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Food Accessibility in Grand Lomé, Togo: A Household Perception Analysis

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ABSTRACT

In West Africa, 110 million urban dwellers do not have access to sustainable food. 22 million are underweight and the majority are overweight. The aim of this study is to identify the obstacles to food accessibility in Grand Lomé, Togo. A questionnaire was administered to 963 randomly sampled heads of households. Qualitative data were collected through group and individual interviews, as well as field observation. Excel spreadsheet and R-Studio software were used to process and analyze quantitative data, while verbal statements collected via interviews were subjected to content analysis. The results reveal, firstly, inequalities in physical access to food: the Fisher test applied to the data at the 5% threshold (p-value < 1.509e-07), indicates that perception of distance from food markets is strongly linked to place of residence. Secondly, low purchasing power and high food prices mentioned respectively by 88.34% and 72.25% of respondents, are the primary causes of food insecurity. In fact, economic poverty particularly affects large families and those whose heads of household work in the craft and trade sectors. More than half of all respondents cite the high cost of animal products, tubers/roots and fruit, while the reasons for this vary according to the respondent's level of education. The acquisition of "tubers/roots", "livestock products" and "dairy products" is more conditioned by the proximity of food shops, while that of "cereals/legumes", "vegetables" and "beverages" depends on the price and purchasing power of the household. This information is crucial for plan-

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ning actions to combat food inequalities in this urban area.

Keywords: Urbanization; Physical Proximity to Food; Food Prices; Grand Lomé; Togo

1. Introduction

Food security is a major challenge for African cities in a context of rapid urbanization.Urban population growth in Africa is increasing rapidly, from around 203 million to 401 million between 1990 and 2010; during the same period, the proportion of people living in cities rose from 32% in 1990 to 39% in 2010. These figures are expected to reach 50% by 2030 [1]. The high urban concentration is followed by sub-optimal provision of public services [2] and inequalities that delay urban development. Firstly, income disparities in African cities are the most flagrant in the world, with a Gini index of 0.529 compared to 0.509 for Latin American and Caribbean cities, and 0.305 for the European zone [1]. Secondly, habitat inequalities, marked by high levels of slums, reduce the quality of life in urban areas especially in poorly governed countries [3, 4]. These two major inequalities are at the root of food accessibility difficulties in African cities and this hangs over the health and well-being of city dwellers. In 2021, around 78% of people on the African continent were unable to afford a healthy diet, compared with 42% worldwide; millions of Africans suffer from micronutrient deficiencies, while overweight and obesity are already worrying public health issues in African cities [5].

In West Africa, around 110 million people do not have access to adequate food: 58 million are underweight, 22 million of whom live in cities, while the majority of the 52 million overweight/obese are urban dwellers over 15 years of age [6]. This double nutritional burden is attributable to undiversified food consumption and increased consumption of cheap but nutrient-poor imported food products [7, 8]. These behaviours can be explained by the low purchasing power of a large proportion of the population and rising food prices due to food policies that have failed to put the urban consumer (who may not be a producer and rural) at the center of concerns [9]. Furthermore, in the face of rapid urbanization, "urban food systems", understood as the set of activities comprising food production, transport, processing, distribution, retailing and consumption [10] are struggling to meet the ever-increasing demand for food.

In Togo, despite the relative availability of food according to the Direction des Statistiques Agricoles, de l'Informatique et de la Documentation [11], not all the people have access to quality food. This information reveals a food profile that largely paints a picture of unequal access to food. Indeed, around 35.09% of Togolese households are Transient Food Insecure (TFI) on the basis of food expenditure, i.e. they are perpetually threatened by insufficient financial means to maintain stable food accessibility; on the other hand, based on food consumption score, 4.74% of households are Transient Food Insecure (TFI) although they spending enough on food, they are confronted with an undiversified diet that lacks essential nutrients. 8.17% of households have an annual per capita expenditure of less than 130,337 FCFA (i.e., $203 USD) and are therefore totally food insecure (ISAT) and the quality and quantity of food consumed are virtually inadequate [12]. These disparities in access to food in Togo remain striking between rural and urban areas. In fact, 58.08% of rural households, compared with just 40.21% of urban households have Total Food Security (TFS), i.e. they enjoyed a healthy, diversified diet that was accessible on a regular basis thanks to sufficient financial resources [12]. This difference can be explained by the fact that rural households produce a large proportion of their food stocks themselves. As a result, they have better access to local staple foods at lower cost. Urban households, on the other hand, are essentially dependent on the market to satisfy their food needs and the rising cost of food in the city exposes them to food insecurity.

To this end, measures have been put in place to facilitate access to food in the area of Grand Lomé which is home to over 63% of Togo's urban population [13]. Food markets built and managed by local authorities bring foodstuffs closer to consumers. To enable all city dwellers to feed themselves, a food price control policy

has been initiated by the State through the Minister of Commerce and Local Consumption (MCCL). In synergy with civil society actors defending consumers' rights, the MCCL verifies the cost of foodstuffs in the markets of Grand Lomé. In addition, a mechanism to protect local cereal production, managed by the National Food Security Agency (ANSAT) in Togo, should help regulate the prices of basic products and therefore making them affordable for all.

Despite this, difficulties in obtaining adequate food in Grand Lomé persist. Food insecurity is particularly characterized by urban dwellers' infatuation with low-cost markets [14]. In particular, underprivileged urban households, whose livelihoods are based on less profitable activities, indulge more in the consumption of non-diversified, affordable food products of dubious health and nutritional quality [15–17]. These behaviours can be explained by the low-income levels of a large proportion of households, who are primarily concerned with satisfying their hunger to the detriment of food quality. Indeed, 87.9% of the city population get their livelihoods from informal activities (petty trading, handicrafts, motorcycle cabs, etc.), which bring in less monetary income to cope with social and economic shocks; thus, the average annual food expenditure per household in this city was estimated at just 349,290 FCFA, equivalent to $580.29 USD [18].

In addition, the cost of food in this urban area is higher since people get most of their food from the countryside. This situation can be explained by many structural challenges (inadequate transport, processing and storage infrastructures, fragile trade circuits, crop losses, unbalanced food security policies, poor cooperation between players in the food chain, etc.), which influence agriculture and therefore making urban food supply complex [19]. Geographical access to various food products becomes even more complex in a context of rapid, unplanned urbanization marked fundamentally by excessive spatial expansion and the anarchic/dispersed installation of dwellings [20–22]. As a result, socio-collective infrastructures are no longer keeping pace with high demographic growth [23] and many households are isolated from basic services; a situation that has an impact on their food security. Moreover, nutritional pathologies are on the rise in Togo according to the recent Multiple Indicator Cluster Survey (MICS 6) and Grand Lomé has the highest number of people living with chronic illnesses such as high blood pressure, type 2 diabetes, overweight and obesity [24]. Given these findings, it is imperative to investigate the causes of food insecurity in this urban area. Given that much of the food in this city is purchased, the present research questions the obstacles to food access. The hypothesis is that unequal food distribution, high food prices and low consumer income, as well as certain individual household characteristics, contribute to food access difficulties in Grand Lomé. The interest of this research is twofold. On the one hand, in a context of rapid demographic growth and increasing impoverishment of Africa's urban populations [1], food security research based on access to food for all, is crucial to achieving the goal of sustainable urban development (ODD11) in Africa. On the other hand, it seems necessary to advance knowledge of the food constraints specific to African cities in order to suggest solutions capable of improving urban food security. Our research, which is part of a Sustainable Urban Development research program, therefore finds its raison d'être in the fact that it contributes to the evolution of knowledge on the issue of urban food insecurity in West Africa in general and in Togo in particular.

On a theoretical level, "food access", one of the fundamental pillars of food security, is mobilized in this research. According to the Food and Agriculture Organization of the United Nations (FAO), food security exists when "all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life" [25]. From this definition, the institution considers that food security exists in a territory when four dimensions (availability, access, utilization and stability) are met. In African cities, "food accessibility" proves to be an important dimension to study, insofar as city dwellers are more dependent on the market for their food. In fact, physical access to food is guaranteed when consumers are close to food shops and can therefore get to the supply points in good time. On the other hand, economic access requires that people have the financial means to buy food products, and that the

prices of products available on the market are affordable to facilitate the acquisition of sufficient quantities of healthy, nutritious food [25, 26]. On the other hand, when the condition of physical proximity is not met, "food deserts" - understood as urban spaces where geographical access to healthy food is very low, or even non-existent [27] - take hold, thus posing problems of inequality of spatial access to food. This concept also includes the idea of a very low number of food outlets in proportion to the number of inhabitants, resulting in a low supply of quality food at affordable prices [28]. Similarly, "food mirages" are unavoidable in certain urban areas where markets abound, but prices are beyond the means of low-income households on the one hand [29], and on the other, when food is culturally non-adapted [30]. In all cases, desert and food mirage contribute to low food access in that residents must travel some distance to obtain affordable food [29]. In the literature, the characteristics that remain constant in the definition of these notions boil down to distance from affordable markets, income levels and food costs [27, 28, 31]. The main aim of this research is to identify situations of food desert and mirage in Togo's largest city, using a participatory approach based on consumers' perceptions and experiences. The measurement of these concepts in this research is based on a sociological survey (combining a structured questionnaire, interviews and observation) of households and institutions in charge of food security. Specifically, this research work aims to:

- Assess the physical accessibility of food to households in Grand Lomé;
- Measure the affordability of food to households in Grand Lomé.

It is well documented that, very often in African cities, the majority of urban development initiatives fail dismally for reasons of insufficient information, lack of understanding of urban problems due to failure to take into account the profound aspirations of beneficiaries, as well as the urban dimension [32]. As a result, the results obtained from the above-mentioned specific objectives, and the recommendations that emerge from them, will be made available to urban decision-makers (State, municipalities, civil society, development partners). They will be able to use them to design and reorganize food supply and distribution systems in line with urban demand and household living conditions.

2. Materials and Methods

2.1. Area of Study

The research area is the city of Grand Lomé, the capital of Togo. Located in West Africa (**Figure 1**), Togo ranks 167th out of 189 countries on the United Nations Development Programme's Human Development Index [33]. Its poverty rate, measured according to the 2011 purchasing power parity threshold of $1.90 per day per person, is estimated at 46.2% by the World Bank [34]. Grand Lomé conurbation, between longitudes 1°00' and 1°50' and latitudes 6°40' and 6°10' North, remains Togo's largest and most extensive urban area. It is bordered to the south by the Atlantic Ocean, to the north by Zio and Avé prefectures, to the east by the Lacs prefecture and to the west by the Aflao-Ghana border. The city is subdivided into two (02) prefectures (Golfe and Agoè-Nyivé) and comprises thirteen (13) communes (**Figure 1**). Grand Lomé is characterized by a high population density (around 2,188,376 souls) resulting in a disproportionate growth of urban space. This can be explained by its extreme poverty, the race for "home", the search for low-cost housing, and the absence of a housing policy [20]. 70% of households in Grand Lomé travel mainly by motorcycle [23], and expenditure on non-adapted modes of transport (motorcycle cabs, personal motorcycles, collective cabs) impacts on low-income households. In this context, food distribution systems have reached their limits in the face of urban sprawl. This situation considerably reduces the population's physical and economic access to food products. From the socio-economic perspectives, the Harmonized Survey of Household Living Conditions (EHCVM) shows that unemployment and underemployment are prevalent, with the result that a large proportion of inhabitants have irregular, unstable and essentially informal means of subsistence [18].

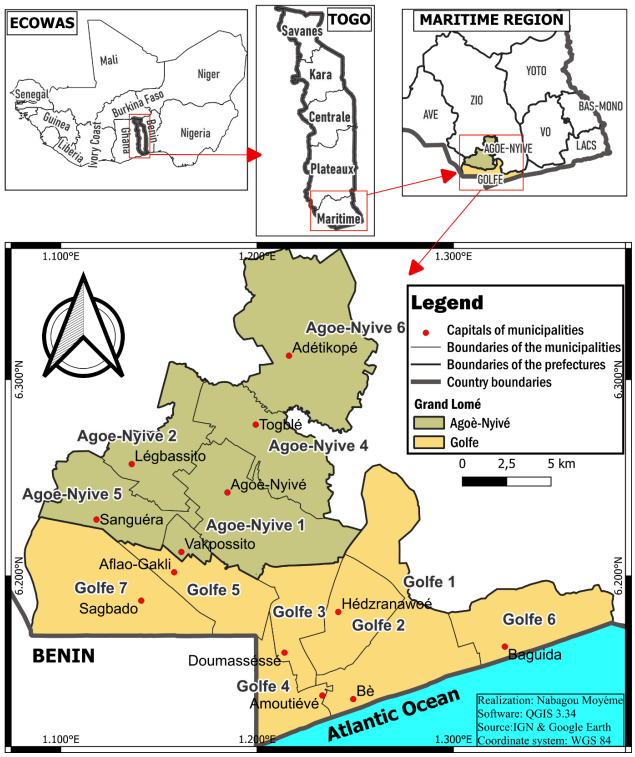

Figure 1. Map of Grand Lomé showing its prefectures and communes.

2.2. Data Collection and Processing

A mixed approach (quantitative and qualitative) was used to gather the empirical data essential to achieving the objectives set. The surveyed population consists of consumers (households) and urban governors.

2.2.1. Sampling

The quantitative survey targeted only the household reference persons referred to in this research as "heads of household". This choice is explained by the fact that heads of household very often invest in the financial means to feed their families, but also carry out the bulk of food shopping. As a result, they have more information about access levels to food outlets and prices, as well as the reasons behind food choices. The sample size was determined using Daniel Schwartz's [35] statistical formula, presented as follows: let "n" be the sample size:

$$n = \frac{\left[(z_a)^2 \, x \, P(1-P)\right]}{d^2}$$

With z_a: deviation set at 1.96 corresponding to a confidence level of 95%; *d*: margin of error set at 6% and *P*: proportion of households per commune.

In fact, out of a total of 533,930 households in the city of Grand Lomé, the numerical application of this formula made it possible to interview 963 households. This number was calculated using data from the Fifth General Census of Population and Housing [13] (**Table 1**). Using the KoboCollect application, a questionnaire was administered indirectly (face-to-face) to 963 households in 13 communes and 65 neighbourhoods, with 5 affected neighbourhoods per commune. The interviewers visited the dwellings to interview the heads of households who were willing to listen to the interviewer. Indirect administration (face-to-face) was preferred, and was carried out by a team of 17 people, including 14 interviewers, 02 supervisors and 01 coordinator. Quantitative data collection took place from August 5 to September 25, 2022 in Grand Lomé. The size of the people reached in each municipality, as well as the neighborhoods of residence where respondents voluntarily agreed to be interviewed, can be read in the table below:

2.2.2. Description of the Questionnaire

The identification of obstacles to food access in Grand Lomé was made possible by a questionnaire comprising several types of questions (closed, open, single-choice, multiple-choice). With regard to the specific objectives assigned to the research, the data collection tool is structured in two sections as follows:

- Section 1: identification of respondents' socio-demographic characteristics;
- Section 2: assessment of physical and economic access to food;

Generally speaking, in Africa, the knowledge of a household's economic situation by others is a disgrace and therefore affects the dignity of the household. The logic of Africa, and Togo in particular, is that such information should not be divulged. As a result, it is difficult to obtain an exact answer on the income of the head of household, as this information very often frustrates the respondents. In view of these socio-cultural realities, the questions on the occurrence of food inaccessibility were adapted to the Togolese context. Thus, the questions addressed to households were drafted in such a way as to enable respondents to feel at ease during the administration. The profile of respondents is presented in the first part of the results. **Table 2** below illustrates the main questions, modalities and results obtained in Section 2.

Table 1. Distribution of Respondents by Commune in Grand Lomé.

Communes	Main Towns	Household Size	Neighborhoods Affected	Number of Respondents	(%)
Agoè-nyivé 1	Agoè-nyivé	77 379	Astanvé, Cacaveli, Minamadou, Kitidjan, Zogbégan	132	14
Agoè-nyivé 2	Légbassito	31 260	Légbassito, Sogbossito, Koshigan, Logopé, Démakpoè	59	6
Agoè-nyivé 3	Vakpossito	11 599	Hossoukopé, Logogomé, Elavagno-Klévé, Awoudja-Kopé, Dansakopé	23	2
Agoè-nyivé 4	Togblécopé	37 666	Togblécopé, Alinka, Fidokpui, Kotokoli-Zongo,	70	7
Agoè-nyivé 5	Zanguéra	30 511	Sanguéra, Zopomahé, Zossimé, Dangbéssito, Nanégbé	57	6
Agoè-nyivé 6	Adéticopé	26 877	Adétikope-centre, Anyave, Devime, Kladzeme, Kpotave	51	5
Golf 1	Bè-Est	85 744	Klotamé, Kégué-Zogbedji, Tingamé, Bè-Kpota, Attiégou	144	16
Golf 2	Bè-centre	33 208	N'kafu, Kégué, Tokoin-Wuiti, Attiégouvi, Hédzranawoé	62	6
Golf 3	Bè-Ouest	12 870	Gbossimé, Tokoin-Gbonvié, Tokoin klévé, Doumasséssé, Massouhoin	25	3
Golf 4	Amoutivé	38 010	Tokoin-Gbadago, Hanoukopé, Amoutivé, Nyékonakpoè, Kodjoviacopé	71	7
Golf 5	Afla-Gakli	41 642	Agbalépedogan, Totsi, Djijolé, Gblenkomé, Adidoadin	77	8
Golf 6	Baguida	44 283	Baguida, Avépozo, Kpogan, Boboloè, Adamavo	81	8
Golf 7	Aflao- Sagbado	62 881	Wantamé, Segbe-Douane, Logoté, Sagbado, Wougomé-Dékpo	111	12
Total	**13**	**533 930**	**65**	**963**	**100**

Source: authors, August–September 2022.

2.2.3. Qualitative Survey

Not all the information needed to achieve the objectives of this research can be obtained through quantitative data collection. Also, the quantitative survey limits consumers to "expressing themselves freely and in depth about lived experiences and phenomena concerning them" [36]. So, to complement the quantitative analysis, statements from city authorities and heads of households were collected through individual and group semi-structured interviews.

On the administrative side, institutions were interviewed using an interview guide designed according to the information targeted. These were the Agence Nationale de la Sécurité Alimentaire du Togo (ANSAT), the Direction du Commerce et de la Consommation Locale (DCCL), the Association Togolaise des Consommateurs (ATC) and the Collectivités Territoriales (CT). The aim of the interviews with these authorities was to understand their role in the city's food security, as well as the actions undertaken to facilitate access to food products for urban households. These were chosen from among a number of departments in charge of food security, as their mission is directly linked to food accessibility objectives. Discussions with these institutions focused on the state of food markets, food price controls, and existing relationships between the various food security services.

In order to gain an in-depth understanding of consumers' food access problems, 13 focus groups, one per urban commune, were organized between November 5, 2024 and February 25, 2023. Each group interview was made up of 10 heads of household who had previously been approached by each zone interviewer. Written letters containing practical information about the collective meeting (description of the subject, objectives, place and date, etc.) were given to the heads of households who agreed to take part in the interviews. With the help of community leaders, the individuals who took part in the group discussions were identified on the ba-

Table 2. Statistical description of survey results.

Type of Question	Modality	Proportion (%)
How do you perceive the distance between your home and food markets?	Near market	64.23
	Far market	35.77
What are the reasons for your difficulties in accessing food?	Lack of money	88.34
	High food prices	72.25
	Distance from market	33.52
	Unavailability of food	14.47
Which of the following food groups seem more expensive to you?	Tubers/roots	52.8
	Cereals/legumes	21.48
	Vegetables	26.45
	Fruit	35.66
	Meat/fish	53.12
	Dairy products	44.66
	Beverages	16.51

Source: field survey, August-September 2022.

sis of their availability. The latter confirmed their presence a week before the group interviews were to take place. Each group was facilitated by a moderator (the researcher himself) and an observer. In fact, all 13 interviewers had been trained to collect quantitative data from heads of households, and each played the role of observer in his or her area of assignment during the group discussions. The use of a single interview guide for each session enabled us to collect verbal statements recorded with a microphone. This stage was particularly aimed at obtaining the opinions, concerns and suggestions of consumers (heads of households) on access to foodstuffs.

In addition, an observation grid was designed to observe the indicators that prevent households from having adequate access to food products. The indicators observed are: price trends for staple foods on the markets, distance between homes and food outlets, distribution of food markets, types of existing food outlets according to area of residence.

2.2.4. Data Processing and Analysis

The KoboToolbox application was used to collect quantitative data. Microsoft Excel was used to organize and format the data collected from the KoboToolbox platform. The data were then processed and analyzed using R-Studio software, in line with the specific objectives of the research. The use of Fisher's statistical tests, chi-square dependence and Principal Component Analysis (PCA), facilitated the detection of correlations and meanings between variables. In addition, content analysis applied to empirical information gathered through individual and group interviews, was based on the similarity and regularity of respondents' statements. These verbal statements were synthesized and the essential ideas retained. All the information was used to test the research hypothesis that "unequal food distribution, high food prices and low consumer income, as well as certain individual household characteristics, contribute to food access difficulties in Grand Lomé". The simple descriptive analysis based on the size of the respondents' answers, the observation of facts in the field and the similarity of the respondents' verbal declarations, enabled us to prove the existence of situations of food inaccessibility. With regard to statistical tests, rejection of the null hypothesis is based on a p-value below 5%. Interpretation of the PCA results focuses on the most interesting correlations, which explain most of the variance.

3. Results

3.1. Quantitative Research Results

A total of 963 heads of household were surveyed. Women were more represented (57.52%) than men (42.48%). This difference can be explained by the fact that African perceptions place women at the center of cooking and food shopping. As a result, some male heads of household had to direct the interviewers towards their wives, as they felt they were better able to answer food-related questions. Women were more will-

ing to listen to the interviewers. Similarly, the availability of respondents was more remarkable in the municipalities of Golfe 1 (10.5%) and Agoé-Nyivé1 (9.5%). Furthermore, the sample was dominated by educated people (80.83%) versus illiterates (19.18%). There is also a predominance of craftsmen (25.21%) and tradesmen (22.03%), the majority of whom generally work in the informal sector in Africa. Taking socio-demographic variables into account allows us to determine whether they correlate with perceptions linked to the food access dimension. **Table 3** below illustrates the identity of the respondents.

Table 3. Socio-demographic characteristics of the respondents.

Indicators	Proportion (%)
Gender	
Female	57.52
Male	42.48
Municipality of residence	
Agoè-Nyivé 1	9.5
Agoè-Nyivé 2	6.6
Agoè-Nyivé 3	6.6
Agoè-Nyivé 4	6.6
Agoè-Nyivé 5	7.2
Agoè-Nyivé 6	6.6
Golfe 1	10.5
Golfe 2	8.2
Golfe 3	8.4
Golfe 4	8.9
Golfe 5	7.5
Golfe 6	6.6
Golfe 7	7
Profession	
Self-employed	6.25
Craftsman	31.04
Trader	22.03
Student	14.30
Retired	3.50
Employee	17.58
Other	5.30
Level of education	
Not educated	19.18
Education through literacy courses	2.33
Primary	11.86
Secondary	37.92
University	28.71

Source: field survey, August–September 2022.

3.1.1. Measuring Physical Access to Food Products in Grand Lomé

The proximity of populations to foodstuffs facilitates the supply by reducing movement times. It also influences the choice of preferred foods as consumers, once in a suitable food market, are faced with several product proposals and this gives them the choice to select according to their financial capabilities and tastes. In this research, the measurement of households' physical proximity to food outlets is based on the respondent perceptions. **Figure 2** highlights the link between respondents' places of residence and their opinions on the distance travelled to make food purchases. The responses obtained are presented in **Figure 2** below. They show that food shopping distance in Grand Lomé varies according to the household's area of residence.

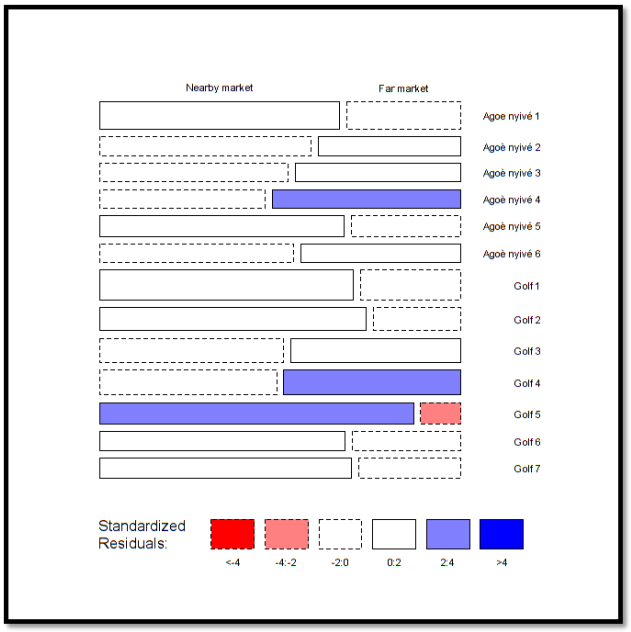

Figure 2. Perception of distance to food stores by area of residence.

Figure 2 shows that the populations of the communes of Golf 1 and Agoé Nyivé 1 are the most represented. The values of the standardized residuals of the crossover proportions are between −2 and 2, which brings them close to the numbers expected under the independence hypothesis, with the exception of the communes of Golf 4 and 5, and Agoé Nyivé 4 where the populations are overestimated (blue boxes) and underestimated (light red box). In general, it can be seen

that in 8 out of the 13 municipalities, the majority of the population recognizes the proximity of food supply markets. However, Agoé-Nyivé 4, Golf 4, Agoé-Nyivé 2, Agoé-Nyivé 3 and Agoé-Nyivé 6 are the municipalities where respondents are most concerned about the lack of proximity to food stores. The Fisher test applied to the crossover shows a p-value above the 5% threshold (1.509e-07). This indicates that perception of distance to food markets is strongly linked to place of residence. This result was confirmed by the residual chi-square test, which indicates that independence is not influenced by probable sampling bias. In short, not all households surveyed have easy access to inexpensive food shops selling a wide range of products.

3.1.2. Factors Limiting Economic Access to Food in Grand Lomé

A household's ability to access healthy food in an urban environment also depends on the cost of food products in relation to the income level of urban households. Indeed, data on household incomes are difficult to obtain in the Togolese context. Aware of this difficulty in the field, a multiple-choice question was asked so as not to frustrate respondents. This enabled us to collect a range of reasons which, in the experience of the households surveyed, prevent them from eating decently. **Figure 3** below shows, according to the size of the responses obtained, four reasons, two of which are primary and two secondary.

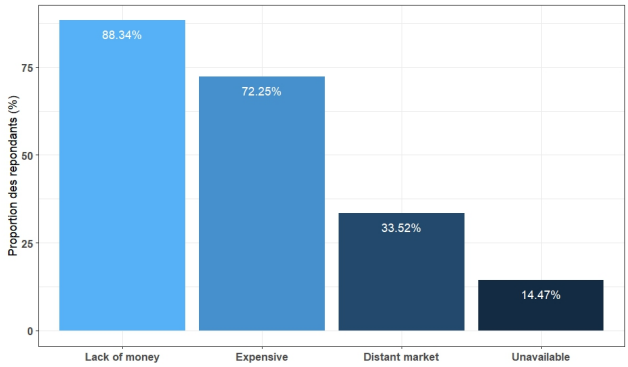

Figure 3. Main causes of food access difficulties.

When asked what factors prevent heads of household from adequately feeding their families, a large number of respondents mentioned lack of financial means (88.34%) and the high cost of food (72.25%). Concerns about the distance to food shops shown in **Figure 2** were also mentioned by 33.52% of respondents. Certainly, the last two minor but not insignificant reasons are directly linked. Households cut off from adequate food markets very often do with small informal outlets in their neighborhoods where the products sold are limited in quantity and non-diversified. In this case, the perception of food unavailability (14.47%) can therefore be explained by the inadequacy of food distribution systems. The results of the interdependence test carried out between these four variables (X-squared = 62.192, df = 3, p-value = 1.999e-13) indicate that the difference between the responses obtained is statistically significant. If the primary reason for food insecurity is a lack of financial resources, then which households are most affected?

Influence of Professional Status and Household Size on Access to Food

This section shows the identity of the 88.34% of respondents who claim to experience financial difficulties in accessing food. **Figure 4** below is the result of crossing three variables (lack of money, professional status and household size). The results show that economic inaccessibility to food is more pronounced in larger families and those in the craft and trade sectors.

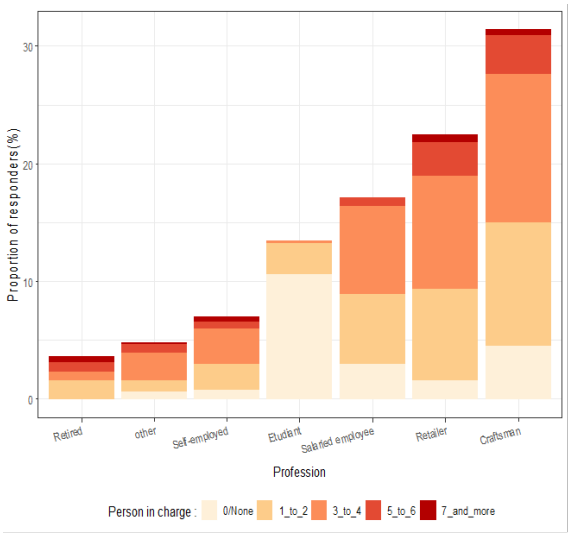

Figure 4. Impact of occupation and household size on access to food.

Three main findings can be drawn from **Figure 4**. Firstly, income poverty is more prevalent in households headed by craftsmen (31.4%) and tradesmen (22.5%). This is understandable, given that a large proportion of

the population in African towns is involved in these two types of activity, which are less organized and generate unstable incomes. Next, we note that "craftsmen" and "tradesmen" still dominate the category of respondents with more dependents. Finally, those who have no dependents at all (mostly students) or fewer dependents (students, self-employed, retired people), worry less about money problems. This is to say that in Grand Lomé, households with unstable incomes (craftsmen and shopkeepers) are also characterized by their high household size, and this situation has negative influence on their food security. In other words, the more a head of household is engaged in a craft or a particular commercial activity, and the more people he has in charge, the less chance he has to feed his members properly. The second major variable of food insecurity in this research is the high cost of food (**Figure 3**).

Cost Perceptions by Food Group in Grand Lomé

Respondents were asked a multiple-choice question aimed at identifying food products that are generally expensive. **Figure 5** below shows the responses obtained. It can be seen that, for the majority of respondents, high prices affect animal products, some staple foods and fruit.

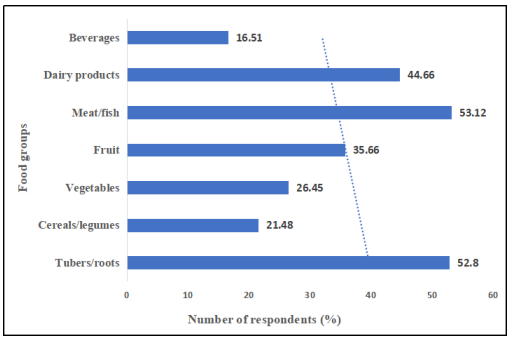

Figure 5. Ranking of food products by cost in Grand Lomé.

When asked which foods you find difficult to buy because of their high price, the "meat/fish" (53.12%) and "tubers/roots" (52.8%) groups took first and second place respectively. Dairy products", 'fruit' and 'vegetables' follow, with 44.66%, 35.66% and 26.45% of respondents respectively. Finally, "cereals/legumes" (21.48%) and "beverages" (16.51%), which are largely imported, occupy lower positions. The trend line shows that the size of responses decreases from foods perceived as expensive to those more affordable. Based on P. Steiner's sociological approach to economic phenomena[], the ranking of food costs observed in **Figure 5** reflects the link between household monetary income and social representations. Indeed, it previously emerged that craftsmen and shopkeepers, representing more than half (53.03%) of our sample (**Table 2**), lack more financial means to meet their families' food needs (**Figure 4**). In addition to the high cost of nutritious foods (**Figure 5**), these poor households must first and foremost seek to satisfy their hunger; and in this case, it is obvious that preferences linked to the first four food groups (meat/fish, tubers/roots, dairy products, fruit) are relegated to second place. This high cost of nutritious food can lead to nutritional deficiencies in these low-income families.

Factors Influencing Food Costs in Grand Lomé

Knowing the views of city dwellers on the causes of rising food prices is a useful way of encouraging them to take part in future projects aimed at reducing food costs. The following figure is the result of a cross-tabulation between food price volatility factors and respondents' level of education.

The analysis of **Figure 6** shows that the respondents' views on the causes of high food prices in Grand Lomé are strongly correlated with their level of education. Indeed, respondents with a secondary education point to local food underproduction, difficulties in transporting food to the city, and market speculation. The positioning of these three variables shows that they are highly correlated.On the other hand, poor food supply in the city was mentioned by heads of households who attain higher education. In short, to guarantee affordable food costs in Grand Lomé, we need to improve local food production, transport infrastructures and the regulation of food stocks.

Economic and Geographic Variables and Disparity in Access to Food Groups in Grand Lomé

Through principal component analysis, **Figure 7** shows that food insecurity in Grand Lomé is less related to food unavailability. However, a correlation emerges between economic-geographical variables and access to food groups.

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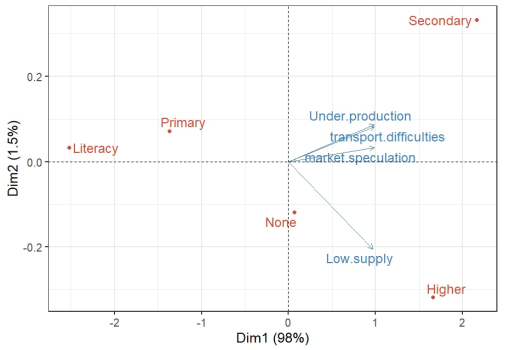

Figure 6. Main factors influencing the cost of food in Grand Lomé.

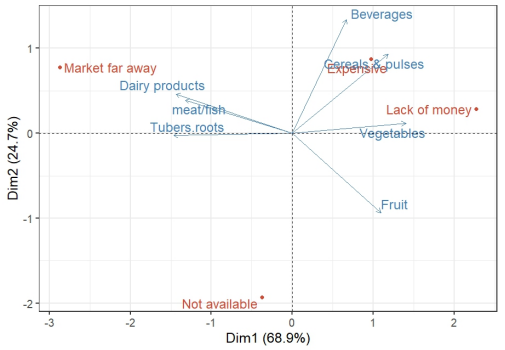

Figure 7. Impact of economic-geographic variables on access to food groups in Grand Lomé.

According to the information contained in **Figure 7**, the remoteness of food markets, highlighted earlier in **Figure 2**, makes it difficult to purchase tubers, meat and dairy products. This means that households living in neighborhoods isolated from low-cost food outlets have to travel long distances to get these three food groups. Since these households incur additional transport costs to get to the markets, it is clear that the price of these three food groups will be high. In contrast, the purchase of the other food groups (staple cereals/legumes, vegetables and beverages) is highly dependent on their price, but also on the household's purchasing power. In both situations, we can see that basic products (tubers, cereals, legumes) and vegetables are in limited supply and therefore confirm the information in **Figure 5**.

3.2. Results of Qualitative Surveys

3.2.1. Semi-Structured Interviews with Services in Charge of Food Security

The problem of food prices and markets was discussed with the departments in charge of food security. According to ANSAT, the government is making efforts by putting every year, tons of staple products (maize, sorghum, rice, etc.) on the market to make prices affordable. However, the institution deplores the fact that there are still "disloyal merchants" speculating and not always respecting recommended retail prices set. For the DCCL, the main body responsible for food price control, recurrent checks are carried out on the prices of essential foodstuffs in the markets. However, not only is this department woefully understaffed to cover all food markets, it also has only one field vehicle. The service also deplores the inadequacy of the annual budget dedicated to this mission, and the lack of coordination with the communes which, being normally very close to the markets, should be involved in this activity. ATC is also concerned about the gradual rise in commodity prices, and deplores the fact that the government does not involve them in food management decisions. According to this body, its mission is to ensure that the regulatory provisions adopted by the State are respected by food operators. It does this by raising awareness, petitioning and denouncing consumer fraud. To ensure that consumers' food baskets are truly positively impacted, the organization urges the government to make the right decisions when it comes to setting food prices so that civil society players can support it in the effective application of its policies. Finally, as far as local elected representatives are concerned, we understand that their interactions are limited to the merchants who must pay them taxes. They are not involved in controlling prices nor the quality of food products sold on these markets. As for certain districts isolated from food products, the communes find themselves in a weak position when it comes to setting up food markets, due to a lack of available space (land) on the one hand, and a lack of funding on the other. In short, the departments do not consult each other when making decisions, so they work in isolation in a context of scarce resources. This way of operating cannot pro-

duce the expected results in terms of food security.

3.2.2. Interviews with Heads of Households

The aim of the group interviews with heads of households was to gather much more in-depth data on the dimension of access to food. What can be noted is that problems of physical access to food are more frequently mentioned in the Légbassito, Vakpossito Togblécopé and Adéticopé zones, and this explains the quantitative results which previously showed the Agoé-Nyivé prefecture as an area with poor physical access to food (**Figure 2**). According to households, these difficulties stem mainly from the lack of appropriate markets in their area of residence. As a result, most food purchases are made from street vendors selling fresh produce and small shops located in front of houses. These shops not only offer a less diverse range of products, they are also more expensive. To buy certain culturally-relevant foods, some households claim to travel long distances to the only big market in the commune. Above all, they also have to wait for the market's busy days to hope to find the foodstuffs they want. To adapt to the situation, some churches have been transformed into food sales outlets. According to a respondent living in Légbassito in the commune of Agoé-nyvé 2. She explains:

> *"It's hard to find the food we need in the neighborhood, because the markets are far from our homes. Most households stock up on food every Sunday after mass; traders bring in all kinds of food products, especially tubers, vegetables and fruit, to sell at a good price. So, we take advantage of the opportunity to do our weekly shopping just outside the church".*

For the residents of Golfe 4, who also experience difficulties in gaining physical access to food (**Figure 2**), it is rather the difficulties of movement that make food shopping complex. According to households, markets do exist but the time it takes to get to them is quite long. Moreover, the difficulties of accessing food economically are much more shared by all respondents regardless of their place of residence. Participants in the collective discussions were unanimous in their desire for the State to strengthen governance so as to reduce cereal prices. They also want new public markets to be built to meet hygiene and sanitation standards, and existing public markets to be renovated since many of them are depleted.

3.2.3. Field Observation Results

Observation of the food environment in Grand Lomé shows that the peri-urban areas (Sanguera, Légbassito, Sagbado, Baguida, Vakpossito, Adétécopé, Toglécopé) recently created as urban communes by law no 2019-018 creating the Self-governing of District of Grand Lomé (DAGL), have problems with socio-collective facilities. Indeed, the only existing public food markets are very often concentrated in communal centers, which are overflowing with municipal premises. However, the land pressure that now prevails in these communes, which used to be agricultural zones, is leading to the disappearance of farmland in favor of housing. As a result, residents have become more dependent on the market for their food, and food shops are no longer sufficient to meet their needs. From what we have observed, people living a long way from adequate food markets are fed mainly by small shops (kiosks selling food products at the doors step of houses; street vendors selling fresh or dried fruit, vegetables, etc.). The following **Figures 8–10** illustrate the state of retail outlets in some neighborhoods lacking adequate food market space:

Figure 8. Street sale of basic products in Vakpossito (Agoé-Nyivé 3).

Figure 9. Sale of fresh vegetables and fruits in Adétikopé (Agoé-Nyivé 6).

Figure 10. Sale of dried and fresh vegetables under a tree in Toglékopé (Agoè-Nyivé 4).

These small shops, mostly owned by women engaged in income-generating activities, are characterized by a large number of intermediaries. As a result, the products they sell are generally expensive, and hygiene is not always observed. Furthermore, less perishable foodstuffs such as cereals and cereal by-products, pulses and canned foods are more likely to be found in these small shops. On the other hand, to buy perishable foods such as frozen livestock products, tubers and fruit, these households are obliged to travel long distances to the larger markets, which generally provide a wide range of products at affordable prices. In fact, these disparities in food availability may explain the correlation observed between the "distance from food markets" and access to perishable products such as "tubers/roots, meat/fish and dairy" (**Figure 7**).

As for the cost of food, this varies according to the origin and nature of the food. In general, local foods are much more expensive than imported ones. In the staples category, the cereals most consumed in this city (rice, wheat) are mostly imported, and therefore affordable. Indeed, at the time of the survey (September 2022), the cheapest 2.5 kg of local rice was selling for 2100 FCFA versus 1400 FCFA for imported rice, a difference of 700 FCFA ($1USD is equivalent to FCFA 600 X0F the currency of French-speaking West Africa). "Tubers/roots" (a typically local crop) are highly prized by city dwellers. However, these remain the most expensive of all staple foods due to their low production at national level (DSID, 2017). Moreover, in our context, "tubers/roots" are grown in areas far from cities. Thus, with the high cost of transport and losses recorded during their transportation due to unsuitable transport conditions, negatively impact the cost price of these types of food. For example, with 3 tubers of yams at around 4,500 FCFA in times of shortage, this is enough for a poor household to buy at least 7.5 kg of imported rice or 15 kg of local maize (at 700 FCFA per 2.5 kg container in lean times). Furthermore, the market for animal products is dominated by imported frozen chicken, which remains the only affordable meat. Indeed, 1 kg of imported chicken ready for cooking costs 1,900 FCFA, compared with 2,500 FCFA for local chicken and 3,000 FCFA for local beef. Like tubers/roots, vegetables and fruit are mostly produced locally, so their availability is seasonal. As a result, they are only affordable in times of plenty. Fruits such as pineapple and mango, on the other hand, are subject to export. And to fill the fruit gap, ultra-processed sweetened and carbonated drinks flood the markets of Grand Lomé at very low prices.

4. Discussion

4.1. Disparities in Physical Access to Food in Cities

The aim of this study was to identify the obstacles to food accessibility in the city of Grand Lomé, Togo. The study has come out with many results. The first relates to the non-proximity of some city dwellers to food outlets since the perception of distance to food markets correlates with the household's area of residence (**Figure 2**). Zones where people complain of distance from food markets due to lack of facilities or congestion (Agoé-Nyivé 4, Golf 4, Agoé-Nyivé 2, Agoé-Nyivé 3, Agoé-Nyivé 6) can be compared to "food deserts". Indeed, one of the conditions for accessing food is to be close to suitable food markets. This makes it easier for households to buy food as they can visit these shops at any time to choose products according to their preference. However, in West Africa in general, many studies show that urban food distribution systems are limited in a context of unplanned urbanization marked fundamentally by the anarchic and dispersed installation of housing. In most of these cities, the mismatch between supply and demand in basic infrastructures is permanent[21, 32]. In particular, the uneven distribution of food markets means that the populations of certain districts live far from places where a diversified and/or inexpensive food supply is available[22] with negative repercussions on their diets. At the same time, residents in areas with sufficient food supplies consume more and this positively affects their food security. This finding is in line with a study conducted in Ethiopia, Africa[37]. In the city of Grand Lomé, demographic pressure complicates the management of urban land, which is beyond the control of the State. As a result, indigenous families sell land in a haphazard way without any control. In the absence of a housing policy to regulate construction, coupled with a strong desire on the part of every household to live in their own home, we are witnessing a disproportionate urban sprawl marked by anarchic and unsustainable housing construction. Besides, many people often leave the city center for the outskirts in search of cheaper housing. They no longer take into account the comfort of residential areas before settling in the outskirts. As a result, they find themselves in neighborhoods with lack of roads and social amenities.

In general, the literature on the issue of geographical access to food is more abundant for cities. As in this research, uncontrolled urbanization has led to problems of geographical accessibility to food for precarious populations in the cities of Rabat, Abidjan and Niamey[38]. In Canadian cities, material devaluation had exacerbated food accessibility problems as it created additional barriers, especially for households with no personal car transport or access to public transport[39, 40]. Similarly, "food deserts", characterized by constraints on physical proximity to affordable and nutritious food were also reported in an African-American neighborhood[41], and among households with reduced mobility in Poland[42], and these had contributed to food deprivation, as well as exacerbating social and economic stress among residents. In the city of Rome in Italy, a geospatial analysis highlights "blackened food zones" characterized by the scarcity or absence of supermarkets and food distribution solidarity networks; thus, some people are socially excluded from food, as they cannot benefit from the same substantial food-related choices as residents close to diversified food markets[43]. In this research, the problem of physical access to food in certain communes of Grand Lomé is more closely linked to a lack of food shops. In France, on the other hand, it was rather an uneven distribution of food shops in Paris, Lyon and Montpellier[44–47] which prevented residents from making safe food purchases. In all cases in Africa, whether there is a shortage, absence or uneven distribution of food shops in a city, several research studies show that this situation results in unequal access to food, leading to malnutrition and social exclusion from food[48, 49]. This sheds light on the consequences of poor urban planning for city decision-makers, and the urgent need to design and implement targeted food policies to combat urban food insecurity.

One of the consequences of the inefficiency of food distribution in African cities is the resurgence of informal sales outlets and itinerant food shops. In Grand Lomé for instance, it has been shown that, in terms of visit, informal food outlets occupy the second place after public markets. Moreover, the unsanitary state of these street food outlets calls into questioning the hygienic quality of the products sold[14]. This shows the weak role of market infrastructure in the food supply

of households in Grand Lomé. The same observation was made in Windhock, Namibia where the absence of adequate food shops in poor neighborhoods resulted in the rapid expansion of informal markets in these areas [50]. The main reasons for the growth of unhealthy food shops in African cities are deficient urban planning, lack of financial resources to build new, safer and more resilient market facilities, weak development of short food chains, and the poverty of populations who prefer informal shops considered as being geographically and economically closer [14, 50, 51]. Today, even if these street shops are alternatives to the lack of adequate food markets in working-class African neighborhoods, the lack of hygiene in these outlets calls into questioning the sustainability of the food distributed [14, 48, 52]. As in this research, studies of the food supply in Detroit, Michigan, unanimously note that it is in "food deserts" that "convenience stores" emerge, which are in fact sales outlets stocking low-quality products [28, 53]. These forms of sales, which account for a third of food outlets in this city [53]. can be compared to street food shops in urban Africa, as shown by the images from field observation in this research (**Figures 8–10**). Nevertheless, if we look at the food environment in Grand Lomé, the "food desert" can be qualified by the fact that small informal shops and many other non-market sources of supply [54, 55], such as food self-production, sharing and borrowing, exist in these areas lacking market infrastructures.

In Africa, socio-spatial inequalities result from shortcomings linked to the governance of urban food systems. These are crumpling of players in food supply chains with competing programs, less-promoted urban and peri-urban agriculture, the predominance of informal operators in the food retail trade, inadequate transport systems for food distribution, weak role of local authorities in urban food systems [56]. In this case, given that African urban households are essentially dependent on purchased food [57], these organizational failures of food systems increase food expenditure and hence the poverty of urban dwellers. Food distribution therefore plays a key role in food accessibility in urban areas and also in urban food security. However, it has to be noted that the municipalities of Grand Lomé, like most African local urban administrations, lack the vision and resources to invest in this area. Their role is very often limited to opening and closing existing markets and collecting taxes from traders, as has also been the case in cities in Nigeria [58]. But these taxes are never enough to reinvest in new market facilities. They are always waiting for the voluntary action of Technical and Financial Partners (TFP) to satisfy the needs of their population. In the absence of public marketplaces, elected officials can promote short food distribution circuits (online sales and home deliveries, food self-production) whose sustainability is no longer in question, and which are less developed in this city [14]. As evidence of this, the introduction of short food chains into the Polish food system has helped to increase access to local produce in households, thereby improving consumer health [59]. Decidedly, the promotion of short food chains (SCF) in Togo's urban food system will enable the massive adoption of these forms of distribution by households in Grand Lomé and this will create new jobs. CCs will also help to meet the challenges of geographical and economic accessibility facing the Grand Lomé conurbation.

4.2. Economic Constraints and Food Insecurity in Cities

Secondly, this research reveals that the conditions of economic access to food are not met in Grand Lomé. A large proportion of households cite low purchasing power and unaffordable food prices (**Figure 3**). This result confirms the QUIBB survey that reveals that 53.9% of Togolese urban households linked their food insecurity to low financial resources and fluctuating food prices for staple cereals [60]. Indeed, according to the Multidimensional Poverty Index (MPI), more than half of African population, or 593 million people, are poor [61]. In addition, according to a joint study by the Economic Community of West African States (ECOWAS), the United Nations Economic Commission for Africa (UNECA) and the United Nations World Food Programme (WFP), the proportion of people living in extreme poverty, i.e. on less than $1.90 a day in the West African region rose from 2.3% in 2020 to 2.9% in 2021. As a result, over 25 million people in West Africa were unable to meet their basic food needs, an increase of 34% compared to 2020 [62]. Following this fact, a positive correlation

had already been observed between income poverty and food insecurity in several African cities [14, 37, 63] and in many other urban contexts outside Africa [64]. While the majority of African poor people live in rural areas, poverty inequalities are more pronounced in cities due to human concentration, a wide education gap between urban dwellers, and graduate unemployment and underemployment [1, 4, 32]. The majority of urban dwellers in Africa work in occupations that not only generate meagre incomes, but are also very often unstable in order to cope with the high cost of food in the city.

Professional status and the number of people in the household have no effect on the financial capacity of urban households. This hypothesis is well demonstrated in this research. The study reveals that heads of households engaged in crafts and commerce, as well as extended households, have greater financial challenges in feeding their families (**Figure 4**). In fact, in African urban environment, these two trades (crafts and commerce) are very widespread, and are very often practiced informally. So, in the absence of bank loans to develop their services, these actors perpetuate themselves in fragmented and unorganized activities that hinder their upward social mobility. And as we have pointed out in this research, these actors, in addition to their insufficient income, support even more people in their households (**Figure 4**). This leads us to conclude that poverty increases with household size. These conclusions are shared by the national survey on basic well-being indicators, which had already noted that small households (1 or 2 people) are less poor (23%) than large ones (78%) [65]. These same observations, which have also been raised in urban areas in Senegal and Gabon maintain that food security decreases beyond three individuals in the household [66, 67]. We therefore need to think about strategies to improve the incomes of these poor families, especially as social protection programs in Africa do not cover these disadvantaged social classes.

In addition to monetary poverty, the high cost of food amplifies the difficulties of access to food in Grand Lomé. It turns out that it is in the West African region that the cost of healthy food remains highest, on average 1.2 times higher than in peri-urban areas [68].This situation is first and foremost a structural challenge inherent to African agriculture which can be summed up in the pre-eminence of productive agricultural policies focused solely on increasing yields to the detriment of the organization of downstream agricultural value chains. Thus, the deficiency of transport, processing, storage and preservation infrastructures [19, 69–71] has a negative impact on the cost price of food in cities. Added to this is low agricultural yield due to non-mechanized farming, low input use, and small-scale cultivation [72]. Yet, rising food prices, starting with nutritious foods (fruit, animal and dairy products, etc.) as consumers so clearly indicated in this research (**Figure 5**) leads to a "food mirage" where inhabitants, because healthy and nutritious food is too expensive, indulge in the purchase of cheaper, non-nutritious and culturally unsuitable products [30]. These unhealthy eating practices are even more undeniable in West Africa where the poorest urban households spend more than half their income on food [57]. In this case, it is clear that extended families working in the informal sector cannot avoid food deprivation, non-diversified consumption and the purchase of cheaper, non-nutritious foods. Our research demonstrates the need to take "food prices" into account in the fight against urban food insecurity in Africa.

Yet, many of African social programs and food security policies are channelled towards the rural environment that is considered vulnerable in every respect. Togolese cities are struggling to provide a decent living environment for their populations due to a lack of regulatory frameworks, planning tools and sustainable management of urban services [73]. However, they can still play a key role in improving their own food security. Combating urban food insecurity requires strong interaction between urban decision-makers on the one hand, and collective awareness and decision-making around urban food challenges on the other [74]. The present research shows that this collective struggle lacks in Grand Lomé where the lack of collaboration between urban players is reflected in isolated actions that are not yielding convincing results. Municipalities, which are the primary actors in urban governance, are not involved in any food security initiatives. Moreover, while governance calls for food action to be taken by many actors [75], in

Togo, public institutions still have a monopoly on grain management while civil society organizations are more involved in promoting local consumption. Merchants, on the other hand, are primarily profit-driven, and do not participate in either the state or the CSOs local consumption schemes. This way of operating does not allow for the integration of stakeholders in the fight against food insecurity. We believe that the co-production of urban food policies through learning, consultation, dialogue and collaboration [76] is likely to facilitate food accessibility in the city of Grand Lomé.

5. Conclusion and Recommendations

This research highlights the factors limiting food security in Grand Lomé, in Togo. Firstly, the remoteness of certain households from suitable food outlets deprives them of the opportunity to enjoy diversified and/or inexpensive food purchases. Secondly, inadequate incomes among craftsmen and shopkeepers who have more dependents prevent them from adequately feeding their families. The third major constraint limiting access to food is the continuous increase in prices, especially for staples and vegetables. They are too expensive for more than half of respondents. Besides, an analysis of the functioning of the institutions in charge of food security in Grand Lomé reveals weak interactions between the actors. They struggle to implement existing food policies collectively. Moreover, these policies do not include any innovative initiatives that could boost food security for local people. To meet these challenges, we need to:

- establish rules for the sustainable occupation of urban spaces. This policy can prevent the population from settling in areas that lack socio-collective infrastructures
- build new food markets in populated areas that are far from food shops. If this cannot be done, it would be advisable to promote online food ordering and distribution; this can help improve both physical and economic access to food in households
- subsidize local commodities to enable them to compete in urban markets. This will reduce food prices and therefore increase local food consumption
- institutionalize agriculture in Grand Lomé. Local authorities have unused public land reserves that lie fallow. They therefore have the opportunity to develop these plots of land for food production. Otherwise, they must make this arable land available to citizens for agricultural purposes. Implementing this policy will encourage people to produce their own food (home and community gardens) and to engage in commercial farming. This will increase the availability of vegetables and thus make food prices more affordable.

Author Contributions

Conceptualization, M.N.; Data curation, K.K.; Formal analysis, M.N. and K.K.; Funding acquisition, M.N.; Investigation, M.N.; Methodology, M.N. and K.K.; Project administration, M.N.; Resources, M.N.; Software, M.N. and K.K.; Supervision, K.K.; Validation, K.K.; Visualization, K.K.; Writing-original draft, M.N.; Writing -review & editing, M.N.

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Not applicable.

Data Availability Statement

Data will be made available on request.

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Conflicts of Interest

The authors declare no conflict of interest.

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