

Press Release

Throwing Away Fruit and Vegetables with Imperfections as a Form of Food Waste – June 2018

- ⊙ Given the chance to choose between fruit and vegetables with or without imperfections if there was no difference in price, 60% of respondents would choose the products without imperfections.
- ⊙ Among the reasons respondents have for favouring products without imperfections, those most often cited were that they are easier to cut and clean and that buying flawless fruit and vegetables is simply the normal thing to do so they wouldn't think about it. Both of these reasons were indicated by more than 90% of respondents.
- ⊙ The main reasons cited for deciding to buy fruit and vegetables with imperfections are the belief that it does not matter what the food looks like because it's equally nutritious either way (86% of respondents chose this response) and the view that imperfections are natural and are thus a sign of a more natural approach to growing fruit and vegetables without using chemicals (85% of respondents chose this response).
- ⊙ When asked to estimate the amount of fruit and vegetables that never reach consumers because of their appearance, almost two-fifths (38%) of respondents gave a correct estimate (20–30%).
- ⊙ According to the Czech public, a decisive role in determining which fruit and vegetables reach the shelves of retail chains and supermarkets is played by EU norms (33%) and by standards imposed by retail chains and supermarkets (28%).

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As part of its June survey the Public Opinion Research Centre asked respondents several questions about food and in particular about food waste. This block of questions included a section about buying blemished or misshapen fruit and vegetables. Respondents commented specifically on which food items they would select if given the choice – food items with or without imperfections, and whether they take the appearance of fruit and vegetables into consideration at all when shopping. They were also asked about the reasons for their choices. One of the questions focused on who respondents believe determines which fruit and vegetables reach the shelves of retail food chains. Finally, they were also asked to estimate what share of total food production is thrown away because it has visual imperfections.

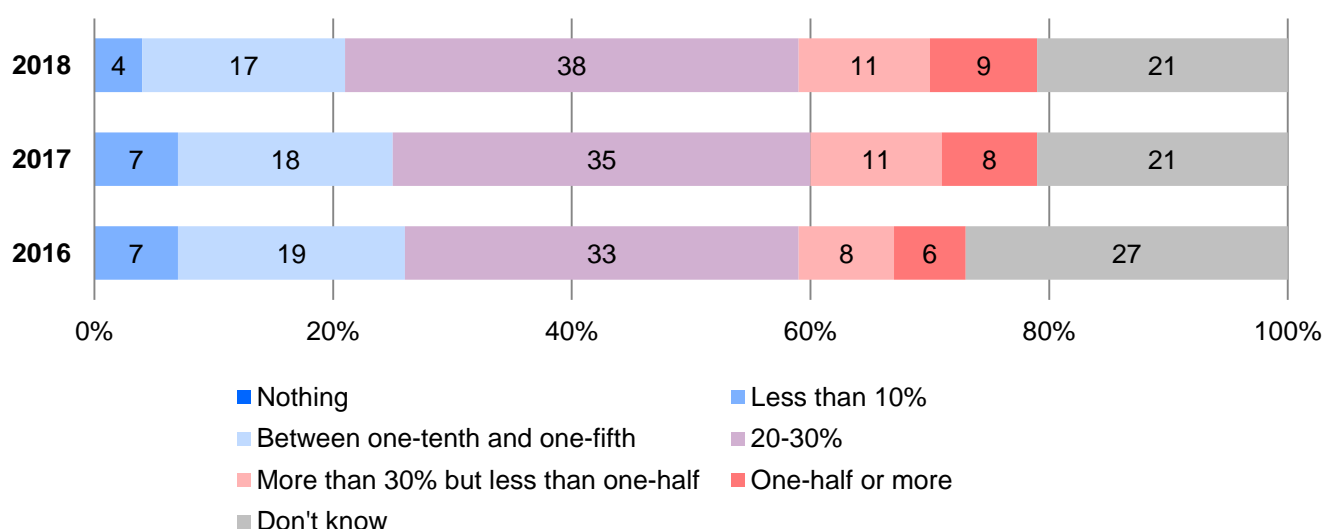
Throwing away food because it is blemished or does not meet other standards is one of a number of ways in which food is wasted. This is not the kind of waste that is directly associated with households or with the disposal of unused (unsold) food, but waste that occurs primarily on the level of the production of food and its distribution to consumers.

The waste that occurs in this stage of food's journey to the consumer is mainly tied to the standards and demands of the buyers of agricultural products and those main buyers are retail chains. Because of the standards buyers assign to the appearance of food (mainly vegetables and fruit) a large share of the food grown is thrown away and the agricultural industry is forced to produce much more fruit and vegetables than is in reality necessary. It is estimated that approximately 20-30% of crops are tossed out during the selection process for reasons such as weight,

appearance, and size.¹ There are, however, no official statistics that record exactly how much food is thrown away. The consequences of these practices are not just the waste of unsuitable food and overproduction, but also soil exhaustion, which in the future can lead to lower yields. This means that the total yield of a field of a certain size will decrease into the future. Other economic consequences include the wastage of the water and energy that go into this overproduction and the loss of biodiversity. The effects of food wastage can also be observed in the economic sphere, where there are costs attached to the cultivation of fruit and vegetables that are then never used, and in the social sphere, where there are costs associated with health and equal access to food.^{2 3}

In the Czech Society survey the Czech public was also asked to estimate the share of food that is thrown away because it has imperfections out of the total volume of food produced. Almost two-fifths (38%) of respondents correctly estimated the true share of food that is wasted in this way (20–30% of total food production). Slightly more than one-tenth (11%) estimated the share at more than 30%, but did not believe it was more than one-half. Just under one-tenth (9%) of the Czech public believed that the share of food wasted for aesthetic reasons was greater than the amount that makes it onto the store shelves – or in other words, that one-half or more of food is wasted. By contrast, approximately one-fifth (21%) estimated a smaller share of wasted food than there is in reality; 17% of them believed that between 10% and one-fifth of food is wasted and 4% believed the figure to be less than 10%. More than one-fifth (21%) of respondents were unable to answer this question and selected the ‘don’t know’ response.

Figure 1: Respondents’ estimates of the share of food thrown away because of its appearance (%)⁴



Source: Public Opinion Research Centre, Institute of Sociology, Czech Academy of Sciences, Czech Society 16–29 June 2018, 1078 respondents over the age of 15, face-to-face interviews.

When comparing the results over time, we find that since 2016, when this subject was first included in the Czech Society survey, there have been no pronounced changes from year to year in the structure of opinion among the Czech public. The only exception is a decrease (by 6 percentage points) between 2016 and 2017 in the share of people who indicated ‘don’t know’. There was also a statistically significant increase (by 5 percentage points) between 2016 and 2018 in the share of people who ‘correctly’ estimated the share of wasted food at 20–30 %.

The question arises as to why there are such demands regarding the appearance and shape of food items. Retail chains often argue that demands governing the exact shape and size of food items come directly from consumers themselves. The strategy supermarkets take is that they offer customers only fruit and vegetables that look almost

¹ FAO (2011). *Global food losses and food waste – Extent, causes and prevention*. Food and Agriculture Organization of the United Nations, Rome.

² Stuart, T. (2009). *Waste: uncovering the global food scandal*. WW Norton & Company.

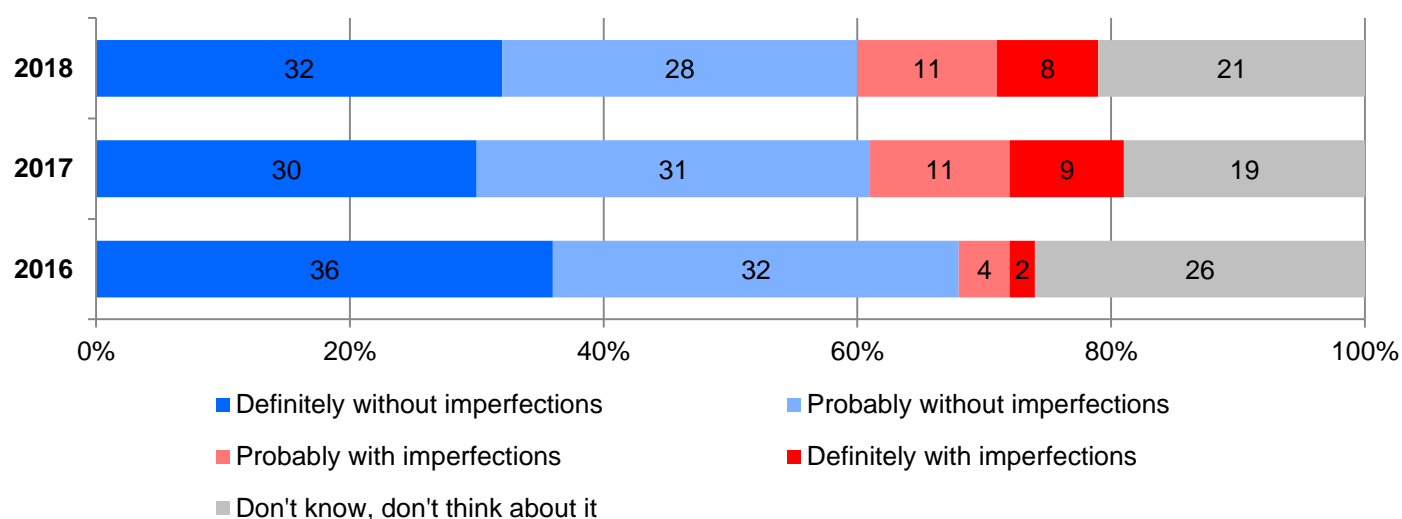
³ Stenmarck, A., Jensen, C., Quested, T., Moates, G. (2016). *Estimates of European Food Waste Levels*. FUSIONS. Reducing Food Waste through Social Innovation. Stockholm.

⁴ The question read: ‘In some cases, produce does not make it onto the shelves of stores because of its appearance and it is ploughed back into the field or fed to livestock. Can you estimate what share of total produce this happens to?’ On a scale of 0-100%.

identical and differ little in size, shape, etc., from other pieces of the same fruit and vegetables. However, this is a marketing issue, and it has nothing to do with the real quality of the food.⁵ Nevertheless, some chains are moving away from this strategy and are starting to also sell fruit and vegetables that do not fit size and shape criteria. We can see this development occurring not just abroad but also in the Czech Republic, where fruit and vegetables of non-standard size and shape are sold at supermarket chains Tesco and Penny Market and on the online store Rohlík.cz.

When we look at how the Czech public commented on this subject, the results show that if asked to choose between fruit and vegetables with or without imperfections and there was no difference in price between the two, three-fifths (60%) of respondents would favour the products with no flaws (more precisely, 32% would definitely choose the products without imperfections and 28% would probably do so). Conversely, just under one-fifth (19%) of respondents would choose the imperfect products (of which 11% would probably buy the imperfect items and 8% would definitely do so). More than one-fifth (21%) of respondents said they would not give it any thought or were unable to say which they would choose.

Figure 2: Would you buy fruit and vegetables with or without imperfections (%)^{6 7}



Note: In 2017 the wording of the question was changed and cards were used with illustrations of vegetables with and without imperfections. In 2018 the same wording was used as in 2017.

Source: Public Opinion Research Centre, Institute of Sociology, Czech Academy of Sciences, Czech Society 16–29 June 2018, 1078 respondents over the age of 15, face-to-face interviews.

When comparing the results over time, we find that there were no significant shifts in respondents' opinions from the previous survey in June 2017. But if we compare the current results with those from 2016, when the question was worded slightly differently, it is possible to observe some changes. Most notably, there was an increase in the share of people who said they would buy imperfect fruit and vegetables and a decrease in those who would favour fruit and vegetables without imperfections. There was also a slight decrease in the share of people who said they did not know or that they wouldn't give it any thought.

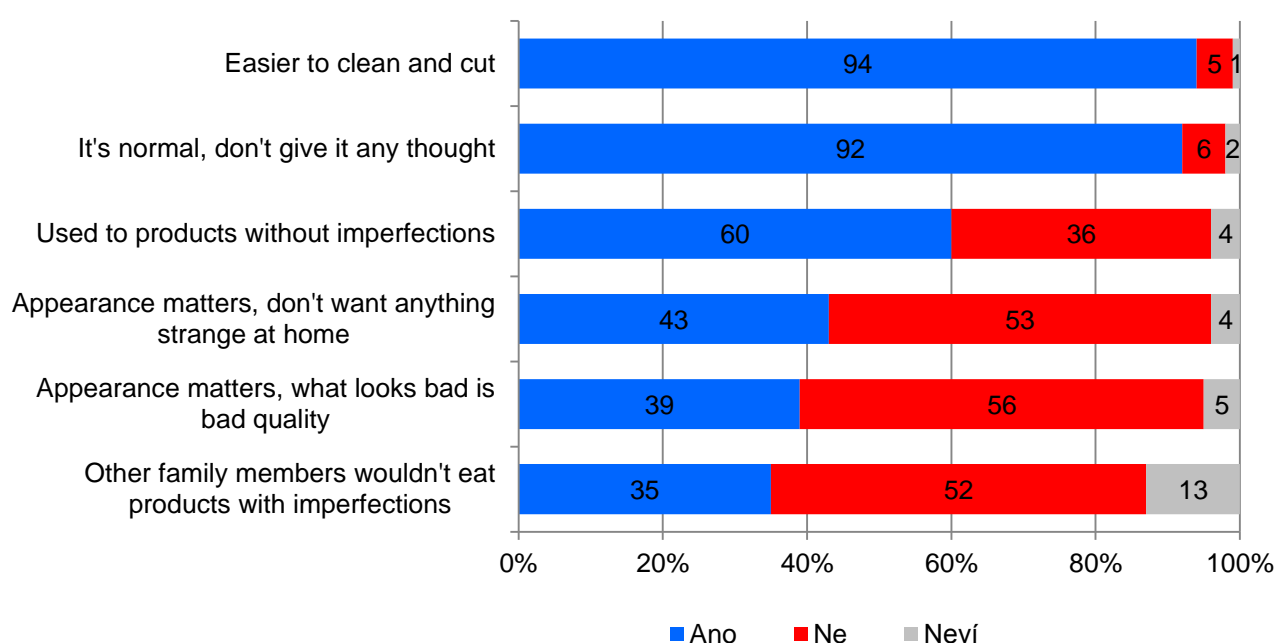
⁵ FAO (2011). *Global food losses and food waste – Extent, causes and prevention*. Food and Agriculture Organization of the United Nations, Rome.

⁶ In 2017 and 2018 the question read: 'Imagine that you are buying food in a shop and on the shelf you see fruit or vegetables for sale that are not entirely perfect in shape or colour (crooked carrots, bent cucumbers – see Figure A), and right next to them are fruit and vegetables that are the perfect shape and colour (see Figure B). If the price was the same for both, which ones would you be more likely to buy? Response options: Definitely those in Figure A, Probably those in Figure A, Probably those in Figure B, Definitely those in Figure B, Don't know, you don't think about it.'

⁷ In 2016 the question read: 'Imagine that you are buying food in a shop and you see fruit or vegetables that are not entirely perfect in appearance but are not rotten (crooked carrots, bent cucumbers, etc.) and right next to them there are ones that are perfect in shape. If the price was the same for both, which ones would you be more likely to buy? Response options: Definitely the perfect ones, Probably the perfect ones, Probably the imperfect ones, Definitely the imperfect ones, Don't know, you don't think about it.'

Respondents who favoured perfect fruit and vegetables over products with imperfections commented on whether any of the following reasons was a factor in their decision. The reasons respondents most often mentioned as guiding their decision were that fruit and vegetables without imperfections are easier to clean and cut (94%) and that it was normal to buy products without imperfections so wouldn't give it any thought (92 %). Another reason is that people are used to buying fruit and vegetables that look perfect, with three-fifths (60%) of respondents citing this reason. In the case of the other reasons respondents could choose from, negative responses outweighed positive ones. More than two-fifths (43%) of respondents indicated that they would buy the perfect products because it matters to them what the fruit and vegetables look like and they don't want strange-looking items at home (but this reason was not important for more than one-half – 53 %). Just under two-fifths (39%) of respondents indicated that appearance plays a role in their decision because if something looks bad that means it is not good quality (for 56% this is not a factor). More than one-third (35%) of respondents said that other members of their households would not eat products with any flaws (just over one-tenth – 13% - of respondents were not able to comment on this option).

Figure 3: Reasons for buying vegetables without imperfections (%)⁸

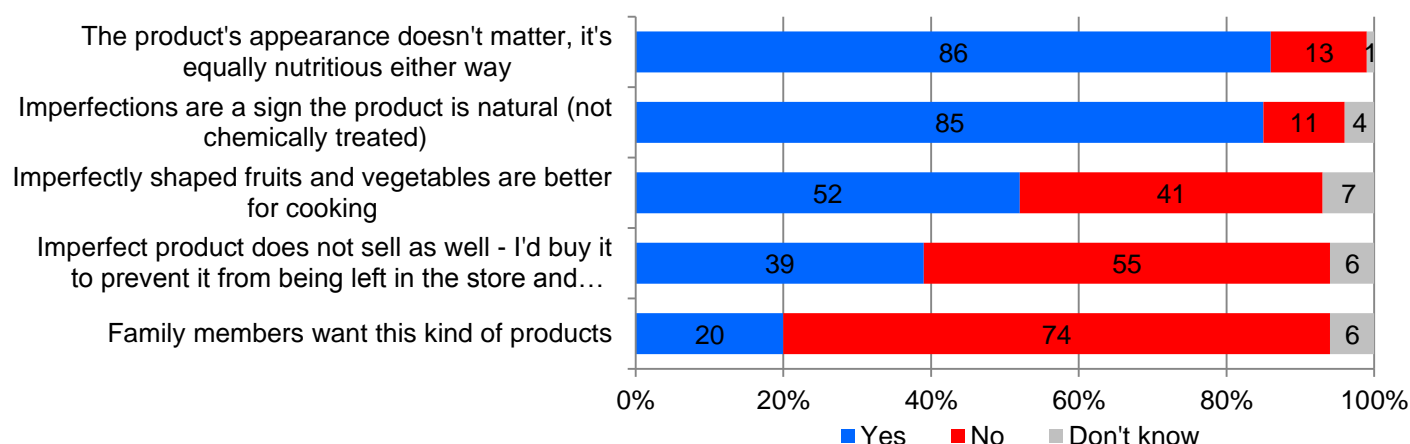


Source: Public Opinion Research Institute, Institute of Sociology, Czech Academy of Sciences, Czech Society 16–29 June 2018, 639 respondents over the age of 15, face-to-face interviews.

Similarly, we asked people about the reasons they would buy fruit and vegetables with imperfections. The most frequently cited response was that the product's appearance does not matter because there are no nutritional differences; 86% of the respondents who said that given the choice between fruit and vegetables with or without imperfections, they would choose the imperfect ones agreed with this statement. Almost the same share of respondents (85%) said that imperfections are a sign that the product is natural and that the imperfect fruit and vegetables are not chemically treated. More than one-half (52%) indicated that they find imperfectly shaped fruit and vegetables (e.g. small potatoes) better for cooking. Just under two-fifths (39%) of respondents stated that imperfect fruit and vegetables do not sell as well so they bought them to prevent them from being thrown out. On the other hand, for more than one-half (55%) of respondents this reason would not be influence their decision. One-fifth (20%) of respondents indicated that their family members want fruit and vegetables with imperfections. Nevertheless, for almost three-fifths (74%) of respondents this reason is not a factor.

⁸ The question read: 'Why would you prefer to buy fruit and vegetables without imperfections? Please indicate which of the following reasons apply in your case: a) They are easier to clean and cut, d) appearance matters, who looks bad is of bad quality, c) appearance matters to you, you don't want something strange-looking at home, d) you're used to produce that looks perfect and you don't want to change, e) other household members would not eat produce with imperfections, f) produce without imperfections is normal, you'd buy it without giving it a thought.' The response options were: yes, no.

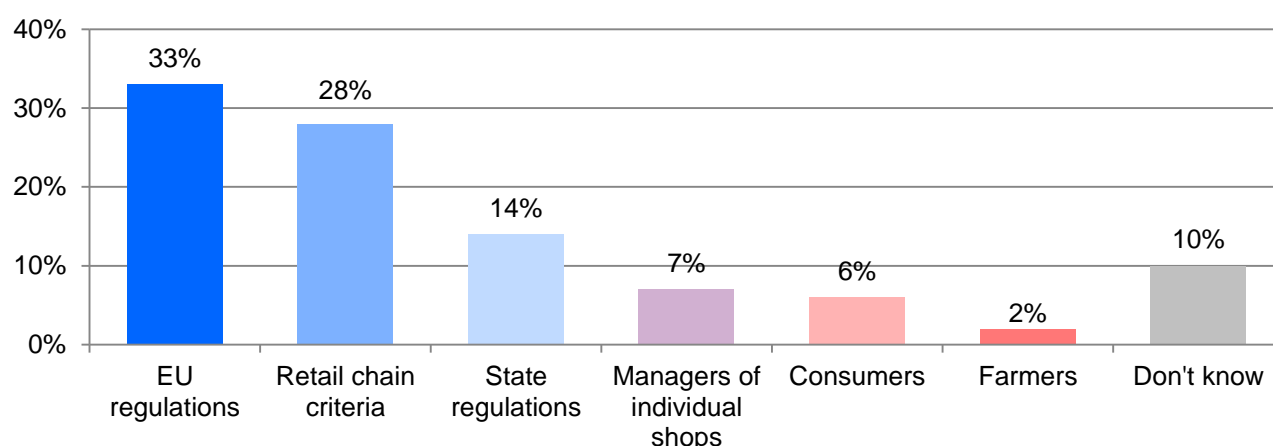
Figure 4: Reasons for buying vegetables with imperfections⁹



Source: Public Opinion Research Centre, Institute of Sociology, Czech Academy of Sciences, Czech Society 16–29 June 2018, 203 respondents over the age of 15, face-to-face interviews.

We also asked respondents who, in their opinion, determines what fruit and vegetables are supposed to look like in order to make it onto the shelves of retail chains and supermarkets. One-third (33%) of respondents believed that EU regulations are the main factor that determines what fruit and vegetables have to look like. The belief that criteria imposed by retail chains and supermarkets have the biggest influence on what fruit and vegetables look like was shared by 28% of respondents. Half that share (14%) believed that state regulations are the main determining factor. Less than one-tenth of respondents believed that the biggest influence on this is had by the managers of individual stores (7%) and by consumers (6%). Only 2% of respondents believe that farmers have an influence on determining what fruit and vegetables look like. The remaining one-tenth (10%) of respondents were unable to select a response and chose 'don't know'.

Figure 5: Who determines what the fruit and vegetables that reach the shelves of retail chains must look like¹⁰



Source: Public Opinion Research Centre, Institute of Sociology, Czech Academy of Sciences, Czech Society 16–29 June 2018, 1078 respondents over the age of 15, face-to-face interviews.

⁹ The question read: 'Why would you buy vegetables and fruit with imperfections? Please indicate which of the following reasons apply in your case: a) it doesn't matter what produce looks like, misshapen and ordinarily shaped vegetables/fruit are both equally nutritious, b) imperfection is a sign they are natural (not treated with chemicals), c) imperfect produce sells less well so I'd buy it to prevent it being left in the shop and thrown out, d) family members want it like this, e) imperfectly shaped fruit and vegetables are better for cooking (e.g. small potatoes).' The response options were: yes, no.

¹⁰ The question read: 'Who in your opinion has the final word in deciding what fruit and vegetables have to look like in order to be selected for sale in retail chains and supermarkets? European Union regulations, criteria imposed by retail chains and supermarkets, state regulations, managers of individual stores, farmers, consumers.'

Technical parameters of the survey

Research:	Czech Society, v18-06
Fielded by:	Public Opinion Research Centre, Institute of Sociology, Czech Academy of Sciences
Project:	Czech Society – Continuous Public Opinion Research Project of the Public Opinion Research Centre of the Institute of Sociology, Czech Academy of Sciences
Field survey dates:	16–29 June 2018
Sampling method:	Quota sampling
Quotas:	Region (NUTS 3 regions), size of place of residence, sex, age, education
Data source for quota sampling:	Czech Statistical Office
Representativeness:	Population of the Czech Republic over the age of 15
Number of responses:	1078
Number of interviewers:	240
Data collection method:	Face-to-face interviews conducted by interviewers with respondents – combined CAPI and PAPI
Research instrument:	Standardised questionnaire
Questions:	PL.16, PL.17, PL.18, PL.19, PL.32
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Glossary of terms:

A quota sample replicates the structure of the basic population of the study (in this case the population of the Czech Republic over the age of 15) by setting quotas for different parameters. In other words, a quota sample is based on the same proportion of persons with the selected characteristics. We used data from the Czech Statistical Office to create the quotas. In our surveys quotas are set for sex, age, education, region, and community size. The sample is thus selected so that the percentage of men and women in the sample corresponds to the share of men and women in each region of the CR. Similarly the sample reflects the corresponding shares of the population in individual regions in the CR, citizens in different age groups, people with different levels of education, and people in different sizes of communities.

A representative sample is a sample from the total population whose characteristics can be validly inferred to apply as the characteristics of the population overall. In our case this means that respondents were selected with a view to generalising the collected data as applicable to the population of the Czech Republic over the age of 15

The Public Opinion Research Centre (CVVM) is a research department of the Institute of Sociology, Czech Academy of Sciences. Its history dates back to 1946, when the Czechoslovak Institute for Public Opinion Research began operating as part of the Ministry of Information. The current CVVM emerged in 2001 when its predecessor (IVVM) was transferred from the Czech Statistical Office to the Institute of Sociology. Its incorporation within an academic institution provides a guarantee of high professional standards and quality, and as part of an academic environment the CVVM is required to fulfil criteria that ensure it meets the highest professional standards. The CVVM's work is centred on the Czech Society research project, in the frame of which it examines public opinion by conducting ten surveys annually on a representative sample of the population aged 15 and over, with approximately 1000 respondents participating in each survey. The questionnaire's omnibus format makes it possible to cover a wide array of topics. Political, economic, and other generally social topics are regularly added to the survey. The surveys include both repeat questions, whereby it is possible to observe phenomena over time, and new topics that reflect current events. The long-term and continuous nature of this project focused on surveying public opinion is unique in the Czech Republic.

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