **European Journal of Public Health**, v. 30, n. Supplement\_5, 2020.

TAMIRU, D.; BELACHEW, T. **The association of food insecurity and school absenteeism: Systematic review** *Agriculture and Food Security*, 2017.

**The State of Food Security and Nutrition in the World 2021.** [s.l.] FAO, IFAD, UNICEF, WFP and WHO, 2021.

**The State of Food Security and Nutrition in the World 2022.** [s.l: s.n.].

THOMAS, M. M. C.; MILLER, D. P.; MORRISSEY, T. W. Food insecurity and child health. **Pediatrics**, v. 144, n. 4, 2019.

TSAKOK, I.; MENGOU, F. E. **Brazil Agriculture—Response and resilience of food security under dual shocks in 2020: Oil price collapse and the COVID-19 pandemic.** [s.l: s.n.]. Disponível em: <[www.policycenter.ma](http://www.policycenter.ma)>.

UNICEF DATA AND ANALYTICS SECTION DIVISION OF DATA, A. P. AND M. **How to measure child experiences of food insecurity?**

USDA. **Food Security Status of U.S. Households in 2023.** Disponível em: <<https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-u-s/key-statistics-graphics/#children>>. Acesso em: 12 nov. 2024.

## ANNEX

### Annex 1: FAO Badge for Using the Food Insecurity Experience Scale

SDG Indicator 2.1.2 - Using the Food Insecurity Experience Scale (FIES)



#### Recipient details

**Name** Shannon Perrone

#### Issuer details

**Issuer name** Food and Agriculture Organization of the United Nations eLearning Academy

**Contact** [elearning-enquiries@fao.org](mailto:elearning-enquiries@fao.org)

#### Badge details

**Name** SDG Indicator 2.1.2 - Using the Food Insecurity Experience Scale (FIES)

**Competencies** Collect and analyze data to report on SDG 2.1.2, using the Food Insecurity Experience Scale

**Course** SDG Indicator 2.1.2 - Using the Food Insecurity Experience Scale (FIES)

**Criteria**

- The following activity has to be completed:
  - "Quiz - SDG Indicator 2.1.2 - Using the Food Insecurity Experience Scale (FIES) - Quiz (Pass grade: 75%)"

#### Badge validity

**Date issued** Monday, 5 June 2023, 5:42 PM

### Annex 2: Articles Published During Master's Program

Article I: **CLOSING THE LOOP: SUSTAINABLE APPROACHES FOR MANAGING AND RECOVERING FOOD INDUSTRY RESIDUES**

Link: <https://periodicos.ifpb.edu.br/index.php/principia/article/view/8436>


Abstract: Food waste management is a growing global concern, driven by the imperative to address environmental sustainability, resource conservation, and global hunger. This article aims to provide a theoretical analysis of the historical evolution of food waste management, delving

into the definition of the term and its international relevance. Additionally, it critically examines the need for sustainable approaches. The methodology comprises a comprehensive literature review from 2013 to 2023, utilizing keywords related to food waste, sustainability, and the circular economy. The databases used include Science Direct and MDPI. Findings reveal a shift from individual to institutional food waste sources, underscoring the necessity for alternative approaches. Environmental analysis highlights the adverse impacts of conventional practices, while strategies such as food rescue, fermentation, and anaerobic digestion emerge as promising solutions. Understanding consumer behavior is crucial, and smart labels are introduced as potential tools to reduce food waste. The article identifies the challenges and limitations of current food waste management practices, emphasizing the need for sustainable treatments. Sustainable approaches in managing food industry residues, including food rescue, fermentation, and anaerobic digestion, are discussed as alternatives to conventional methods. The article concludes by proposing future research directions, emphasizing the importance of understanding consumer behavior, exploring the potential of smart labels, and addressing gaps in current knowledge to achieve a more sustainable and responsible approach to food consumption and waste management.

## Closing the loop: sustainable approaches for managing and recovering food industry residues


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SILVA, L. L. P. da; PERRONE, S.; REIS, C. L. F. de S. e; SOUZA, T. F. C. de; OLIVEIRA, T. F. de; PEREIRA, J. Closing

## Article II - DIDÁTICA COMPLEXA E TRANSDISCIPLINAR: UMA RESISTÊNCIA AO PROJETO DE NORMALIZAÇÃO DO HOMESCHOOLING NO BRASIL COMPLEX AND TRANSDISCIPLINARY TEACHING: RESISTANCE TO THE HOMESCHOOLING STANDARDIZATION PROJECT IN BRAZIL

Link: <https://revistas.fucamp.edu.br/index.php/cadernos/article/view/3660>

Abstract: This paper aims to present Complex and Transdisciplinary Didactics as a transgression against the formalization of homeschooling in Brazil. The article draws on research and studies about the origins and implications of homeschooling, with a special focus on its development in

Brazil in light of recent political changes, as well as the Theory of Complexity (Morin, 2011; 2015) and the principle of Transdisciplinarity (Nicolescu, 1999; Nicolescu, Morin & Freitas, 1994; Suanno, 2015; Santos, 2008). Based on the present research, it was observed that the controversial and obscurantist nature of homeschooling has been shown to hinder the teaching-learning process and the development of those involved. This paper offers a critical reflection on the relationship between homeschooling and Complex and Transdisciplinary Didactics, arguing that while homeschooling may offer a certain degree of flexibility, it lacks the democratic, critical, and humanizing qualities essential for citizenship formation—qualities that are supported by emerging critical didactics. Therefore, this work advocates for an educational process that integrates diverse knowledge and experiences, positioning Complex and Transdisciplinary Didactics as a necessary counterpoint to the one sided nature of homeschooling in Brazil.

[Início](#) / [Arquivos](#) / [v. 36 \(2024\): Cadernos da FUCAMP](#) / [Artigos](#)

## **DIDÁTICA COMPLEXA E TRANSDISCIPLINAR: UMA RESISTÊNCIA AO PROJETO DE NORMALIZAÇÃO DO HOMESCHOOLING NO BRASIL**

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**João Henrique Suanno**

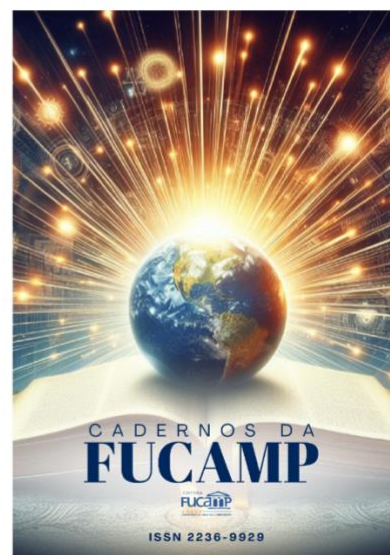
Universidade Estadual de Goiás

**Núria Lorenzo Ramirez**

Universidade de Barcelona

**Marcos Fernandes Sobrinho**

Instituto Federal de Goiás



### Annex 3: Conference Presentations During Master's Program

SEMITEC

November 7<sup>th</sup>, 2024

### INSEGURANÇA ALIMENTAR NO BRASIL: REFLEXOS DA ASCENSÃO DA EXTREMA-DIREITA EM MEIO A UMA ECONOMIA GLOBALIZADA

**XXIII Congreso Internacional Territorio y Cultura - SEMITEC'2024**

**Hace constar que**

**Shannon Perrone**

**Participó como Ponente en el XXIII Congreso Internacional sobre Territorio y Cultura SEMITEC'2024 con la ponencia:**

**Insegurança alimentar no Brasil: reflexos da ascensão da extrema-direita em meio a uma economia globalizada**  
Villa de Leyva, Colombia del 5 al 7 de noviembre de 2024

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**Diana Rico Revelo**  
Coordinadora Capítulo RETEC, Colombia  
Profesora ESAP-Territorial  
Quindío-Risaralda

**Gregorio Hernández Pulgarín**  
Coordinador Grupo de Investigación Territorialidades  
Profesor UCALDAS, Colombia

**Béatriz Nates-Cruz**  
Coordinadora General del Congreso  
Profesora UCALDAS, Colombia  
(ICSH-DET/GIT)

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Instituto Colombiano de Estudios de Territorio y Cultura

**DOCTORADO**  
ESTUDIOS TERRITORIALES

**Grupo de Investigación TERRITORIALIDADES**

**Con el apoyo de:**

**ALCALDIA DE Villa de Leyva**

**ALCALDIA DE VILLA DE LEYVA**

**Escuela Superior de Administración Pública**

CPISA

March 21<sup>st</sup>, 2024

## ELEMENTARY SCHOOL STUDENTS FROM VARIOUS SOCIOECONOMIC BACKGROUNDS AND THEIR EXPERIENCE WITH FOOD INSECURITY IN BRAZIL

**CPISA**  
1º Congresso do Centro-Oeste de Produção, Inovação e Segurança de Alimentos

# CERTIFICADO DE APRESENTAÇÃO DE TRABALHO

Este certificado é concedido aos autores do trabalho

Shannon Perrone, Tatianne Ferreira de Oliveira, Márcio Caliar, intitulado "**Elementary school students from various socioeconomic backgrounds and their experience with food insecurity in the United States and Brazil**", apresentado durante o 1º Congresso do Centro-Oeste de Produção, Inovação e Segurança de Alimentos (CPISA), realizado de 20 a 22 de março de 2024, na Escola de Veterinária e Zootecnia da Universidade Federal de Goiás, Goiânia-GO. Suas contribuições acadêmicas enriqueceram significativamente o conteúdo científico do evento.

Equipe Organizadora  
CPISA

1º Congresso do Centro-Oeste de Produção, Inovação e Segurança de Alimentos

O Tempo da Nutrição – XXIV Congresso de Nutrição e Alimentação

May 8-9<sup>th</sup>, 2025

Braga, Portugal

**THROUGH THEIR EYES: EXPERIENCES OF FOOD INSECURITY AMONG PUBLIC ELEMENTARY SCHOOL STUDENTS IN APARECIDA DE GOIÂNIA, BRAZIL**



**8 + 9**  
maio'25  
**Forum**  
**Braga**

**o tempo**  
da **nutrição**

**XXIV**  
Congresso de  
Nutrição e  
Alimentação

**ASSOCIAÇÃO**  
PORTUGUESA  
DE NUTRIÇÃO

# DIPLOMA

**THROUGH THEIR EYES: EXPERIENCES OF FOOD INSECURITY AMONG PUBLIC ELEMENTARY SCHOOL STUDENTS IN APARECIDA DE GOIÂNIA, BRAZIL**

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Foi disponibilizado em formato de Poster na *app* do XXIV Congresso de Nutrição e Alimentação, o qual decorreu nos dias 8 e 9 de maio de 2025, no Forum Braga.

Braga, 9 de maio de 2025

**Célia Craveiro (Presidente)**  
Comissão Organizadora

**Annex 4: Consent Form - Kids**



**UNIVERSIDADE FEDERAL DE GOIÁS  
ESCOLA DE AGRONOMIA  
PROGRAMA DE PÓS-GRADUAÇÃO EM CIÊNCIA E TECNOLOGIA DE  
ALIMENTOS**

**TERMO DE ASSENTIMENTO LIVRE E ESCLARECIDO – TALE – CRIANÇAS**

Sou a Shannon Perrone e estudo na Universidade Federal de Goiás. Estou fazendo uma pesquisa sobre o que as crianças acham da comida que comem. Gostaria de convidar você a participar voluntariamente na minha pesquisa “**ALUNOS DO ENSINO FUNDAMENTAL PÚBLICO E SUAS EXPERIÊNCIAS COM INSEGURANÇA ALIMENTAR EM APARECIDA DE GOIÂNIA, BRASIL**”. Para fazer essa pesquisa eu vou te fazer algumas perguntas sobre o que você come em casa e na escola. A gente vai para um lugar reservado, e ninguém vai ouvir sua resposta. Só eu vou ter contato com ela. Você não precisa responder algumas perguntas se não quiser. Se você tiver cansado, a gente pode parar e continuar outro dia. Se você não quer responder alguma pergunta, não precisa responder. A sua participação é voluntária, você não vai receber nada em troca por participar. Se você não quiser participar, não será prejudicado. Essa pesquisa vai ajudar a sua escola e sua cidade, e vai ser muito importante para as refeições da sua escola também. Eu vou te fazer 16 perguntas, e a pesquisa irá demorar 5 minutos para completar. Temos o apoio e a presença dos seus professores e administradores, e pessoas da equipe que poderão conversar com você em qualquer momento da pesquisa se você quiser. Se você quiser conversar comigo depois da pesquisa pode entrar em contato em qualquer momento por telefone (62) 3521-1530 ou email [shannon@discente.ufg.br](mailto:shannon@discente.ufg.br). Se você quiser conversar com o comitê de ética da UFG, pode ligar (62) 3521.1215.

Eu entendi tudo que vai acontecer na pesquisa e concordo com minha participação

concordo

não concordo

Goiânia, ..... de ..... de .....

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Assinatura por extenso do(a) participante

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Assinatura por extenso do(a) pesquisador(a) responsável

**Annex 5: Consent Form - Parents**



**UNIVERSIDADE FEDERAL DE GOIÁS ESCOLA DE AGRONOMIA  
PROGRAMA DE PÓS-GRADUAÇÃO EM CIÊNCIA E TECNOLOGIA DE  
ALIMENTOS**

**TERMO DE CONSENTIMENTO LIVRE E ESCLARECIDO – TCLE –**

**Pais/Responsáveis**

Eu, Shannon Perrone, pesquisadora responsável pelo projeto, convido você ..... e a criança ..... sob sua responsabilidade para participar voluntariamente do estudo **“ALUNOS DO ENSINO FUNDAMENTAL PÚBLICO E SUAS EXPERIÊNCIAS COM INSEGURANÇA ALIMENTAR EM APARECIDA DE GOIÂNIA, BRASIL”**. Após receber os esclarecimentos e as informações a seguir, se você quiser participar e se consentir na participação da criança sob sua responsabilidade neste estudo, assine ao final deste documento, que está impresso em duas vias, sendo que uma delas é sua e a outra ficará comigo. Esclareço que em caso de recusa na sua participação e na participação da criança sob sua responsabilidade, não haverá penalização para nenhum de vocês. Mas se houver aceite, as dúvidas sobre a pesquisa poderão ser esclarecidas pela pesquisadora responsável, via e-mail [shannon@discente.ufg.br](mailto:shannon@discente.ufg.br) ou através de contato telefônico para o número (62) 3521-1530 inclusive com possibilidade de ligação a cobrar. Ao persistirem as dúvidas sobre os direitos como participante desta pesquisa, você também poderá fazer contato com o Comitê de Ética

em Pesquisa com Seres Humanos da Universidade Federal de Goiás (CEP/UFG) pelo telefone (62) 3521.1215, de segunda a sexta-feira, no período matutino. O CEP-UFG é uma entidade independente, de caráter consultivo, educativo e deliberativo, no âmbito de suas atribuições, criado para proteger o bem-estar dos/das participantes de pesquisa, em sua integridade e dignidade, visando contribuir no desenvolvimento da pesquisa dentro de padrões éticos vigentes. A presente pesquisa tem como objetivo geral identificar os níveis de insegurança alimentar em vários tipos

de escolas primárias no Brasil e nos Estados Unidos. A sua participação e a participação da criança sob a sua responsabilidade é importante para a realização desta pesquisa.

Eu vou explicar como será a sua participação na pesquisa como responsável da criança. Presencialmente ou virtualmente você irá responder o questionário. Ou presencialmente ou vou te mandar pelo email ou whatsapp um questionário para você responder. Você vai demorar 5 minutos para responder esse questionário. Se você se sentir cansado, você pode parar e responder o seu questionário depois. Se você se sentir constrangido com alguma pergunta e não quiser responder pode pular e passar para a próxima. Se você durante a pesquisa quiser retirar seu consentimento, pode parar e retirar sem problema algum. Você não será identificado. Seu nome não vai aparecer nos resultados, somente eu a pesquisadora terei contato com as suas respostas.

A criança sob sua responsabilidade também responderá um questionamento sobre alimentação que também presenciara um tempo de 5 minutos. Se a criança se sentir cansada poderá responder outro dia. Se ela não quiser responder alguma pergunta ela também pode não responder. Ela também pode se recusar a sair da pesquisa a qualquer momento. Todos os cuidados para a criança se sentir segura, confortável e não identificada serão tomados. E se ela precisar de algum acompanhamento e aconselhamento eu serei responsável por esse acompanhamento.

A participação na pesquisa será voluntária, vocês não receberão nenhum pagamento para participação. Vocês não terão nenhum gasto para participar, mas se houver vocês serão ressarcidos. Portanto, não haverá despesas pessoais ou gratificação financeira decorrente da participação, caso haja despesas, elas serão ressarcidas.

Os benefícios para você e para a criança sob sua responsabilidade não são diretos. Eles se darão na forma de informação e dados para os sistemas públicos de educação e de saúde, controle social para políticos públicos e projetos de atenção para essa população. O benefício é coletivo e longo prazo.

Caso ocorra algum dano, o direito a pleitear indenização para reparação imediata ou futuro, decorrentes da cooperação com a pesquisa está garantido em Lei. O sigilo e anonimato da sua autorização e da participação da criança na pesquisa será preservada.

Vou guardar os dados coletados de você e a criança por 5 anos e depois serão descartados de forma segura sem a identificação de vocês. Pode haver a necessidade de utilizar os dados para outras pesquisas. Se isso acontecer, será enviado novamente ao comitê de ética para apreciação.

( ) Eu permito utilizar meus dados para pesquisa futura  
( ) Eu não permito utilizar meus dados para pesquisa futura

Eu ....., abaixo assinado, entendo os termos de consentimento para a pesquisa e autorizo a criança ....., a participar do projeto intitulado **“ALUNOS DO ENSINO FUNDAMENTAL PÚBLICO E SUAS EXPERIÊNCIAS COM INSEGURANÇA ALIMENTAR EM APARECIDA DE GOIÂNIA, BRASIL”**. Informo ter mais de 18 anos de idade e destaco que a participação dele(a) nesta pesquisa é de caráter voluntário.

Eu..... aceito participar da pesquisa **“ALUNOS DO ENSINO FUNDAMENTAL PÚBLICO E SUAS EXPERIÊNCIAS COM INSEGURANÇA ALIMENTAR EM APARECIDA DE GOIÂNIA, BRASIL”**. Informo ter mais de 18 anos de idade e destaco que a participação dele(a) nesta pesquisa é de caráter voluntário.

Fui devidamente informado(a) e esclarecido(a) pela pesquisadora responsável Shannon Perrone sobre a pesquisa, os procedimentos e métodos nela envolvidos, assim como os possíveis riscos e benefícios decorrentes de minha participação no estudo. Foi-me garantido que posso retirar meu consentimento a qualquer momento, sem que isto leve a qualquer penalidade. Declaro, portanto, que concordo com a minha participação no projeto de pesquisa acima descrito.

Goiânia, ..... de ..... de .....

\_\_\_\_\_ Assinatura  
por extenso do(a) participante

\_\_\_\_\_ Assinatura  
por extenso do(a) pesquisador(a) responsável

Escola de Agronomia - Programa de Pós-Graduação em Ciência e Tecnologia de Alimentos Av. Esperança s/n, Campus Samambaia, CEP 74.690-900 Goiânia - Goiás - Brasil Telefone: +55 (62) 3521-1530

## Annex 6: UNICEF How to Measure Child Experiences of Food Insecurity

### How to measure child experiences of food insecurity?



unicef  
for every child

Nutrition – global food security

#### PROBLEM

The implementation of the Food Insecurity Experience Scale (SDG 2.1.2) annually in the Gallup World Poll has provided data on experiences of food insecurity for people aged 15 years and older in about three-quarters of the world's countries. **No comparable data exist for children younger than 15 years old.** Research over the past decade has established the importance of assessing children's experiences of food insecurity directly from them rather than from parental reports because children have different experiences of food insecurity than adults and adults often do not know about child experiences of food insecurity and consequently under-report these experiences.



#### SOLUTION

With the emergence of new systems for data collection for school-aged children in surveys, a globally applicable questionnaire to assess child experiences of food insecurity is needed. The objective of this project is to build on the questionnaires that have been developed and tested in the U.S. (Fram et al., 2013, 2015b), Venezuela (Bernal et al., 2014), and Lebanon (Jamaluddine et al., submitted) to, working with multiple partners:

1. Develop a potentially globally applicable questionnaire
2. Conduct cognitive interviews in multiple countries to confirm that the questionnaire items ask meaningful questions, the meaning is what was intended, and the responses are meaningful
3. Conduct quantitative field tests as opportunities to do so are available



**Monitor food insecurity in children globally**

**DRAFT** ten items to ask children:

*In the last 12 months.....*

1. Did you worry that food at home would run out before your family was able to get more?
2. Did you worry about how hard it is for your parents/guardians to get enough food for your family?
3. Were you not able to get the food you wanted because there wasn't enough money?
4. Has the size of your meal been cut because your family didn't have enough food?
5. Were you hungry but didn't eat because your family didn't have enough food?
6. Did you skip a meal because your family didn't have enough food?
7. Did you feel tired or weak because your family didn't have enough food to eat?
8. Did you feel embarrassed or ashamed because your family didn't have enough food?
9. Did you feel sad or mad because your family didn't have enough food?
10. Did you feel embarrassed or ashamed about any of the things you or your family had to do to get enough food?

**Response Options:**

Many times / 1 or 2 times / Never / Don't know / Refuse to answer

UNICEF Data and Analytics Section  
Division of Data, Analytics, Planning and Monitoring

**Contacts:** [nutritiondata@unicef.org](mailto:nutritiondata@unicef.org)  
**Website:** [data.unicef.org/topic/nutrition](http://data.unicef.org/topic/nutrition)