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The living income for Slovak households

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Abstract

Legally mandated minimum subsistence level and statutory minimum wage are often an arbitrary amount reflecting political interests more than the actual cost of living. We calculate the living income for a single adult household and the household of two adults and two dependent children based on real price microdata. Our approach accounts for a nutritious diet, adequate housing, basic clothing and footwear, transport, education, healthcare and budget for communication, recreation, and other miscellaneous goods. We report separate living income for households residing in the capital city and households living in the different types of housing. Our main aim is to calculate the cost of living for Slovak households, which can be helpful to policy professionals in variety of domains, including macroprudential regulation. Our methodology allows for regular updates and improvements of living income calculation in the future as additional data become available.

JEL codes: D14, H53, R28

Keywords: Cost of living, Decent income, Expenditure, Household consumption

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Introduction

We propose a scientifically robust method to calculate the living income for a standard Slovak household using real price microdata. Living income represents the amount of money that allows a household to secure all the essential needs, but certainly not all the wants. The concept of ‘essential needs’ reflects the level of economic development and various social and cultural determinants. In consequence, determining an universally acceptable living income is challenging (Goedemé et al., 2017). Therefore, easy-to-calculate proxies are often used in policy practice, for instance the risk-of-poverty-rate threshold, which typically equals 60 % of the national median equivalized disposable income after social transfers. This amount, however, represents vastly different living standard in countries with different income level (Fabo and Guzi, 2019). We side-step this problem by opting for a more tailor-suited approach, developing a living income calculation specifically for Slovakia. The presented calculation of living income for Slovakia can be therefore understood as the level of income necessary to ensure basic needs for the specified household. The aim of this paper is to define such cost of living using a bottom-up approach in the context of central European standards.

The idea that everybody should have a sufficient income to pursue a decent life goes back to the Ancient period philosophers (Anker, 2011). In its modern usage it is connected mainly to two powerful intellectual traditions – the Labor movement and Catholic social thinking (Hirsch and Valadez-Martinez, 2017). In this line of thought, the decent life is connected to *just* remuneration of workers, which has been explicitly defined as a human right in the Universal Declaration of Human Rights (United Nations, 1948). On the policy level, these ideas are reflected typically by some combination of minimum wage policy and tax policies, that ensure that everybody who works enjoys a certain income level, deemed sufficient by relevant entities such as the state or business and labor representatives. Nonetheless, it is not uncommon in some regions such as Eastern Europe - the minimum wage amounts are commonly set at levels that they do not cover even the very basic needs of life (Fabo, 2018; Fabo and Belli, 2017).

The main income source for jobless tends to be government transfers. Some 20th century thinkers, including Martin Luther King and Friedrich Hayek, go even a step further and advocate a right to some form of Universal Basic Income (UBI), which they claim should be granted to all people regardless of their labor status (Banerjee et al., 2019). In Slovakia, the minimum subsistence level is defined as a socially recognized minimum income threshold that every household is formally entitled to depending on a family composition. However, to incentivize people to seek employment, the amount of the subsistence minimum is, substantially lower than the minimum wage.

In contrast to the arbitrary legally set amounts, our approach returns to the original idea behind the notion of the living income. We aim to determine a minimum amount sufficient to ensure a decent life, which can be directly related to the cost of living in basic terms. Our intention is mostly policy based as the legal concepts pertaining to living income provide a reference point of many policy measures. The term “minimum wage” is included in 26 new or amended laws adopted by the Slovak parliament between 2016 and 2021, while the term “subsistence minimum” has been mentioned 45 times⁵.

At the same time, these debates are clearly making a footprint in general public. According to Google search data, the interest in the UBI has gained attention recently, although still however remaining less popular than the concept of minimum wage is still the most popular (Figure 1).

⁵ According to the online legal database slo-lex.sk.

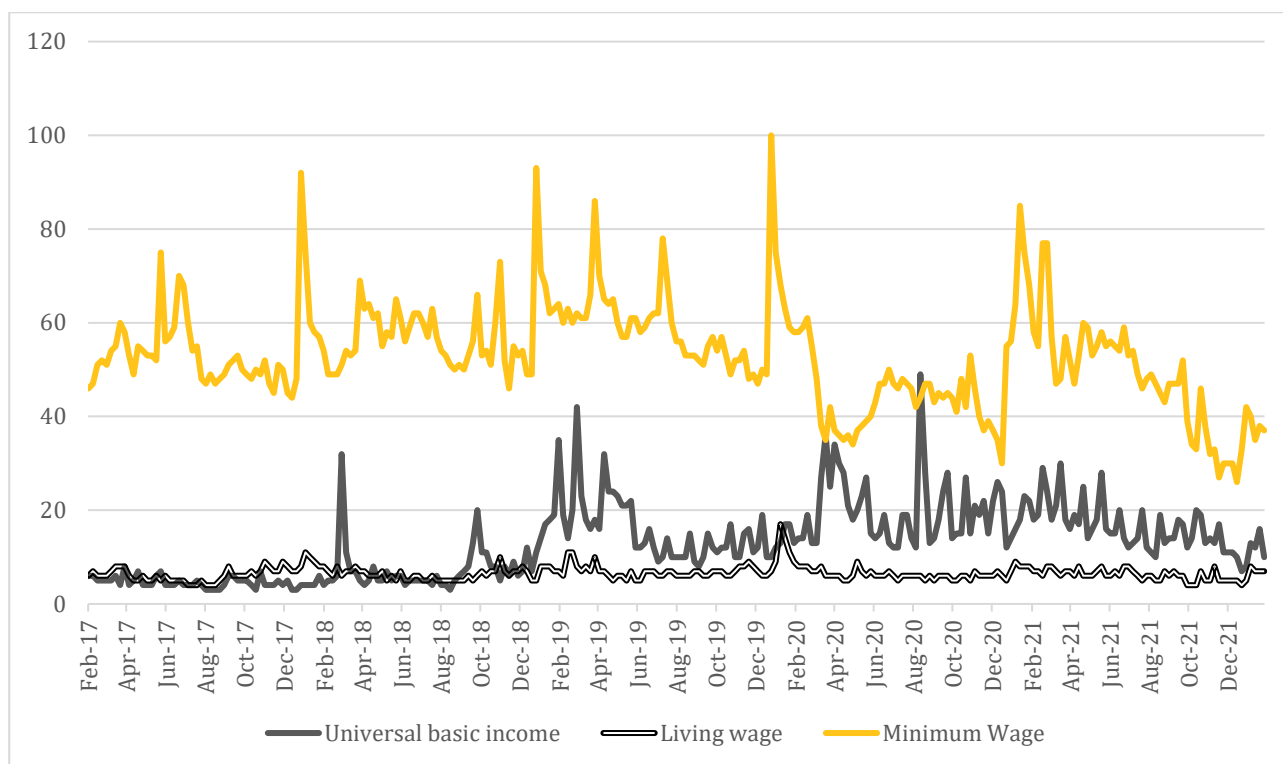


Figure 1: The relative frequency of searches for “universal basic income”, “living wage” and “minimum wage” topics worldwide on Google between February 2017 and December 2021.
 Source: Authors based on Google Trends

In this paper, we propose the calculation of living income, which we understand as the minimum necessary disposable income for the household. The methodology for calculation of living income that we can be used as a benchmark for setting minimum wage and social transfers. It can be likewise useful for the purpose of financial stability regulation. Specifically, the key concept of debt-service-to-income ratio explicitly tests whether households have sufficient resources left to maintain a minimum standard of living after paying all monthly instalments (Jurča et al., 2020). Our calculation can be useful to open a discussion about the adjustment of minimum subsistence level legislated by the government as a reference of living income.

Another useful aspect of calculating its living income is that it provides information about the development of prices of goods households obtain on a regular basis in time. As theorized by Lucas (1972) and confirmed empirically (D’Acunto et al., 2021), these “directly experienced” price changes are the key element determining households’ inflation expectations, which are crucial factor in modern monetary policy considerations.

Analytical strategy and data

The living income has not yet been calculated specifically for Slovakia, although there are estimates based on international data (Guzi, 2014; 2021). The approach proposed in this paper is based on methodology outlined in Guzi and Kahanec (2019) and is broadly consistent with the manual for living wage calculation published by Anker and Anker (2017).

In general, a minimum living standard comprises of a nutritious diet, adequate housing, and economically priced good including basic clothing and footwear, transport, education, healthcare and a very limited budget for communication, recreation, and other miscellaneous

goods. The goods and services provided publicly do not enter household expenses. In Slovakia, services such as education, healthcare or childcare are generally provided by state and household contributions are low.

We present the calculation of living income separately for Slovakia in general and specifically for the capital city of Bratislava, where cost of housing and services is higher.

The cost of living depends on family composition. We calculate the living income for two common household types in Slovakia (Sitárová and Hornáček, 2020), a single-adult household (referred to as 1 + 0) and a household of two economically active parents and two dependent children (referred to as 2 + 2). We assume children are within the age range of compulsory school attendance.⁶ In the 2 + 2 household, we assume both adults have jobs.⁷

For the purpose of food needs calculation, we assume the 1+0 household consists of a male adult and 2 + 2 household of a male and a female adult and two children (our model assumes same calory requirement for children of both genders).

Our living income calculation relies on data from multiple sources summarized in Table 1. The statistics on household expenditure is obtained from Household Budget Survey (HBS) annual report published by the Slovak Statistical Office. We define the lower quartile of household income to reflect the needs of low-income households. The expenditures are reported following the international classification of household expenditures COICOP (Classification of Individual Consumption According to Purpose).

Table 1: Data sources used in the calculation

Expenditure	Data source
Food	HBS, WHO, FAO, CPI microdata, Tesco e-shop, kaloricketabulky.sk
Housing	HBS, Nehnutelnosti.sk, self-collection
Transport	CPI microdata, self-collection
Clothing	HBS
Other needs	HBS, CPI microdata, self-collection

Source: Authors

Note: HBS (Household Budget Survey), WHO (World Health Organization), FAO (Food and Agriculture Organization), CPI (Consumer Price Index).

Calculation of living income

Food costs

We derive the cost of food for a nutritious diet for all household members in four steps:

1. We define the number of calories required for a female, a male and a child.
2. We create a food diet model based on average consumption of food and beverages taken from HBS.
3. We adjust the diet model to ensure the compliance with WTO nutritional recommendations.
4. We scale the food basket to match the amount of food calories required for a considered household per day.

⁶ In Slovakia that implies the age range between six and fifteen years of age

⁷ This assumption is based on Eurostat, which reports that the average number of full-time workers in Slovak households with at least one member economically active is 1.96.

In practical terms the final two steps can be interpreted as reflecting the homegrown food consumption, which remains a major factor in Slovakia as evidenced by significantly different food consumption patterns in rural and urban areas (Cupák et al., 2016) and propensity of low earning populations to pick mushrooms and berries in the forest (Ciaian et al., 2018).

A detailed breakdown of the methodology and the diet model is presented in the Appendix 1. Table 2 shows the calculated monthly food expenses that enters the living income. We assume the same food prices (and hence food costs as well) in Bratislava and in the rest of the country.

Table 2: Food costs for a household per month

Household	Calories needed per day	Food cost
1 + 0	2,681	€107
2 + 2	8,675	€347

Source: Authors

Housing costs

Housing typically represents the largest regular expenditure for a household. In 2020, 92% of Slovak households reported to live in owner occupied housing (*OOH*), and 8 % in a rented dwelling. Almost 70% of Slovak households lived in OOH with no outstanding mortgage or housing loan (Eurostat table ILC_LVH002). We reflect these conditions in our calculation and we assume three different types of housing for a household:

1. a commercially *rented housing*
2. a subsidized *social housing*, supply of which is very limited in Slovakia
3. *OOH* without a mortgage (we do not consider the scenario of OOH with a mortgage as we do not have access to mortgage data)

We gather rental listing prices from the Slovak leading real estate site *nehnutelnosti.sk*. Specifically, we collected apartment rent prices in Bratislava and Banská Bystrica (representing a typical medium-size town). In 12 weeks between September and November in 2020 we collect rent prices of one room and three room apartments. We include 6 offers from each apartment type in Banská Bystrica and 8 offers in Bratislava per week. The prevailing practice in Slovakia is to list the rent prices separately from utilities, so we deduct these from the published rent amount to determine the market prices of rented housing without utility costs.

We obtained the cost of social housing from local representatives and municipal websites. The final price is estimate by averaging the information from 12 cities in Slovakia. In the case of Bratislava, we were able to obtain the information about social housing costs in two major districts, the average of which we assume represents the average for the whole city. For residents of social housing utilities are added on top since they pay their utility charges separately.

We obtained the utility costs from the HBS. Following Anker and Anker (2017), the utility costs has to cover water, electricity and heating. On top of that we include garbage collection charges. We assume that households in OOH are only responsible for paying utility and maintenance bills. The overview of total housing costs is summarized in Table 3 (see also Appendix 2).

Table 3: Housing costs for a household per month

Household	Region	Utility costs	Market rent	Social rent	Market housing cost	Social housing cost
1 + 0	Bratislava	€73	€329	€142	€402	€215
2 + 2	Bratislava	€111	€507	€208	€618	€319
1 + 0	Slovakia	€73	€249	€104	€322	€177

2 + 2	Slovakia	€111	€457	€173	€568	€284
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Source: Authors

Transport costs

Transportation is essential for commuting to work/school, shopping and other regular activities. In Slovakia, it is feasible to rely on public transport, which is accessible and of sufficient quality particularly in urban areas. We collect the costs of public transportation in two cities Banská Bystrica (representing an average Slovak city) and Bratislava.

In Banská Bystrica, a monthly public transportation pass costs €20 and the reduced price for children is €12. In Bratislava, the price of a monthly pass is €25 for adults and €12 for children. In line with the literature (Anker 2011) we allow households to take taxi for one trip per month (two ways), representing shopping for large items or other activity. We observe the cost of taxi service online. The cost of a taxi ride across the town is €4.50 in Banská Bystrica and €8 in Bratislava. Table 4 lists the transportation costs.

Table 4: Transportation costs for a household per month

Household	Region	Transportation cost
1 + 0	Bratislava	€41
2 + 2	Bratislava	€90
1 + 0	Slovakia	€29
2 + 2	Slovakia	€73

Source: Authors

Additional costs

For other essential costs we assume the same prices in Bratislava and in the rest of the country:

- Simple, but appropriate *clothing and footwear*. We obtain the costs of these items from HBS. The amount is very modest, possibly reflecting the trends of second-hand shopping among low income households.
- *Education* is free in Slovakia, including higher education. According to the HBS, the spending of low-income households on education amounts to €7.50 for a family with two children. This costs likely represent the costs of textbooks, stationary and after-school club, which is a necessity for working parents. On top of that we add some minimum expenses to ensure healthy development of a child. Specifically, we assume every child attends one school trip per year. The cost of the school trip is €20 or €1.70 per month per child. We also assume every child attends afterschool training in music or foreign language, which amounts to €5.25 and €16 per month respectively according to the CPI microdata.
- *Healthcare* is covered by a single payer insurance system for the most part in Slovakia, although there are some costs associated with co-payments for medicines and dental care. Based on the HBS, we estimate the cost of healthcare of €10 per month in a single adult household and €16 per month per family.
- *Communication* is important, particularly considering the covid-19 pandemic. In this category, we assume the cost of purchasing a cell phone every five years, a cheap phone tariff and the price of internet connection. Considering the most economic option, adults possess smart phones worth €120 and children own regular phones worth €50. For the individual, the cost of purchasing a phone every five years is thus €2 per month, while for a family it is €6. The cost of a cheap cell phone tariff is €15 and children can be enrolled for €3 per child. A cheap broadband internet connection is available for €14 per month.

- *Culture and recreation* are necessities supporting good mental health and enhancing social participation. Based on the average cost of cultural activities in the CPI microdata, we allocate €9 per head for one cultural event per month. Children pay half price, reflecting children discounts available at many cultural venues. We allow households to eat out once per month. The price is calculated on the basis of the CPI microdata for a cheap meal in a restaurant consisting of a meat broth, friend pork chop, french fries and a €1 drink. We also allow the households to go on a domestic holiday for eight days per year at the cost of €560, double the average food spending to account for pocket money and a train ticket of €15 per adult (children can travel for free on trains in Slovakia).
- *Miscellaneous expenses* include expenses on home maintenance and personal care. Based on HBS, we assume these to amount to €10 per month for a single adult and €19 for a family.
- Finally, following Anker (2011) and Anker and Anker (2017) we add 5 % allowance of total household living costs to the budget for unforeseen events (see in Table 6).

The tally of all smaller expenses is summarized in Table 5.

Table 5: Other costs for a household per month

Household	Clothing	Education	Healthcare	Communication	Culture /Recreation	Miscellaneous expenses
1 + 0	15	0	10	31	44	10
2 + 2	40	32	16	56	113	19

Source: Authors

Conclusion

Using real price data, we estimate the living income in Slovakia for two model households and three different housing types (market rent, social housing and owner-occupied housing). We account for higher price level in Bratislava and calculate separately the living income for households residing in the capital city. Table 6 summarizes the living income calculation.

Table 6: Calculation of living income

Housing type	Rented housing				Social Housing				OOH	
	Slovakia		Bratislava		Slovakia		Bratislava		Slovakia	
Household	1 + 0	2 + 2	1 + 0	2 + 2	1 + 0	2 + 2	1 + 0	2 + 2	1 + 0	2 + 2
Food	€107	€347	€107	€347	€107	€347	€107	€347	€107	€347
Housing	€249	€457	€329	€507	€104	€173	€142	€208		
Utilities	€73	€111	€73	€111	€73	€111	€73	€111	€73	€111
Transport	€29	€73	€41	€90	€29	€73	€41	€90	€29	€73
Clothing	€15	€40	€15	€40	€15	€40	€15	€40	€15	€40
Education	€0	€32	€0	€32	€0	€32	€0	€32	€0	€32
Healthcare	€10	€16	€10	€16	€10	€16	€10	€16	€10	€16
Communication	€31	€56	€31	€56	€31	€56	€31	€56	€31	€56
Culture/Recreation	€44	€113	€44	€113	€44	€113	€44	€113	€44	€113
Miscellaneous goods	€10	€19	€10	€19	€10	€19	€10	€19	€10	€19
Provision 5%	€28	€63	€33	€67	€21	€49	€24	€52	€16	€40
Total costs	€596	€1,327	€693	€1,398	€444	€1,029	€497	€1,084	€335	€847

Source: Authors

Next we contrast the calculated living income with minimum subsistence level and the net income earned by adult(s) working for minimum wage (Table 7). We find that the legally

defined minimum subsistence level is not sufficient even for a household living in OOH without mortgage. Specifically, the subsistence minimum for a family with two children amounts to €569, but that amounts only covers around 67 % of the living income of the household (€847). We therefore caution against assuming that minimum subsistence level is reflective of the family living costs.

The household with two adults depending on minimum wage has €1,050 disposable income and can cover regular living expenses as long as they live in OOH with no outstanding mortgage interest payments. Households depending on minimum wage living in social housing may get close to the breaking point outside the capital city (€1,029) and narrowly behind it in Bratislava (€1,084). However households living in commercially rented housing who depend on minimum wage can cover 88% of its total monthly expenses in case of a single person household and 79 % in case of a family with two children (this amount drops to 75 % for households living in Bratislava). Our findings therefore concur with our previously published assessment (Fabo and Guzi, 2019) that low-earning households in Slovakia generally struggle to obtain basic necessities of life even if they contain two adults working full time as well as a recently published critical analysis of the subsistence minimum by the Council for Budget Responsibility (Novyzedlak et al., 2022).

Table 7: Living income in context

Region	Slovakia		Bratislava	
	1+0	2+2	1+0	2+2
Household				
Subsistence minimum ⁸	€218	€569	€218	€569
Net income earned at minimum wage ⁹	€525	€1,050	€525	€1,050
Living income rented housing	€596	€1,327	€693	€1,398
Living income social housing	€444	€1,029	€497	€1,084
Living income owner occupied housing	€335	€847	€335	€847

Source: Own calculation.

Note: Net minimum wage estimate based on minimalnamzda.sk

From our assessment, we draw several conclusions. Firstly, we show that people in low earning households need to work full time to meet the basic ends. This finding stands in contrast with the narrative that limiting welfare transfers is needed to motivate people to work. The subsistence minimum threshold defined by the state is not sufficient to cover household expenses even for a debt free household with own housing.

We further found that households with children, where adults earn up to 10-20% above the minimum wage struggle to afford living in a rented housing. They can support themselves as long as they live in their own dwelling, but their labor mobility is limited. The availability of social housing is very limited in Slovakia but we show that it significantly helps families to

⁸ Households whose income falls under subsistence minimum can benefit from various government schemes to support low earning households. However, these benefits generally fall short even of the subsistence minimum threshold. Additionally, the state provides benefits to all parents of dependent children regardless of income.

⁹ Importantly, full time workers are entitled to one meal a day, which can be either provided directly at the company canteen or as a subsidy of meal tickets or in money equivalent of the subsidy paid directly to the worker. The minimum subsidy a worker is entitled to is €2.48 per working day or about €50 per worker monthly. In practice, the subsidy amount or value of meal provided by the employer tends to be higher than this minimum amount.

achieve a decent living standards. These households are not able to afford any kind of commercially rented housing if they want to relocate to Bratislava where job opportunities in low skill occupations exist. With minimum wages being so close to living income, the increase in energy prices in late 2021 and 2022 is likely to create existential difficulties for low-income households, supporting the case for targeted government subsidies.

Our key message is that the official amounts of subsistence minimum and minimal wage do not sufficiently cover reasonably basic requirements of life. Authorities should consider updating their calculation to better reflect the actual living costs.

References

- Anker, R., 2011. Estimating a living wage: a methodological review.
- Anker, R., Anker, M., 2017. *Living Wages Around the World: Manual for Measurement*. Edward Elgar Publishing.
- Banerjee, A., Niehaus, P., Suri, T., 2019. Universal Basic Income in the Developing World. *Annual Review of Economics* 11, 959–983. <https://doi.org/10.1146/annurev-economics-080218-030229>
- Ciaian, P., Cupák, A., Pokrivčák, J., Rizov, M., 2018. Food consumption and diet quality choices of Roma in Romania: a counterfactual analysis. *Food Sec.* 10, 437–456. <https://doi.org/10.1007/s12571-018-0781-8>
- Cupák, A., Pokrivčák, J., Rizov, M., 2016. Diverzifikácia spotreby potravín na Slovensku. *Politická ekonomie* 64, 608–626. <https://doi.org/10.18267/j.polek.1082>
- D'Acunto, F., Malmendier, U., Ospina, J., Weber, M., 2021. Exposure to Grocery Prices and Inflation Expectations. *Journal of Political Economy* 129, 1615–1639. <https://doi.org/10.1086/713192>
- Fabo, B., 2018. Living Wage a Relevant Topic for Europe. ETUI Research Paper-Policy Brief 8.
- Fabo, B., Belli, S.S., 2017. (Un) believable wages? An analysis of minimum wage policies in Europe from a living wage perspective. *IZA Journal of Labor Policy* 6, 4.
- Fabo, B., Guzi, M., 2019. The Cost of Living in the EU: How Much Do You Need? ETUI Research Paper-Policy Brief 4.
- Frothingham, S., 2018. What Is Basal Metabolic Rate? [WWW Document]. Healthline. URL <https://www.healthline.com/health/what-is-basal-metabolic-rate> (accessed 5.5.22).
- Goedemé, T., Penne, T., Hufkens, T., Karakitsios, A., Bernát, A., Simonovits, B., Alvarez, E.C., Kanavitsa, E., Parcerisas, I.C., Romaní, J.R., Mäkinen, L., Matsaganis, M., Arlotti, M., Kopasz, M., Szivós, P., Ritakallio, V.-M., Kazepov, Y., Bosch, K.V. den, Storms, B., 2017. What Does It Mean To Live on the Poverty Threshold? Lessons From Reference Budgets (No. 1707), Working Papers, Working Papers. Herman Deleeck Centre for Social Policy, University of Antwerp.
- Hirsch, D., Valadez-Martinez, L., 2017. *The Living Wage*. Agenda Publishing, Newcastle upon Tyne.
- Jurča, P., Klacso, J., Tereanu, E., Forletta, M., Gross, M., Čihák, M., 2020. The Effectiveness of Borrower-Based Macroprudential Measures: A Quantitative Analysis for Slovakia. IMF Working Papers 2020. <https://doi.org/10.5089/9781513550503.001.A001>
- Lucas, R.E., 1972. Expectations and the neutrality of money. *Journal of Economic Theory* 4, 103–124. [https://doi.org/10.1016/0022-0531\(72\)90142-1](https://doi.org/10.1016/0022-0531(72)90142-1)
- Novýsedlák, V., Siebertová, Z., Švarda, N., 2022. Dvojaká chudoba ...alebo keď nevieme, kto je chudobný. Rada pre rozpočtovú zodpovednosť. URL <https://www.rrz.sk/dvojaka-chudoba-alebo-ked-nevieme-kto-je-chudobny/> (accessed 6.23.22).
- Sitárová, T., Hornáček, M., 2020. Incomes, Expenditures of Private Households in the SR for 2019 (simulated data). Statistical Office of the Slovak Republic, Bratislava.
- United Nations, 1948. Universal Declaration of Human Rights.

Appendix 1: Calculation of food costs in detail

The amount of food calories is set rigorously. WHO suggests using weight corresponding to the average height and a body mass index (BMI) of 21 as the basis for estimating an adequate number of food calories. On average Slovak men are 179.5 cm tall and Slovak women are 167.5 cm tall. At the BMI of 21 we assume 70kg weight for a male and 59 kg for a female. Basal metabolic rate (BMR) is the amount of energy needed for essential life functions, such as breathing, circulation, cell production, nutrient processing or brain function (Frothingham, 2018). BMR depends on the person weight and in our case it equals 1,325 kcal for females and 1,676 kcal for males. The total energy expenditure is the multiple of BMR depending on the physical activity level (PAL). There are three main types of physical activity characterized by different values of PAL: sedentary or light activity lifestyle, active or moderately active lifestyle and vigorous or vigorously active lifestyle (FAO, 2021).

We choose PAL factor of 1.6, which is on the border between sedentary and active lifestyles. This leads to the 2,210 kcal /day ($1,325 \times 1,6$) for females and 2,681 kcal /day ($1,676 \times 1,6$) for males. Calories are set differently for children to account for their growth. Children younger than 17 require on average 1,892 kcal for moderate activity level (Anker and Anker, 2017). A family of four thus requires about 8,500 kcal per day. A single-adult household of one person requires 2,681 kcal per day in order to ensure a sufficient diet for a female as well as for a male.

The food diet model reflects the consumption patterns reported in the HBS with minor modifications. Our food model includes 73 g of protein, 306 g of carbohydrates and 78 g of fats a day¹⁰. Protein and carbohydrates have 4 calories per gram and fats have 9 calories per gram, that amounts to 292 kcal of protein, 1,223 kcal of carbs and 705 kcal of fats. The nutritious diet proposed by WHO and FAO includes at least 10 % protein, 15-30 % fats and 55-75 % carbohydrates (expressed as % of total food calories). Our food model complies with these requirements (it includes 13 % of protein, 55 % of carbohydrates and 32% of fats) except it is higher in the amount of fats. We reduce the amount of items rich in fat and lower the amount of flour on the basis of WHO guidelines.

Prices are taken from the CPI microdata whenever available and manually collected from the online store of the Tesco shopping chain for other items. Food items are divided into food groups according to a model diet presented by Anker and Anker (2017). Expenditure on alcoholic beverages and tobacco are excluded.

¹⁰ We take information on food nutrients from <https://www.kaloricketabulky.sk/>.

Appendix Table 1: Food diet model for one person per month

Food groups	Food items	kg/year	Price/ unit (€)	Food costs/ month (€)
1A. Cereals and grains	Wheat flour	12.0	0.33	0.33
	Pearl barley and oat flakes	1.1	0.98	0.09
	Corn semolina	0.9	0.98	0.07
	White rice	5.7	1.03	0.49
1B. Prepared cereals	Bread	33.7	1.05	2,95
	Baked (rolls)	38.3	1.12	3,57
	Pasta	7.2	1.30	0.78
2. Roots	Potatoes	52.8	0.49	2.16
3. Legumes and nuts	Nuts in terms of kernel	1.5	12.99	1.62
	Beans	0.4	1.98	0.07
	Peas	0.7	1.88	0.11
	Lentils	0.4	2.10	0.07
4. Dairy	Milk for drinking (<i>l</i>)	44.1	0.69	2.54
	Curd cheese	2.8	4.20	0.98
	Hard cheese	4.2	5.56	1.95
	Soft cheese	2.0	7.90	1.32
	Processed cheese	1.9	7.90	1.25
	Powder, evaporated	0.7	4.37	0.25
	Cream	3.3	4.60	1.27
	Yogurts	7.8	2.48	1.61
	Fermented cream	1.9	2.72	0.43
5. Eggs	Eggs (<i>in pieces</i>)	224.0	0.129	2.41
6. Meats and fish (<i>in carcass weight</i>)	Beef and veal	5.2	4.57	1.98
	Poultry	26.9	2.19	4.91
	Pork	35.7	3.40	10.12
	Fish	5.6	6.45	3.01
7A. Green leafy vegetables	Cauliflower and	2.3	1.19	0.23
	Cabbage	12.4	0.49	0.51
	Salad	2.4	1.59	0.32
	Spinach	0.3	0.86	0.02
	Kohlrabi	4.7	2.95	1.16
7B. Other vegetables	Tomatoes	18.5	1.49	2.30
	Onion	11.0	0.55	0.50
	Garlic	0.7	3.59	0.21
	Carrot	12.9	0.69	0.74
	Parsley	3.1	1.79	0.46
	Celery	2.0	0.89	0.15
	Cucumbers	6.8	1.50	0.85
	Green pepper	6.6	1.76	0.97
	Melons	7.7	0.49	0.31
8. Fruits	Apples	13.6	1.09	1.24
	Pears	1.5	1.57	0.20
	Plums	1.6	2.22	0.30
	Apricots	0.9	3.13	0.23
	Peaches	2.6	2.69	0.58
	Strawberries	1.0	7.96	0.66
	Grapes	4.4	2.19	0.80
	Oranges	13.2	1.23	1.35
	Tangerines	5.1	1.35	0.57

	Lemons	3.5	1.78	0.52
	Grapefruits	1.5	1.09	0.14
	Bananas	11.3	0.99	0.93
	Kiwi	0.9	1.95	0.15
9. Oils and fats	Butter	1.5	9.52	1.19
	Lard (<i>in terms raw</i>)	1.5	2.38	0.30
	Vegetable edible fats	3.0	1.28	0.32
	Edible vegetable oils	5.0	1.49	0.62
10. Sugar and confectionaries	Sugar	10.8	0.59	0.53
	Chocolate, chocolate	4.3	9.60	3.44
	Cocoa powder	0.7	9.90	0.58
	Non-chocolate sugar	3.0	8.77	2.19
	Ice cream	2.7	2.49	0.56
	Honey	1.1	6.68	0.61
11. Non-alcoholic beverages	Coffee	2.9	14.78	3.57
	Tea	0.2	24.00	0.40
	Unflavoured drinks (<i>l</i>)	82.6	0.27	1.86
	Flavoured drinks (<i>l</i>)	111.9	0.67	6.25
	Juices and nectars (<i>l</i>)	8.8	1.29	0.95
	Syrups for drinking (<i>l</i>)	3.2	1.70	0.45
12. Other	Poppy	0.4	4.76	0.16
	Yeast	1.5	5.48	0.69
	Spices	2 % of costs		
The cost of food basket (2236 kcal per day)		89.12		

Source: Own elaboration based on WHO, FAO, CPI microdata and Tesco data

Note: Prices are expressed per kilogram or per litre. In the case of eggs, the price are per an individual egg.

Appendix 2: Calculation of utility costs

We assume a single person pays €16 per month for water and €45 for electricity, gas, solid and liquid fuels and central heating and warm water. Energy costs for a family, are calculated by multiplying the average expenditures per person by the coefficient 2.1 (OECD equivalence scale also used by Slovak Statistical Office in the HBS reports). The utility costs for a family of four are estimated at €25 per month for water and at €68 per month for electricity, gas, solid and liquid fuels and central heating. We add €2 charge per person per month for garbage waste and €10 per household contribution to the building maintenance fund.