

Press Release

Food Waste and the Shopping and Consumer Behaviour of Czech Households – Food 2021

- ⊗ More than two fifths (43%) of people believe that food waste is a big problem, while another approximately two-fifths (42%) believe that food waste is wrong but there are more urgent problems that need solving, and around one-seventh (14%) do not consider food waste to be a problem in society.
- ⊗ A more than one-half of majority (54%) of people say that their household does not waste more than 10% of its food. Just under one-quarter (23%) believe that their household wastes more than 10% but less than one-quarter of their food. One-twentieth (5%) of respondents claim their household wastes more than one-quarter but less than one-half of its food, and a negligible 1% say they throw out one-half or more of their food. Just under one-eighth (13%) of respondents claim that their household does not throw out any food.
- ⊗ According to respondents, the most important reason people have for limiting food waste is the money their household can save in doing so (74%), and the least important reason cited is personal experience of not having enough food (30%).
- ⊗ A more than one-half majority (53%) of respondents go shopping for food several times a week, one-quarter (25%) go grocery shopping once a week, and 10% of respondents shop every day.
- ⊗ Monthly expenditures on groceries for the whole household tend to be in the range of 2,000 Czk and 10,000 Czk.
- ⊗ The Czech public believe that food services are the biggest source of food waste, and that food production contributes the least to food waste. These results, however, are very different from EU estimates on this issue.

Prepared by:

Radka Hanzlová

Public Opinion Research Centre, Institute of Sociology, Czech Academy of Sciences

Tel.: 210 310 587; e-mail: radka.hanzlova@soc.cas.cz



In its special 'Food 2021' survey the Public Opinion Research Centre at the Institute of Sociology, Czech Academy of Sciences, examined the Czech public's attitudes and opinions on the issue of food waste.

Respondents were asked to evaluate how serious a problem they believe the issue of food waste to be, to estimate how much food on average their household wastes and how much of that waste could be avoided, and to indicate why they end up throwing out food and what leads them not to waste food. In the next part of the survey, we focused on the respondents' shopping and consumption behaviour and in particular asked them about where and how often they shop, how much they spend on food on average, and about other actions relating to grocery shopping that they engage in. Finally, we were also interested in learning who, in the view of respondents, contributes most to food waste and, by contrast, who, in respondents' opinion, is trying most to reduce food waste in the Czech Republic.

Background to the issue of food waste

Food waste is currently an enormous problem all over the world. It is an issue that has environmental, economic, and social consequences. We can see this in the fact that one of the United Nations' Sustainable Development Goals is to reduce by half the volume of food waste produced per person across the food production chain.¹ And since 2020 there has been an International Day of Awareness of Food Loss and Waste, which falls on 29 September.

According to a study conducted by the Food and Agriculture Organization (FAO) titled 'Global Food Losses and Waste', around one-third of all food produced is thrown out each year, which amounts to 1.3 billion tonnes of food.² That amount of food could probably feed as many as three billion people. Food waste leads to large financial losses, which in the European Union annually amount to an incredible 143 billion EUR.³

A big problem in this area is the shortage of precise data on the amount and composition of the food that is wasted, as no set method has yet been developed that could be applied in every country in order to observe trends and compare the results of different countries. The figures that are available are only estimates, which tell us that the global average is 74 kg of food thrown out per person each year.⁴ As regards countries of the European Union, they annually throw out approximately 129 million tonnes of food.⁵

Rough estimates provided by the European Commission indicate that at various stages in the food production chain the Czech Republic throws out very little food in comparison with other EU countries. According to a more modest estimate, 829,851 tonnes of food are wasted in the Czech Republic (i.e. 6.4% of the total volume of food production), if we do not take into account potential waste from agriculture. According to the same estimate, households throw out 254,124 tonnes of food, which is 25 kg a year per inhabitant of the Czech Republic. Researchers at Mendel University in Brno arrived at similar figures in their study of how much food is wasted by households in Brno, which revealed that the average resident of Brno throws out 37.4 kg of food each year, while people's subjective estimate of how much they waste was only 4.2 kg.^{6 7} Food purchases are naturally a significant item in the family budget. According to the Czechoslovak Statistical Office, in 2020 expenditures on food (not including restaurants and beverages) amounted to 28,341 Czk a year per household member, which amounts to 19% of all consumer expenditures.⁸

Food waste accounts for around 30% of all household waste.⁹ It is also important to realise what the term 'food waste' refers to and what it encompasses. Food waste comprises not just the food that ends up in the consumer's waste basket and the waste crushers, etc. It also includes food that is composted, fed to animals (e.g. hard bread), or is otherwise left unconsumed by consumers themselves. It is not just individuals and households that waste food, as it is also wasted in other stages of the food production chain.

For a fuller picture, we should add that food waste is part of the wider issue of food consumption and distribution generally. It is something that experts have been dealing with for decades, especially in connection with unequal distribution in terms of access to food globally. According to estimates by the FAO, the number of undernourished people in the world has been growing in recent years. The most recent data for 2020 estimate that between 720 and 811 million people around the world suffer from hunger and undernourishment, which is 161 million more than in 2019. At the same time, in 2020 almost 2.37 billion people did not have access to enough food, which is a year-on-year increase of 320 million people.¹⁰ Eradicating hunger and ensuring access for all to safe, nutritious, and adequate amounts of food throughout the year and eliminating all forms of undernourishment by 2030 are also among the UN's Sustainable Development Goals (SDGs), which according to current data, however, are still a very distant goal.

Experts began to focus systematically on the issue of food waste after the year 2000. Coverage of the issue in the Czech Republic has so far remained on the level of separate studies dealing with individual dimensions of the problem, as there are no studies or research teams that deal with this issue in a complex way. The Public Opinion

¹ OSN. (2021). *Cíle udržitelného rozvoje* [online]. Available from: <https://www.osn.cz/sdg-12-zajistit-udrzitelnou-spotrebu-a-vyrobu/>

² FAO. (2011). *Global food losses and food waste – Extent, causes and prevention*. Rome. Available from: <http://www.fao.org/3/mb060e/mb060e.pdf>

³ Stenmarck, Å., Jensen, C., Quesada T., & Moates, G. (2016): *Estimates of European food waste levels*. FUSIONS. Available from: <https://www.eu-fusions.org/phocadownload/Publications/Estimates%20of%20European%20food%20waste%20levels.pdf>

⁴ United Nations Environment Programme (2021). *Food Waste Index Report 2021*. Nairobi.

⁵ Caldeira, C., De Laurentis, V., Corrado, S., van Holsteijn, F., & Sala, S. (2019). Quantification of food waste per product group along the food supply chain in the European Union: A mass flow analysis. Resources, Conservation and Recycling, 149, 479–488. <https://doi.org/10.1016/j.resconrec.2019.06.011>

⁶ Neplýtvěj potravinami. Mendelova Univerzita v Brně. <http://neplytvejpotravinami.mendelu.cz/>

⁷ Krbcová. 2020. V Brně si mysleli, že vyhodí 4 kg potravin ročně. Je to mnohem víc. [online]. Available from: <https://www.vitalia.cz/clanky/v-brne-si-mysleli-ze-vyhodi-4-kg-potravin-rocne-je-to-mnohem-vic/>

⁸ ČSÚ. Spotřební výdaje domácností – 2018. Available from: <https://www.czso.cz/cso/czso/spotrebni-vydaje-domacnosti-2020>

⁹ FAO. 2011. *Global food losses and food waste – Extent, causes and prevention*. Rome. Available from: <http://www.fao.org/docrep/014/mb060e/mb060e.pdf>

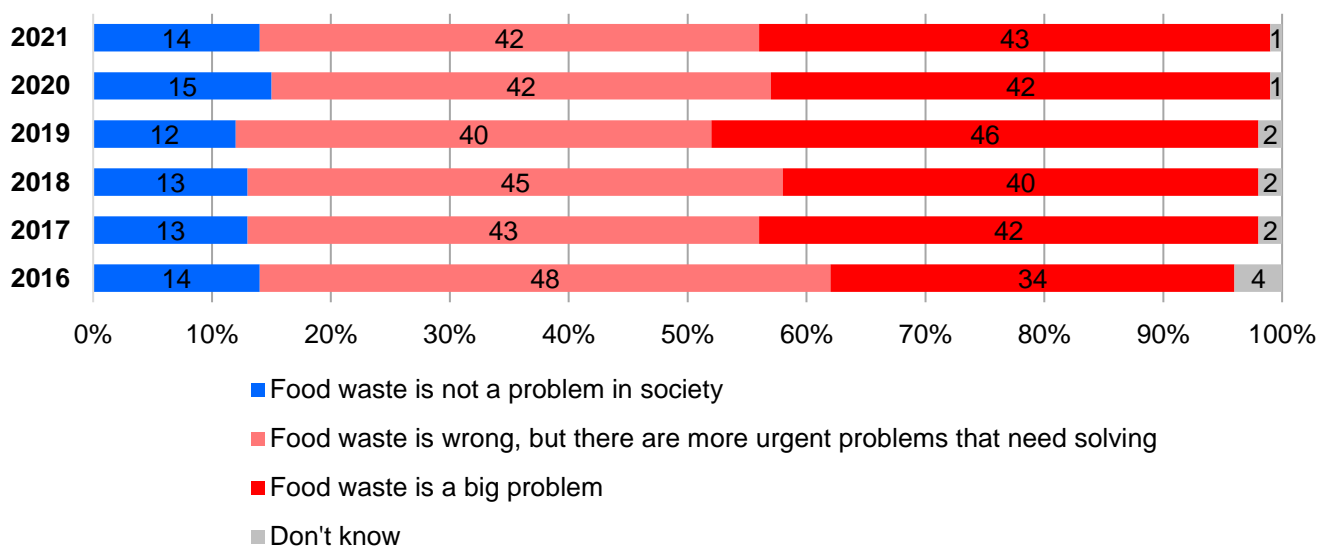
¹⁰ FAO, IFAD, UNICEF, WFP and WHO. (2021). *The State of Food Security and Nutrition in the World 2021. Transforming food systems for food security, improved nutrition and affordable healthy diets for all*. Rome, FAO. <https://doi.org/10.4060/cb4474en>

Research Centre has been surveying the Czech public's opinions on this issue since 2016 as part of its participation in the Strategy AV21 – Food for the Future research programme,¹¹ which deals with the subject of 'Food Waste as a Local and Global Problem'. Every year the Public Opinion Research Centre surveys people's views on food waste and their shopping and consumer habits, and each year it focuses additionally on one other topic, such as genetically modified crops, shopping for organic and local food, labelling food products with shelf-life dates, awareness of a gluten-free diet, the problem of packaging, composting, and growing fruit and vegetables in the garden.

Food waste in Czech households

Respondents were first asked for their opinion on food waste. More than two-fifths (43%) of respondents considered food waste to be a big problem, while around another two-fifths (42%) said food waste is wrong but that there are more urgent problems that need solving, and approximately one-seventh (14 %) said they did not think food waste is a society-wide issue (see Figure 1).

Figure 1: Opinions on how urgent the problem of food waste is (in %)¹²



Source: Public Opinion Research Centre, Institute of Sociology, Czech Academy of Sciences, Our Society, 'Food'.

Compared to the last survey in August 2020 there were no statistically significant changes in the distribution of opinions and the current results are comparable to the results of all the surveys since 2017. A longer time comparison indicates that people have relatively stable views on the issue of food waste.

Views on food waste have a connection to the kinds of the places where people shop. Respondents who regularly shop at farmers markets, farm shops, or package-free shops are more likely to take the view that food waste is a big problem. This opinion was also more often held by women (49%, compared to 37% for men) and people with a university education.

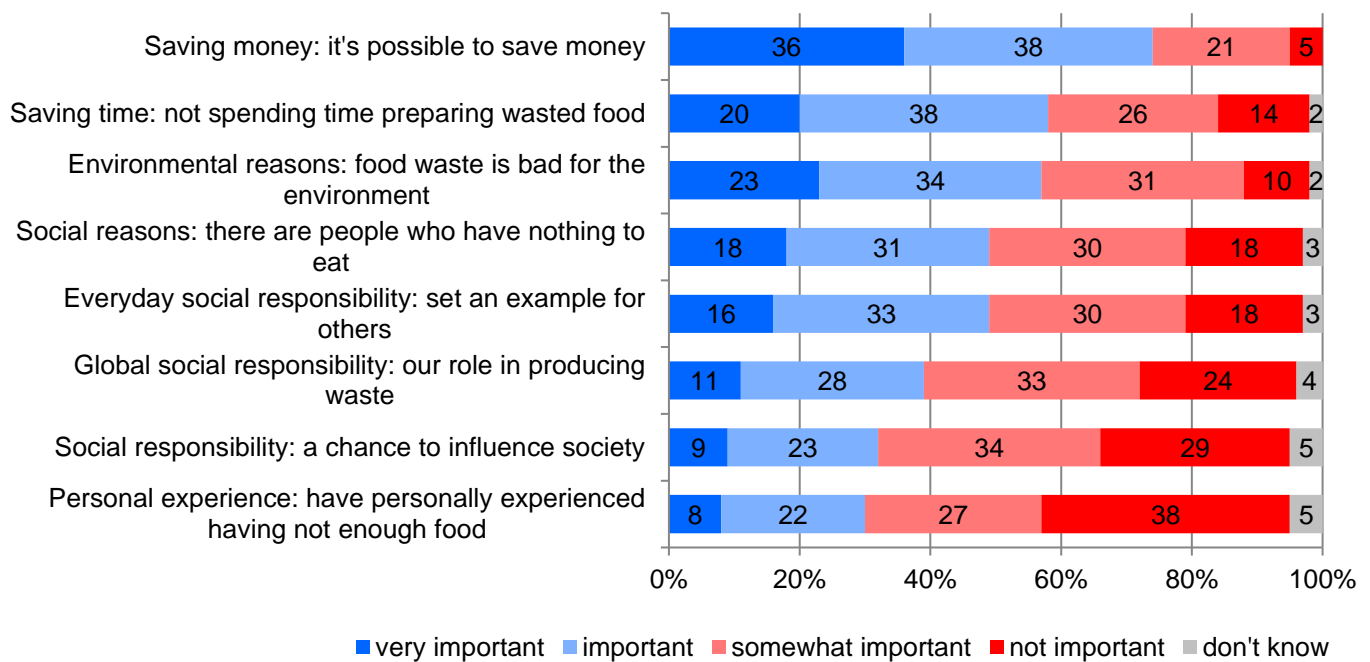
When respondents were asked to evaluate specific reasons for limiting food waste (see Figure 2), the most important one mentioned was that households can save money. Almost three-quarters (74%) of respondents cited this as an important reason. Just under three-fifths (58%) of people consider saving time they would otherwise spend preparing or buying food to be a reason for limited food waste and also see it as beneficial for the environment (57%). Almost

¹¹ <https://www.potravinav21.cz/>

¹² Question wording: 'Please indicate which of these opinions most closely resembles your own: Food waste is not a problem in society. Food waste is wrong, but we have more urgent problems that need solving. You consider food waste to be a big problem.'

one-half of respondents consider the ethical and social aspects of the problem to be significant and cite as important reasons for limiting waste to be the fact there are people in the world who are hungry and that by changing their behaviour they can set an example and influence the behaviour of others around them (49% considered each of these two reasons important). Just under two-fifths (39%) of respondents said that they feel less guilty about producing waste in general by limiting their food waste. Among the least common reasons, cited by approximately three-tenths of respondents in each case, were the feeling that people can change society through their own behaviour (32%) and the influence of their own personal experience of having not enough food (30%).

Figure 2: The importance of different reasons for limiting food waste (in %)¹³



Source: Public Opinion Research Centre, Institute of Sociology, Czech Academy of Sciences, Food 10–26 July 2021, 884 respondents over the age of 15, face-to-face interviews.

The level of importance assigned to different reasons for limiting food waste correlates strongly with age, education, sex, and household standard of living. People over the age of 60 more often indicate saving time and money, the fact there are people in the world who are hungry, and personal experience of a lack of food to be 'very important' reasons for limiting food waste, while the last-cited reason here is 'not important' for young people between the ages of 15 and 19 and respondents with a good household standard of living. The explanation for this is clear, older people are more aware of the value of food because they have personally experienced having not enough food, while young people do not have this experience and therefore need to be educated on this and be told that food waste is bad and what its negative effects are. Women more often indicated that 'very important' reasons for not wasting food for them are saving time and environmental reasons, along with the feeling of guilt for producing waste generally, and an awareness that there are people who have nothing to eat, while for men and people with a poor household standard of living this reason is more often 'not important'. Saving money is identified as a more important reason by people with secondary-school education without the school-leaving exam, and by respondents who assess their household standard of living as poor. By contrast, a sense of social responsibility is more often 'not important' for people with basic education and respondents with a poor household standard of living.

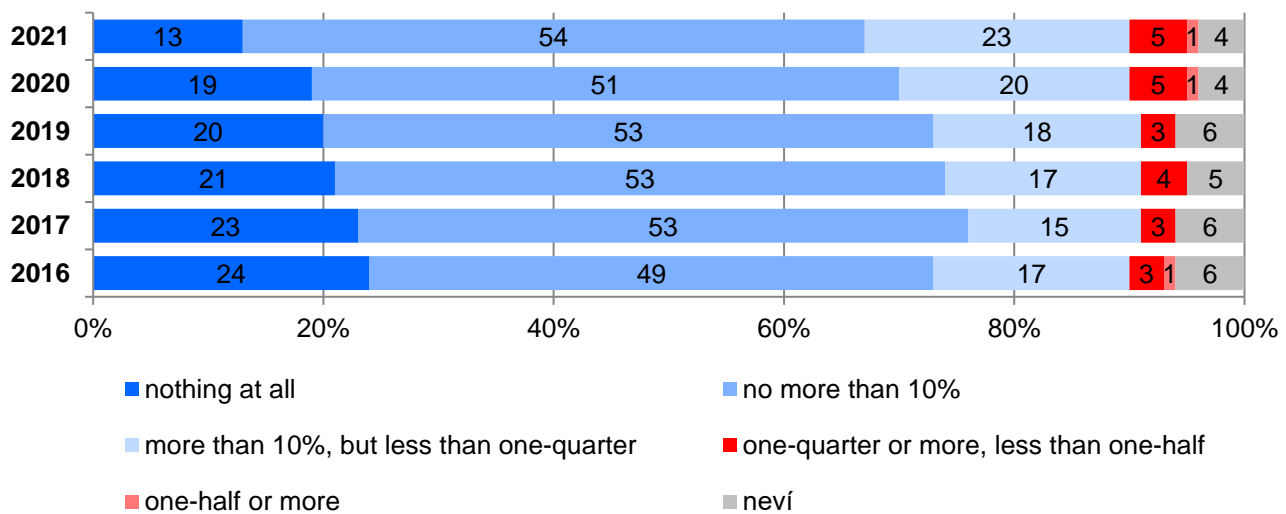
¹³ Question wording: 'People give various reasons for trying not to waste food. I'm going to read you several reasons, and I'd like you to tell me how important or unimportant the given reason is for you not to waste food. a) You're thinking about how you can save money. b) You're thinking about how wasting food is bad for the environment. c) You're thinking about the people who do not have enough to eat. d) You regret the time wasted on shopping for and preparing food that won't be eaten. e) You feel guilty about producing waste generally. f) You're thinking about how you can change society through your own behaviour. g) You want to set an example for those close to you. h) You have experienced what it's like to not have enough food yourself.' Response options: very important, important, somewhat important, not important at all.

Reasons for wasting food and how much food is wasted

We then asked respondents to estimate how much food their household wastes (see Figure 3). They were asked to also include in their estimate any food they compost or give to animals – i.e. include all food not consumed by the household. A more than one-half majority (54%) of citizens declared that their household wastes no more than 10% of their food. Just under one-quarter (23%) of respondents estimated that their household wastes more than 10% but less than one-quarter of their food. One-twentieth (5%) of respondents admitted that their household throws out more than one-quarter but less than one-half of their food, and an insignificant 1% said they throw out one-half or more of their food. Just under one-eighth (13%) of respondents claimed, on the contrary, that their household does not throw out any food. The remaining 4% of respondents were unable to answer this question and chose ‘don’t know’ as their response.

When we look at the trend over time since 2016, we find no statistically significant year-on-year shifts in the distribution of the answers to how much food households waste. The only exceptions are the very slight increase (by 4 percentage points) between 2017 and 2017 in the share of people claiming their household wastes no more than 10% of their food, and the decrease (of 6 percentage points) since August 2020 in the share of people claiming they do not waste any food. This decrease is accompanied by a slight (statistically insignificant) increase in the share of people claiming they throw out no more than 10% or throw out more than 10% but less than one-quarter of their food, with the shares for these two responses reaching their highest levels so far. The data reveal a general decline in the share of people claiming that they throw out ‘nothing at all’, which has been observed since the first survey in 2016, since which time the share of people claiming they waste no food has declined by 11 percentage points.

Figure 3: Declared share of food that households throw out (in %)¹⁴



Source: Public Opinion Research Centre, Institute of Sociology, Czech Academy of Sciences, Food 10–26 July 2021, 884 respondents over the age of 15, face-to-face interviews.

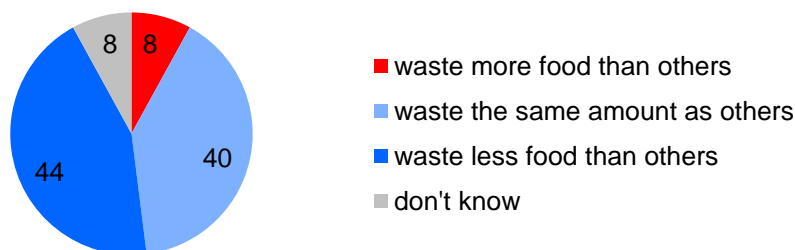
A more detailed analysis reveals that people who claim they throw out ‘nothing at all’ tend to be those who are over the age of 60, have basic education, assess their household standard of living as poor, and ‘always’ stick strictly to their shopping list. Young people aged 15 to 19 and respondents with basic education significantly more often don’t know what share of food their household throws out. This is especially the case if they are not the ones who see to the shopping in their household (which is an item that is relatively closely linked to age).

We then asked those respondents who said that they do throw out at least some food about how they think they compare to other households that are the same size as theirs in terms of how much food they waste (see Figure 4).

¹⁴ Question wording: ‘What percentage of food is left unconsumed in your household and is thrown out, fed to animals, or composted? Please think about it and estimate as a percentage what share of food your household throws out.’ Response options: nothing at all, less than 10%, more than 10% but less than one-quarter, approximately one-quarter or more but less than one-half, one-half or more.

More than two-fifths (44%) of respondents said that they believe their household wastes less food than other households of the same size, two-fifths (40%) of respondents estimated that they throw out around the same amount of food as other similarly sized households, and just under one-eighth (8%) said they believe their household throws out more than other similarly sized households. The remaining just under one-tenth (8%) of respondents said they 'don't know'.

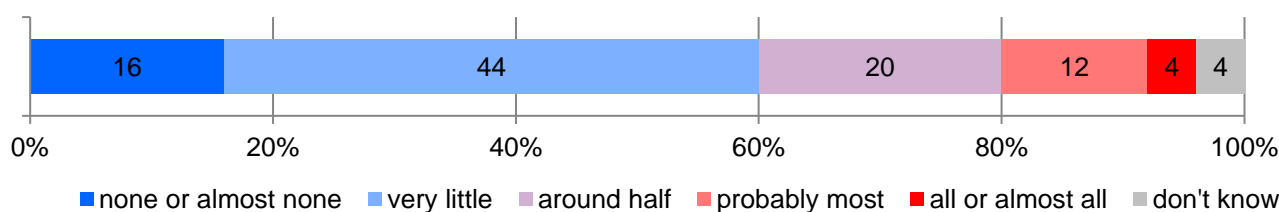
Figure 4: How respondents believe their household compares to other similarly sized households in terms of how much food they waste (in %, only those who waste at least some food)¹⁵



Source: Public Opinion Research Centre, Institute of Sociology, Czech Academy of Sciences, Food 10–26 July 2021, 884 respondents over the age of 15, face-to-face interviews.

We also asked those respondents who said that they do throw out at least some food whether they thought it was possible to prevent this waste of food, and how much they could avoid throwing out (see Figure 5). More than two-thirds (44%) of people said that they could avoid wasting 'a small amount' of the food their household throws out, one-fifth (20%) estimated they could avoid wasting 'around half' of the food they throw out, and around one-tenth (12%) of respondents said they could avoid wasting 'probably most' of the food that their household throws out. Just under one-twentieth (4%) people thought that they could avoid throwing out 'all or almost all' the food they waste. Conversely, approximately one-sixth (16%) of respondents said that it would be impossible to reduce the amount of food their household throws out. The remaining 4% of these respondents were unable to answer and chose 'don't know' as their response.

Figure 5: How much food waste could the household avoid (in %, only those who waste at least some food)¹⁶



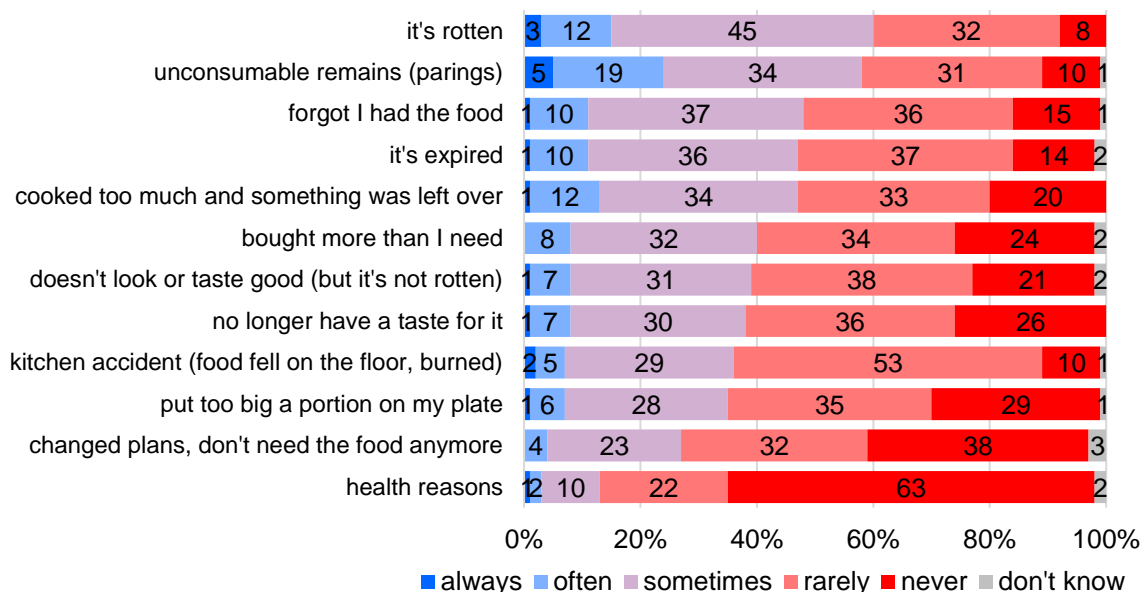
Source: Public Opinion Research Centre, Institute of Sociology, Czech Academy of Sciences, Food 10–26 July 2021, 884 respondents over the age of 15, face-to-face interviews.

The most common reasons for throwing out food that were mentioned by the respondents who said they waste at least some food were the food's deterioration (it's rotten, past its expiry date, doesn't look very good) or that the waste consisted of leftovers in the form of parings. Relatively common reasons given had to do with having too much food (cooked too much food, forgot about the food, needlessly bought too much, a person took too large a portion). Another reason frequently mentioned was that of accidents occurring while handling food (the food fell on the floor, burned) or the person lost their taste for it (for details see Figure 6).

¹⁵ Question wording: 'Do you think that compared to other similarly sized households your household wastes: more food, the same amount of food, less food.'

¹⁶ Question wording: 'How much of the food your household waste could be prevented? None or almost none, very little, probably half, probably most, all or almost all.'

Figure 6: Reasons why foods end up not being consumed in households (in %, only those who throw out at least some food)¹⁷



Note: Response items are ordered according to the sum of responses 'always', often, and 'sometimes'.

Source: Public Opinion Research Centre, Institute of Sociology, Czech Academy of Sciences, Food 10–26 July 2021, 884 respondents over the age of 15, face-to-face interviews.

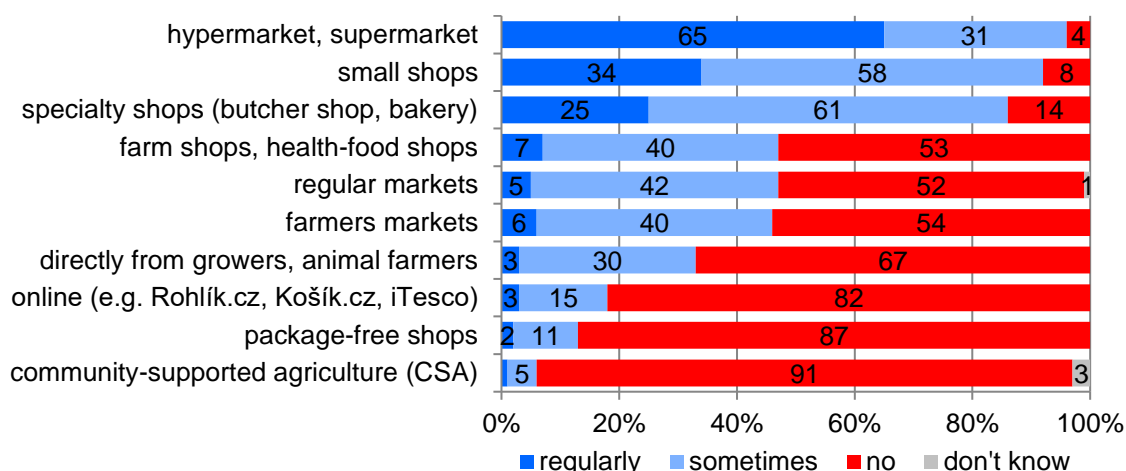
Respondents' shopping and consumer behaviour

In the final part of this report will look at the results for questions about the respondents' shopping and consumer behaviour. We specifically asked the respondents where they usually go shopping for groceries, how often they go, how much they spend on groceries a month, and what other behaviours they engage in in connection with food shopping (e.g. whether they make a shopping list and use it when shopping, whether they buy food on sale or food that they don't need).

Figure 7 shows where respondents most often go shopping for food (93% of respondents said they at least sometimes do their shopping in a grocery store). Most respondents buy their food (regularly or occasionally) in a hypermarket/supermarket (96%), in smaller shops (92%), and in specialised shops like butcher shops or bakeries (86%), while other options are used much less often, as the results indicate that they are used by less than one-half of respondents. Just under one-half of respondents regularly or occasionally shop at an ordinary market, a farm shop, or at a health-food shop (in each case 47%) and at a farmer's market (46%). One-third (33%) of people also at least sometimes buy directly from food growers and animal farmers. Just under one-twentieth (18%) of respondents indicated that they regularly or sometimes shop online (e.g. Rohlík.cz, Košík.cz, iTesco). More than one-tenth (13%) of people said they at least sometimes shop in a package-free shop. Among Czech citizens the least common form of shopping was through community supported agriculture (CSA), as only around one-twentieth (6%) of respondents indicated that they engaged in this kind of shopping.

¹⁷ Question wording: 'There are many reasons why you may throw out food. I'm going to present you with some reasons and please tell me if they happen in your household. a) it's rotten, b) it doesn't look or taste good (but it's not rotten), c) it's expired, d) cooked too much food and some of it was left over, e) for health reasons (e.g. allergies), f) no longer have a taste for it, g), accident in the kitchen (e.g. the food fell on the floor, burned), h) you forgot about the food item, i) you bought more than you need (too large a package, you bought something you already had at home), j) your plans changed and you no longer need the food item, k) unconsumable remains (parings), l) you put too big a portion on your plate.' Response options: never, rarely, sometimes, often, always.

Figure 7: Where do respondent shop for food? (in %, only those who shop for food)¹⁸



Note: Response items are ordered according to the sum of responses 'yes regularly' and 'yes sometimes'.

Source: Public Opinion Research Centre, Institute of Sociology, Czech Academy of Sciences, Food 10–26 July 2021, 884 respondents over the age of 15, face-to-face interviews.

In a time comparison going back to 2018, presented in Table 1, we can see that, with a few exceptions, there were no statistically significant year-on-year shifts in respondents' opinions between 2018 and 2020, and the results can therefore be regarded as relatively stable. In the current survey, however, there were several significant shifts from the previous survey in August 2020, as there was an increase in the share of people who at least sometimes shop for food in a farm shop or a health-food shop (an increase of 10 percentage points), at a farmers market (an increase of 7 percentage points), at an ordinary market (an increase of 5 percentage points), and directly from food growers and animal farmers (an increase of 4 percentage points). Since 2018 there has been a clear trend of slightly increasing shares of people who shop online (a total increase of 6 percentage points). The results of the recent survey are in almost every case statistically comparable to the survey from 2018, except for the shares of people shopping in farms shops and health-food shops and shopping online, as these shares are higher in the most recent survey.

Table 1: Where the respondents shop for food (in %, only those respondents who shop for food) – time comparison

	VI/2018	IV/2019	VIII/2020	VII/2021
Hypermarket, supermarket	97	97	97	96
Small shops	91	91	93	92
Specialty shops (e.g. butcher shop, bakery)	89	88	86	86
Farm shop or health-food shop	42	43	37	47
Regular market	48	40	42	47
Farmers market	44	41	39	46
Directly from food growers, animal farmers	36	32	29	33
Online (e.g. Rohlík.cz, Košík.cz, iTesco)	12	13	15	18
Package-free shops	-	-	11	13
Through community-supported agriculture (CSA)	-	-	-	6

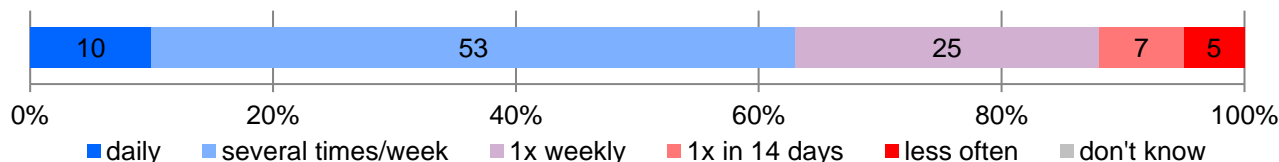
Note: The figures in the table are the sums of the responses 'yes regularly' + 'yes sometimes'. The difference to 100% is made up of the responses 'no' and 'don't know'. Items are listed in order according to the results of the current survey.

Source: Public Opinion Research Centre, Institute of Sociology, Czech Academy of Sciences, Food.

¹⁸ Question wording: 'Do you buy food at the following places? a) hypermarkets, supermarkets, b) small shops, c) specialty shops (e.g. butcher shop, bakery), d) farm shops or health-food shops, e) farmers markets, f) regular markets, g) directly from growers and animal farmers, h) online (e.g. Rohlík.cz, Košík.cz), i) package-free shops.' Response options: yes regularly, yes sometimes, no.

We were also interested in how often people shop for food. A more than one-half majority (53%) of respondents said that they shop for food several times a week, one-quarter (25%) shop once a week, and just under one-tenth shop less often than that (7% go grocery shopping once every two weeks and 5% shop even less often than once every two weeks). Conversely, one-tenth (10%) of respondents stated that they go shopping for food every day. It is more often women who shop every day or several times a week, while men shop less often.

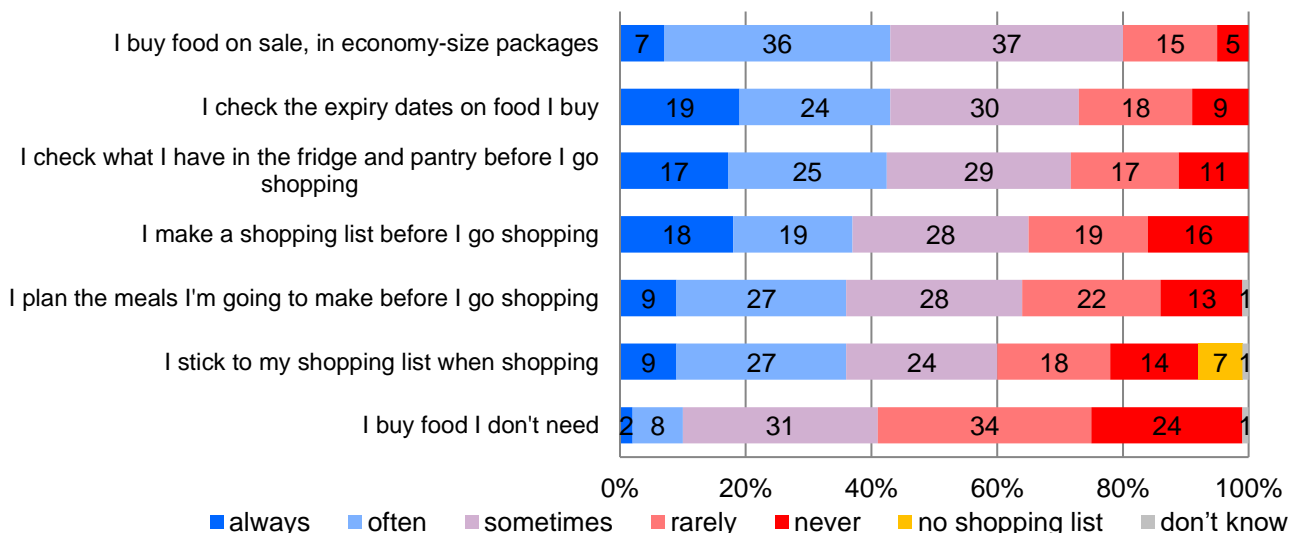
Figure 8: How often do people shop for food (in %, only those who do shop for food)¹⁹



Source: Public Opinion Research Centre, Institute of Sociology, Czech Academy of Sciences, Food 10–26 July 2021, 884 respondents over the age of 15, face-to-face interviews.

We then presented respondents with a battery of questions focused on different behaviours relating to food shopping that it has been recommended people do or do not engage in to prevent food waste. Figure 9 shows that among the behaviours that tend to contribute to food waste, the one people most commonly do is buy food because it's on sale or in an economy-size package (80% of respondents at least sometimes do this), while buying food they don't need is much less common (41% of respondents at least sometimes do this). The results for the other behaviours that, conversely, people should do to prevent food waste encouragingly show that three-fifths of respondents at least sometimes engage in these behaviours. Common ones are checking the expiry/best before dates on labels (73%) and checking what's in the fridge and the pantry before going shopping (71%). Approximately two-thirds of respondents said they make a shopping list before they go shopping (65%) and plan the meals they are going to prepare (64%). Three-fifths (60%) of respondents said that they at least sometimes stick to a written shopping list when they are shopping.

Figure 9: How often do people engage in selected behaviours relating to shopping for food (in %, only those who shop for food)²⁰



Note: Items are listed in order according to the sum of responses 'always', 'often', and 'sometimes'.

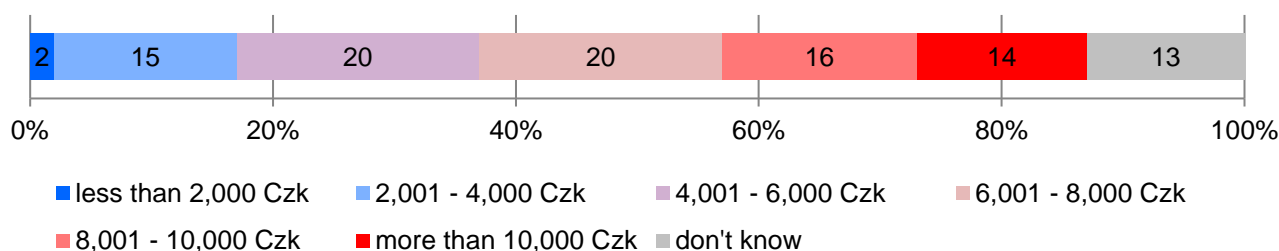
Source: Public Opinion Research Centre, Institute of Sociology, Czech Academy of Sciences, Food 10–26 July 2021, 884 respondents over the age of 15, face-to-face interviews.

¹⁹ Question wording: 'How do you shop for food? Every day, several times a week, once a week, once every two weeks, less often than once every two weeks.'

²⁰ Question wording: 'How often do you engage in the following behaviours relating to food shopping? a) You make a shopping list before you go shopping; b) You check what you have in the pantry and fridge before you go shopping; c) You plan the meals you're going to make before you go shopping; d) You stick to your shopping list when you are shopping; e) You check the expiry/best before dates on the food you buy; f) You buy food items because they're on sale or in economy-size packages; g) You buy food items that you don't need.' Response options: never, rarely, sometimes, often, always.

At the close of this set of questions we asked respondents to tell us how much their household spends on food each month. Figure 10 shows that households most often spend between 2,000 and 10,000 Czk on food a month, with one-seventh (15%) spending between 2,001 and 4,000 Czk, one-fifth (20%) between 4,001 and 6,000 Czk, one-fifth (20%) between 6,001 and 8,000 Czk, and around one-sixth (16%) between 8,001 and 10,000 Czk. Another over one-tenth (14%) indicated that their household spends more than 10,000 Czk a month on groceries. Only a small share of respondents (2%) believe that their household spends less than 2,000 Czk a month, while more than one-tenth (13%) of respondents did not want to or could not answer this question and selected 'don't know' as their response.

Figure 10: Monthly household expenditures on food (in %)²¹



Source: Public Opinion Research Centre, Institute of Sociology, Czech Academy of Sciences, Food 10–26 July 2021, 884 respondents over the age of 15, face-to-face interviews.

The people who spend the least money on household groceries each month are those over the age of 60, senior citizens, the unemployed, respondents who assess their household standard of living as poor, and households without children. Those whose monthly expenditures are higher than 10,000 Czk are most often entrepreneurs, highly qualified employees, people in management positions, and households with two or three children. Men are much more likely not to know how much their household spends on food each month. In relation to household size, single-member households usually spend 2,000 to 4,000 Czk on food a month, two-member households spend 4,000 to 8,000 Czk, three-member households spend 6,000 to 10,000 Czk a month, and four-member households spend 6,000 to 12,000 a month. Households with more than four members spend even more a month on food.

Where does the most food waste occur?

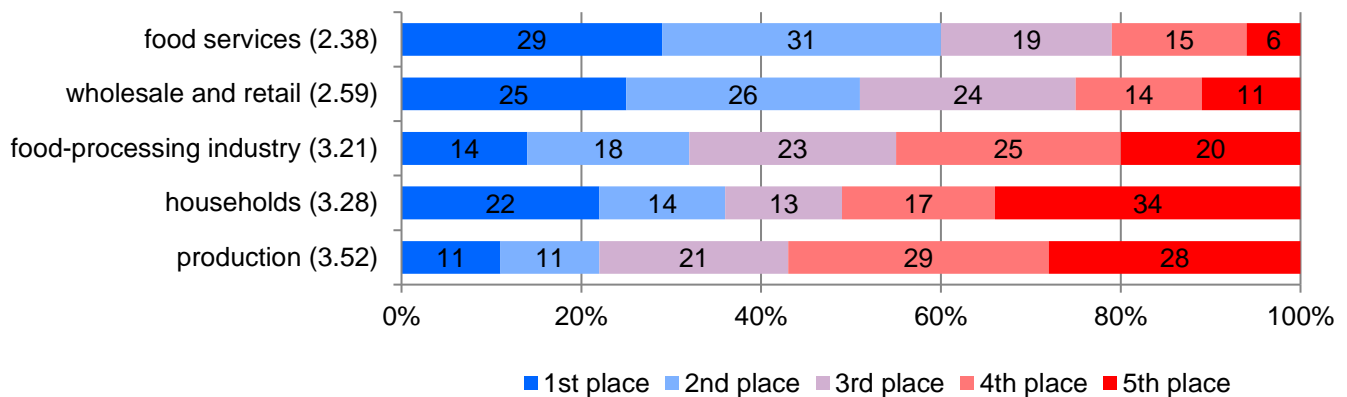
Food waste, however, is not just a problem of households and individuals, even though their role appears to be the most visible one. Food waste occurs in every part of the food production chain – from agricultural production through to the end consumption of food in households. According to EU estimates from 2016,²² the most waste occurs on the household level (53% of all food wasted is wasted by households), while approximately one-fifth (19%) of all food waste is produced by the food-processing industry and more than one-tenth in the food services sector (12%). Waste that occurs as part of the production process also accounts for around one-tenth of all waste (11%). The remaining 5% comes from wholesale and retail food markets. We asked respondents²³ to rank these five parts of the food-production chain in order according to which how much they believe each one contributes to the total amount of food waste. The results are presented in Figure 11.

²¹ Question wording: 'How much in Czech crowns does your household spend shopping for food every month? Less than 2,000 Czk; 2,001 – 4,000 Czk; 4,001 – 6,000 Czk; 6,001 – 8,000 Czk; 8,001 – 10,000 Czk; 10,001 – 12,000 Czk; 12,001 – 14,000 Czk; more than 14,000 Czk.

²² Stenmarck, Å., Jensen, C., Quedsted T., & Moates, G. (2016): *Estimates of European food waste levels*. FUSIONS. Available at: <https://www.eu-fusions.org/phocadownload/Publications/Estimates%20of%20European%20food%20waste%20levels.pdf>

²³ Question wording: 'Rank the following sectors from 1 to 5 according to how much you think they contribute to total food waste? (1 means the most, 5 means the least, NONE OF THE NUMBERS CAN BE ASSIGNED MORE THAN ONCE)'. Sectors: households, production (e.g. farmers), food services (e.g. restaurants), wholesale and retail markets, the food-processing industry.

Figure 11: Different parts of the food production change listed according to how much they contribute to food waste in the public's opinion – from most to least (%)



Note: Response items are listed according to the average score (in brackets) from the lowest averages to the highest averages. The numbers in the figure represent the distribution of responses after excluding the 'don't know' responses, which made up 2% of the sample.

Source: Public Opinion Research Centre, Institute of Sociology, Czech Academy of Sciences, Food 10–26 July 2021, 884 respondents over the age of 15, face-to-face interviews.

If we draw on EU estimates, according to which households are responsible for the most waste, while the least waste comes from wholesale and retail markets, and we compare these estimates with the opinions of respondents, we get some interesting results. More than one-third (34%) of respondents identified households as producing the least food waste, and almost three-tenths (29%) of respondents on the contrary identified food services as the source of the most food waste. Based on the average scores of respondents' assessments, we find that Czech respondents believe the most food waste occurs in food services, followed by wholesale and retail markets, the food-processing industry, and households, and the least waste occurs in production. It is important to note that the differences between the third and fifth place in this ranking are not large or statistically significant. We can conclude by pointing out that the opinions of the Czech public about who wastes more or less food differ substantially from EU estimates. Respondents in our survey tended to considerably underestimate the role of households in food waste and looked more at food services and the retail and wholesale markets as the guilty parties.

Given the growing interest in this issue and in monitoring the pursuit of Sustainable Development Goal 12.3, the above estimate from the food distribution system was newly replaced by two separate indexes, the purpose of which is to enable clearer monitoring and the easier measurement of progress. These two indexes are the *Food Loss Index* (FLI), which is prepared by FAO and provides estimates from the point of harvest up to (but not including) the retail level, and the *Food Waste Index* (FWI), which is calculated by the United Nations and provides estimates of the amount of waste on the retail level and the level of consumers (restaurants, households).²⁴

Based on new methodology, the first 'Food Waste Index Report 2021'²⁵ was drawn up, which estimates that in 2019 around 931 million tonnes of food waste were generated, 61% of which came from households, 26% from restaurants and eating facilities, and 13% from retail. According to the FLI, preliminary estimates indicate that around 14% of world food is wasted in the early stages of the food production chain.²⁶

²⁴ <http://www.fao.org/food-loss-and-food-waste/flw-data>

²⁵ United Nations Environment Programme (2021). Food Waste Index Report 2021. Nairobi. Available from: <https://www.unep.org/resources/report/unep-food-waste-index-report-2021>

²⁶ FAO. (2018). Pilot Testing the Food Loss Index. FAO. Available from: <http://www.fao.org/3/ca6691en/ca6691en.pdf>

Technical parameters of the survey

Survey:	<i>Food 2021</i>
Implementer:	<i>Public Opinion Research Centre, Institute of Sociology, Czech Academy of Sciences</i>
Project:	<i>Strategy AV21 'Food for the Future'</i>
Survey fielding dates:	<i>10 July – 26 July 2021</i>
Selection of the respondents:	<i>Quota sampling</i>
Quotas:	<i>Region (NUTS 3 regions), size of place of residence, sex, age, education</i>
Data weighting:	<i>Education X NUTS 2, age X NUTS 2, sex X region, size of place of residence X age, education X age</i>
Source data for quota sampling and data weighting:	<i>Czech Statistical Office</i>
Representativeness:	<i>Population of the Czech Republic over the age of 15</i>
Number of respondents:	<i>884</i>
Number of interviewers:	<i>161</i>
Data collection method:	<i>Face-to-face interviews with respondents conducted by interviewers – combined CAPI and PAPI techniques</i>
Survey instrument:	<i>Standardised questionnaire</i>
Questions:	<i>PL.7, PL.10, PL.11, PL.12, PL.13, PL.15, PL.27, PL.38, PL.39, PL.40, PL.41, PL.43</i>
Report Code:	<i>OR211119</i>
Published on:	<i>19 November 2021</i>
Prepared by:	<i>Radka Hanzlová</i>

Glossary:

Quota sampling: This sampling method replicates the structure of the basic survey population (in this case the population of the Czech Republic over the age of 15) by determining the size of selected sample parameters, i.e. 'quotas'. In other words, in quota sampling the same percentages of selected characteristics in the population are reproduced in the sample. To create quotas, we use data from the Czech Statistical Office. In our surveys we set quotas for sex, age, education, region, and size of the place of residence. The sample is therefore created to ensure that the percentage shares of men and women, for example, correspond to the percentage shares of men and women in each region of the Czech Republic. Similarly, the sample reflects the different percentages of the population living in the country's different regions, and the percentage of citizens in different age categories, with different levels of education, and in different community sizes.

A representative sample is a sample of the total population whose characteristics can be validly inferred to be the characteristics of the total population. In our case this means that respondents are selected in a way that allows us to ensure that the data we obtain on them can be generalised to apply to the population of the Czech Republic over the age of 15.

Data weighting: A technique used to increase a sample's representativeness for selected population characteristics by assigning weights to each respondent. The weights are created using the method of iterative proportional fitting/weighting and are always within the range of 0.333 and 3.

The Public Opinion Research Centre (CVVM) is a research department at the Institute of Sociology, Czech Academy of Sciences. It has a history that extends back to 1946, when the Czechoslovak Institute for Public Opinion Research began operating as part of the Ministry of Information. The current centre was founded in 2001 when its predecessor (the IVVM) was transferred from the Czech Statistical Office to the Institute of Sociology of the Czech Academy of Sciences. As part of a research institution the centre has a high-quality professional work environment at its disposal and is part of an institution with a reputation of excellence. As part of an academic setting the Public Opinion Research Centre must fulfil all the requirements for and maintain the highest professional standards. The main part of the centre's work is devoted to the "Our Society" research project, which conducts ten surveys each year. This public opinion research is conducted on a representative sample of the Czech population aged 15 and over and approximately 1.000 respondents take part in each survey. The omnibus form of the questionnaire means that the survey can cover a large range of subjects, which therefore regularly includes political, economic, and other generally socially topics. The survey includes both repeat questions, which can be used to observe the development of certain phenomena over time, and questions on new topics in response to current events. The long-term continuous nature of this public opinion research project makes this scientific project unique in the Czech Republic.

'This work was supported under AV21 Strategy of the Academy of Sciences as part of the 'Food for the Future' research programme' (<http://www.potravinav21.cz/>).