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# FOOD CONSUMPTION IN THE VISEGRAD GROUP COUNTRIES – TOWARDS A HEALTHY DIET MODEL

**Summary:** The paper describes patterns of food consumption observed in the V4 countries and compares them to the healthy diet model recommended by the WHO. The conducted analyses were based on the data from Eurostat and Statistical Offices of the Czech Republic, Poland, Slovakia and Hungary. The study also used reports from the UN (including the WHO), the National Food and Nutrition Institute and the literature on consumption economics. The identified consumption patterns of the V4 countries differ from the recommended model of healthy diet. If the V4 societies want to limit the risk of developing diseases of affluence and other negative social phenomena, first of all they should limit the consumption of sugar, salt, animal fats, alcohol and tobacco. On the other hand, they should increase the consumption of vegetables and fruits, dairy products, eggs as well as fish and fats of plant origin.

**Keywords:** food consumption, consumption pattern, consumption model, healthy diet, human capital, the Visegrad Group (V4).

**JEL Classification:** R22.

## Introduction

In the theory of economics, consumption is understood as the process of satisfying human needs, the development of which is closely related to socio-economic development. In the most synthetic approach, it is defined as the whole of human behaviour, aimed at satisfying needs using the goods and services available to an individual [Bywalec, 2007, p. 14; Zalega, 2012, p. 14]. Consumption allows a person to stay alive, maintain physical fitness and mental health, and enables the development of personality along with the building of

human capital, it is a determinant of belonging to a specific social or professional group [Dąbrowska et al., 2013, p. 7].

The most important element of the whole sphere of consumption is the consumption of food because the nutritional purposes of people are of basic character and their satisfaction is a leading issue in all socio-economic conditions [Gutkowska and Ozimek 2005, p. 20; Świetlik (red.), 2015, p. 7]. The quantity, quality and type of food purchased affects the health of the society, measurably shaping the quality of human capital.

The purpose of the paper is to present current patterns of food consumption of four countries making up the Visegrad Group (V4) and to compare these patterns with the Healthy Diet Model recommended by the World Health Organization (WHO).

Changes in the level and structure of food consumption in the V4 countries have been particularly dynamic. After years of shortages, the emerging free market economy faced a difficult task of meeting food needs which had been neglected for years. The choice of food types and ways of eating of the population of these countries began to be determined not only by economic factors (availability of food on the market, the price of products, the level of income obtained), but also by non-economic ones, including marketing factors and consumption patterns of highly developed Western countries [Ozimek and Żakowska-Biemans 2011, pp. 138-140]. Due to serious health consequences, the development of consumption should not only be, as rightly noted by Halicka and Rejman [2010, p. 76], a spontaneous process that is beyond the control of the science and policy of feeding the population. Monitoring of food consumption, which allows for the recognition of consumption patterns, trends and regularities, is necessary to respond to adverse processes from the nutritional and health point of view and to undertake actions aimed at modifying consumption towards a health enhancing food consumption model.

## **1. Food consumption patterns and models**

In the literature in the field of consumption economics, there is no unanimity in the way of defining the concepts of 'pattern' and 'model' of food consumption, and also whether these concepts are identical or different from each other. Some authors describe a model as the existing structure of consumption or its pattern. Therefore, the notions of the pattern and the model are considered as identical, and there are no objective criteria for distinguishing these concepts

[Świstak and Laskowski 2016, p.5]. Most often, however, it is assumed that the pattern of food consumption is an empirically established, real and socially respected construct. It shows the level, structure and methods of consumption together with their determinants, fixed and repeated in large numbers under specific socio-economic conditions. The pattern reflects consumers' preferences and habits regarding food as well as traditions and eating habits. On the other hand, the consumption model is a theoretical concept of consumption, in relation to its role, functions and determinants, concerning the future, expressing specific goals to be achieved in the short or longer term. The consumption model should reflect the objectives and nutritional recommendations, but also should take into account supply possibilities of the economy, customs and preferences of the population. It is therefore a system of food consumption, to which one should strive by means of an appropriate feeding policy, implemented in harmony with economic, agricultural, social, commercial and educational policy [Halicka and Rejman 2010, pp. 76-77; Kwasek 2015, p. 98, Piekut 2017, pp. 23-26]. Such an interpretation of the concepts mentioned was also adopted in this work.

Knowledge of food consumption patterns allows for the anticipation of future changes in food consumption and their proper modelling. In particular, it is important to keep in mind patterns of food consumption in specific consumer groups, fulfilling a role model for other groups, for example:

- a pattern of food consumption in the most affluent households as a model of consumption for lower income consumers,
- a pattern of food consumption of population from heavily urbanised areas as a model of consumption for people from small towns, rural areas and regions distant from urban environments,
- a pattern of food consumption of people from countries with a higher level of economic development as a model of consumption for the population of countries with a lower standard of living, but similar natural, socio-economic conditions, food preferences and traditions.

The consumption pattern fulfils mainly the cognitive, registering and diagnostic role, while the consumption model – a function that creates future consumption [Kamiński 1980; Wiszniewski 1983; Świstak and Laskowski 2016]. Both constructs have information and educational functions, because through appropriate actions in the field of food policy one can create pro-health nutritional behaviours of consumers, necessary in the prevention of diet-related diseases and conditioning their occurrence. Systematic supervision over the food situation of the country and the health of its residents sets the basis for formulating and implementing the population feeding policy [Halicka and Kowrygo, 2009].

## **2. Research material and methodology**

The source material used in the work is the Eurostat data aggregates collected as part of the Classification of Individual Consumption by Purpose (COICOP). COICOP is one classification of the consumption families according to purpose, developed and recommended by the United Nations (UN). COICOP is also used in other important areas of statistics, such as national accounts, household budget survey (HBS) and PPP (Purchasing Power Parity). This classification, both in the HBS, PPP and HICP study, is in line with the current version of COICOP published by the UN at the two-, three- and four-digit levels, and for each of these three statistical areas, Eurostat has developed more detailed versions, adapting this classification to the needs of individual statistical surveys (COICOP/HICP, COICOP/HBS and COICOP/PPP). The data collected as part of COICOP enabled the analysis of the basic economic indicators of the Visegrad Group countries and their reference to the average values of indices calculated for the EU28.

Human Development Reports 2016 [www 4] should also be included in the sources of information used in this paper. The data contained in it allowed for describing the level of social development of the Visegrad Group countries and determining the position of these countries in the latest HDI ranking.

In order to analyse the current food consumption patterns of the four countries making up the V4, data from statistical yearbooks issued by the central statistical offices of these countries were adopted: the Czech Statistical Office, Statistical Office of the Slovak Republic, Hungarian Central Statistical Office and Central Statistical Office in Poland. The identified patterns were then compared to the healthy diet model recommended by the WHO. For this purpose, data and studies of the National Food and Nutrition Institute (NFNI) in Warsaw were used.

## **3. The Visegrad Group countries**

The Visegrad Group (V4) is an informal regional form of cooperation between four Central European countries – Poland, the Czech Republic, Slovakia and Hungary, which are combined not only by the direct proximity and similar geopolitical conditions, but above all by common history, tradition, culture and values. The idea underlying the creation of the V4 was to step up cooperation in the area of building democratic state structures and the free market economy, and, in the long run, participation in the process of European integration. The date for its establishment is assumed on February 15, 1991, when the presidents

of Poland and then Czechoslovakia and the Prime Minister of Hungary signed a joint declaration in Visegrad setting out the objectives and conditions for mutual cooperation. At present, the Visegrad Group is a forum for exchanging experience and working out common positions on matters relevant to the future of the region and the European Union (EU). In addition to the European issues, cooperation within the framework of V4 focuses primarily on strengthening stability in Central Europe, exchanging information, promoting the cultural community, as well as cooperating in the field of culture, science, education and youth exchange. The priority areas of cooperation are the development of transport infrastructure and strengthening energy security in the region [www 1, www 2].

The land area of the V4 countries is just over 12% of the territory of the European Union. It is inhabited by nearly 64 million people, constituting nearly 12.5% of the Community's citizens – Table 1.

The GDP of the Visegrad Group countries constitutes 5.65% of the GDP of the European Union. The highest GDP per capita among the V4 countries is in the Czech Republic, which is just over 60% of the average GDP per capita of the European Union. The adjusted gross disposable income of households per capita and the final consumption expenditure are below the average of the European Union in all V4 countries. In turn, the self-assessment of health, which is also influenced by a properly balanced diet, similar to the EU average, is only in Slovakia. 66.5% of the inhabitants of this country assess their health condition as very good or good. Poland falls the worst in this respect among the V4 countries (58.5%) – Table 1.

**Table 1.** Countries of the Visegrad Group – basic data

Specification	Year	Czech Republic	Hungary	Poland	Slovakia	European Union
Population	2017	10,578,820	9,797,561	37 992,964	5 435,343	511,522,671
Area (km <sup>2</sup> )	2017	78,866	93,030	312,683	49,037	4,422,773
GDP (million euro) *	2017	192,016.6	123,494.6	465,651.6	84,154.0	15,324,266.7
GDP per capita (euro)	2017	18,100	12,600	12,100	15,600	29,900
Average household size	2016	2.4	2.3	2.8	2.8	2.3
Adjusted gross disposable income per capita (PSS)**	2016	17,069	13,551	15,400	16,365	21,889
Final consumption expenditure (current prices euro per capita)	2017	12,000	8,800	9,300	11,500	22,700
Self-perceived health by level of perception *** (% of population)	2016	60.4	59.6	58.5	66.5	67.5

\* Gross Domestic Product at market prices.

\*\* Purchasing power standard per inhabitant.

\*\*\* Very good or good.

Source: Based on: Eurostat [www 3: tps001; tps0005; tec0001; sgd\_30\_20; ilc\_lvph01; sgd\_10\_20; namq\_10\_pc].

The countries of the Visegrad Group are therefore still lagging behind the economies of Western Europe in the area of economic development. The need to catch up with the most developed countries is also visible in the area of social development (Table 2).

**Table 2.** Human Development Index and its components for the Visegrad Group Countries (in 2015)

HDI rank	Country	HDI*	Life expectancy at birth	Expected years of schooling	Mean years of schooling	GNI per capita** (USD)	GNI per capita rank minus HDI rank
28	Czech Republic	0.878	78.8	16.8	12.3	28,144	11
36	Poland	0.855	77.6	16.4	11.9	24,117	11
40	Slovakia	0.845	76.4	15.0	12.2	26,764	1
43	Hungary	0.836	75.5	15.6	12.0	23,394	6

\* HDI – Human Development Index.

\*\* GNI – Gross national income per capita: Aggregate income of an economy generated by its production and its ownership of factors of production, less the incomes paid for the use of factors of production owned by the rest of the world, converted to international dollars using PPP rates, divided by midyear population.

Source: Based on: Human Development Reports 2016 [www 4].

Although, according to the latest Human Development Reports, all V4 countries belong to the group of countries with the highest level of social development in the world, but the highest ranked among the V4 members – the Czech Republic – is only 28th in the HDI ranking (Table 2).

#### 4. Food consumption patterns

Expenditure on food and non-alcoholic beverages in all V4 countries is the largest group of expenses, just after expenditure on housing and energy. It accounts for 16-18% of all consumption expenditure (Table 3).

**Table 3.** Final consumption expenditure of households of the Visegrad Group Countries (in 2016, percentage of total)

Specification	Czech Republic	Hungary	Poland	Slovakia	European Union
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
Total	100.0	100.0	100.0	100.0	100.0
Food and non-alcoholic beverages	16.0	17.7	17.1	17.8	12.2
<i>of which food</i>	14.4	15.2	15.4	16.2	11.1
<i>of which non-alcoholic beverages</i>	1.6	2.4	1.7	1.5	1.1
Alcoholic beverages, tobacco and narcotics	8.4	7.6	6.1	5.1	3.9
<i>of which alcoholic beverages</i>	3.6	2.9	3.6	2.5	1.6
<i>of which tobacco</i>	4.4	4.0	.	2.3	1.9

**Table 3 cont.**

<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
Clothing and footwear	3.6	3.6	5.2	4.0	4.9
Housing, water, electricity, gas and other fuels	25.6	19.2	21.2	24.4	24.5
Furnishings, household equipment and routine household maintenance	5.5	4.4	5.3	6.0	5.5
Health	2.4	4.9	5.6	2.6	3.9
Transport	9.8	12.4	12.1	7.5	12.9
Communications	2.7	3.8	2.4	3.4	2.5
Recreation and culture	8.7	7.1	7.9	10.2	8.5
Education	0.5	1.7	1.0	1.6	1.2
Restaurants and hotels	8.7	9.3	3.2	6.0	8.6
<i>of which catering services</i>	<i>6.3</i>	<i>7.7</i>	<i>2.5</i>	<i>5.3</i>	<i>6.9</i>
Insurance	2.1	1.2	1.4	1.8	2.5
Financial services	1.5	2.9	4.2	3.5	2.6
Other consumption expenditure	4.5	4.2	7.3	6.1	6.3

Source: Based on: Eurostat [www 3: nama\_10\_co3\_p3].

This is a much higher result than the EU average of 12.2%, especially in comparison with the average of 11.6% of the old EU [www 3]. According to the A. Fisher's three-sectoral division of economy theory, this is a situation typical of low-income countries. In 2016, the average citizen of Hungary spent on food and non-alcoholic drinks 1,000 Euro, Poland 1,100 Euro, the Czech Republic 1,300 Euro, and Slovakia 1,400 Euro [www 3].

In the structure of total expenditure in the Visegrad Group countries, a relatively high percentage is spent on alcoholic beverages, tobacco and drugs, that is products which have little in common with a model of healthy diet – Table 3. The average Czech spent 700 Euro on these goods in 2016 (more than half of that on food and non-alcoholic beverages). The residents of other V4 countries spent 400 EUR on these products.

Data from statistical yearbooks of individual V4 member states allow for a more detailed look at the structure and level of food consumption in the analysed countries<sup>1</sup> – Table 4.

<sup>1</sup> Due to different ways of aggregating consumption in the Czech Republic and other V4 countries, direct comparisons between the Czech Republic and these countries are not possible. In addition, in case of the Czech Republic and Hungary, the latest available data refer to 2014.

**Table 4.** Average yearly consumption of selected foodstuffs per capita in households\* of the Visegrad Group Countries (in 2015\*\*)

Specification	Unit	Czech Republic	Hungary	Poland	Slovakia
Fruit	kg	78.1	38.8	43.1	43.2
Vegetables	kg	156.4	75.4	104.2	120.2
<i>of which potatoes</i>	kg	70.1	26.4	41.8	48.8
Bread	kg	40.0	36.9	44.9	35.0
Cereals	kg	140.8	41.2	27.8	52.3
Milk	l	58,3	46,5	37,8	47,3
Cheese and curd	kg	16.6	5.7	10.0	12.1
Meat	kg	75.9	53.6	63.2	50.2
<i>of which pork</i>	kg	40.7	16.0	36.9	30.6
<i>of which beef and veal</i>	kg	8.0	0.6	1.2	4.2
<i>of which poultry</i>	kg	24.9	16.9	24.1	14.1
Fish	kg	5.4	1.4	0.3	5.6
Eggs	units	255	133	141	200
Oils and fats	kg	24.3	15.6	13.8	18.0
<i>of which butter</i>	kg	5.1	1.0	3.4	2.8
<i>of which vegetable fats</i>	kg	17.2	11.7	9.7	12.0
Sugar	kg	31.7	13.6	13.1	30.2
Mineral or spring waters	l	55.0	62.2	54.8	80.0

\* For Czech Republic with consumption outside the household.

\*\* For Czech Republic and Hungary in 2014.

Source: Based on: CSO [2016a, 2016b]; CZSO [2016]; HCSO [2016]; Statistical Office of the SR [2016]; [www 5].

As it can be seen, vegetables play a significant role in the diet of the Czechs. Unfortunately, these are mainly potatoes, of which 70 kg per year per person is consumed. It is only about 8 kg less than the total fruit consumption. In the diet of the Czechs, all kinds of cereals are of great importance and exceed the consumption of bread more than three times. Large consumption of cereals implies high milk consumption. The average Czech drinks nearly 60 litres a year, more than mineral water. Meat is present in the Czechs' diet, of which they consume an average of about 200 grams per day. Most often it is pork. There is a lot of sugar in the diet of the Czechs. It is more than oils and fats. The average Czech also consumes relatively many eggs – 255 a year (Table 4).

The diet of the inhabitants of Hungary is dominated by vegetables, among which there are a lot of tomatoes, peppers, onions and squashes. The meat is also important: poultry, pork and all kinds of offal [HCSO, 2015, p. 66]. However, butter, eggs, cheese and curd are scarce. The average Hungarian consumes only 38.8 kg of fruit and 1.4 kg of fish per year. A positive phenomenon is low sugar consumption, less than 4 grams per day – Table 4.

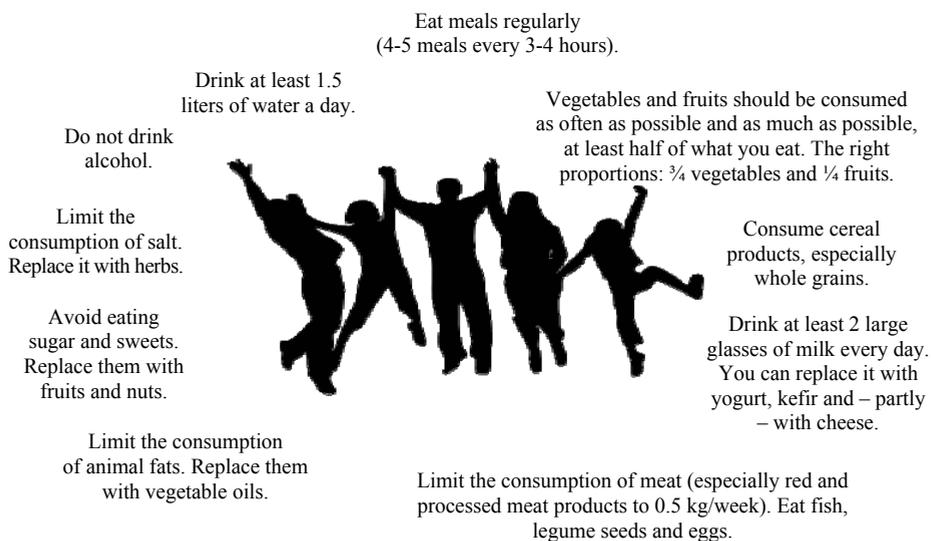
The Polish diet is characterised by a relatively high consumption of vegetables, among which very often there are potatoes. They are definitely more often consumed than cereals and milk, the Poles reach out for bread, consuming nearly 45 kg per person per year. The Poles eat more meat than bread, mainly pork and the cheapest one – poultry. The average Pole consumes 43 kg of fruit a year, as well as 10 kg of cheese and curd. Unfortunately, it is in vain to look for fish the Poles' diet. Their consumption is at a barely perceptible level of 0.3 kg per person per year – Table 4.

In Slovakia, the consumption of cereals definitely exceeds the consumption of bread. A lot of milk is drunk, though it is not as large consumption as of mineral and spring water, of which the average Slovak drinks 80 litres a year. In case of meat, pork consumption prevails, but beef consumption is also noticeable. The Slovaks consume a relatively large amount of fish – 5.6 kg per person per year. In the diet of Slovaks, vegetables, fruits and oils of plant origin are also important. Unfortunately, there is a lot of sugar in it too. The average Slovak consumes more than 30 kg per year – Table 4.

## **5. Healthy diet model and observed food patterns**

As the result of recommendations issued by the WHO in August 2015 regarding a healthy diet, the National Food and Nutrition Institute in Warsaw developed a pyramid of healthy nutrition and physical activity in 2016. The document presents a comprehensive idea of feeding modern humans, whose implementation gives them a chance for a healthy long life and the preservation of intellectual and physical fitness until the late years of life. It can be contained in the 10 principles presented in Figure 1.

According to the WHO and NFNI recommendations, vegetables and fruits should be at the base of a healthy diet model. Then cereal products, especially whole grains, with a high fiber content. On the other hand, the consumption of red meat and its products should be limited, which should be replaced with fish meat, eggs and legumes. Consumption of animal fats should be avoided, replacing them with vegetable oils. In everyday nutrition one should strive to eliminate sugar and sweets, salt and salty foods and alcohol. Healthy eating should be supported by daily physical activity lasting at least 30-45 minutes a day.

**Figure 1.** Principles of healthy diet

Source: Based on: IŻŻ [2016, pp. 6-15]; WHO [2018, pp. 9-15]; [www 6].

When comparing the recommendations with the previously presented patterns of food consumption in the V4 countries, one can notice a clear discrepancy between them. The current feeding patterns of the Visegrad Group countries situate them, according to The Lancet Global Health Journal, among the societies with the worst diet in the world [www 7]. If the daily diet of the V4 people were to consist of half of vegetables and fruits, they should eat about 0.5 kg per day of them. In addition, they should drink about 0.5 a liter of milk per day, replace pork and poultry meat with fish, increase the consumption of eggs and cheeses and curd, as well as to significantly reduce the consumption of alcohols and tobacco.

## Conclusions

The conducted analysis of food consumption patterns of the V4 countries shows how difficult it is to change the ways of food consumption that have been preserved over the years [Maciejewski, 2016a, 2018a]. Despite 14 years of presence in the structures of the European Union and an even longer period of implementing the free market economy, preferences and eating habits of the Visegrad Group countries' inhabitants very slowly become similar to food consumption patterns of wealthier, more economically and socially developed coun-

tries [Maciejewski, 2015, 2016b, 2018b]. The currently recommended healthy diet model by the WHO containing the idea of ‘Less sugar, salt and fat – more fiber’ determines the direction in which the societies of the V4 countries should follow. Shifting towards this model will help prevent, or at least significantly reduce, the development of negative social phenomena, such as diseases of affluence, thus improving the quality of life in these countries.

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## KONSUMPCJA ŻYWNOŚCI W KRAJACH GRUPY WYSZEHRADZKIEJ – W KIERUNKU MODELU ZDROWEGO ŻYWIENIA

**Streszczenie:** W artykule scharakteryzowano wzorce konsumpcji żywności zaobserwowane w państwach V4 i porównano je z zalecanym przez WHO modelem zdrowego żywienia. Przeprowadzone analizy dokonano na podstawie danych Eurostatu i Urzędów Statystycznych Czech, Polski, Słowacji i Węgier. W pracy wykorzystano także raporty

UN (w tym WHO), IŻŻ oraz literaturę z zakresu ekonomiki konsumpcji. Zidentyfikowane wzorce konsumpcji państw V4 odbiegają od zalecanego modelu zdrowego żywienia. Społeczeństwa państw V4, chcąc ograniczyć ryzyko rozwoju chorób cywilizacyjnych i innych negatywnych zjawisk społecznych, powinny przede wszystkim ograniczyć konsumpcję cukru, soli, tłuszczu zwierzęcych oraz alkoholu i tytoniu, natomiast zwiększyć konsumpcję warzyw i owoców, nabiału, jaj oraz ryb i tłuszczu pochodzenia roślinnego.

**Słowa kluczowe:** konsumpcja żywności, wzorzec konsumpcji, model konsumpcji, zdrowe żywienie, kapitał ludzki, Grupa Wyszehradzka (V4).