ISSN 1822-8038 (online)
INTELEKTINĖ EKONOMIKA
INTELLECTUAL ECONOMICS
2020, No. 14(1), p. 76-88

IMPACT OF ECONOMIC AFFORDABILITY OF FOOD ON THE LEVEL OF FOOD CONSUMPTION BY UKRAINIAN HOUSEHOLDS

Olena KOTYKOVA

Mykolaiv National Agrarian University
Georgiy Gongadze St. 9, Mykolaiv 54010, Ukraine,

Mykola BABYCH, Olena POHORIELOVA

Admiral Makarov National University of Shipbuilding
Prospekt Tsentralnyj Ave. 3, Mykolaiv 54000, Ukraine

DOI: 10.13165/IE-20-14-1-05

Abstract. *This work assesses the current level of food security in Ukrainian households according to the methodology proposed by the authors. The methodology developed includes separate indicators for monitoring SDG1 and SDG2 in Ukraine and indicators proposed by the authors. The survey identified vulnerable categories of households based on their level of food security: households located in rural areas; households with four or more persons; households with four or more children; and households with average per capita total income per month below the statutory subsistence level. The results of the study confirm the hypothesis that the level and structure of food consumption is significantly influenced by the economic affordability of products. Households in rural areas as well as households with large numbers of persons have significantly lower incomes than other household groups, and these households are characterized by the lowest quality of food.*

Keywords: *food security, economic affordability, consumption rate, household, expenses.*

JEL: *D12, R22, R51*

1. Introduction

According to the draft Law of Ukraine "On food security of Ukraine" (2011, p. 3), "The process of formation of food security should be accompanied by organized monitoring of the nature of changes, their quantitative and qualitative assessment in order to prepare appropriate recommendations and management decisions. The monitoring system should be based on a combination of economic and social indicators with indicators that reflect the performance of public authorities in addressing food security. According to the results of monitoring, the authorized bodies of the executive power must make decisions about changes in the food basket for the main social and demographic groups of the population, and the authorized executive bodies should decide on the changes and approve the food sets for the main social and demographic groups of the population".

In the context of European integration, which implies openness of internal and external food markets, the constant monitoring of household food security indicators is necessary in order to prevent social and humanitarian crises and to formulate an appropriate state policy for the protection of vulnerable groups in the context of transformational financial and economic processes.

When discussing the monitoring of food security indicators, the levels at which it is conducted should be highlighted: the interstate (global), national, and regional levels, as well as the levels of household and individual.

The methodological support for food security monitoring at global, national, and regional levels has been partially or fully developed. The Food and Agriculture Organization (FAO) monitors food security indicators at the interstate (global) level. Information on the methodology of evaluation and the direct relevance of the indicators is available on the official FAO website, which has been integrated into a single database to ensure open access to information and the creation of a comprehensive food security information system. Indicators are classified into four components of food security measurement: availability, access, use, and stability (Food security statistics, n.d.). The FAO is currently developing indicators for monitoring food security and nutrition (FAO, WFP, and IFAD 2016) as part of the new global agenda for Sustainable Development Goals 2016–2030 (GSDs-2030).

Monitoring of Ukraine's food security indicators is carried out in accordance with the Methodology for determining the main food security indicators at the national and regional levels, approved by the Cabinet of Ministers of Ukraine in the Resolution "Some issues of food security" (2007). Regarding the monitoring of Ukraine's food security indicators at the regional level, there are also suggestions by Ukrainian scientists. In "Monitoring of food security at the regional level" (Kotykova, Babych, and Semenchuk 2019), the authors developed a methodological approach to food security monitoring and evaluation at the regional level, which meets the criteria and dimensions of the GSDs-2030 and which includes a rating assessment of the food supply of the regions based on 9 indicators over the last five years (on average and in the dynamics). Appropriate calculations and proposals for solving the identified problems in the field of food security in each particular region were made.

There is no monitoring of household food safety indicators in Ukraine.

The studies of international researchers are scientifically interesting in this regard. For example, Hansen, Sorensen, and Eriksen (2018) have developed a basic model that identifies the expected links between consumer motives (health, environmental and social awareness), organic food identification, and organic eating behavior. Ortega and Wolf (2018), with the help of Becker–DeGroot–Marschak (BDM), investigated the demands of households in Michigan for livestock products from humanized technologies. Bhalla, Handa, Angeles, and Seidenfeld (2018) investigated the impact of social financial assistance on Zimbabwe's household food security. Haysom and Tawodzera (2018) developed a system of drivers and methods for assessing the food security of households living in urban areas. Botkins and Roe (2018) determined the effectiveness of local governmental food promotion programs in the United States, including farm-to-school FTS programs. Bonanno, Bimbo, Cleary, and Castellari (2018) studied the effectiveness of food labeling policies in helping consumers make informed choices about healthy foods. However, in practice it is possible to use the results of these studies in Ukraine only as an idea for conducting such research: it is quite obvious that the conclusions obtained will not be identical to those obtained in other countries.

Part of the assessment of the level of food security of households is carried out by domestic scientists. In open access (on the official site of the National Library of Ukraine named after V. I. Vernadsky), there are only seven scientific papers devoted to the study of the food security indicators of Ukrainian households. In particular, the work of Ambrosenko (2010) revealed the factors that shape consumer behavior and influence its food supply process. Works by Mostenska (2015) and Suta (2012) included studies of household food consumption by income and number of children in the household. The research of Piskunova (2016), Lysenko (2015), and Yatsiv (2014) analyzed the economic affordability of food for different income groups and examined the dynamics of differentiation in the consumption of basic food in households with different monetary incomes. At the same time, the works mentioned lack a single methodological basis for their studies, and vulnerable segments of the population are identified only among households with different numbers of members and children in their composition.

2. Methodology

The theoretical bases of this study are: the fundamental provisions of the formation of the food security system; modern economic theory, which defines the goals and patterns of sustainable development for the world and Ukraine; the scientific works of domestic and international scientists on food security; and the public administration and legislative regulation of this problem.

The methodological basis of the study is the dialectical method, and the general and special methods of scientific knowledge. In the course of this research the following methods of economic research were used: abstract-logical (involving the formation of principles, theoretical generalizations, and conclusions, as well as the substantiation of methodology and the methodology of complex research and evaluation of food security);

monograph (studying best practices in food security); systematic analysis (identifying the cause and effect of the problem of food shortages in Ukraine); elementary-theoretical analysis; and synthesis (establishment of patterns of development and determination of the current state of food security of Ukraine at different levels). Statistical methods were also used during the study, including: grouping, comparison of average and relative values, graphical, and index.

The information bases for the research were: the legislative and regulatory acts and program documents of the state bodies of Ukraine and EU countries; the official materials of the Cabinet of Ministers of Ukraine; the methodical and statistical materials of the State Statistics Service of Ukraine and relevant services and institutions of other countries; the results of studies of international organizations and the FAO; and the results of the author's personal research.

The hypothesis of the study is that there are significant disparities in the level of consumption by different categories of households, and that these imbalances impact economic affordability. Based on this thesis, it is proposed to assess the level of household food security by household category based on the major indicators of economic affordability and food consumption (Figure 1).

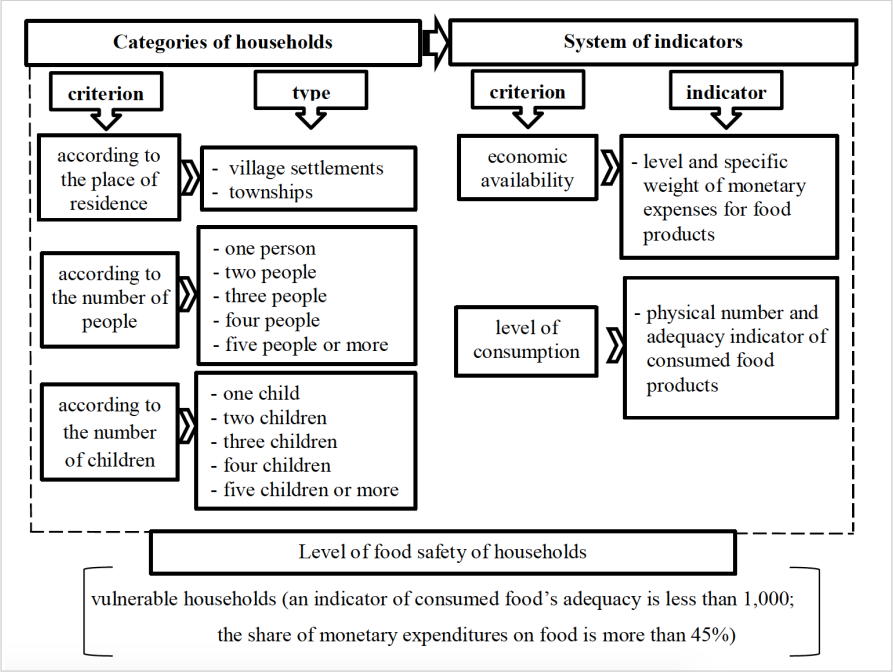

Figure 1. *Methodology for economic evaluation of the assessment system for the effective management of food security at the household level*

Sources: Author's original creation

The objective of the study is to assess the current level of food security in Ukrainian households via the proposed methodology, and to identify vulnerable categories of households based on the level of food security.

3. Results

In 2016, total household spending on food was UAH 2,367.1 per month, compared to 1,766.14 UAH in 2014. However, fluctuations in this indicator were found based on the household categories of urban and rural settlements, accounting for 49% and 45% respectively of expenses (Table 1). This situation is explained by the fact that in rural settlements most of the food products are produced by households, and they therefore do not spend money on their purchase. Further, the vast majority of the rural population tries to earn additional income through the sale of food produced by their own household. At the same time, the dynamics of rural households' spending on food and non-alcoholic beverages are increasing, while the share of spending for urban households is decreasing.

Table 1. *Household expenses on food and non-alcoholic beverages, UAH per month*

Indicator	2014	2015	2016	% change, 2014–2016
On average per household (UAH)	1,766.14	2,207.23	2,367.10	34.0
% of consumer spending	52.9	54.0	52.3	-0.6
% of expenses	47.8	49.6	47.8	0.0
In urban areas (UAH)	1,960.21	2,432.01	2,587.98	32.0
% of expenses	49.4	51.3	49.0	-0.4
In big cities (UAH)	2,093.19	2,628.29	2,787.35	33.2
% of expenses	49.1	50.9	47.8	-1.3
In small towns (UAH)	1,761.59	2,157.3	2,308.76	31.1
% of expenses	50.0	51.9	50.9	0.9
In rural areas (UAH)	1,375.64	1,747.34	1,913.65	39.1
in relation to expenses in big cities	-717.55	-880.95	-873.70	21.8
% of expenses	43.7	45.4	45.0	1.3
in relation to expenses in big cities	-5.4	-5.5	-2.8	2.6

Source: calculated by the authors based on data (Expenditure and resources of households of Ukraine: Statistical publication 2017)

Consumer aggregate costs of the population in large cities exceeded this indicator for the rural population by 873 UAH, or 31.3%, in 2016. It is worth noting that in the aggregate consumer costs the costs of foodstuffs on average in households in rural areas

are 213 UAH lower, and the share of these expenditures in the aggregate consumer expenditures is 5.3% higher in this population.

There are also significant differences in the structure of total household spending in urban settlements and rural areas. In 2016, rural households spent 45% of their total expenditures on food (including out-of-home meals), down 0.4% from 2015. In urban areas, the decrease was 2.3%, but the indicator was 4% higher compared to households in rural areas. This type of spending ceased to be dominant, since the purchase of non-food items and payment for household services were directed at the same share of their expenditures as food. Essentially, these changes are driven by an increase in the share of household expenditures spent on housing maintenance (including ongoing repairs), water, electricity, gas, and other fuels, although the dynamics of these components vary.

The cost of eating for one person in rural areas averaged 30 UAH per day, versus 43 UAH in urban settlements, while the absolute rate of increase was almost the same (Figure 2).

Changes in household structure are insignificant in the context of rural and urban households: the same dynamics of increasing or decreasing the share of food costs are observed in almost all types of food except meat and meat products (in rural areas, the share of costs is increasing, and in urban areas it is decreasing) and vegetables, including potatoes (in urban areas the cost share increases and in rural areas the dynamics have not changed).

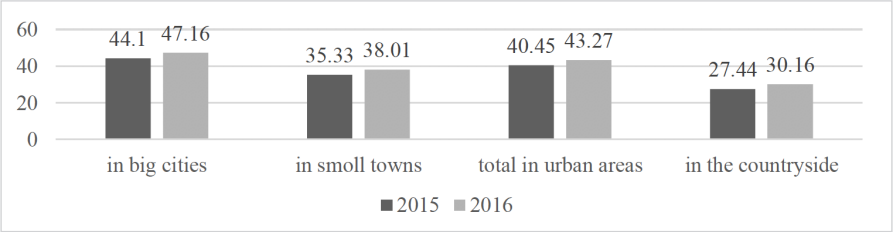

Figure 2. *The level of expenses in urban and rural households for food per person per day, UAH*

Source: calculated by the authors based on data (Expenditure and resources of households of Ukraine: Statistical publication, 2017)

On the other hand, there are significant differences in the absolute cost of household spending in rural and urban areas. Thus, the increase in expenditures on household food in rural areas amounted to UAH 166 versus UAH 156 in urban settlements. At the same time, household spending in rural areas increased significantly on types of food such as: bread and bread products; meat and meat products; fish and fish products; sugar, jam, honey, syrup, chocolate and confectionery; soft drinks and other products. Accordingly, household spending in urban areas has increased significantly on types of food such as: vegetables and potatoes; fruits; milk, cheese, and eggs, while reducing on fish and fishery products.

The significant increase in the cost of sugar, soft drinks, and other products in rural areas compared to households in urban areas can be explained by the lack of their production in the countryside, but it is difficult to make a valid argument regarding bread, meat, and fish, since the production of these products is concentrated within households. Thus, the increase in costs may be caused by an increase in consumption by this category of households. However, the consumption of these foodstuffs in rural households on average per month is less than their consumption in urban areas – meat and meat products by 0.7 kg and fish and fish products by 0.1 kg. Only the consumption of bread and bread products is higher in rural areas, on average by more than 2.1 kg. In addition, households in rural areas consume less eggs, fruits, berries, and grapes than households in urban areas.

Thus, a sufficient level of consumption in accordance with rational food consumption in households in rural and urban areas is achieved by vegetable oil, as well as by bread products in households in rural areas. The lowest consumption in accordance with the rational norms of consumption of food in households in rural and urban areas is of fruits, berries, and grapes – respectively 0.507 and 0.320 kg per month.

In addition to the place of residence, the numerical composition of households is significantly influenced by the affordability of food and its structure because of the level of income of households. Estimates show that, on average per person, depending on the number of people in one household there are different costs for food. The highest expenditure on food per person (UAH 1,370) is for households with one person (Figure 3). The lowest cost (per person) for food is in households of five or more people. For such households, expenditures per person are 38.6% lower than the level of expenditure for food in one-person households.

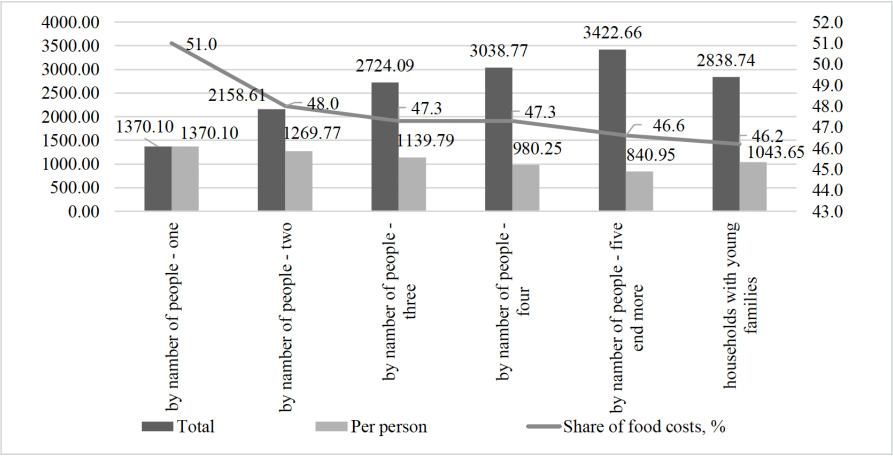

Figure 3. *The level of household expenditures on food by their average monthly composition, UAH*

Source: calculated by the authors based on data (Expenditure and resources of households of Ukraine: Statistical publication, 2017)

The cost structure of households with different numbers of people also varies significantly. The one-person household group has the highest share of oil costs, at a much lower cost than meat, fish, fruit, and sugar. Thus, single-person households consume almost twice as much oil per person as other groups. However, despite the relatively low share of costs, this group consumes more meat, fish, fruits and sugar, as well as the rest of the foods except eggs, the highest consumption of which is in two-person households.

In the two-person household group, the highest share of costs is spent on meat, fish, vegetables, milk, cheese, and eggs. For households with three people, the highest share is spent on fruits and soft drinks. Households with five people spend most on bread, sugar, and other foods. In the category of households with young families (where the average equivalent household size is 2.72 persons), the highest expenditure is on fruit and non-alcoholic beverages compared to other groups.

Levels of consumption below the average of most food products are observed in households with a population of four and five or more people. The highest percentage of households that have, on average, a cash income per capita per month that is lower than the subsistence minimum are comprised of four persons – 30.1% – and households with five persons possess the smallest share of those with average per capita cash income per month below the subsistence level – 9.5%. In four-person households, the oil consumption adequacy indicator is more than 100%, for eggs and bread it is more than 75% and 80%, for other products it is below 60%. Households with a population of five or more are most likely to deviate from the average in their consumption of animal products. Thus, the deficit in consumption of meat and meat products in households that number five or more persons is 44.5% of the normal rate, for milk and dairy products this is 46.0%, eggs 29.7%, and fish 46.0%. In this case, the compensation of calories is partly accomplished by the excess consumption of oil, while the consumption of potatoes, vegetables, fruits, and berries remains insufficient, since these products are consumed at a level much lower than rational standards. Thus, it can be argued that the level of nutrition in households of four or more people is insufficient and the level of food security has not been reached.

Vulnerable groups in terms of food security include households with children. The analysis shows that, on average per household, there are different costs for food depending on the number of children. The highest expenditure on food (UAH 1,068) is for households with one child (Figure 4).

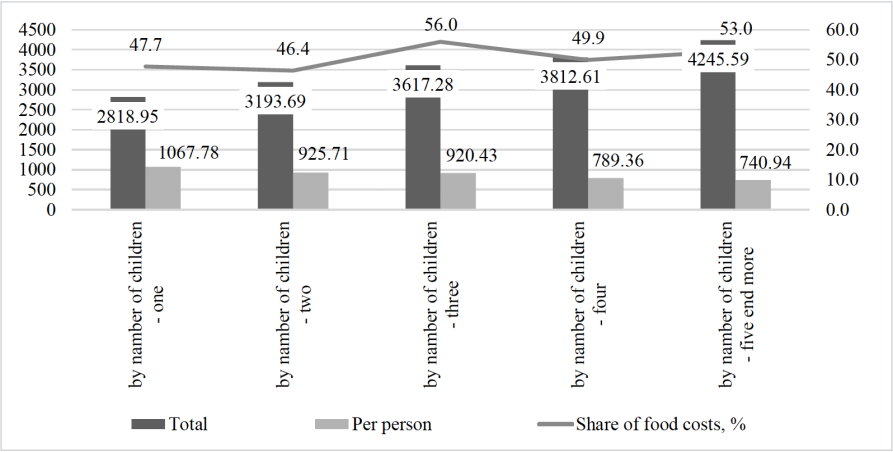

Figure 4. *The level of household expenses on food depending on the number of children, on average per month, UAH*

Source: calculated by the authors based on data (Expenditure and resources of households of Ukraine: Statistical publication 2017)

The lowest costs (per person) for meals are in households with five or more children. In such households, the cost of food is 30.6% lower than the level of expenditure on food in households with one child. The share of food expenditure in different groups ranges from 46.4% to 56.0%, but there is no clear tendency to increase or decrease the share of food expenditure depending on the number of children in the household. If, on average, households with children spend 47.6% of total expenses on foodstuffs, then for households with five or more children the share of such expenditures is already 53.0%, or 5.4% higher.

In the one-child household, the highest share of meat and vegetable costs is significantly lower than in other bread and sugar spending groups. In the group of households with two children, the highest share is spent on non-alcoholic beverages and other foodstuffs, with a much lower share of the cost on oil. In the group of households with three children, the share of spending on fish, fruit, and non-alcoholic beverages prevails; and in the group of five children with oil and sugar at the expense of less consumption of fruit, meat, milk, cheese, and eggs. In the group of five or more children in households (the average equivalent household size is 5.73 persons), the highest share of bread, meat, milk, cheese, and eggs is at the expense of other expenditures, with a lower cost share for fish, vegetables, soft drinks, and other food.

Among households with children, 30.1% of the total number are households with four children with an average per capita cash income per month below the statutory subsistence level (UAH 1,388). However, there are no significant variations in the level of food consumption among households with different numbers of children from one to three. This is indicative of the fact that parents are trying, under any circumstances, to

provide their children with the necessary food, but it is very difficult to accomplish this task under the conditions of low purchasing power. Thus, for households with four or more children, the average level of consumption of food by one person is observed only for bread and bread products (1.4%) and potatoes (12.1%). In addition, households with four or more children had the lowest consumption indices for meat and eggs (22% and 22.2%, respectively), and vegetables and fruits (22.4% and 30.3%, respectively). This indicates that households with four or more children, as in the case of households comprising four or more persons, compensate for less protein of animal origin by increased consumption of plant-derived proteins. The relatively low consumption of fruits and vegetables is explained by the high price in the winter-spring season and the low purchasing power of this category of households. Therefore, households with four or more children can also be categorized as vulnerable in terms of food security. In the latter group, where the number of children is four or more, indicators of the adequacy of food consumption by individual types of products are lower than the average, and significant deviations from the first group were found for meat and eggs (Table 2).

Table 2. *Indicator of adequacy of food consumption in households with children, depending on the number of children in their composition in 2016, on average per month per person*

Indicator	Households with number of children				
	all	one	two	three	four and more
Meat and meat products	0.615	0.645	0.555	0.630	0.480
Milk and milk products	0.543	0.553	0.524	0.518	0.502
Eggs	0.745	0.786	0.703	0.662	0.579
Fish and fish products	0.600	0.660	0.540	0.660	0.480
Sugar	0.758	0.758	0.695	0.758	0.726
Vegetable oil of all kinds	1.200	1.200	1.015	1.015	1.015
Potato	0.561	0.561	0.571	0.590	0.629
Vegetables and melons	0.566	0.604	0.492	0.529	0.440
Fruits, berries and grapes	0.440	0.453	0.400	0.413	0.307
Bread	0.832	0.855	0.784	0.891	0.844

Source: calculated by the authors based on data (Statistical Yearbook of Ukraine for 2016: Statistical publication 2017)

The defining characteristic of Ukrainian consumers is low purchasing power. Different levels of household income form the appropriate structure of household consumption. Thus, a population with an income level of up to 840 UAH per month consumes on average 1.5kg of meat and meat products per month for one person, and those with an income level over 3,720 UAH consume 5.5 kg per month, with an average consumption over all households of 4.2 kg per month. Only households where the income per person

exceeds 2,640 UAH (which is 1,252 UAH below the statutory minimum wage) have an average level of consumption of meat and meat products per person. A similar situation is observed in milk and dairy products, fish, fruits, and berries. Even for relatively inexpensive food (potatoes, bread, and baked goods), the consumption per capita is higher than the average for all households, and households with an income higher than 2,280 UAH per capita, which is 892 UAH below the statutory subsistence level, can afford an average amount of these foods. Thus, households with average total income per capita per month below the statutory subsistence level (1,388 UAH) consumed all foodstuffs below the national average in 2016, including: bread and bread products – by 14.5%; meat and meat products – by 42.9%; fish and fish products – by 41.7%; milk and cheese – by 41.4%; eggs – by 21.1%; oil – by 33.3%; fat and lard – by 40.0%; oil and other vegetable fats – by 20.0%; fruits, berries, nuts, grapes, watermelons, and melons – by 46.8%; vegetables, potatoes, mushrooms – by 29.7%; and sugar and honey – by 29.6%.

3. Conclusions

1. There are significant differences in the levels of affordability and consumption of household food. According to the research conducted, vulnerable areas of the population in terms of food security are:
   1) households located in rural areas (the expenses of such households are lower than those of urban settlements; disparities are observed in the structure of expenditures on foodstuffs, with a significant predominance of bread and sugar expenditures and lower costs of meat and milk with insufficient consumption of the latter);
   2) households with four or more persons (the level of nutrition in the households is insufficient and the level of food security is not reached);
   3) households with four or more children (households compensate for less protein of animal origin by the increased consumption of vegetable proteins).
2. The results of the study confirm the hypothesis that the level and structure of food consumption is significantly influenced by the economic affordability of products. Households in rural areas and households with a large number of persons have significantly lower incomes than other household groups, and these households are characterized by the lowest quality of food.
3. Further scientific research will focus on the formation of strategic foundations and the formation of an appropriate state policy for the protection of vulnerable groups in the context of transformational financial and economic processes.

Acknowledgments

This study is prepared as part of the implementation of the initiative research theme "Food security in terms of European integration of Ukraine" (the state registration No. 0114U007072). This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

References

1. AMBROSENKO, O. Deiaki aspekty prodovolchoi bezpeky domohospodarstv na prykladi zhytomyrskoi oblasti [Some aspects of food security of households on the example of Zhytomyr region]. *Effective economy*. 2010, (5).
2. BHALLA, G., S. HANDA, G. ANGELES, and D. SEIDENFELD. The effect of cash transfers and household vulnerability on food security in Zimbabwe. *Food Policy*. 2018, **74**, 82–99. Available from: https://doi.org/10.1016/j.foodpol.2017.11.007
3. BONANNO, A., F. BIMBO, R. CLEARY, and E. CASTELLARI. Food labels and adult BMI in Italy – An unconditional quantile regression approach. *Food Policy*. 2018, **74**, 199–211. Available from: https://doi.org/10.1016/j.foodpol.2017.12.008
4. BOTKINS, E. and B. ROE. Understanding participation in farm to school programs: Results integrating school and supply-side factors. *Food Policy*. 2018, **74**, 126–137. Available from: https://doi.org/10.1016/j.foodpol.2017.12.006
5. CABINET OF MINISTERS OF UKRAINE. *Resolution of December 5, 2007, No. 1379 "Some issues of food security"* [online]. 2007 [viewed 12 Oct. 2019]. Available from: http://zakon2.rada.gov.ua/laws/show/1379-2007-%D0%BF
6. Expenditure and resources of households of Ukraine: Statistics publication. *State Statistics Service of Ukraine* [online]. 2017 [viewed 12 Oct. 2019]. Available from: http://www.ukrstat.gov.ua/
7. FOOD AND AGRICULTURE ORGANIZATION [FAO], WORLD FOOD PROGRAM (WFP), and INTERNATIONAL FUND FOR AGRICULTURAL DEVELOPMENT [IFAD]. *Мониторинг продовольственной безопасности и питания в поддержку осуществления Повестки дня в области устойчивого развития на период до 2030 года* [Monitoring food security and nutrition in support of the implementation of the Agenda for sustainable development until 2030]. Rome: FAO, 2016. Available from: http://www.fao.org/3/a-i6188r.pdf
8. Food security statistics. *Food and Agriculture Organization of the United Nations* [online]. N.d. Last updated: 17 July 2020 [viewed 12 Oct. 2019]. Available from: http://www.fao.org/economic/ess/ess-fs/ess-fadata/en/#.WIT09PCLS00
9. HANSEN, T., M. SORENSEN, and M.-L. ERIKSEN. How the interplay between consumer motivations and values influences organic food identity and behavior. *Food Policy*. 2018, **74**, 39–52. Available from: https://doi.org/10.1016/j.foodpol.2017.11.003
10. HAYSOM, G. and G. TAWODZERA. Measurement drives diagnosis and response: Gaps in transferring food security assessment to the urban scale. *Food Policy*. 2018, **74**, 117–125. Available from: https://doi.org/10.1016/j.foodpol.2017.12.001
11. KOTYKOVA, O., M. BABYCH, and I. SEMENCHUK. Monitoring of food security at the regional level. *Management Theory and Studies for Rural Business and Infrastructure Development*. 2019, **41**(4), 463–473. Available from: https://doi.org/10.15544/mts.2019.37
12. LYSENKO, O. Koreliatsiinyi analiz vzaiemovplyvu pokaznykiv fizychnoi dostatnosti ta ekonomichnoi dostupnosti osnovnykh produktiv kharchuvannia. *Actual problems of the region's economy development*. 2015, **11**.

13. MOSTENSKA, T. Prodovolcha bezpeka na rivni domohospodarstv [Food security at the household level]. *Economics and social development: scientific works of NUKHT*. 2015, **21**(1).
14. ORTEGA, D. and C. WOLF. Demand for farm animal welfare and producer implications: Results from a field experiment in Michigan. *Food Policy*. 2018, **74**, 74–81. Available from: https://doi.org/10.1016/j.foodpol.2017.11.006
15. PISKUNOVA, O. Konverhentsiia dokhidnykh hrup domohospodarstv za spozhyvanniam kharchovykh produktiv yak umova posylennia prodovolchoi bezpeky [The Convergence of Profitable Groups of Households by the Consumption of Food Products as a Condition for Strengthening the Food Security]. *Biznes Inform*. 2016, (11), 116–123.
16. Statistical Yearbook of Ukraine for 2016: Statistics publication. *State Statistics Service of Ukraine* [online]. 2017 [viewed 12 Oct. 2019]. Available from: http://www.ukrstat.gov.ua/
17. SUTA, O. Riven spozhyvannia produktiv kharchuvannia v domohospodarstvakh Ternopilskoi oblasti v zalezhnosti vid dokhodiv [Level of consumption of food in households of Ternopil region depending on income]. *AgroSvit*. 2012, (4), 59–62. Available from: http://www.agrosvit.info/?op=1&z=852&i=11
18. VERKHOVNA RADA OF UKRAINE. On food security of Ukraine: The Draft Law of Ukraine No. 8370-1, 28 April 2011 [online; viewed 12 Oct. 2019]. Available from: http://w1.c1.rada.gov.ua/pls/zweb2/webproc4_2?pf3516=8370-1&skl=7
19. YATSIV, I. Otsinka variatsii rivnia ekonomichnoi dostupnosti prodovolstva [Assessment of variation in the level of economic availability of food]. *Ekonomichnyi analiz*. 2014, **15**(1), 228–236.