Food Insecurity in Affluent Societies: A Local Analysis Using the FIES

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Abstract

Food insecurity is a global and multifaceted issue, not only confined to low-income countries but also increasingly evident in affluent nations. The Committee on World Food Security (2012) defines it as a condition in which individuals always have consistent access to adequate food, encompassing physical, social, and economic dimensions. Recent data from FAO, IFAD, UNICEF, WFP, and WHO (2024) indicate that approximately 700 million people experienced hunger in 2023, with 30% of the global population facing varying degrees of food insecurity. In Europe, Eurostat (2024) reports that 9.5% of the EU population experienced severe food deprivation in 2023, struggling to afford a protein-rich meal every two days. This prevalence underscores the persistence of food insecurity, even in high-income countries, where factors such as economic downturns, the socio-economic impacts of the COVID-19 pandemic, climate change, and geopolitical instability further exacerbate the issue (Marino 2024). These challenges deepen poverty and social marginalisation, making food insecurity a key indicator of broader societal inequalities (Bernaschi 2020). The pioneering research of Sen (1981) and Dreze and Sen (1990) highlights the significant role of entitlements and socio-economic conditions in either constraining or facilitating access to food. Over time, research has increasingly recognised the need to address not only food availability but also its experiential and emotional dimensions (Radimer *et al.* 1990; HLPE, 2023). In this context, the FAO's Food Insecurity Experience Scale (FIES) has become pivotal in capturing these aspects, offering critical insights into the lived realities of those affected (Cafiero *et al.* 2018). While FIES is generally used at the national level, this article applies it to assess food insecurity at a local level, focusing on the metropolitan city of Rome, Italy, where economic inequalities intersect with

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social and territorial disparities. The findings reveal significant territorial inequalities, with marginalised populations being more vulnerable to food insecurity. These insights highlight the importance of targeted interventions and policies to address local disparities, emphasising the need to integrate experiential measures into food security assessments to foster social equity.

Keywords: food insecurity; FIES; experiential measure; agency; local measurement.

1. *Introduction*: *The relevance of measuring the underside of food insecurity*

Food insecurity is widely perceived as a challenge primarily affecting low-income countries, often attributed to inadequate food availability. However, it represents a complex and intricate issue. As highlighted by Hendriks (2015), it encompasses a range of experiences, from severe cases like starvation to achieving a complete state of food security. This state is defined as ensuring that *"all people at all times have physical, social, and economic access to food, which is safe and consumed in sufficient quantity and quality to meet their dietary needs and food preferences, and is supported by an environment of adequate sanitation, health services, and care, allowing for a healthy and active life"* (Committee on World Food Security 2012, 8).

According to data released by the Food and Agriculture Organization (FAO) in 2024, approximately 700 million people worldwide experienced hunger in 2023, while 30% of the global population faced some degree of food insecurity (FAO, IFAD, UNICEF, WFP, WHO 2024). Furthermore, in 2021, a staggering 42% of individuals were unable to afford a nutritious diet (FAO, IFAD, UNICEF, WFP, WHO 2023), leading to notable adverse effects on children's health, evident in alarming increases in malnutrition rates, including wasting and overweight (USAID 2022; UNICEF 2020; World Bank 2023).

In 2023, Eurostat reported that 9.5% of the European Union's population, approximately 42.5 million individuals, could not afford a meal containing meat, fish, or a vegetarian equivalent every other day, up from 8.3% in 2022 (Eurostat 2024). This trend underscores escalating challenges in food accessibility across the EU, reflecting broader socio-economic vulnerabilities. In Italy, 8.4% of the population, or about 4.9 million people, experienced material food deprivation in 2023, an increase

from 7.5% in 2022, when around 4.4 million individuals faced similar hardships (Eurostat 2024; ActionAid 2023).

These data underscore that food insecurity is not confined to low-income nations but also extends to affluent countries with abundant food supplies. This phenomenon, often referred to as the *food paradox* (Berti *et al*. 2021), illustrates a specific example of the broader concept of *scarcity within abundance* (Campiglio, Rovati 2009). It highlights the paradoxical coexistence of food insecurity – where individuals lack stable access to adequate food – and a persistent food surplus, much of which is wasted despite efforts to redistribute it through solidarity initiatives (Galli *et al*. 2019; Papargyropoulou *et al*. 2018; Caplan 2017; Riches 2018; Barrera, Hertel 2021).

However, this paradox does not exist in isolation but is further exacerbated by broader socio-economic challenges. Economic downturns, the socio-economic repercussions of the COVID-19 pandemic, the escalating threats of climate change, and geopolitical instability collectively contribute to rising poverty, social marginalisation, and food insecurity – even within wealthier societies (Maino *et al*. 2023). Amidst this societal turbulence, food insecurity serves as a stark indicator of deepening inequalities within communities (Bernaschi *et al*. 2023a).

This interplay between socio-economic factors and food insecurity has been extensively explored in economic theory. Groundbreaking studies by Amartya Sen (1981) and Dreze and Sen (1990) shed light on how compromised entitlements hinder individuals from attaining regular and sufficient food access. Subsequent research (HLPE 2023; Swinburn *et al*. 2019; Loopstra *et al*. 2016) supports this notion, indicating that in contexts of socio-economic insecurity, family or personal budgets are strained by essential expenses (such as rent, mortgage, etc.), often resulting in compromises in food expenditure (Dowler, O'Connor 2012; Friel *et al*. 2014; Poppendieck 2014; Purdam *et al*. 2016; Riches 2002).

In response to growing food insecurity, food assistance has emerged as a key mechanism to mitigate its effects, yet it remains an insufficient solution. The rise of food insecurity coincides with an increase in food assistance, reflecting a response to escalating poverty and economic instability (Dickinson 2019; Blake 2019). While food aid has become one of the crucial indicators of the extent of food insecurity (Caraher, Furey 2018), it only scratches the surface of a multidimensional problem that

encompasses agency and capabilities (Grimaccia, Naccarato 2018; Bernaschi 2020).

Beyond the material aspects of food insecurity, its experiential and emotional dimensions further underscore the profound impact on individual well-being. The latent dimension of food insecurity encompasses undiscovered facets, entailing the deprivation of substantive freedoms, such as control and autonomy regarding food choices and nutritional capabilities (Bernaschi 2020). As a result, this entails a notable emotional and experiential dimension associated with deprivation and social exclusion, eliciting anxieties and apprehensions regarding self-reliance for both oneself and one's family (Siefert *et al.* 2001; Heflin *et al.* 2005; Tarasuk *et al.* 2019; Eisenberger *et al.* 2003; Palladino *et al.* 2024).

In light of this complexity, measuring food insecurity cannot be limited to its economic and material aspects but must also incorporate approaches that capture its experiential dimension. Within the scope of the multidimensional concept of food insecurity and the different approaches to its evaluation and measurement (Barrett 2010; Fanzo *et al.* 2021), this article aims to investigate the less uncovered dimensions of food insecurity, exploring the contribution of experiential measures, particularly the Food Insecurity Experience Scale (FIES) developed by the FAO, utilised comparatively across more than 150 countries and employed in monitoring Goal 2 of the UN 2030 Agenda (Nord *et al.* 2016; Cafiero *et al.* 2018).

The article introduces two primary aims. Firstly, it aims to measure food insecurity as an experiential phenomenon, moving beyond considerations about food production, economic access, and food prices, to comprehend and capture the experience and ramifications of food insecurity (Saint Ville *et al.* 2019). Since the 1970s, both academic and international agency efforts have focused on measuring and monitoring food insecurity's causes and social determinants. Over time, the need to humanise those experiencing food insecurity has emerged, recognizing their rights beyond charity (De Schutter 2014a). The debate on subjective elements that may contribute to measuring social phenomena highlights their importance in understanding quality of life, encompassing social and psychological well-being (Stiglitz *et al.* 2009; Jones 2017; Pérez-Escamilla, Segall-Corrêa 2008; Gundersen, Ziliak 2015). Countering food insecurity is a restorative act of dignity, enhancing people's agency and capabilities (Bernaschi 2020). Measurement tools like the Food Insecu-

rity Experience Scale (FIES) capture food insecurity through the lived experiences of people, emphasising the crucial link between agency, nutritional outcomes, and social inequalities (Cafiero *et al.* 2024).

Given that large-scale analyses are essential for identifying general trends, applying tools like FIES at the local level enables the detection of territorial inequalities and the identification of populations most vulnerable to food insecurity. Therefore, the second aim of this article is to apply the FIES, typically used by the FAO at the national level for global comparisons, at a local level. While broad-scale analyses of food insecurity can reveal similarities across various contexts (Graham *et al.* 2019; Smith *et al.* 2017), examining food insecurity on a local scale allows for the detection of its intensity and scope within specific areas, highlighting regions and populations most vulnerable to food insecurity.

By considering the local dimension of food insecurity, it becomes possible to examine spatial inequalities within a single country – inequalities intertwined with the food environment that either facilitate or constrain food choices and access to nutritious food (Loopstra, Tarasuk 2012). Using the FIES alongside local-level variables such as access to social services (e.g., transportation and food retail), as well as income and education, allows for the identification of populations most vulnerable to socioeconomic disruptions within the local food system (Grimaccia, Naccarato 2018; Tadesse *et al.* 2020; Cook *et al.* 2006).

These considerations have led to the focus of this research on a local case study: the metropolitan city of Rome, the largest agricultural municipality in Europe. This metropolitan area consists of 121 municipalities, where economic inequalities intersect with social and territorial ones (Celata, Lucciarini 2016; Marino *et al.* 2022; Felici *et al.* 2022). Urbanisation has occurred at varying intensities, creating territorial discrepancies in access to resources and exacerbating inequalities, particularly affecting women and young couples who relocate to the outer and peripheral areas of the city.

The article is structured as follows: Section 2 outlines the evolution of the definition and measurement of food insecurity, with particular emphasis on the experiential dimension and its crucial role in enhancing and expanding individuals' agency. Section 3 presents a local case study, focusing on Rome as the pilot city for the application of the Food Insecurity Experience Scale (FIES). Section 4 discusses the key findings

from the FIES implementation in Rome in detail. The concluding Section explores the challenges of measuring food insecurity, the importance of experience-based metrics like FIES, and the need for data-driven policies to address systemic gaps.

2. *Changes in the definition and measurement of food insecurity*

Hendriks (2015, 610) argues that the understanding of food insecurity is a cumulative process and that the way in which we define food insecurity has a crucial impact on how it is measured (Candel 2014). Over time, the analysis of food insecurity has evolved significantly, with an increasing awareness of its multifaceted nature (Maxwell *et al.* 1998; Swaminathan 1996; Clapp *et al.* 2022). Early recognition of the importance of food supply, aside from Malthus' seminal work in the late 1700s, can be traced back to the late 1930s. In their 1939 work *Our Food Problem and Its Relation to Our National Defences*, Le Gros Clark and Titmus highlighted the strategic role of food availability and distribution in ensuring national security and stability.

However, explicit reference to the concept of food insecurity only emerged in the early 1940s. At the UN Conference on Food and Agriculture held in 1943, it was stated that "a safe, adequate and appropriate food supply should be a cardinal objective in every country" (UN 1943, 173). Until the 1980s, the prevailing definition of food insecurity emphasised food availability, i.e., agricultural productivity. This led to a focus on measures assessing food availability to meet energy needs, such as food balance sheets (Hendriks 2015; Webb *et al.* 2006; Pinstrup-Andersen 2009; Upton *et al.* 2016).

In the 1980s, Amartya Sen's (1981) work marked a significant turning point, emphasising that access to food – determined by food entitlements – was just as critical as food availability. This shift broadened the focus to include factors such as income, social transfers, pricing policies, market conditions, and coping strategies (Burchi, De Muro 2016, 13). As Hendriks (2015) and others point out, food availability is necessary but insufficient for access, and access is necessary but insufficient for effective food utilisation. Consequently, the 1990s saw an increased emphasis on the preferences and nutritional dimensions of food insecurity, including how the broader food environment shapes life chances (Clay 2003; Barrett 2010; Caballero 2005; Townsend *et al.* 2001; McKinnon *et al.* 2009).

The focus then shifted towards understanding both the internal and external vulnerabilities that shape individuals' ability to secure food. Hart (2009) highlights how socio-economic and environmental factors interact to influence people's food security. Central to this evolving conceptualisation[1] were the studies of Radimer *et al.* (1990), which expanded the definition of food insecurity to include emotional and experiential dimensions. These dimensions encompass not only the absence of diverse and nutritious food but also feelings of fear, anxiety, frustration, alienation, and distress related to a lack of control over one's food supply (Frongillo 2013).

Hendriks (2015) further discusses how the fear of not being able to afford food long-term often signals the onset of food insecurity. This fear is exacerbated by market disruptions and price instability, prompting people to adopt precautionary strategies. As food insecurity deepens, individuals may reduce or skip meals, or opt for cheaper, processed foods (Headey, Alderman 2019). The shift from mild to severe food insecurity illustrates the emotional toll that food insecurity can have on individuals (Ballard *et al.* 2014; Hendriks 2015; Saint Ville *et al.* 2019).

The emotional/experiential dimension thus provides valuable insights into how food insecurity is experienced over time, allowing for a deeper understanding of its intensity, magnitude, and managed processes. Grimaccia and Naccarato (2018) further argue that, when combined with personal, familial, social, and territorial factors, this approach provides a richer understanding of the risks and consequences of food insecurity. This focus on intensity also enables the identification of potential interventions to prevent severe forms of insecurity and vulnerability (Devereux 2009).

2.1. Experiential dimension of food Insecurity: Humanising the experience of food insecurity

Since the 1970s, there has been considerable interest in both scholarly literature and the work carried out by international agencies in measuring and monitoring the causes and social determinants of food insecurity (Sassi, 2018). However, as discussed in the previous section, there has

[1] This stage was also marked by the UN International Conference on Nutrition held in 1992.

also been a growing recognition of the need to give a face and a voice to those experiencing food insecurity. As Fassin (2018) puts it, this perspective emphasises a right beyond any obligation or charitable approach to social inequality.

In this context, the role of subjective elements in measuring food insecurity has been widely debated. These elements, which provide key insights into people's quality of life, extend beyond material well-being to encompass social and psychological factors (Alkire *et al.* 2015; Stiglitz *et al.* 2009; Grimaccia, Naccarato 2018; Fukuda-Parr 2003; Ibrahim and Alkire 2007). As Wilkinson and Pickett (2009) argue, improving people's quality of life is crucial in addressing social inequalities, with food insecurity being a fundamental issue of inequality (Lang, Caraher 1998). In this sense, addressing food insecurity becomes a restorative act of dignity, expanding and enhancing people's agency and capabilities (Cardoso 2002; Coates *et al.* 2006; Pollard, Booth 2019).

Agency, as Clapp *et al.* (2022, 4) highlight, is central to food insecurity, as it concerns both individuals' ability to control their food choices and broader life circumstances. Moreover, it involves the capacity of individuals and communities to have their voices heard and actively participate in the food system (Burchi, De Muro 2016; Drèze, Sen 1990).

Clapp *et al.* (2022) note that there are various important examples of measures aimed at highlighting the relationship between agency and food insecurity. These measures provide valuable insights into the connection between agency and nutritional outcomes, with a particular focus on gender inequalities. Measures such as the Food Insecurity Experience Scale (FIES), which capture the lived experiences of individuals – including feelings of anxiety and instability related to a lack of control over food choices – integrate these subjective elements into the very definition of food insecurity (Coates 2013; Quisumbing *et al.* 2021; Cafiero *et al.* 2018).

2.1.1. *Measuring food insecurity using the* FIES *scale*

The measurement of food insecurity remains a debated issue in social research, largely due to the varying definitions and interpretations of the concept among scholars (Barrett 2010). One of the most recent developments in this field defines food insecurity as the limited or uncertain ability to acquire healthy and nutritious food on a regular basis – a con-

dition affecting both individuals and households (FAO, IFAD, UNICEF, WFP, WHO, 2022).

Sometimes the inability to access food has also been referred to as food poverty, although the two terms are not synonymous. Food poverty refers mainly and specifically to the economic constraints that limit individuals' ability to access sufficient and nutritious food, positioning it as a subset of monetary poverty. However, following Sen's capabilities approach, food poverty should perhaps not be viewed solely as a lack of financial resources but as a broader deprivation that restricts people's capabilities to secure adequate nutrition and maintain a healthy life (Drèze, Sen, 2013; Nussbaum 2000; De Schutter 2014b; Dowler 2003).

This consideration leads the way towards considering food insecurity, which is a broader concept that extends beyond financial limitations to include structural, social, and behavioural barriers to food access (Lowe *et al.* 2009; Lytle, Sokol 2017; McCarthy *et al.* 2001). These may include physical inaccessibility (e.g. food deserts), lack of nutritional knowledge, cultural dietary restrictions, psychological stress, or social exclusion (Drèze, Sen 1990; Brady *et al.* 2021; Ver Ploeg 2010). Therefore, while food poverty is directly linked to monetary poverty, food insecurity can exist independently of financial status. Even individuals who are not classified as economically poor may experience food insecurity due to factors such as high living costs, health conditions, or a lack of access to adequate food sources (Stuff *et al.* 2004; Kirkpatrick *et al.* 2010).

This distinction is critical for designing effective policy interventions. Recognising food insecurity as a complex, latent condition – one that is not always directly observable only in terms of material deprivations – highlights the limitations of traditional economic indicators such as monetary poverty, income, expenditure, and food consumption patterns in fully capturing the issue (Jones *et al.* 2013). For a long time, researchers and analysts relied on these indirect measures, leading to challenges in accurately assessing food insecurity.

A major breakthrough in the measurement of food insecurity occurred in the late 1980s, following the pioneering work of Kathy Radimer and colleagues at Cornell University (Radimer *et al.* 1990). Their ethnographic research provided insight into how individuals actually experience difficulties in accessing food. Radimer and her colleagues identified a set of recurring experiences and conditions reported by individuals and sug-

gested that they be used in measuring the severity of food insecurity in a way similar to the way symptoms described by a patient are used in diagnosing an illness and assessing its severity, so that treatment could be best designed. This work laid the foundation for the development of direct measures of the severity of food insecurity, shifting the field away from purely economic indicators towards an experience-based approach.

The next step, achieved through research conducted by the United States Department of Agriculture's Economic Research Service (USDA-ERS) from 1992 onwards, involved processing the response data collected through questionnaires using the Rasch model, an analytical tool specifically developed for measuring latent traits (Rasch 1993). The approach adopted by the USDA-ERS, embodied in the implementation of the H*ousehold* F*ood* S*ecurity* S*urvey* M*odule* (HFSSM) within a food security supplement of the annual continuous US population survey, has since been extended to other countries worldwide. This began in Latin America (e.g., in Brazil with the E*scala* B*rasileira de* I*nsegurança* A*limentar* - EBIA, and in Mexico with the E*scala* M*exicana de* S*eguridad* A*limentaria* - EMSA) and subsequently spread globally (Bickel *et al*. 2000; Pérez-Escamilla, Segall-Corrêa 2008).

In 2012, as part of the Voices of the Hungry project, FAO headquarters in Rome developed the Food Insecurity Experience Scale (FIES) as a complete measurement system, including also a global reference scale, along with the necessary procedures to calibrate the measures obtained in each country, to ensure global comparability of estimates (FAO 2016). To date, the FIES survey module has been translated into more than 200 languages and dialects and applied in almost every country in the world (FAO, IFAD, UNICEF, WFP, WHO 2021). In October 2015, the FIES was adopted as one of the indicators for measuring a specific target related to Goal 2 of the Sustainable Development Goals (SDGs) included in the UN 2030 Agenda (United Nations 2015).

3. *Zooming into the case study: territorial inequalities intertwined with food insecurity*

According to the E*uropean* F*ood* S*ecurity* C*risis* P*reparedness and* R*esponse* M*echanism* (EFSCM) research, published in 2024, which qualitatively analyses the state of food insecurity in Europe based on inputs from a panel of

experts, the disposable income emerges as one of the key determinants of food insecurity. Households at risk of poverty are more than twice as likely to be unable to afford an adequate meal compared to middle-income households (19.7% vs 8.3% in 2022).

Moreover, households with children – especially single-parent households – women, the elderly, and young adults are more at risk of poverty than other household types. In 2022, 12% of elderly households and 15% of single-parent households with average incomes stated that they could not afford an adequate meal every second day; the figures were 20% for all households at risk of poverty, 21% for low-income elderly households, and 23% for low-income single-parent households.

The national structure in Italy essentially mirrors the European one. The latest ActionAid report (2023) adds further dimensions to the issue, showing how material or social food deprivation[2] is more prevalent among those without job stability (economic security), those with low levels of education, those who live in rented accommodation, and people residing in metropolitan areas.

Metropolitan areas present an interesting case study for investigating the issue of food insecurity and its various territorial distributions. This prompted the research to focus on a local case study, namely the metropolitan city of Rome, which is the largest agricultural municipality in Europe. The metropolitan city consists of 121 municipalities, where economic inequalities are intertwined with social and territorial ones (Celata, Lucciarini 2016; Felici *et al*. 2022).

In accordance with the recent publication *Rome at your Fingertips: The 15-Minute City* (2024) by the Department of Roma Capitale for the City of 15 Minutes, there has been a profound demographic and territorial shift since the 1970s. Urbanisation has occurred with varying degrees of intensity, resulting in territorial discrepancies in resource access and subsequent inequalities, particularly impacting women and young couples who relocate to the outer and peripheral areas of the city (Chiaradia *et al*. 2024).

[2] It is assessed by the inability to enjoy a complete meal with meat, chicken, fish, or a vegetarian alternative at least once every two days, as well as the inability to socialise with friends or relatives for a meal or drink at least once a month.

As highlighted by several studies (Caritas 2022; Lelo *et al.* 2021), residents in wealthier districts exhibit higher levels of education and better health conditions compared to those in poorer districts. This disparity is further evidenced by the distribution of COVID-19 infections, which are more prevalent in the city's most vulnerable areas. Additionally, there are concerning statistics regarding the rise in material deprivation, with 23.6% of Romans living in economically challenging conditions, earning less than €15,000 annually, and 10.3% experiencing severe material deprivation (Caritas 2022).

The increase in material deprivation can also translate into a rise in the demand for food aid. According to the latest 2023 report from the Observatory on Poverty and Food Insecurity in Rome[3], which utilises data from the Fund for European Aid to the Most Deprived (FEAD) to assess food assistance within the Roman territory for the year 2022, there are a total of 451 territorial food assistance organisations in Rome. The distribution of these organisations is uneven, with initiatives primarily concentrated in Municipalities I and VII, while Municipality XI has the fewest territorial assistance organisations.

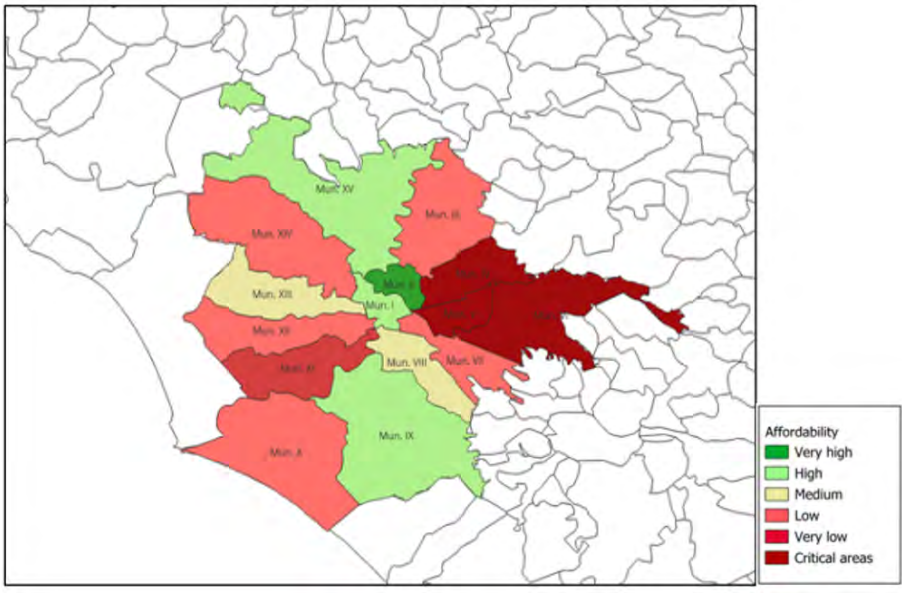
Regarding intervention methods, the majority of food products are distributed through food parcels, with only 3% allocated to solidarity emporiums (i.e., social grocery shops), which aim to promote a new, dignified form of food distribution. Based on FEAD data, a Food Precariousness Index has been calculated to measure the number of interventions by solidarity food assistance organisations relative to the population of each municipality. This index has an average value of 6.16%. This percentage

[3] The Food Affordability Index (FAI) is a new instrument developed by the Observatory to measure the local economic accessibility of healthy diets. Based on CREA's "Healthy Diet Guidelines," the FAI establishes a monthly diet plan for a family of four and carries out pricing surveys across Rome. It assesses the proportion of monthly household spending dedicated to healthy diets relative to overall consumption, and contrasts this with national averages provided by ISTAT. A higher FAI value reflects increased difficulty in accessing sustainable diets. An index value of 1 indicates that no additional adjustments are necessary for maintaining a healthy diet, whereas values above 1 suggest that residents may need to cut back on other expenses to afford a nutritious diet. In contrast, values below 1 denote that a healthy diet can be maintained along with other expenditures without significant compromise.

represents the proportion of residents who rely on food assistance, indicating the level of food insecurity within the municipalities of Rome.

The impact of disposable income on food insecurity is significant, as evidenced by recent research (Bernaschi *et al.* 2023a). These studies highlight critical areas where residents, given their economic resources and the cost of food, struggle to afford a healthy and sustainable diet. As illustrated in Figure 1, only four municipalities demonstrate high affordability, suggesting that in the remaining areas of the city, incomes may be inadequate. This insufficiency compels residents to either reallocate funds from other expenditures or seek substantial increases in income to obtain nutritious and sustainable food.

Figure 1 • The affordability of healthy and sustainable diet in Rome

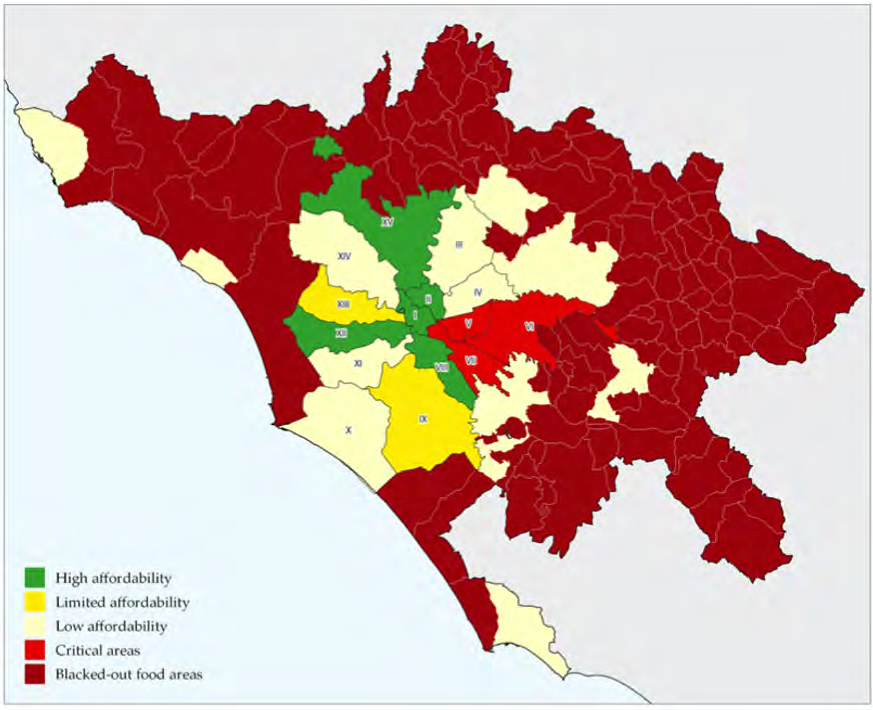


Source: Bernaschi *et al.* (2023a)

Going into more detail, the research identifies specific areas within the metropolitan city of Rome where families not only face insufficient economic resources to access a healthy and sustainable diet but also lack food outlets and solidarity initiatives, such as food aid programs,

to address food insecurity. These regions are characterised by a convergence of vulnerabilities – economic, physical, and a lack of community support – resulting in what are termed 'blacked-out food areas' (Bernaschi *et al.* 2023b). These areas (see Fig. 2) are marked by significant social exclusion, where residents experience markedly reduced access to food compared to other parts of the city. Essentially, these 'blacked-out food areas' represent zones where the food system goes into a state of blackout, with multiple vulnerabilities – such as economic, social, and physical fragilities – overlapping, creating territories of social exclusion. In these spaces, the inability to access food is intertwined with broader socio-economic challenges, amplifying inequalities and exacerbating social exclusion.

Figure 2 • The distribution of blacked-out food area in the Metropolitan City of Rome



Source: Bernaschi *et al.* (2023b)

4. FIES *in Rome*: A*pproach to data collection and analysis*

4.1. Methodology

In this study, a brief questionnaire consisting of the eight questions translated from the standard FIES module used by FAO, was administered to individuals interviewed outside retail outlets in various locations across the metropolitan area of Rome. The aim was to assess the severity of food insecurity as experienced over the preceding 12 months by the people interviewed.

Table 1 • English version of the Food Insecurity Experience Scale

N.	Short reference	Question wording
1	WORRIED	During the last 12 MONTHS, was there a time when you were worried you would not have enough food to eat because of a lack of money or other resources?
2	HEALTHY	Still thinking about the last 12 MONTHS, was there a time when you were unable to eat healthy and nutritious food because of a lack of money or other resources?
3	FEWFOODS	Was there a time when you ate only a few kinds of foods because of a lack of money or other resources?
4	SKIPPED	Was there a time when you had to skip a meal because there was not enough money or other resources to get food?
5	ATELESS	Still thinking about the last 12 MONTHS, was there a time when you ate less than you thought you should because of a lack of money or other resources?
6	RANOUT	Was there a time when your household ran out of food because of a lack of money or other resources?
7	HUNGRY	Was there a time when you were hungry but did not eat because there was not enough money or other resources for food?
8	WHOLEDAY	During the last 12 MONTHS, was there a time when you went without eating for a whole day because of a lack of money or other resources?

Source: Cafiero *et al.* 2018

Respondents were asked to provide simple 'yes' or 'no' responses indicating whether the conditions outlined in the questions, typically associated with limited economic access to food, had occurred during the past year. The data collected in this manner were analysed to derive severity measures following the Rasch model-based analytic approach, which could be compared against the standard reference threshold defined with the global Food Insecurity Experience Scale (FIES), facilitating the estimation of the prevalence of moderate to severe food insecurity within the sampled population.

4.2. The main findings

In 2021, a total of 127 questionnaires were collected, followed by 331 in 2022, resulting in 458 cases overall. Among these, 371 responses were obtained from municipalities within Rome, with the remaining 87 coming from suburban municipalities (referred to as the 'belt area'). The sample,

primarily acquired by intercepting individuals exiting food establishments, consists predominantly of single individuals (35.4%) and single parents (20.5%), with couples (18%), couples with adult children (15.5%), and couples with minors (10.6%) comprising the rest.

The study focuses on the municipalities under the jurisdiction of the Rome City Council, categorising them into different levels of Human Development Index (low, medium, medium-high, high) according to the classification by Lelo *et al*. (2021).

Table 2 • Distribution of the sample according to the Human Development Index of Municipalities

Human Development Index	Municipalities	N° interviewees
High	I; II; XV	73
Medium-high	XII; VIII; IX	53
Medium	III; VII; XIV	103
Low	IV; V; VI; XIII; XI	142

The sample is predominantly drawn from municipalities characterised by a 'low' and 'medium' Human Development Index, with additional representation from 'belt' municipalities, while also displaying a balanced distribution across municipalities with a 'medium-high' and 'high' Human Development Index. Moreover, the research indicates that couples (41.3%) and single individuals (32.1%) predominantly reside in municipalities with a 'medium' Human Development Index, whereas couples with adult children (32%) are more commonly found in municipalities with a 'medium-high' Index. Couples with minor children are concentrated in 'belt' municipalities (47%), while single parents (32.1%) are more likely to reside in municipalities with a 'low' Index.

In our examination, none of the questions posed presented comprehension challenges. Analysis of the consistency in the structure of responses obtained from our sample, in accordance with the Rasch measurement model conditions, indicates a strong fit (with a reliability factor of 75%), ensuring the statistical validity of measures on a one-dimensional scale. Subsequently, the measurements were easily aligned with the global reference scale, yielding a prevalence estimate of 7%

in this sample, which exceeds the FAO-reported figure for the Italian population (5.7% for the 2020-22 period).

Further analysis, while acknowledging the constraints imposed by the limited sample size – which affect both the precision of estimates and the comparability across different samples – reveals a notably higher estimated prevalence in 2021 (8.45%) compared to 2022 (6.45%). Conversely, no significant variance appears between the prevalence rates obtained from data collected within the city and those from surrounding municipalities.

5. *Concluding remarks: Measuring the unseen – Food insecurity as an experiential and policy challenge*

Food insecurity is a complex and context-dependent issue, particularly in affluent nations, where it often remains hidden and inadequately measured. Rather than relying on direct, continuous monitoring, proxy indicators such as poverty thresholds, food aid recipient numbers, and welfare entitlements are commonly used. However, as Moragues-Faus *et al.* (2024) argue, the absence of direct measurement allows food insecurity to evade effective control, perpetuating inaction (Varzakas, Smaoui 2024; Caraher *et al.* 2023; Parsons, Hawkes 2019). This lack of direct measurement not only limits our understanding of food insecurity but also raises questions about the effectiveness of existing policy responses.

There is no single, perfect metric for food insecurity. Instead, various measures offer insights into different interconnected aspects of the phenomenon. Recognising food insecurity as a critical element of social welfare allows for a more comprehensive approach, moving beyond reactive policies to address its multidimensional and dynamic nature (Saint Ville *et al.* 2019). By exploring these less visible aspects, we can identify and monitor social vulnerabilities, paving the way for more equitable interventions that aim to reduce societal disparities (Placzek 2021). While these various measures provide valuable insights, they do not fully capture the lived experience of food insecurity, which remains a critical dimension of the issue.

However, capturing the subjective experience of food insecurity presents its own challenges. As Amartya Sen (1999) notes, individuals' adap-

tive capacities – their ability to adjust to adverse circumstances – can distort measurements of food insecurity that rely solely on subjective perceptions, as these adaptations may lead individuals to underestimate the severity of their situation. Nevertheless, by acknowledging the difficulty of handling these measures, calibrating them to different contexts, and integrating them with other socio-economic indicators, experience-based measures such as the Food Insecurity Experience Scale (FIES) provide valuable insights into perceived vulnerability from a forward-looking perspective. These measures capture the stress, anxiety, and uncertainty individuals face, acting as early indicators of potential long-term issues (Jolliffe *et al.* 2018; Maitra, Rao 2014). Qualitative studies (e.g., Heltberg *et al.* 2012) have shown that food price crises, for example, induce high levels of stress, significantly impacting psychological and physical well-being.

In this paper, which focuses on the local implementation of the FIES, we highlight the importance of considering food insecurity as an experiential construct, and stress the difference between food insecurity and some of its causes – such as monetary poverty – and consequences – such as possible forms of malnutrition. By relying on an experience-based food insecurity scale, we also recognize that, while individuals may appear food secure if assessed simply based on availability, access, and utilisation at a given moment, they may still perceive vulnerability and instability in both the short and long term.

Despite its simple structure, the FIES enables robust quantification of food insecurity severity, thanks to sophisticated analytic protocols. It allows for cross-country and intra-territorial comparisons, offering a flexible framework that can be adapted to specific social and cultural contexts (Cafiero *et al.* 2018; Grimaccia, Naccarato, 2018; Tadesse *et al.* 2020). Despite the availability of tools like the FIES, translating data into effective policy remains a challenge, as seen in the case of Rome.

Data-driven policies are essential for effectively addressing food insecurity. This principle is particularly relevant in the context of the food policy process initiated in Rome in 2018, which sought to develop a strategic approach to food insecurity at the municipal level. However, despite efforts such as the creation of the Rome Food Council and the approval of Delibera dell'Assemblea Capitolina n. 38 in 2021, the lack of a comprehensive municipal food plan prevents a systematic and ev-

idence-based response to food insecurity. The absence of a robust, data-driven framework – like the FIES – hinders the ability to monitor and address food insecurity on a more granular, local scale. The broader Metropolitan Food Strategy, which initially recognised food as a common good, has not yet been fully applied, and the implementation of effective, targeted interventions remains a challenge. While previous analyses described Rome's approach as a "policy without politics" (Mazzocchi, Marino 2020), the current situation could be viewed as "politics without policy," underscoring the gap between the city's food security initiatives and the data-driven approach that the FIES offers to accurately measure and respond to food insecurity.

References

ActionAid (2023), *Frammenti da ricomporre. Numeri, strategie e approcci in cerca di una politica*, https://www.actionaid.it/poverta-alimentare-in-italia/

Alkire S., Roche J. M., Ballon P., Foster J., Santos M.E., Seth S. (2015), *Multidimensional poverty measurement and analysis*, Oxford, Oxford University Press.

Ballard T. J., Kepple A.W., Cafiero C., Schmidhuber J. (2014), "Better measurement of food insecurity in the context of enhancing nutrition", *Ernahrungs Umschau*, vol. 61, n. 2, pp. 38-41.

Barrera E.L., Hertel T.W. (2021), "Global food waste across the income spectrum: Implications for food prices, production and resource use", *Food Policy*, vol. 98, 101874, https://doi.org/10.1016/j.foodpol.2020.101874.

Barrett C.B. (2010), "Measuring food insecurity", *Science*, vol. 327, n. 5967, pp. 825-828.

Bernaschi D. (2020), *Collective Actions of Solidarity Against Food Insecurity*, Wiesbaden, Springer Fachmedien.

Bernaschi D., Marino D., Felici F. (2023a), "Measuring food insecurity: Food Affordability Index as a measure of territorial inequalities", *Italian Review of Agricultural Economics*, vol. 78, n. 3, pp. 79-91.

Bernaschi D., Marino D., Cimini A., Mazzocchi G. (2023b), "The Social Exclusion Perspective of Food Insecurity: The Case of Blacked-Out Food Areas", *Sustainability*, vol. 15, n. 4, 2974.

Berti G., Giordano C., Mininni M.V. (2021), "Assessing the transformative potential of food banks: The case study of Magazzini Sociali (Italy)", *Agriculture*, vol. 11, n. 3, 249.

Bickel G., Nord M., Price C., Hamilton W., Cook J. (2000), *Guide to measuring household food security, revised* 2000, U.S. Department of Agriculture, Food and Nutrition Service, https://www.fns.usda.gov/guide-measuring-household-food-security-revised-2000.

Blake M.K. (2019), "More than just food: Food insecurity and resilient place making through community self-organising", *Sustainability*, vol. 11, n. 10, 2942.

Brady P.J., Askelson N.M., Ashida S., Nothwehr F., Janssen B., Frisvold D. (2021), "The relationship between political, economic, social, and cultural vulnerability and food insecurity among adults aged 50 years and older", *Nutrients*, *vol.* 13, n. 11, 3896, https://doi.org/10.3390/nu13113896.

Burchi F., De Muro P. (2016), "From food availability to nutritional capabilities: Advancing food security analysis", *Food policy*, vol. 60, pp. 10-19.

Caballero B. (2005), "A nutrition paradox – underweight and obesity in developing countries", *The New England Journal of Medicine*, vol. 352, n. 15, pp. 1514-1516.

Cafiero C., Gheri F., Viviani S. (2024), "Validating the food insecurity experience scale for use in analyses of recent food insecurity", *Global Food Security*, vol. 42, 100783.

Cafiero C., Viviani S., Nord M. (2018), "Food Security Measurement in a Global Context: The Food Insecurity Experience Scale", *Measurement*, vol. 116, pp. 146-152, https://doi.org/10.1016/j.measurement.2017.10.065.

Candel J.J. (2014), "Food security governance: A systematic literature review", *Food Security*, vol. 6, pp. 585-601.

Campiglio L., Rovati G. (2009), *La povertà alimentare in Italia: Prima indagine quantitativa e qualitativa*, Milano, Guerini e Associati.

Caplan P. (2017), "Win-win? Food poverty, food aid and food surplus in the UK today", *Anthropology Today*, vol. 33, n. 3, pp. 17-22.

Caraher M., Furey S. (2018), The economics of emergency food aid provision, Cham, Springer.

Caraher M., Furey S., Wells R. (2023), *Food Policy in the United Kingdom: An Introduction*, London, Routledge.

Cardoso A.C. (2002), "Life chances and modern poverty", *Urban Design International*, vol. 7, pp. 223-236.

Caritas Italiana (2022), *L'anello debole: Rapporto 2022 su povertà ed esclusione sociale in Italia*, Roma, Caritas Italiana.

Celata F., Lucciarini S. (2016), *Atlante delle Disuguaglianze A Roma* [*Atlas of Inequalities in Rome*] Camera di Commercio Industria Artigianato e Agricoltura di Roma.

Chiaradia F., Lelo K., Monni S., Tomassi F. (2024), "The 15-Minute City: An Attempt to Measure Proximity to Urban Services in Rome", *Sustainability*, vol. 16, n. 21, 9432.

Clapp J., Moseley W.G., Burlingame B., Termine P. (2022), "The case for a six-dimensional food security framework", *Food Policy*, vol. 106, 102164.

Clay E.J. (2003), "Responding to change: WFP and the global food aid system", *Development Policy Review*, vol. 21, nn. 5-6, pp. 697-709.

Coates J. (2013), "Build it back better: Deconstructing food security for improved measurement and action", *Global Food Security*, vol. 2, n. 3, pp. 188-194.

Coates J., Frongillo E.A., Rogers B.L., Webb P., Wilde P.E., Houser R. (2006), "Commonalities in the experience of household food insecurity across cultures: what are measures missing?", *The Journal of nutrition*, vol. 136, n. 5, pp. 1438S-1448S.

Committee on World Food Security (2012), *Coming to terms with terminology: Food security, nutrition security, food security and nutrition, food and nutrition security*, Proceedings of the 39th Session of the Committee on World Food Security.

Cook J.T., Frank D.A., Levenson S.M., Neault N.B., Heeren T.C., Black M.M., Chilton M. (2006), "Child food insecurity increases risks posed by household food insecurity to young children's health", *The Journal of nutrition*, vol. 136, n. 4, pp. 1073-1076.

Devereux S. (2009), "Why does famine persist in Africa?", *Food security*, vol. 1, pp. 25-35.

De Schutter O. (2014a), *Report of the Special Rapporteur on the Right to Food: Final Report: the Transformative Potential of the Right to Food*, United Nations General Assembly.

– (2014b), "The specter of productivism and food democracy", *Wisconsin Law Review*, n. 2, p. 199-233.

Dickinson M. (2019), *Feeding the crisis: Care and abandonment in America's food safety net*, vol. 71, Berkeley, University of California Press.

Dowler E. (2003), "Food and poverty: Insights from the 'North'", *Development Policy Review*, vol. 21, nn. 5-6, pp. 569-580.

Dowler E.A., O'Connor D. (2012), "Rights-based approaches to addressing food poverty and food insecurity in Ireland and UK", *Social science & medicine*, vol. 74, n. 1, pp. 44-51.

Drèze J., Sen A. (2013), *An uncertain glory: India and its contradictions*, Princeton, Princeton University Press.

– (1990), *Hunger and public action*, Oxford, Clarendon Press.

Eisenberger N.I., Lieberman M.D., Williams K.D. (2003), "Does rejection hurt? An fMRI study of social exclusion", *Science*, vol. 302, n. 5643, pp. 290-292.

European Food Security Crisis Preparedness and Response Mechanism (EFSCM) (2024), *State of food security in the* EU: A *qualitative assessment of food supply and food security in the* EU *within the framework of the* EFSCM, European Commission, https://agriculture.ec.europa.eu/document/download/a91b3841-6021-489e-b877-7f0f5278c88c_en?filename=efscm-assessment-spring-2024_en.pdf.

Eurostat (2024), *Almost* 1 *out of* 10 *in the* EU *could not afford proper meal*, https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20240712-1.

FAO, IFAD, UNICEF, WFP, WHO (2024), *The state of food security and nutrition in the world* 2024: *Financing to end hunger, food insecurity and malnutrition in all its forms*, Food and Agriculture Organization, https://doi.org/10.4060/cd1254en.

– (2023), *The State of Food Security and Nutrition in the World* 2023, Food and Agriculture Organization, http://www.fao.org/publications/sofi/2023/en/.

– (2022), The State of Food Security and Nutrition in the World 2022: Repurposing food and agricultural policies to make healthy diets more affordable, Food and Agriculture Organization, https://doi.org/10.4060/cc0639en.

– (2021), *The State of Food Security and Nutrition in the World* 2021: *Transforming food systems for food security, improved nutrition, and affordable healthy diets for all*, Food and Agriculture Organization, https://doi.org/10.4060/cb4474en.

FAO (2016), *Voices of the Hungry project*: *Development of the Food Insecurity Experience Scale* (FIES), Food and Agriculture, https://www.fao.org/in-action/voices-of-the-hungry/en/.

Fanzo J., Haddad L., Schneider K.R., Béné C., Covic N.M., Guarin A., Moncayo J.R. (2021), "Rigorous monitoring is necessary to guide food system transformation in the countdown to the 2030 global goals", *Food Policy*, vol. 104, 102163.

Fassin D. (2018), *Ragione umanitaria. Una storia morale del presente*, Roma-Bari, Laterza.

Felici F.B., Bernaschi D., Marino D.L. (2022), *Povertà Alimentare a Roma*: *Una Prima Analisi Dell'impatto dei Prezzi*, Roma, Cursa.

Friel S., Berry H., Dinh H., O'Brien L., Walls H.L. (2014), "The impact of drought on the association between food security and mental health in a nationally representative Australian sample", BMC *public health*, vol. 14, pp. 1-11.

Frongillo E.A. (2013), "Confronting myths about household food insecurity and excess weight", *Cadernos de saude publica*, vol. 29, pp. 229-230.

Fukuda-Parr S. (2003), "The human development paradigm: operationalizing Sen's ideas on capabilities", *Feminist economics*, vol. 9, nn. 2-3, pp. 301-317.

Galli F., Cavicchi A., Brunori G. (2019), "Food waste reduction and food poverty alleviation: a system dynamics conceptual model", *Agriculture and Human Values*, vol. 36, pp. 289-300.

Graham E., Dallmann D., Melgar-Quiñonez H. (2019), "Gender disparities in perceived life satisfaction within food insecure populations", *Food Security*, vol. 11, pp. 493-502.

Grimaccia E., Naccarato A. (2018), "Food Insecurity Individual Experience: A Comparison of Economic and Social Characteristics of the Most Vulnerable Groups in the World", *Social Indicators Research*, vol. 136, n. 1, pp. 1-19, https://doi.org/10.1007/s11205-016-1534-0.

Gundersen C., Ziliak J.P. (2015), "Food insecurity and health outcomes", *Health affairs*, vol. 34, n. 11, pp. 1830-1839.

Hart T.G. (2009), "Exploring definitions of food insecurity and vulnerability: time to refocus assessments", *Agrekon*, vol. 48, n. 4, pp. 362-383.

Headey D.D., Alderman H.H. (2019), "The relative caloric prices of healthy and unhealthy foods differ systematically across income levels and continents", *The Journal of nutrition*, vol. 149, n. 11, pp. 2020-2033.

Heflin C.M., Siefert K., Williams D.R. (2005), "Food insufficiency and women's mental health: findings from a 3-year panel of welfare recipients", *Social science & medicine*, vol. 61. n. 9, pp. 1971-1982.

Heltberg R., Hossain N., Reva A. (eds) (2012), *Living through Crises: How the Food, Fuel, and Financial Shocks Affect the Poor*, Washington DC, The World Bank, https://doi.org/10.1596/978-0-8213-8830-5.

Hendriks S.L. (2015), "The food security continuum: a novel tool for understanding food insecurity as a range of experiences", *Food Security*, vol. 7, n. 3, pp. 609-619, https://doi.org/10.1007/s12571-015-0457-6.

Committee on World Food Security, High Level Panel of Experts on Food Security and Nutrition (2023), *Reducing inequalities for food security and nutrition*, https://www.fao.org/cfs/cfs-hlpe/insights/news-insights/news-detail/launch-of-the-report-on-reducing-inequalities-for-food-security-and-nutrition-15-june-2023/en.

Ibrahim S., Alkire S. (2007), "Agency and empowerment: A proposal for internationally comparable indicators", *Oxford development studies*, vol. 35, n. 4, pp. 379-403.

Jolliffe D., Krznaric I., Prydz J., Corral P.A. (2018), "Socioeconomic Transformation and Gender Disparities in Child Nutrition: Evidence from Rwanda", The World Bank, https://doi.org/10.1596/1813-9450-8555.

Jones A.D. (2017), "Food insecurity and mental health status: a global analysis of 149 countries", *American journal of preventive medicine*, vol. 53, n. 2, pp. 264-273.

Jones A.D., Ngure F.M., Pelto G., Young S.L. (2013), "What are we assessing when we measure food security? A compendium and review of current metrics", *Advances in nutrition*, vol. 4, n. 5, pp. 481-505.

Kirkpatrick S.I., McIntyre L., Potestio M.L. (2010), "Child hunger and long-term adverse consequences for health", *Archives of pediatrics & adolescent medicine*, vol. 164, n. 8, pp. 754-762.

Lang T., Caraher M. (1998), "Access to healthy foods: part II. Food poverty and shopping deserts: what are the implications for health promotion policy and practice?", *Health Education Journal*, vol. 57, n. 3, pp. 202-211.

Lelo K., Monni S., Tomassi F. (2021), *Le mappe della disuguaglianza: una geografia sociale metropolitana*, Roma, Donzelli.

Le Gros Clark F., Titmus R.M. (1939), *Our Food problem and its relation to our national defences*, *Harmondsworth*, Penguin Books.

Loopstra R., Reeves A., McKee M., Stuckler D. (2016), "Food insecurity and social protection in Europe: quasi-natural experiment of Europe's great recessions 2004-2012", *Preventive medicine*, vol. 89, pp. 44-50.

Loopstra R., Tarasuk V. (2012), "The relationship between food banks and household food insecurity among low-income Toronto families", *Canadian Public Policy*, vol. 38, n. 4, pp. 497-514.

Lowe M.R., Butryn M.L., Didie E.R., Annunziato R.A., Thomas J.G., Crerand C.E., Halford J. (2009), "The Power of Food Scale. A new measure of the psychological influence of the food environment", *Appetite*, vol. 53, n. 1, pp. 114-118.

Lytle L.A., Sokol R.L. (2017), "Measures of the food environment: A systematic review of the field, 2007–2015", *Health and place*, vol. 44, pp. 8-34.

Maino F., Lodi Rizzini C., De Tommaso C.V., Bozzi M. (2023), Il contrasto alla povertà alimentare: un sistema multilivello e multiattore in cerca di coordinamento. In *Frammenti da ricomporre: Numeri, strategie e approcci in cerca di una politica: Quarto rapporto sulla povertà alimentare in Italia*, (pp. 56-99), ActionAid Italia.

Maitra C., Rao D.S.P. (2014), "Poverty–Food Security Nexus: Evidence from a Survey of Urban Slum Dwellers in Kolkata", *World Development*, vol. 60, pp. 123-143, https://doi.org/10.1016/j.worlddev.2014.03.009.

Marino D. (2024), *La Narrazione Delle Politiche Del Cibo In Italia. Città, Temi, Attori*, Milano, FrancoAngeli.

Marino D., Bernaschi D., Cimini A., D'Amico G., Gallo G., Giovanelli G., Giustozzi D., Kollamparambil A., Lirosi L., Mazzocchi G., Minotti B., Pagano G., Stella G., Tarra S. (ed.) (2022), *Atlante del cibo. Uno strumento per le politiche locali del cibo, Città metropolitana di Roma Capitale*, Roma, Cursa.

Maxwell D., Levin C., Csete J. (1998), "Does urban agriculture help prevent malnutrition? Evidence from Kampala", *Food policy*, vol. 23, n. 5, pp. 411-424.

Mazzocchi G., Marino D. (2020), "Rome, a Policy without Politics: The Participatory Process for a Metropolitan Scale Food Policy", *International Journal of Environmental Research and Public Health*, vol. 17, n. 2, pp. 479-496, https://doi.org/10.3390/ijerph17020479.

McCarthy S.N., Harrington K.E., Kiely M., Flynn A., Robson P.J., Livingstone M.B.E., Gibney M.J. (2001), "Analyses of the anthropometric data from the North/South Ireland food consumption survey", *Public Health Nutrition*, vol. 4, n. 5a, pp. 1099-1106.

McKinnon R.A., Reedy J., Morrissette M.A., Lytle L.A., Yaroch A.L. (2009), "Measures of the food environment: a compilation of the literature, 1990–2007", *American journal of preventive medicine*, vol. 36, n. 4, pp. S124-S133.

Moragues-Faus A., Clark J.K., Battersby J., Davies A.R. (2024), "The potential of urban food governance to transform lives, cities, and the planet", *Global Food Security*, vol. 40, 100751.

Nord M., Cafiero C., Viviani S. (2016), "Methods for estimating comparable prevalence rates of food insecurity experienced by adults in 147 countries and areas", *Journal of Physics: Conference Series*, vol. 772, n. 1, 012060.

Nussbaum M.C. (2000), *Women and human development: The capabilities approach*. Cambidge, Cambridge University Press.

Palladino M., Cafiero C., Sensi R. (2024), "Understanding adolescents' lived experience of food poverty. A multi-method study among food aid recipient families in Italy", *Global Food Security*, vol. 41, 100762.

Papargyropoulou E., Lozano R., Steinberger J.K., Wright N., Ujang Z.B. (2018), "The food waste hierarchy as a framework for the management of food surplus and food waste", *Journal of Cleaner Production*, vol. 76, pp. 106-115, https://doi.org/10.1016/j.jclepro.2014.04.020.

Parsons K., Hawkes C. (2019), *Policy Coherence in Food Systems*, London, Centre for Food Policy, City University.

Pérez-Escamilla R., Segall-Corrêa A.M. (2008), "Food insecurity measurement and indicators", *Revista de Nutrição*, vol. 21, pp. 15s-26s.

Pinstrup-Andersen P. (2009), "Food security: definition and measurement", *Food security*, vol. 1, pp. 5-7.

Placzek O. (2021), "Socio-economic and demographic aspects of food security and nutrition", OECD *Food, Agriculture and Fisheries Papers*, n.150, Paris, OECD, https://doi.org/10.1787/49d7059f-en.

Pollard C.M., Booth S. (2019), "Food insecurity and hunger in rich countries – it is time for action against inequality", *International journal of environmental research and public health*, vol. 16, n. 10, 1804.

Poppendieck J. (2014), "Food assistance, hunger and the end of welfare in the USA", *First world hunger revisited: food charity or the right to food*?, London, Palgrave Macmillan, pp. 176-190.

Purdam K., Garratt E.A., Esmail A. (2016), "Hungry? Food insecurity, social stigma and embarrassment in the UK, *Sociology*, vol. 50, n. 6, pp. 1072-1088.

Quisumbing A.R., Sproule K., Martinez E.M., Malapit H. (2021), "Do tradeoffs among dimensions of women's empowerment and nutrition outcomes exist? Evidence from six countries in Africa and Asia", *Food Policy*, vol. 100, 102001.

Radimer K.L., Olson C.M., Campbell C.C. (1990), "Development of indicators to assess hunger", *The Journal of nutrition*, vol. 120, pp. 1544-1548.

Rasch G. (1993), *Probabilistic models for some intelligence and attainment tests*, Chicago, MESA Press.

Riches G. (2018), "Food Bank Nations: Poverty, Corporate Charity and the Right to Food", Routledge, https://doi.org/10.4324/9781315184012.

– (2002), "Food banks and food security: welfare reform, human rights and social policy. Lessons from Canada?", *Social Policy & Administration*, vol. 36, n. 6, pp. 648-663.

– Saint Ville A., Po J.Y.T., Sen A., Bui A., Melgar-Quiñonez H. (2019), "Food security and the Food Insecurity Experience Scale (FIES): ensuring progress by 2030", *Food Security*, vol. 11, pp. 483-491.

Sassi M. (2018), *Understanding Food Insecurity*, Springer.

Sen A. 1999. *Development as Freedom*, Oxford University Press.

– (1981), *Poverty and Famines: An Essay on Entitlement and Deprivation*, Oxford, Oxford University Press.

Siefert K., Heflin C.M., Corcoran M.E., Williams D.R. (2001), "Food insufficiency and the physical and mental health of low-income women", *Women & health*, vol. 32, nn. 1-2, pp. 159-177.

Smith M.D., Kassa W., Winters P. (2017), Assessing food insecurity in Latin America and the Caribbean using FAO's food insecurity experience scale", *Food policy*, vol. 71, pp. 48-61.

Stiglitz J.E., Sen A., Fitoussi J.P. (2009), *The measurement of economic performance and social progress revisited*, Paris, Commission on the Measurement of Economic Performance and Social Progress.

Stuff J.E., Casey P.H., Szeto K.L., Gossett J.M., Robbins J.M., Simpson P.M., Bogle M.L. (2004), "Household food insecurity is associated with adult health status", *The Journal of nutrition*, vol. 134, n. 9, pp. 2330-2335.

Swaminathan M. (1996), "Structural adjustment, food security and system of public distribution of food", *Economic and Political Weekly*, vol. 31, n. 26, pp. 1665-1672.

Swinburn B.A., Kraak V.I., Allender S., Atkins V.J., Baker P.I., Bogard J.R., Dietz W.H. (2019), "The global syndemic of obesity, undernutrition, and climate change: the Lancet Commission report", *The lancet*, vol. 393, n. 10173, pp. 791-846.

Tadesse G., Algieri B., Qaim M., Von Braun J. (2020), "Drivers and Triggers of International Food Price Spikes and Volatility", *Food Policy*, vol. 47, pp. 117-128, https://doi.org/10.1016/j.foodpol.2020.101854.

Tarasuk V., Li N., Dachner N., Mitchell A. (2019), "Household food insecurity in Ontario during a period of poverty reduction 2005-2014", *Canadian Public Policy*, vol. 45, n. 1, pp. 93-104.

Townsend M.S., Peerson J., Love B., Achterberg C., Murphy S.P. (2001), "Food insecurity is positively related to overweight in women, *The Journal of nutrition*, vol. 131, n. 6, pp. 1738-1745.

UNICEF (2020), *The State of the World's Children* 2019: *Children, Food and Nutrition*: *Growing well in a changing world* (UNICEF Report), https://www.unicef.org/media/106506/file/The%20State%20of%20the%20World's%20Children%202019.pdf.

United Nations (2015), *Transforming our world*: *The* 2030 *Agenda for Sustainable Development*, https://www.un.org/sustainabledevelopment/sustainable-consumption-production/.

– (1943), *United Nations Conference on Food and Agriculture*: *Hot Springs, Virginia, May* 18 - *June* 3, 1943: *Final Act and Section Reports*, Washington D.C., Government Printing Office.

Upton J.B., Cissé J.D., Barrett C.B. (2016), "Food security as resilience: reconciling definition and measurement", *Agricultural economics*, vol. 47, S1, pp. 135-147.

USAID (2022), 2022 *Global Nutrition Report*, https://www.usaid.gov/global-health/health-areas/nutrition/global-nutrition-report-2022.

Varzakas T., Smaoui S. (2024), "Global food security and sustainability issues: the road to 2030 from nutrition and sustainable healthy diets to food systems change", *Foods*, vol. 13, n. 2, 306.

Ver Ploeg M. (2010), *Access to affordable, nutritious food is limited in 'food deserts'*, Amber Waves, U.S. Department of Agriculture, Economic Research Service, https://www.ers.usda.gov/amber-waves/2010/march/access-to-affordable-nutritious-food-is-limited-in-food-deserts.

Webb P., Coates J., Frongillo E.A., Rogers B.L., Swindale A., Bilinsky P. (2006), "Measuring household food insecurity: why it's so important and yet so difficult to do", *The Journal of nutrition*, vol. 136, n. 5, pp. 1404S-1408S.

Wilkinson R.G., Pickett K.E. (2009), "Income inequality and social dysfunction", *Annual review of sociology*, vol. 35, n. 1, pp. 493-511.

World Bank (2023), *Levels and trends in child malnutrition*: UNICEF/WHO/*The World Bank Joint Child Malnutrition Estimates*, https://datatopics.worldbank.org/child-malnutrition.