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**EXPENDITURE ON FOOD AND FOOD CONSUMPTION  
IN HOUSEHOLDS IN POLAND DURING  
THE COVID-19 PANDEMIC**

Key words: households, food, consumption, expenditures, COVID-19 pandemic, Poland

**ABSTRACT.** The COVID-19 pandemic influenced many areas of human life, one of those areas is expenditure on food and food consumption in households. The paper aims to identify changes in household expenditure on food and food consumption in Poland in the span of the COVID-19 pandemic. The analysis covers the period from 2015 to 2021 (2022 when available). Based on data from Statistics Poland, percentage changes of nominal and real values as well as shares were presented. The results show that from 2015 to 2020 in real terms the value of household total expenditures increased and decreased after 2020. Households in Poland in 2020 spent more than earlier on food and non-alcoholic beverages and less on eating outside the house. The consumption of selected food products also changed in 2020 regarding the previous periods (2015-2019), but the majority of those changes were only temporary turmoil. Only the consumption of some dairy products in households in Poland increased during the COVID-19 pandemic and stayed at a heightened level.

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## INTRODUCTION

Food consumption is the basis of any human activity and it is placed on the lowest level of the Maslov pyramid [Olech 2021]. According to the Engel law the share of expenditure on food decreases with the income growth [Borowska et al. 2020]. Furthermore, according to the Bennet law the role of the cheapest food, in particular starchy staples in the diet falls with higher incomes [Timmer 2017]. Expenditures on food are a crucial part of household budgets. Together with expenditures on housing and energy carriers are fixed expenses [Mieszala et al. 2023].

Personal, social, and environmental determinants for food behaviours are considered in determining individuals' food choices and food consumption out-of-home [Lorenz and Langen 2018]. Food choice is influenced by sociodemographic and behavioural factors, such as country of residence, age, gender, civil state, professional activity, educational level, living environment, responsibility for buying food, weight, height, body mass index, healthy diets, and physical exercise practices [Martinho et al. 2021]. More sustainable and more pro-environmental consumption depends on factors of economic character, consumption patterns of reference persons, and past consumption patterns [Welsch and Kühling 2009].

Even before the COVID-19 pandemic blowout, some changes in household food purchasing behaviour were observed, in particular changing eating habits towards buying and consuming healthy, organic, and unprocessed food [Szwacka-Mokrzycka et al. 2021]. According to the previous research results food consumption of fruit and vegetables is determined by consumers' age, financial means, affordability, and attitudes [Bihan et al. 2010].

The COVID-19 pandemic was an important factor influencing household food consumption. During the COVID-19 pandemic, individuals changed their food consumption patterns, with factors like restrictions, shopping frequency, perceived risk, income loss, and socio-demographic factors influencing these changes [Janssen et al. 2021]. Previous research shows that lockdown policies during COVID-19 in Italy led to increased consumption of "comfort food" and decreased alcohol consumption, with some individuals consuming more fresh fruit and vegetables [Scarmozzino and Visioli 2020]. The first COVID-19 lockdown period led to increased snacking and alcohol consumption, while fast-food and ordered food consumption showed a downward trend [Bakaloudi et al. 2021]. During the COVID-19 lockdown, food science students and professionals in Spain tended to adopt healthier dietary habits and reduced alcohol consumption, while experiencing worse sleep quality and increased working hours [Celorio-Sardà et al. 2021]. The most often research results indicated that under the uncertainty caused by the COVID-19 pandemic households attached more importance to food quality and its

health aspects [Chenarides et al. 2021] which led to an increase in fruit and vegetable consumption [Celik and Dane 2020].

The impact of the COVID-19 pandemic on dietary choices was also observed in Poland. Both positive and negative changes were observed. During the COVID-19 pandemic, most primary school adolescents in Poland adopted healthier food habits, including reducing fat intake, and increasing fruit and vegetable consumption [Kołota and Głąbska 2021]. Anna Przeliorz-Pyszczyk [2021] collected results of research conducted among adults and teenagers from different countries during the first period of the COVID-19 pandemic and observed negative health effects of the lockdown such as an increase in alcohol, snacks and convenience food consumption and reduced fresh fruit and vegetable consumption. On the other hand, the frequency of eating ready-to-go meals was reduced because of more frequent cooking at home. A positive effect on food consumption behaviours was observed among people who increased their physical activity during the lockdown and tried to implement better eating habits [Przeliorz-Pyszczyk 2021]. To sum up, it can be stated that during the COVID-19 pandemic, women and men in Poland increased the number of meals and regularity, but snacking also increased, with varying dietary changes based on gender and dietary parameters [Bolesławska et al. 2021].

Under crises (the pandemic can be regarded as one of them), the amount of food products bought decreases [Świetlik 2014]. Price is becoming a more important factor in the process of buying decisions, and the role of other determinants is decreasing [Zalega 2013]. After the COVID-19 pandemic and after the beginning of the war in Ukraine, economic factors determining household food consumption were also observed. High prices of agricultural commodities increase prices at the level of processing and retail trade, which, with the lower purchasing power of consumers can reduce the demand for food. On the other hand, the share of food expenditure in total consumption expenditure is expected to increase due to the rising prices [Drożdż and Mroczek 2022]. It confirms the previous research results stating that food prices and consumer income are the most crucial factors influencing nutrition behaviour [Żurek 2023].

In the paper, the results of surveys conducted by Statistics Poland were used. The results of the previous research regarding household expenditure on food during crises were confirmed.

## MATERIAL AND METHODS

The paper aims to identify changes in household expenditure on food and food consumption in Poland in the span of the COVID-19 pandemic. The research question was asked whether the changes that took place during this period were permanent or temporary. The analysis covers the period from 2015 to 2021 (2022 when available).

Statistics Poland data was used (Macroeconomic Data Bank, Household budget survey and yearly price indices of consumer goods and services). Percentage changes compared to the previous year and shares of individual categories in the total value were presented. When necessary, nominal and real data were shown and described, and the conversion of nominal variables into real ones was made using the accumulated value of the consumer price index.

## RESEARCH RESULTS

Household consumption, including food consumption, is determined by income and prices. Between 2015 and 2021 total gross real disposable income of the household sector increased almost every year. The decrease occurred only in 2021, when it dropped by 1.7% (Figure 1).

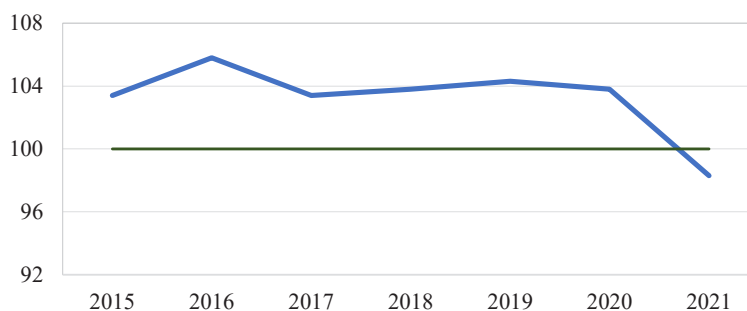


Figure 1. Total gross real disposable income of the household sector (previous year = 100)

Source: own work based on [Statistics Poland 2023a]

From 2015 to 2021 the total real disposable income of the household sector increased by over 20%, so it can be stated that the decrease observed in 2021 was not significant. In current prices average monthly *per capita* household income increased significantly (Figure 2).

It is also worth noting that in the analysed period, in nominal terms the average disposable monthly *per capita* household income increased from 2015 to 2022 by 64% (from PLN 1,338 to PLN 2,195) while in real terms by only 25%. In real terms, the average disposable *per capita* income in 2022 was lower than in 2019. Average monthly *per capita* expenditure on food and non-alcoholic beverages increased in nominal terms from 2015 to 2022 by 50% from PLN 262 to PLN 394 (Figure 3).

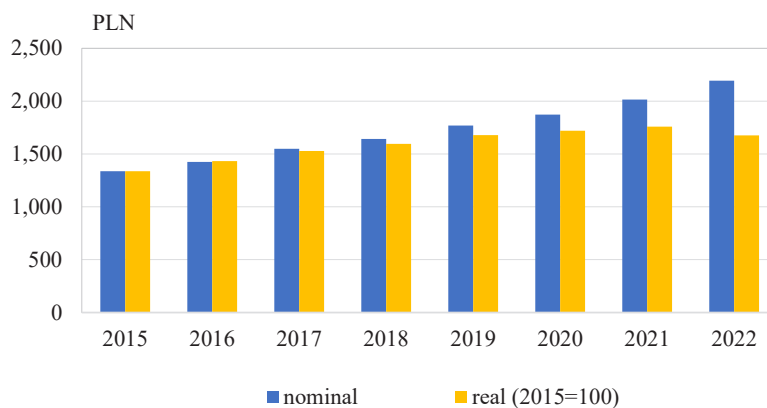


Figure 2. Average disposable monthly *per capita* household income

Source: own work based on [Statistics Poland 2023b,c]

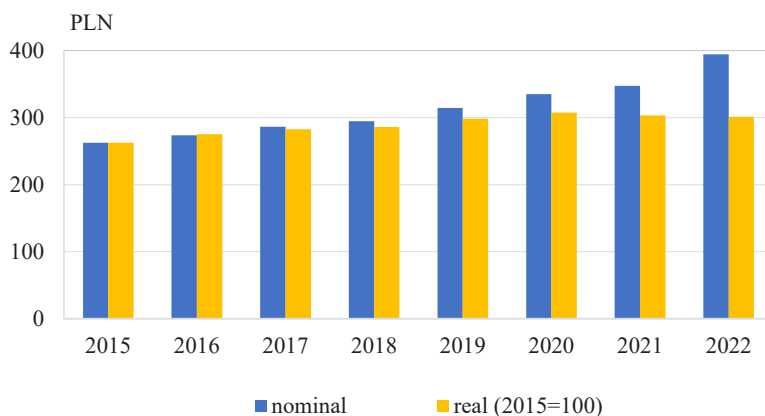


Figure 3. Average monthly *per capita* household expenditure on food and non-alcoholic beverages in Poland

Source: own work based on [Statistics Poland 2023b,c]

In real terms (in prices from 2015) expenditure on food and non-alcoholic beverages was the highest in the year of the first wave of the COVID-19 pandemic – 2020. It is also worth noting that compared to the previous year the real expenditure on food and non-alcoholic beverages increased by 4% in 2019 and only by 3% in 2020. After 2020 expenditure on food and non-alcoholic beverages decreased in real terms. The analysis of the share of expenditure on food and non-alcoholic beverages in total expenditure leads to similar conclusions (Figure 4).

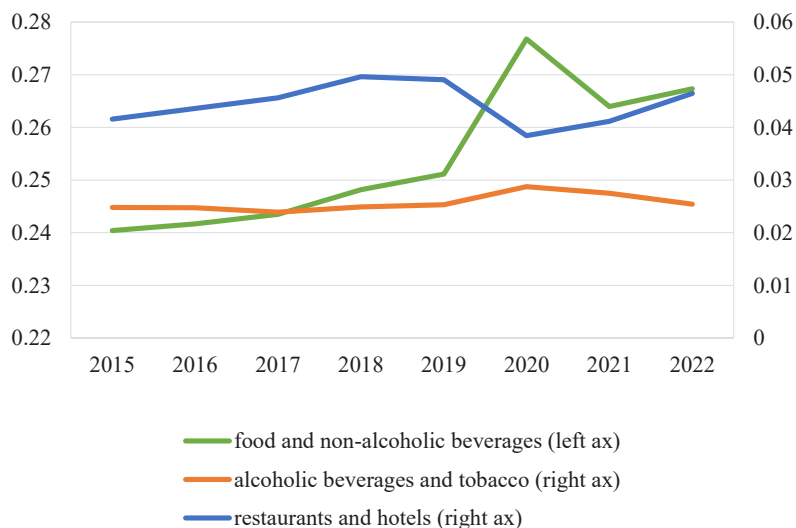


Figure 4. The share of selected expenditures in total household expenditure

Source: own work based on [Statistics Poland 2023b]

The share of expenditures on food and non-alcoholic beverages grew from 2015 to 2020. The most rapid growth was observed in 2020 when the share of expenditures on food and non-alcoholic beverages increased from below 25% to almost 28%. In 2021 and 2022 the shares of expenditures on food and non-alcoholic beverages in total household expenditure were still higher than in 2019. During the lockdown in 2020, people consumed more food at home than outside the home. The increase in the share of expenditures on food came together with the decrease in the share of expenditures on restaurants and hotels (to below 4% in 2020). Despite the return of consumers to outside-the-home activities after a lockdown in 2021 and 2022 expenditure shares on restaurants and hotels were still lower (4.1% in 2021 and 4.6% in 2022) than in 2019 (4.9%). The reduction of expenditure on hotels and restaurants could be caused by the restrictions and by price unavailability. After the price increase in 2022 for a bigger group of consumers recreation became a superior good [Kalinowski and Wyduba 2020]. The share of expenditure on alcoholic beverages and tobacco increased slightly in 2020 (from 2.5% to 2.9%) and decreased to the level from the period before the COVID-19 pandemic in 2022 (2.5%).

Not only expenditures on food changed during the COVID-19 pandemic, but food consumption in households was also different from previous periods. In Table 1 average monthly *per capita* consumption of selected food products was presented.

Table 1. Monthly average *per capita* consumption of selected food products in households in Poland (in natural units)

Item	Unit	Monthly average <i>per capita</i> consumption							
		2015	2016	2017	2018	2019	2020	2021	2022
Bread and cereals, in which:	kg	6.06	5.88	5.67	5.48	5.36	5.31	5.17	5.11
– bread	kg	3.74	3.52	3.31	3.15	2.98	2.75	2.67	2.58
Meat, in wich:	kg	5.27	5.32	5.28	5.20	5.08	5.09	4.97	4.81
–raw meat	kg	3.02	3.04	3.00	2.96	2.87	2.90	2.83	2.68
–raw poultry	kg	1.53	1.57	1.56	1.53	1.53	1.55	1.45	1.36
–processed meat and other meat preparations	kg	2.00	2.03	2.04	2.00	1.97	1.96	1.91	1.92
Fish and seafood	kg	0.33	0.32	0.29	0.28	0.27	0.27	0.28	0.24
Milk (excluding condensed and powdered milk)	litre	3.15	3.08	2.99	2.94	2.87	3.06	2.90	2.85
Yoghurt	kg	0.50	0.53	0.52	0.52	0.54	0.57	0.58	0.58
Cheese and curd	kg	0.83	0.85	0.86	0.87	0.89	0.95	0.97	0.94
Eggs	pcs	11.76	11.64	11.42	11.09	10.99	11.04	10.80	10.50
Oils and fats	kg	1.15	1.13	1.11	1.07	1.05	1.08	1.02	1.00
Fruit	kg	3.59	3.66	3.64	3.75	3.79	3.86	3.95	3.58
Vegetables	kg	8.68	8.59	8.24	7.92	7.61	7.72	7.43	7.13
Potatoes	kg	3.69	3.48	3.16	2.97	2.75	2.68	2.47	2.42
Sugar	kg	1.09	1.01	0.93	0.94	0.80	0.84	0.75	0.76

Source: [Statistics Poland 2023b]

The consumption of bread and cereals decreased in the analysed span by 15.7%, the consumption of bread dropped by 31%, and the consumption of potatoes lowered by 34.4%. This result stands in line with the Bennet law, that with an increase in income, the consumption of starchy products decreases [Timmer 2017]. The decrease in the consumption of sugar, vegetables (including potatoes), fish and seafood, raw meat and raw poultry also decreased. The only group of products, in which consumption at home increased was dairy products such as yoghurt, cheese, and curd.

Looking only at the changes observed in the year of the beginning of the COVID-19 pandemic we can observe that in 2020 decreased the consumption of bread (by 7.7%) potatoes (by 2.5%), bread and cereals (by 0.9%) and processed meat and other meat preparations (by 0.5%). The consumption of cheese and curd increased in 2020 by 6.7% (increased by 13% from 2015 to 2022), consumption of raw milk increased by 6.6% in 2020 (decreased by 9.5% from 2015 to 2022), consumption of yoghurt increased by 5.6% in 2020 (increased by 16% from 2015 to 2022), consumption of sugar increased by 5% in 2020 (decreased by over 30% from 2015 to 2022), and consumption of oils and fats increased by 2.9% in 2020 (decreased by 13% from 2015 to 2022). So, it can be stated that the lockdown caused by the COVID-19 pandemic in 2020 led to temporary turmoil in the consumption of selected food products, on the one hand, consisting in reducing the consumption of starch products, and on the other, increasing the consumption of dairy products, sugar and oils and fats. Part of the observed changes was temporary, only the consumption of cheese and curd stopped at the heightened level from the period of the COVID-19 pandemic.

## SUMMARY

The conducted analysis shows that under economic uncertainty caused by the COVID-19 pandemic average household income in Poland did not decrease in real terms. In the years 2015-2019, it increased every year, from 4.5 to 7.2%, in 2020 it increased by 2.5% compared to the previous year, and in 2021 it remained unchanged. A significant drop in real household income was observed after Russian aggression on Ukraine in 2022 when it decreased by almost 3% compared to the previous year.

From 2015 to 2020, the real value of household expenditure on food and non-alcoholic beverages increased every year, and in 2021 and 2022 it decreased compared to the previous year, by 2.3% and 0.8%, respectively.

The COVID-19 pandemic influenced the structure of household expenditure in Poland. The share of expenditure on food and non-alcoholic beverages increased in 2020 (to 27%) and it stayed at a slightly heightened level in 2021 and 2022 regarding the level before the pandemic. In 2020 an increase in the share of expenditure on alcoholic beverages and tobacco as well as a decrease in the share of expenditure on restaurants and hotels was observed (mainly resulting from the restrictions but also the reduction of needs).

The average consumption of selected food products in households also changed in the first year of the COVID-19 pandemic. Household consumption at home of bread and potatoes decreased significantly, while the consumption of the majority of food products increased: cheese and curd, raw milk, yoghurt, sugar, oils and fats.



To summarize it can be stated that the COVID-19 pandemic influenced the value of household expenditure on food and consumption of food products. Some of the changes are only temporary turmoil but some of them can be permanent.

The study was conducted on data relating to households in general in Poland. Analysis and interpretation of the results broken down by socio-economic types of households, income groups and place of residence could expand knowledge about the impact of the COVID-19 pandemic on food consumption.

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SPÓŻYCIE ŻYWNOSCI ORAZ WYDATKI NA ŻYWNOSĆ  
W GOSPODARSTWACH DOMOWYCH W POLSCE  
W WARUNKACH PANDEMII COVID-19

Słowa kluczowe: gospodarstwa domowe, żywność, konsumpcja, wydatki,  
pandemia COVID-19, Polska

ABSTRAKT. Pandemia Covid-19 wpłynęła na wiele dziedzin życia ludzi, a jednymi z takich obszarów są wydatki na żywność i jej spożycie w gospodarstwach domowych. Celem badań była identyfikacja zmian w wydatkach gospodarstw domowych na żywność i jej spożycie w Polsce w okresie pandemii COVID-19. Analizą objęto dane za lata 2015-2021 (wykorzystano także dane z 2022 roku, gdy były dostępne). Na podstawie danych GUS przedstawiono zmiany procentowe wartości nominalnych i realnych oraz ich udziały. Z opracowanych danych wynika, że w badanym okresie wartość wydatków ogółem gospodarstw domowych w ujęciu realnym zwiększała się do 2020 roku, a następnie malała. W 2020 roku w gospodarstwach domowych w Polsce wydano więcej niż w poprzednich latach na żywność i napoje bezalkoholowe, a mniej na jedzenie poza domem. Spożycie wybranych produktów spożywczych w 2020 roku w stosunku do lat 2015-2019 również uległo zmianom, jednak większość tych zmian miała charakter przejściowy. Jedynie spożycie niektórych produktów mleczarskich w gospodarstwach domowych w Polsce zwiększyło się w czasie pandemii COVID-19 i później utrzymało się na podwyższonym poziomie.

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