Problems of food security in the Russian Arctic

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Abstract. The purpose of this article is to analyse food security of the Russian Arctic regions’ inhabitants. International context consideration allows to show some contradictions in food security concept understanding, that FAO and Russian political elite have. Social disproportions in economic affordability and physical availability of food, consumer preferences and behaviour are revealed. The article addresses original empirical data, statistical regression and factor analysis to examine consumers’ behavioural features, associated with economic inaccessibility of vital food products. It is noted that families with three or more children constantly economize, not buying the necessary amount of meat and meat products, fish and seafood, fruits and berries. Research results indicate that the governmental food security policy should be adapted to the realities of Arctic region inhabitants. We pay special attention to the need to shift the food security concept from external threats and hunger to threats that local population face every day. This problem is particularly relevant for the Russian Arctic zone residents.

Keyword. Arctic, food, security, human, behavior, health, threats, production, consumption

1. Introduction
The paper is devoted to the study of human security problems in the Arctic in terms of sufficient amount of high-quality food products consumption, their physical availability and economic affordability. Specific empirical evidence is based on a results of research, conducted in Yamalo-Nenets Autonomous Okrug (Yamal, Tyumen Oblast), as one of the remote Russian Arctic regions. Research hypothesis: economic component of food security is currently decreasing.

The study of food security in Russia originates from the works of T.I. Zaslavskaya, O.E. Bessonova, S.Yu. Barsukova, Z.I. Kalugina [1]. These works show that post-Soviet market reforms, in fact, destroyed kolkhoz and sovkhoz system, resulting in oversimplification of the used agricultural technologies [2]. It led to the leaching of domestic food from the market, the emergence of huge amount of counterfeit, the imbalance between domestic and imported products. C.Y. Barsukova indicates that in the USSR, even in the most “stagnant” periods, “the consumption of such vital products as milk was unattainably higher than today” [2, p. 8]. The nutritional structure rapidly deteriorated in the 1990s. Even now, market share of low-quality products (including imported ones) is high, and it leads to a significant decrease of population health [3]. High profitability of low-quality and fake food production determines the unprofitability of high-quality food production [4].

The global concept of food security research is captured in the documents of Food and Agricultare Organization of the United Nations (FAO) [5].

The majority of food security-related studies are traditionally rarely focused on nutrition as their main goal or main concern (Allen and de Brauw, [6]; Poole et al. [7]; Thow et al. [8]). However, the two concepts of food and nutrition security, are interlinked and overlap (Bilali El [9]), which was officially
reaffirmed in the high-level 2009 Declaration of the World Summit [10]. In its 2019 report, the FAO draws attention to the fact that, in addition to the problems of hunger, food shortages and malnutrition, the threats of overweight and obesity are expanding in the world [11]. The food security conception development in Europe, its successes, failures and new challenges in the context of globalization are considered by Schroeder and Meyers et al. [12]. In 2018, W. Meyers and T. Joslin published a credible and comprehensive guide on international food and agricultural policy, which is crucial for those willing to contribute to implementation of food and agricultural policies around the world [13]. Russia is also developing a concept of food security, as well as food policy, which is defined as a way of governmental influence on production and distribution of food [14].

In 2008, the Government of Russia developed a conception for ensuring food security. Main principles, presented in documents, are fully consistent with FAO conception: necessity for physical and economic access to food at any time and any place and quality of food. Russian government is actively cooperating with FAO [https://rusfao.mid.ru/11]. Special sections of statistical reports can be found on official website [https://www.gks.ru/itog_inspect], including population’s food intake, Arctic region as a whole, and monitoring the Sustainable Development Goals achievement.

However, the analysis of program documents’ objectives demonstrates that the government is mainly focused on the development of import substitution, which is not in line with the stated goals. The documents were valid for 2010-2020, and main indicators, presented there, were reached by 2018 [http://government.ru/news/27338/].

Many experts associate the fast successes of the 2008 Russian food security program with the policy of sanctions and anti-sanctions [14]. Deliveries of European products to Russia from 2013 to 2018 fell by almost half. But Russian consumers lost from such a policy, as the share of spending on food in the expenditures grew in different groups of products by 40-60%. In addition, the share of counterfeit dairy products and the shadow turnover of fruits and berries increased.

The updated doctrine of food security in Russia was presented by the Ministry of Agriculture in March 2019 [http://government.ru/docs/36055/]. The changes mainly concern the assessment system. The officials turned from import substitution to discussing export opportunities, monitoring the ratio of domestic food production with population’s consumption. Such an approach is still determined by understanding through the country's security in the face of possible external threats: sanctions and trade wars, various conflicts, crises in economy and agriculture. Nevertheless, in our opinion, these documents are still far from comprehension and disclosure of deep problems. From our point of view, the conception of food security in Russia, even in its updated version, needs to be revised.

P. Fauchald et al. point out the ways to ensure food security in the Arctic regions under external factors pressure (such as global warming) through the change in food consumption and land cultivating culture, development of local commercial food markets, and self-organization [15].

In psychological tradition, social factors and food consumption were studied by W. Kjaernes U. and L. Holm [16]. Psychological aspects of products choice from the side of risk, profit and trust perception were examined by de Jonge J. et al. [17]. Quality and attitude towards semi-finished products were investigated by K.G Grunert [18]. Psychological studies reveal that criteria for choosing products are different in various cultures and social groups; they also indicate the variation in consumer dynamic. Food safety and quality as central issues of food security were considered in the works of E.L. Baum et al. [19], P. Quintanilla et al. [20].

Threats to food security in the Arctic are exacerbated by the fact that human activities in this region themselves can disrupt ecosystem resilience. Most food security research focus on formal systems, establishing private models of influence. For example, K. E. Hudelson et al. [21] attempted to mathematically model the effects of climate warming and quicksilver on Arctic ecosystems (on the example of Canada), considering threats to fish harvest in the food security system. However, they were not able to obtain sustainable system responses, and food security itself was only mentioned, but not modeled.

For example, paper [22] presents an approach for the analysis of rural areas’ socio-economic development in Russian Arctic. Authors define rural territories development through the increase of potential for human development, which is reflected by changes in variables, presenting different
spheres of human activity. The issue of preserving and protecting forests in the face of increasing human activity is examined. Irrational human activity and fires leads to deforestation. The article briefly considers the process of degradation of forest resources in the global economy [23]. This study explores the long-run interdependence between deforestation and human activity.

The paper [24] analyzes what factors of human behavior lead to a change in freshwater resources on the planet. The aim is to create a model which will show the relations between the changes in fresh water reserves and human behavior.

Food security of the Arctic inhabitants is mainly studied by scholars using examples of indigenous people (natives) of Alaska and northern Canada; for example, [25-28]. From a methodological point of view, quantitative modeling by E. Whitney et al. [25] seems extremely interesting. A research team from University of Alaska presented a numerical simulation of the assessment of direct links between food sources and food products, called FEW (food-energy-water) in the Cordoba fishery community (North Alaska, the USA). R.W Orttung et al. showed the most effective mechanisms for collaboration between scholars and politicians to incorporate public opinion into food security policies, using the community of Fairbanks as an example [26]. A study of traditional management practices (fishing) in the remote Arctic territories of Canada can be found in M.-J. Roux et al. [27]. Canadian scholars use the method of in-depth interviews with fishermen, revealing the level of their ecological knowledge and how they perceive the stocks of Arctic char (as a traditional source of nutrition for the community); further, researchers modelled its impact on the vulnerability of fishing activity based on weighted data from individual interviews.

The conception of food security through wildlife management in Nunavut, Canada, was introduced by D. Lysenko & S. Schott [28]. Local communities became objects of micro-level observation, rather than households, which are usually the case in socio-economic observations. Research interest is focused on traditional indigenous knowledge, on explaining how social, cultural, and material conditions are interconnected, and what are the transformations that lead to changes in the diet and lifestyle of northern indigenous communities.

Russian researchers, for example, N. Shagayda and V. Uzun, having analyzed official reports, demonstrated distortions in Russia's food security assessment. It is noted that full satisfaction of population’s needs in meat and meat products is achieved by increasing consumption of cheaper, but less healthy and even harmful products [4, p. 27-38, p.76]. Poor, fake products constitute a real threat to humans. This is especially true for remote Arctic regions. In the Arctic, food is mainly imported; and high-quality products often become unavailable due to expensive delivery and therefore price, which results in the decrease of food security economic component. Sometimes food is physically inaccessible, or its assortment is insufficient. In remote regions, market failures can have tragic consequences. As an example, we point out the events of the winter of 2019, when many inaccessible villages of Yamal were left without bread, and flour https://fedpress.ru/news/89/society/2178339 (01/17/2019).

Our literature review and analysis confirms the theme relevance. The conclusion novelty is determined by relying on unique author's empirical data and the choice of the research object.

2. Method
In our work, we rely on FAO’s conception of food security/insecurity, which examines various aspects of the consumption of a sufficient amount of high-quality food products, as well as their physical and economic availability [10-11]. There is no empirical data for Arctic region in scientific literature. Our research is aimed at filling the lack of empirical studies’ results, which provide practical implementation for the Russian Arctic.

Russian statistical observations are very rare, and their results are not representative for the region. The survey methodology is developed by the authors and does not repeat FAO’s. In the future, we plan to assess the possibilities of using known techniques for a comparative analysis of results. Empirical data were obtained during the mass survey «Food Security of Residents of Yamalo-Nenets Autonomous Okrug of Tyumen Oblast (Russia)», which was conducted in April-June 2018. The sample represents the population of Yamal by sex and age structure and territory of residence. A total
of 1,640 people from 18 to 80 years old were surveyed (66.3% urban and 33.7% rural residents). The used questions are given in Appendix A.

3. Results

3.1. The assessment of physical accessibility of food products
We assessed the physical accessibility of food products based on the answers to question 1, Appendix A. Estimates of food sales infrastructure are quite high, as 68% of respondents expressed satisfaction. Satisfaction of rural residents with infrastructure of food sales is 60%, while urban residents express slightly higher satisfaction (72%). 11% of region’s inhabitants claim that products’ assortment is insufficient (10% for urban and 12% for rural). In total, 14% of rural residents and 6% of city dwellers state dissatisfaction with prices in shops and outlets.

Further, we examined how often people buy food in stores based on the answers to question 5, Appendix A. The data for the entire region and for rural/urban residents are given in Table 1 of Appendix B. Four groups of products, constituting consumer basket, were defined, according to how often people buy them.

The first group (above 70%) forms the basis of daily purchases; bread and milk (sour-milk) products were bought by 92% and 76% of respondents in the last 7 days, respectively. These are products that people buy almost daily. Other products are significantly behind in frequency of purchases.

The second group (60-40%) also forms the basis of food basket, given the longer storing period. This is chicken (or other poultry products), tea, coffee, cocoa, sausages, smoked meats, pasta, fresh tomatoes, cucumbers, fresh fruits, berries, pastries, cottage cheese and curd products, cheese, feta cheese, butter, cereals, soft drinks, juices, mineral water. These products are bought at least once every two weeks.

The third group (40-20%) can be conditionally characterized as monthly purchase products. This group includes: vegetable oil, drinking water, onions, garlic, flour, potatoes, pork, nuts, seeds, vegetables, fish, alcoholic beverages.

The fourth group occupies less than 20% of the weekly shopping audience. This group can be conditionally characterized as goods of not regular purchase; or not-for-all (segmented) purchase. The fourth group included beef, veal, ready-made cooking: for example, salads, meatballs, pizza, etc.; semi-finished products (not including meat and fish): for example, dough, dumplings, salted or smoked canned fish, canned vegetables, canned meat, other seafood, canned fruits and berries, lamb.

3.2. The assessment of economic affordability of food products
Analysis of the main indicators of Yamal socio-economic situation showed that, over the last five years, food prices have been constantly growing, often ahead of Russian average. Beef, pork, bread, tea became especially more expensive (see https://www.gks.ru/itog_inspect). But at the same time, revenues grew, reflecting inflationary processes. Subjective indicators of the economic affordability of food were self-assessment of individual’s consumer behavior and regime of economizing on food.

The psychological readiness to economize on food was studied by respondents’ answers to question 2, Appendix A.

In the analysis, we summarized %, indicating three main economizing regimes:

- strong economizing (the sum of options «We practically do not buy because we save money» + «We rarely buy this type of product, as we have to save»);
- economizing in one form or another, or soft economizing (the sum of the options «We practically do not buy because of savings» + «We rarely buy this type of product, as we have to save» + «Usually we buy this type of product, but sometimes we have to save»);
- no purchasing restrictions, no need for saving.

According to sociological observations, Arctic region residents are not psychologically inclined to economize on food. The proportion of people, constantly saving on food products, is low (about 7% of the sample). 34% of respondents answered that they never save on food, another 21% said they sometimes do it, and 8% always economize or buy what’s cheaper. However, the dominant strategy of
Arctic region inhabitants is «we usually don’t save on food, but we don’t buy some products, because they are too expensive» (37% of respondents), Table 2, Appendix B. Note that rural residents consider themselves somewhat more protected, since they often provide themselves with the most necessary products on their own.

What products do people in the Arctic region tend to economize on? We conducted a more specific analysis based on the answers to question 3, Appendix A. The data are given in Table 3, Appendix B. First of all, some comments should be made here. In addition to structure, quality and volume (necessary for survival and raising healthy offspring) of nutrition, there are a number of other factors. People will buy/not buy food depending on their cultural, psychological, social and individual preferences. This shows the needs of people, and these needs have little to do with changes in the economic situation. In this context, scholars usually address culturally and socially conditioned needs. Therefore, the feeling of economizing on specific foods arises in one’s mind only if there is a need for this product.

There are a number of psychologically and culturally determined components of food basket contents of Russians in general, and Arctic region residents in particular. People practically do not economize on bread, milk, eggs, and groceries. About 6% of Arctic residents slightly economize on bread, 11% – on dairy products, 13% – on eggs, and 14% – on the groceries. These products should be attributed to the first group as socially and culturally necessary products. We can say that, even with a decrease in the economic affordability of all products, people are more likely to continue buying bread, milk, groceries, and prepare food based on these products at home in any case, economizing more strictly on other products.

The remaining products should be attributed to the second group. About a third of respondents economize in one way or another (soft saving regime) on butter, cheeses (24%), confectionery (31%), meat and meat products (30-35%); vegetables grown in open ground (26%) and in the greenhouse (33%), fruits and berries (37%). People save or rarely buy sausages, smoked meats, fish and seafood, alcoholic and non-alcoholic drinks (40-45%). Arctic region inhabitants strongly economize on sausages (13%), fish and seafood (18%), soft drinks (33%), and alcoholic drinks (26%).

The absence of necessity to economize on food was calculated by the sum of answers «We never save on food, we can afford to buy any product» (when answering question 2), and «We buy as much as necessary» (when answering question 3). These are the last two columns in Table 3, Appendix B. The sum of values for the first three columns of Table 3, Appendix B represents, to some extent, economically inaccessible products; for example, about 6% of Yamal population cannot buy bread. It can be said that food, in some degree, is economically inaccessible for more than a third of Arctic region inhabitants. This concerns such important products as vegetables, fruits, berries, fish and seafood, meat and meat products, poultry and processed products.

Who economizes on food more often than others? According to the results of our research, in 2018, families with three or more children significantly more often experienced strong economizing regime, than the sample average: 24% – meat and meat products; 19% – poultry meat and processed products; 26% – sausages; 41% – fish and seafood; 21% – butter, cheeses; 30% – fruits and berries, 30% – vegetables.

People over 35 years are much more likely to save on food than young people. This conclusion applies to all products except fish and drinks. Note that local fish products are often more accessible to residents of the Arctic region. In rural areas and for indigenous people, fish products constitute the basis of food basket.

Alcoholic beverages do not fit into general patterns. The proportion of people, who often or constantly buy alcohol and are not inclined to save on it, is about 20% of the sample, and this is a very high proportion.

4. Discussion

Our results show that bread, milk and groceries constitute the basis of food basket. It is important to note that there is practically no difference in the purchase frequency of products from the «tail» of needs. It means that people do not buy or rarely buy these products not because of economizing, but because they purchase them for a long period, or just do not want to. This group includes both
products necessary for a healthy diet (for example, more valuable types of meat, fish and seafood), as well as semi-finished and canned products. Socio-economic situation affects the affordability of food, but does not change the ranks of purchase frequency. The most significant socio-economic problem was a sharp decline in important foods consumption for families with three or more children. Moreover, it is clearly seen that the more children family has, the lower purchase frequency of relatively expensive food gets.

The basis of food basket of families with three or more children (in descending rank order) consists of: bread (90%); milk and dairy products (69%); fresh tomatoes and cucumbers (54%); pasta (52%); tea, coffee, cocoa (51%); chicken or another poultry (50%); sausages and smoked meats (50%); cereal (49%). In fact, people choose cheaper products because of economizing; this is especially noticeable in a decrease of purchase frequency of such nutritious and valuable products as cottage cheese and curd products, fresh fruits and berries, and the increase of potatoes and flour share.

The lowest purchase frequency of milk and dairy products, chicken and other poultry, tea, coffee, cocoa, beef and veal resists in a group of families with three or more children. Furthermore, these families are much more likely to buy cereals, flour, potatoes and other root crops, which, in fact, speaks of apparent economizing and the replacement of nutritious food with products less expensive and less valuable for a healthy diet.

There are a number of positive trend, too. First, a gradual modernization of population food needs’ structure is noted. Young people’s food needs have become more modern, but the differences are still small. For young people, the priority shifted from bread, cereals and pasta to milk and dairy products, chicken or other poultry, fresh tomatoes, cucumbers, fruits and berries, drinks of all kinds. Secondly, the consumption of alcohol is reducing. The purchase frequency of drinks, both alcoholic and non-alcoholic, decreases with the growth of respondent age. The purchase frequency for the non-alcoholic beverages segment is 55% and 45% in groups of 18-24 and 25-44, respectively; and 29% in group of 55+. The purchase frequency for the segment of alcoholic beverages is 25-26% in group of 18-34 and 14-15% in group of 55+.

Some paradoxes should be noted, reflecting rather cultural characteristics than socio-economic situation. Research results allowed us to define foods, which people believe they are forced to economize on, but these products are in the second (regular) group of purchases: sausages, fish, drinks and alcohol. As it is seen, the group contains both necessary and «healthy» fish and soft drinks, as well as products that should not be bought too often: sausages and alcohol. Nevertheless, this cannot be healthy if people economize on fresh meat and replace it with sausages and other cheap semi-finished products.

The remaining products from the second group are characterized by respondents as «soft economizing», but this is not a complete range of products necessary to maintain a normal diet. There are a number of products on which many people save a lot of money (see Tables 3-5), and they fell into the third group goods (not regular or segmented purchases). This is the most disturbing group of products, it includes such important products as beef and lamb, seafood and semi-finished seafood.

Table 5 shows that the hierarchy of food purchases in cities and rural settlements is, as expected, significantly different. The basis of the grocery basket of rural residents consists of (in descending rank order): bread (94%); milk and dairy products (70%); tea, coffee, cocoa (63%); pasta (58%); chicken or another poultry (56%); sausages and smoked meats (55%); confectionery (49%); cereals (48%). The basis of the city’s food basket consists of: bread (92%); milk and dairy products (79%); chicken or another poultry (61%); tea, coffee, cocoa (57%); fresh tomatoes, cucumbers (54%); sausages and smoked meats (54%); fresh fruits and berries (50%), cottage cheese, curd products (49%); pasta (49%). The minimal difference between city and village in the purchase frequency of alcohol should also be mentioned.

5. Conclusion
A number of conclusions important for further research, based on the results of our work, should be drawn.
Structural features of grocery stores’ target audience are mainly determined by income and age. There is a number of settlements (covering more than 50% of inhabited territory, but less than 10% of population), in which the physical availability of food is insufficient.

Residents of the Arctic region are not inclined to economize on food. The desire not to do so is more characteristic of middle-aged people with average and above average income. 15% of those who are 65 and older always save on food; 11% of those who are from 55 to 65 years old do it as well. Given the features of Russian consumer, those who economize on bread and milk are the least wealthy.

In one form or another, 6% of respondents economize on bread, 11% – on dairy products, 13% – on eggs, 14% – on groceries.

About a third of the Arctic region inhabitants softly economize on butter, cheese (24%), confectionery (31%), meat and meat products (30-35%), vegetables (30%), fruits and berries (37%).

Strong economizing on sausages and smoked meats is peculiar for 13% of respondents, on fish and seafood for – 18%, on soft drinks for – 33%. Beyond that, people economize less on alcoholic beverages than on meat and meat products (26% versus 30-35%).

The most influential factor for food economizing regime is family type. Families with three or more children are much more likely to save money on vital products such as meat and meat products, fish and seafood, butter, cheeses, fruits and berries, and vegetables.

Despite the fact that the majority of each social group representatives (more than 55%) prefer raw products, the proportion of those who choses semi-finished food quickly grows with a decrease in income. The poorer the person, the more often he prefers to buy convenience foods.

Thus, in order to accumulate human capital, the authorities should pay special attention to 1) support of families with three or more children nutrition; 2) more active promotion of healthy nutrition, improving food literacy; 3) development of food sales infrastructure in rural areas, support for remote territories.

In the future, we plan to research the transformation of consumer behavior on food under global changes and in the context of ensuring sustainability in Yamal, as one of the remote and very important territories of Russian Arctic.

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7. References

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8. Appendix

Appendix A.

1. Do you think there are enough food stores and outlets in the district where you live or work?
   1. Yes, enough
   2. Yes, there are enough outlets and stores, but product assortment does not satisfy me
   3. Yes, there are enough outlets and stores, but I am not satisfied with quality of food they sell
   4. Yes, there are enough outlets and stores, but prices do not suit me
   5. No, there are not enough outlets and stores

2. Which of the following statements do you most agree with?
   1. We never economize on food; we can afford any product we want
   2. We usually don’t economize on food, but we don’t buy some products, because they are too expensive
   3. We sometimes economize on food
   4. We always economize on food, buy the cheaper products

3. If answering the previous question, you chose 2, 3 or 4, then, please, indicate which products this refers to? (ONE OPTION FOR EVERY LINE)

| Product Type | 1 | 2 | 3 | 4 |
|--------------|---|---|---|---|
| Bread and bakery products | 4 | 3 | 2 | 1 |
| Confectionery | 4 | 3 | 2 | 1 |
| Groceries (flour, cereals, etc.) | 4 | 3 | 2 | 1 |
| Meat and meat products (except poultry) | 4 | 3 | 2 | 1 |
| Poultry meat, processed products | 4 | 3 | 2 | 1 |
| Sausages, smoked meats | 4 | 3 | 2 | 1 |
| Fish and seafood | 4 | 3 | 2 | 1 |
| Eggs | 4 | 3 | 2 | 1 |
| Dairy products | 4 | 3 | 2 | 1 |
| Butter, cheeses | 4 | 3 | 2 | 1 |
| Fruits and berries | 4 | 3 | 2 | 1 |
| Vegetables grown in a greenhouse | 4 | 3 | 2 | 1 |
| Alcoholic drinks | 4 | 3 | 2 | 1 |
| Soft drinks | 4 | 3 | 2 | 1 |
4. Please indicate which of the following foods you and your family members bought in the last 7 days?

|   |                                                            |     |     |     |
|---|------------------------------------------------------------|-----|-----|-----|
| 1 | Bread                                                      | 18  | 19  | 19  |
| 2 | Cereal                                                    | 19  | 20  | 20  |
| 3 | Flour                                                     | 20  | 21  | 21  |
| 4 | Pasta                                                     | 21  | 22  | 22  |
| 5 | Potatoes                                                  | 22  | 23  | 23  |
| 6 | Beets, carrots, root vegetables, cabbage                  | 23  | 24  | 24  |
| 7 | Fresh tomatoes, cucumbers                                 | 24  | 25  | 25  |
| 8 | Onion garlic                                              | 25  | 26  | 26  |
| 9 | Fresh fruits and berries                                  | 26  | 27  | 27  |
|10 | Nuts, seeds                                               | 27  | 28  | 28  |
|11 | Canned vegetables                                         | 28  | 29  | 29  |
|12 | Canned Fruits and Berries                                 | 29  | 30  | 30  |
|13 | Beef, veal                                                | 30  | 31  | 31  |
|14 | Lamb                                                      | 31  | 32  | 32  |
|15 | Pork                                                      | 32  | 33  | 33  |
|16 | Chicken or other bird                                     | 33  | 34  | 34  |
|17 | Canned meat, semi-finished products                       | 34  | 35  | 35  |

Appendix B.

Table 1. Answers to the question 4 «Please mark which of the listed food products did you and your family buy in the last 7 days?», % of respondents in urban and rural settlements, and in the sample as a whole

| Settlement type                                           | Rural | Urban | As a whole |
|-----------------------------------------------------------|-------|-------|------------|
| The first group (above 70%)                               |       |       |            |
| Bread                                                     | 94    | 92    | 92         |
| Milk and Dairy Products                                   | 70    | 79    | 76         |
| The second group (60-40%)                                 |       |       |            |
| Chicken or other poultry                                  | 56    | 61    | 59         |
| Tea, Coffee, Cocoa                                        | 63    | 57    | 59         |
| Sausages, smoked products                                 | 55    | 54    | 54         |
| Pasta                                                     | 58    | 49    | 52         |
| Fresh tomatoes, cucumbers                                 | 44    | 54    | 51         |
| Fresh fruits and berries                                  | 43    | 50    | 48         |
| Confectionery                                             | 49    | 47    | 48         |
| Cottage cheese, curd products                             | 40    | 49    | 46         |
| Cheese, feta cheese                                       | 41    | 45    | 44         |
| Cereals                                                   | 48    | 38    | 41         |
| Butter                                                    | 38    | 43    | 41         |
| Soft drinks, juices, mineral water                        | 35    | 44    | 41         |
| The third group (40-20%)                                  |       |       |            |
| Vegetable oil                                             | 39    | 31    | 34         |
| Drinking water                                            | 25    | 36    | 32         |
| Onion, garlic                                             | 22    | 36    | 31         |
| Flour                                                     | 34    | 27    | 29         |
| Potatoes                                                  | 19    | 35    | 29         |
| Pork                                                      | 21    | 27    | 25         |
| Nuts, seeds                                               | 22    | 24    | 24         |
| Beets, carrots, root vegetables, cabbage                  | 14    | 28    | 23         |
| Fresh, frozen fish                                        | 22    | 22    | 22         |
| Alcoholic drinks                                          | 19    | 22    | 21         |
The fourth group (less than 20%) - “tail of needs”

| Product Type                                                                 | Percentage Less than 20% |
|------------------------------------------------------------------------------|--------------------------|
| Beef, veal                                                                    | 12                       |
| Ready-made cooking - for example, salads, meatballs, pizza, etc.              | 14                       |
| Semi-finished products, not including meat and fish, e.g. dough, dumplings   | 18                       |
| Smoked fish                                                                  | 17                       |
| Canned vegetables                                                            | 10                       |
| Canned meat, semi-finished products                                          | 11                       |
| Canned fish                                                                  | 11                       |
| Canned Fruits and Berries                                                   | 7                        |
| Other seafood                                                                 | 7                        |
| Lamb                                                                         | 6                        |
| Total responded, number of people                                           | 539                      |

Table 2. Answers to question 2 «Which of the following statements do you most agree with?», depending on settlement type and age, %

| Products                          | 1 We never economize on food; we can afford any product we want | 2 We usually don’t economize on food, but we don’t buy some products, because they are too expensive | 3 We sometimes economize on food | 4 We always economize on food, buy the cheaper products | In total |
|-----------------------------------|-----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|---------------------------------|--------------------------------------------------------|---------|
| Sample total                      | 34                                                              | 37                                                                                                 | 21                              | 8                                                      | 100     |
| Settlement type                   | Urban                                                           | Rural                                                                                             |                                 |                                                        |         |
|                                  | 27                                                              | 36                                                                                                 | 23                              | 10                                                     | 100     |
| Age                               | 18-24                                                           | 31                                                                                                 | 42                              | 24                                                     | 3       |
|                                  | 25-34                                                           | 37                                                                                                 | 36                              | 22                                                     | 5       |
|                                  | 35-44                                                           | 37                                                                                                 | 35                              | 22                                                     | 6       |
|                                  | 45-54                                                           | 36                                                                                                 | 38                              | 18                                                     | 8       |
|                                  | 55-64                                                           | 32                                                                                                 | 35                              | 22                                                     | 11      |
|                                  | 65+                                                             | 27                                                                                                 | 39                              | 19                                                     | 15      |

Table 3. The structure of answers to question 3 «If the answer to the previous question was 2, 3 or 4, then what products does this apply to?», %

| Products                          | Almost do not buy because of savings | We rarely buy this type of product, we have to save | Usually we buy this type of product, but sometimes we have to save | We buy as much as necessary | No answer | In total |
|-----------------------------------|--------------------------------------|-----------------------------------------------------|-----------------------------------------------------------------|----------------------------|-----------|---------|
| 1. Bread and bakery products      | 0.5                                  | 0.5                                                 | 5                                                                | 56                         | 38        | 100     |
| 2. Confectionery                  | 2                                    | 8                                                   | 21                                                               | 31                         | 38        | 100     |
| 3. Groceries (flour, cereals, etc.) | 0                                    | 3                                                   | 11                                                               | 47                         | 39        | 100     |
| 4. Meat and meat products (except poultry) | 2                                    | 8                                                   | 25                                                               | 27                         | 38        | 100     |
| 5. Poultry meat, processed products | 2                                    | 5                                                   | 23                                                               | 31                         | 39        | 100     |
| 6. Sausages, smoked meats         | 3                                    | 10                                                  | 29                                                               | 20                         | 38        | 100     |
| 7. Fish and seafood               | 4                                    | 14                                                  | 28                                                               | 18                         | 36        | 100     |
| 8. Eggs                           | 1                                    | 2                                                   | 8                                                                | 50                         | 39        | 100     |
| 9. Dairy products                 | 1                                    | 2                                                   | 8                                                                | 50                         | 39        | 100     |
| 10. Butter, cheeses               | 1                                    | 5                                                   | 18                                                               | 33                         | 43        | 100     |
| 11. Fruits and berries            | 2                                    | 9                                                   | 26                                                               | 25                         | 38        | 100     |
Table 4. The structure of answers question 3 «If the answer to the previous question was 2, 3 or 4, then what products does this apply to?», depending on respondent’s age, %

| Age | Almost do not buy because of savings | We rarely buy this type of product, we have to save | Usually we buy this type of product, but sometimes we have to save | We buy as much as necessary | No answer | In total |
|-----|-------------------------------------|-----------------------------------------------|-------------------------------------------------|----------------------------|------------|----------|
| 4. Meat and meat products (except poultry) | 18-24 | 2 | 10 | 38 | 45 | 5 | 100 |
| | 25-34 | 2 | 12 | 40 | 42 | 4 | 100 |
| | 35-44 | 2 | 12 | 36 | 46 | 4 | 100 |
| | 45-54 | 5 | 17 | 38 | 36 | 4 | 100 |
| | 55-64 | 3 | 10 | 40 | 40 | 7 | 100 |
| | 65+ | 5 | 14 | 39 | 39 | 3 | 100 |
| 5. Poultry meat, processed products | 18-24 | 2 | 7 | 34 | 54 | 3 | 100 |
| | 25-34 | 2 | 7 | 34 | 54 | 3 | 100 |
| | 35-44 | 3 | 7 | 31 | 53 | 6 | 100 |
| | 45-54 | 3 | 14 | 34 | 44 | 5 | 100 |
| | 55-64 | 2 | 7 | 38 | 46 | 7 | 100 |
| | 65+ | 4 | 11 | 39 | 43 | 3 | 100 |
| 6. Sausages, smoked meats | 18-24 | 2 | 14 | 45 | 34 | 5 | 100 |
| | 25-34 | 3 | 15 | 40 | 38 | 4 | 100 |
| | 35-44 | 4 | 14 | 50 | 27 | 5 | 100 |
| | 45-54 | 5 | 16 | 45 | 30 | 4 | 100 |
| | 55-64 | 4 | 18 | 40 | 32 | 6 | 100 |
| | 65+ | 7 | 19 | 46 | 25 | 3 | 100 |
| 7. Fish and seafood | 18-24 | 7 | 14 | 45 | 30 | 4 | 100 |
| | 25-34 | 5 | 21 | 43 | 27 | 4 | 100 |
| | 35-44 | 4 | 24 | 44 | 24 | 4 | 100 |
| | 45-54 | 3 | 24 | 40 | 30 | 3 | 100 |
| | 55-64 | 6 | 22 | 36 | 28 | 8 | 100 |
| | 65+ | 9 | 19 | 40 | 29 | 3 | 100 |
| 10. Butter, cheeses | 18-24 | 2 | 7 | 28 | 58 | 5 | 100 |
| | 25-34 | 2 | 7 | 28 | 58 | 5 | 100 |
| | 35-44 | 1 | 5 | 30 | 58 | 6 | 100 |
| | 45-54 | 1 | 8 | 34 | 52 | 5 | 100 |
| | 55-64 | 2 | 10 | 31 | 50 | 7 | 100 |
| | 65+ | 4 | 8 | 26 | 58 | 4 | 100 |
| 11. Fruits and berries | 18-24 | 4 | 9 | 39 | 44 | 4 | 100 |
| | 25-34 | 3 | 14 | 36 | 42 | 5 | 100 |
| | 35-44 | 3 | 11 | 47 | 34 | 5 | 100 |
| | 45-54 | 4 | 14 | 38 | 39 | 5 | 100 |
| | 55-64 | 4 | 16 | 40 | 34 | 6 | 100 |
| | 65+ | 5 | 16 | 38 | 38 | 3 | 100 |
| 12. Vegetables in the ground | 18-24 | 7 | 9 | 41 | 37 | 6 | 100 |
| | 25-34 | 5 | 11 | 34 | 44 | 6 | 100 |
| | 35-44 | 6 | 13 | 38 | 37 | 6 | 100 |
| | 45-54 | 6 | 13 | 30 | 46 | 5 | 100 |
| Settlement type | Almost do not buy because of savings | Usually buy this type of product, but we have to save | We rarely buy this type of product, we have to save | We buy as much as necessary | No answer | In total |
|----------------|-----------------------------------|--------------------------------|--------------------------------|----------------------------|------------|---------|
| **4. Meat and meat products (except poultry)** | | | | | | |
| Rural          | 4                                 | 10                              | 36                              | 39                          | 11              | 100     |
| Urban          | 8                                 | 13                              | 30                              | 45                          | 4               | 100     |
| **5. Poultry meat, processed products** | | | | | | |
| Rural          | 18-24                             | 16                              | 17                              | 33                          | 29              | 5       |
| Urban          | 25-34                             | 16                              | 24                              | 29                          | 26              | 5       |
| **6. Sausages, smoked meats** | | | | | | |
| Rural          | 35-44                             | 22                              | 24                              | 22                          | 25              | 7       |
| Urban          | 45-54                             | 25                              | 23                              | 27                          | 20              | 5       |
| **7. Fish and seafood** | | | | | | |
| Rural          | 55-64                             | 25                              | 18                              | 19                          | 30              | 8       |
| Urban          | 65+                               | 28                              | 19                              | 23                          | 26              | 4       |
| **13. Alcoholic beverages** | | | | | | |
| Rural          | 18-24                             | 16                              | 17                              | 33                          | 29              | 5       |
| Urban          | 25-34                             | 16                              | 24                              | 29                          | 26              | 5       |
| **14. Soft drinks** | | | | | | |
| Rural          | 35-44                             | 22                              | 24                              | 22                          | 25              | 7       |
| Urban          | 45-54                             | 25                              | 23                              | 27                          | 20              | 5       |
| **10. Butter, cheeses** | | | | | | |
| Rural          | 18-24                             | 16                              | 17                              | 33                          | 29              | 5       |
| Urban          | 25-34                             | 16                              | 24                              | 29                          | 26              | 5       |
| **11. Fruits and berries** | | | | | | |
| Rural          | 35-44                             | 22                              | 18                              | 19                          | 30              | 8       |
| Urban          | 45-54                             | 25                              | 18                              | 19                          | 30              | 8       |
| **12. Vegetables in the ground** | | | | | | |
| Rural          | 55-64                             | 25                              | 18                              | 19                          | 30              | 8       |
| Urban          | 65+                               | 28                              | 19                              | 23                          | 26              | 4       |

**Table 5.** The structure of answers question 3 «If the answer to the previous question was 2, 3 or 4, then what products does this apply to?», depending on settlement type, %
Table 6. The structure of answers question 3 «If the answer to the previous question was 2, 3 or 4, then what products does this apply to?», depending on family type, %

| Family type                  | Almost do not buy because of savings | Usually we buy this type of product, but we have to save | We buy as much as necessary | No answer | In total |
|------------------------------|--------------------------------------|--------------------------------------------------------|----------------------------|-----------|---------|
| 4. Meat and meat products (except poultry) |                                     |                                                        |                            |           |         |
| No children                  | 4                                    | 13                                                     | 40                         | 4         | 100     |
| One child                    | 2                                    | 11                                                     | 39                         | 7         | 100     |
| Two children                 | 2                                    | 10                                                     | 39                         | 3         | 100     |
| Three and more children      | 2                                    | 22                                                     | 27                         | 10        | 100     |
| 5. Poultry meat, processed products |                                     |                                                        |                            |           |         |
| No children                  | 3                                    | 7                                                      | 38                         | 4         | 100     |
| One child                    | 2                                    | 11                                                     | 31                         | 6         | 100     |
| Two children                 | 3                                    | 6                                                      | 36                         | 4         | 100     |
| Three and more children      | 2                                    | 17                                                     | 32                         | 9         | 100     |
| 6. Sausages, smoked meats    |                                     |                                                        |                            |           |         |
| No children                  | 4                                    | 16                                                     | 42                         | 33        | 100     |
| One child                    | 4                                    | 16                                                     | 46                         | 29        | 100     |
| Two children                 | 5                                    | 12                                                     | 51                         | 29        | 100     |
| Three and more children      | 8                                    | 18                                                     | 43                         | 21        | 100     |
| 7. Fish and seafood          |                                     |                                                        |                            |           |         |
| No children                  | 7                                    | 20                                                     | 39                         | 30        | 100     |
| One child                    | 4                                    | 19                                                     | 47                         | 24        | 100     |
| Two children                 | 2                                    | 22                                                     | 46                         | 27        | 100     |
| Three and more children      | 6                                    | 35                                                     | 29                         | 19        | 100     |
| 10. Butter, cheeses          |                                     |                                                        |                            |           |         |
| No children                  | 2                                    | 8                                                      | 30                         | 55        | 100     |
| One child                    | 2                                    | 6                                                      | 29                         | 55        | 100     |
| Two children                 | 1                                    | 5                                                      | 27                         | 64        | 100     |
| Three and more children      | 4                                    | 17                                                     | 37                         | 31        | 100     |
| 11. Fruits and berries       |                                     |                                                        |                            |           |         |
| No children                  | 4                                    | 13                                                     | 39                         | 40        | 100     |
| One child                    | 4                                    | 12                                                     | 41                         | 37        | 100     |
| Two children                 | 2                                    | 13                                                     | 42                         | 40        | 100     |
| Three and more children      | 6                                    | 24                                                     | 31                         | 29        | 100     |
| 12. Vegetables in the ground |                                     |                                                        |                            |           |         |
| No children                  | 8                                    | 11                                                     | 34                         | 42        | 100     |
| One child                    | 3                                    | 12                                                     | 36                         | 39        | 100     |
| Two children                 | 5                                    | 8                                                      | 35                         | 48        | 100     |
| Three and more children      | 2                                    | 29                                                     | 29                         | 27        | 100     |
| 13. Alcoholic beverages      |                                     |                                                        |                            |           |         |
| No children                  | 23                                   | 18                                                     | 26                         | 28        | 100     |
| One child                    | 16                                   | 26                                                     | 31                         | 20        | 100     |
| Two children                 | 18                                   | 26                                                     | 24                         | 28        | 100     |
| Three and more children      | 34                                   | 25                                                     | 8                          | 23        | 100     |
| 14. Soft drinks              |                                     |                                                        |                            |           |         |
| No children                  | 36                                   | 19                                                     | 17                         | 22        | 100     |
| One child                    | 27                                   | 23                                                     | 21                         | 22        | 100     |
| Two children                 | 32                                   | 19                                                     | 21                         | 23        | 100     |
| Three and more children      | 20                                   | 18                                                     | 25                         | 26        | 100     |