

SCIENCE **20**
BARO+
METER **22**

Dear reader,

Ever since the spring of 2020, the coronavirus pandemic has been a profound influence on the setting in which the data for the science barometer is collected. In September 2022, however, data collection for the science barometer was also strongly influenced by the war in Ukraine and its impact on energy supply in Germany and other countries. Against this backdrop, half of the respondents in this year's science barometer believe that research on climate and energy issues should be the most important field of research in the future (p. 25/26). Nonetheless, the results also show a continuously high level of general trust in science and research (p. 7/8) and, compared to other groups of actors, a high level of trust in the statements of researchers on the coronavirus pandemic (p. 27/28) and on questions of energy supply in Germany (p. 29/30). Especially relevant for future science communication are the results on p. 15/16, which provide information on the aspects the public deems to be of particular importance for the public communication about science and research.

The science barometer is made possible by our funders and supporters – the Robert Bosch Stiftung and the Fraunhofer-Gesellschaft – and by the collaborative work of our scientific advisory board. Thank you very much!

We wish you an inspiring read!



Christian Kleinert, Managing Director
Wissenschaft im Dialog



Ricarda Ziegler, Project Lead
science barometer



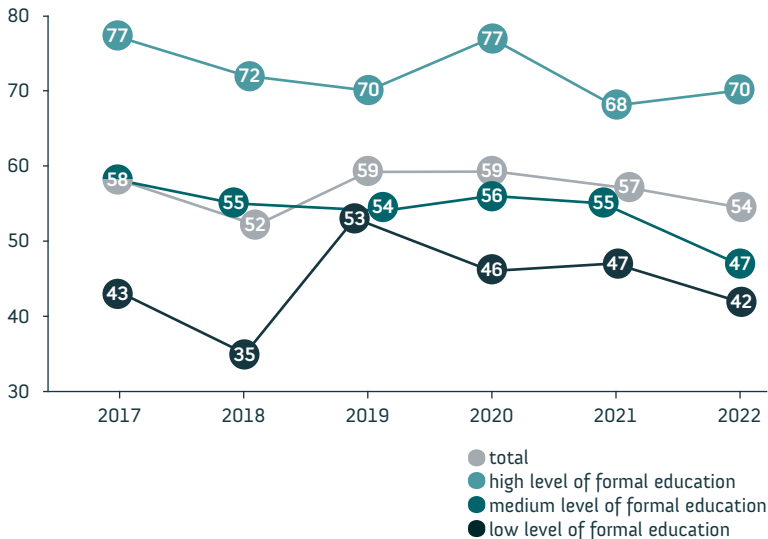
What is the science barometer?

Through the science barometer, *Wissenschaft im Dialog* annually surveys public attitudes towards science and research in Germany. In close collaboration with a scientific advisory board a new questionnaire is designed each year which includes questions from previous survey waves but also new ones. For all results of the 2022 survey and all previous survey waves as well as further information, please visit www.sciencebarometer.com.

Who is responsible for the science barometer?

Wissenschaft im Dialog (WiD) is the German organisation for science communication of the scientific community. WiD supports science and research with expertise in effective communication with society and encourages researchers to communicate their research, including its controversial aspects, with the public. Moreover, WiD raises citizens' awareness of the social significance of science and promotes understanding of research processes and findings. For that reason, WiD organises various participatory formats, e.g. discussions, school projects, exhibitions, and competitions across Germany and provides online portals about science and science communication. The results of the science barometer help us in doing so.
www.wissenschaft-im-dialog.de

Interest in science and research by level of formal education



Aggregated numbers for 'somewhat strong' and 'very strong' interest shown;

Low level of formal education: elementary or lower secondary school;

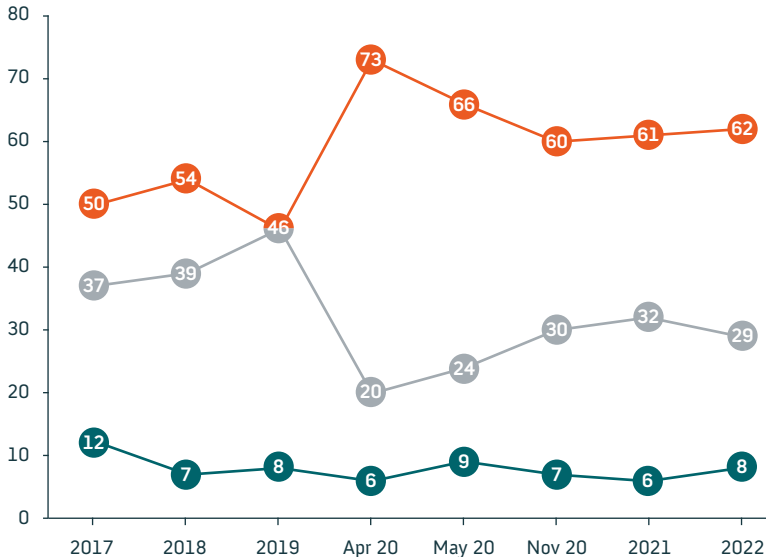
Medium level of formal education: secondary school without high-school diploma;

High level of formal education: high-school diploma, entrance qualification for university or university of applied science, university degree; Minimum of 1,000 respondents each survey wave;

Figures are in per cent. Numbers may not add up to 100 per cent due to rounding.

The level of interest in science and research in 2022 is similar to that in previous years. 54 per cent of respondents say they have a somewhat or very strong interest in science and research. However, the level of formal education of the respondents makes a difference: 70 per cent of respondents with a high level of formal education state that they have a somewhat or very strong interest in science and research. Among respondents with a medium level of formal education, it's 47 per cent, and 42 per cent among those with a low level of formal education. Differences between levels of formal education are apparent in all survey waves of the science barometer so far.

How much do you trust science and research?



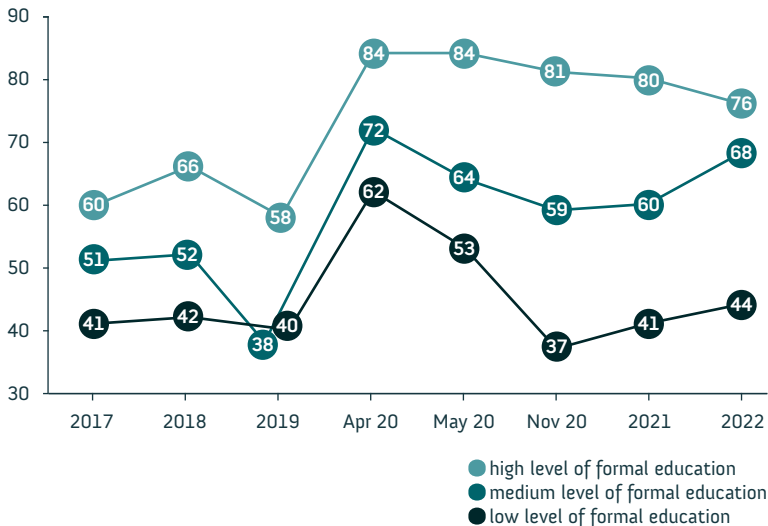
Numbers for 'don't know, missing answer' not shown;
Minimum of 1,000 respondents each survey wave;
Figures are in per cent.
Numbers may not add up to 100 per cent due to rounding.

- trust completely / trust somewhat
- undecided
- distrust somewhat / distrust completely

In the third year following the onset of the coronavirus pandemic, the respondents' trust in science and research is still higher than in the science barometer survey waves prior to 2020: in 2022 62 per cent say they trust somewhat or completely in science and research. 29 per cent of the respondents are undecided and eight per cent of the respondents say they distrust science and research somewhat or completely. In this regard, the results of 2022 are similar to the results of the two previous surveys in autumn 2021 and 2020.

Once again, trust in science and research is particularly high among younger respondents: 71 per cent of 14- to 29-year-olds and 74 per cent of 30- to 39-year-olds say they trust somewhat or completely in science and research. Among the 40- to 49-year-olds, it's 65 per cent, among the 50- to 59-year-olds 58 per cent, and in the 60-plus group 53 per cent.

Trust in science and research by level of formal education



Aggregated numbers for 'trust somewhat' and 'trust completely' shown;

Low level of formal education: elementary or lower secondary school;

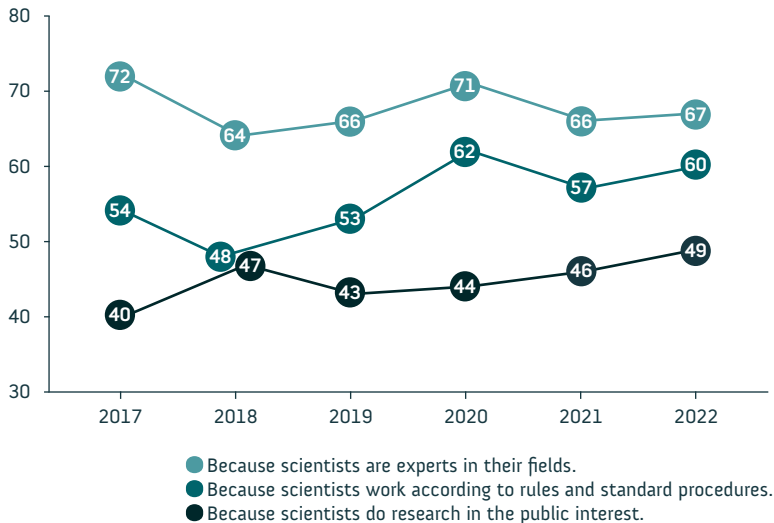
Medium level of formal education: secondary school without high-school diploma;

High level of formal education: high-school diploma, entrance qualification for university or university of applied science, university degree; Minimum of 1,000 respondents each survey wave;

Figures are in per cent. Numbers may not add up to 100 per cent due to rounding.

Similar to the trends observed concerning interest in science and research (see p. 5/6), differences between levels of formal education also exist regarding trust in science and research. In the science barometer 2022, trust is highest among respondents with a high level of formal education (76 per cent). While 68 per cent of respondents with a medium level of formal education state that they trust somewhat or completely in science and research, only 44 per cent of respondents with a low level of formal education do so. Differences in trust in science and research between respondents according to their level of formal education emerged in all survey waves of the science barometer so far.

Agreement with different reasons to trust scientists

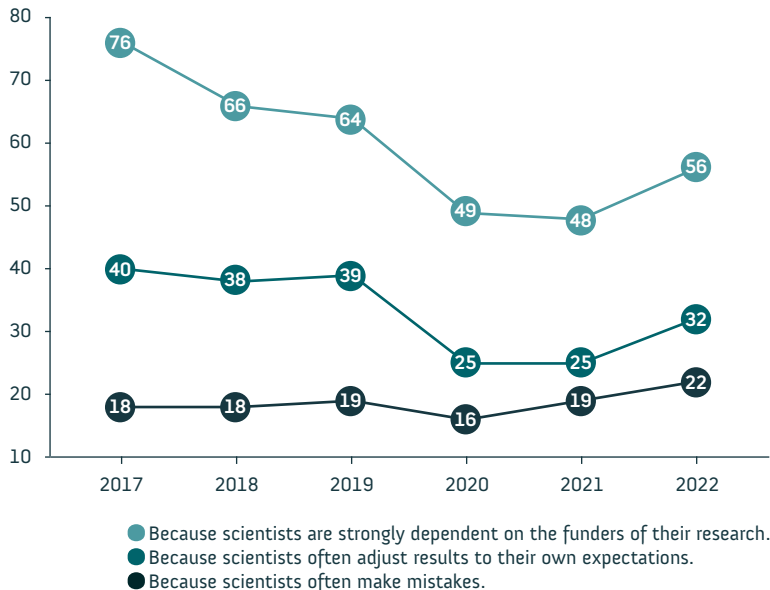


Aggregated numbers for 'somewhat agree' and 'completely agree' shown;
Minimum of 1,000 respondents each survey wave;
Figures are in per cent. Numbers may not add up to 100 per cent due to rounding.

In the science barometer 2022 the largest proportion of respondents (67 per cent), once again, indicates that scientists' expertise is a reason to trust them. For 60 per cent of respondents, the fact that scientists work according to rules and standard procedures is a reason to trust them. 49 per cent agree that scientists' orientation towards the public interest is a reason to trust them.

A higher level of formal education comes with greater agreement that scientists can be trusted because they are experts in their field and because they work according to rules and standards. Regarding the assessment of scientists' orientation towards the public interest, there are no such differences between respondents according to their level of formal education.

Agreement with different reasons to distrust scientists



Aggregated numbers for 'somewhat agree' and 'completely agree' shown;
Minimum of 1,000 respondents each survey wave;
Figures are in per cent. Numbers may not add up to 100 per cent due to rounding.

Currently, most respondents agree with the statement that scientists' strong dependence on the funders of their research can be a reason to distrust them (56 per cent). One third thinks that scientists can be distrusted because they often adjust results to their own expectations. 22 per cent think that frequent mistakes by scientists are a reason to distrust them.

Throughout all survey waves of the science barometer that included statements on the reasons to distrust scientists, the statement that dependence on their funders is a reason to distrust scientists receives the most agreement. The statement that scientists often make mistakes generally receives the least agreement. Agreement with all three statements is slightly higher in 2022 than in autumn 2020 and 2021.

When scientists communicate publicly, how important is it that they comment on the following aspects?

the results of their own research



the results of other scientists doing research on the same topic



their research methods



the societal impact of their research



the general role of science within society



statements and decision made by politicians who refer to scientific evidence

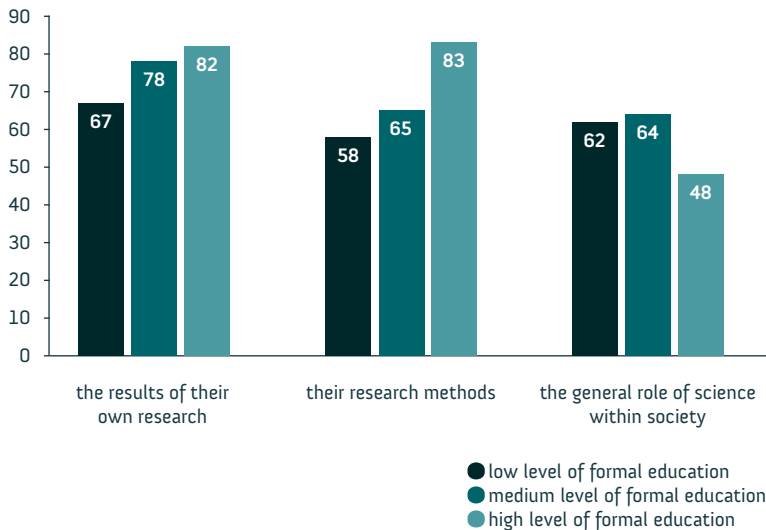


Number of respondents: 1,037;

Figures are in per cent. Numbers may not add up to 100 per cent due to rounding.

Some preferences become apparent when asking the German public about the aspects that scientists should attach particular importance to when they communicate publicly about science and research: In addition to communicating their own research results, which 74 per cent of respondents find (very) important, many respondents also deem it (very) important that scientists communicate about the results of others working on similar topics (71 per cent). A comparable number of respondents find it (very) important that scientists shed light on their research methods (69 per cent). Slightly fewer respondents find it (very) important that scientists comment on the societal impact of their research (61 per cent) or point to the general role of science in society (56 per cent). The lowest proportion of respondents finds it (very) important that scientists comment on statements or decisions made by politicians who refer to scientific findings (51 per cent).

Importance of scientists' communication contents by level of formal education



Aggregated numbers for 'important' and 'very important' shown;

Low level of formal education: elementary or lower secondary school;

Medium level of formal education: secondary school without high-school diploma;

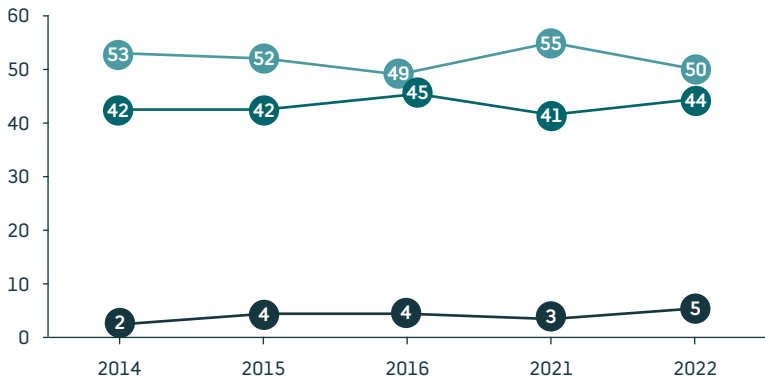
High level of formal education: high-school diploma, entrance qualification for university or university of applied science, university degree; Number of respondents: 1,037;

Figures are in per cent. Numbers may not add up to 100 per cent due to rounding.

When asked about their perception of crucial aspects of science communication, the science barometer 2022 shows differences between respondents according to their level of formal education. Respondents with a low level of formal education less often consider it important that scientists communicate about their own research results (67 per cent) than respondents with a medium (78 per cent) or high level of formal education (82 per cent). The difference is even more stark with regard to the question of whether scientists should communicate about their research methods. Here, 58 per cent of respondents with a low level of formal education consider this (very) important, compared to 65 per cent of respondents with a medium and 83 per cent with a high level of formal education.

The question of whether scientists should comment on the general role of science in society paints a different picture, though: More than 60 per cent of respondents with a low and medium level of formal education state that this aspect of science communication is (very) important to them. Among respondents with a high level of formal education 48 per cent agree with this.

If public expenditures have to be reduced, for example to avoid further public debt, how should spending on research be dealt with?



- If possible, public spending on research should not be reduced.
- Public spending on research should be reduced in the same proportion as public spending in other areas.
- Research should be one of the first areas where public spending is reduced.

2014-2016 slightly different wording: 'Research should be one of the first areas where austerity measures are taken.' instead of 'Research should be one of the first areas where public spending is reduced.';

Numbers for 'don't know, missing answer' not shown;

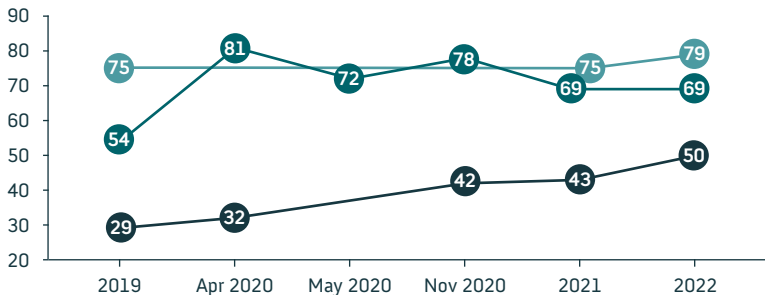
Minimum of 1,000 respondents each survey wave;

Figures are in per cent. Numbers may not add up to 100 per cent due to rounding.

In September 2022, there continues to be strong support for publicly funded research in Germany. Half of the respondents think that even if public expenditures had to be reduced, spending on research should not be cut. 44 per cent of respondents say that spending on research should be reduced in the same proportion as spending in other areas. Five per cent think that public spending on research should be reduced first when necessary. These results are similar to those of previous waves of the science barometer.

Differences between levels of formal education also become apparent here. While 50 per cent of respondents with a low level of formal education and 47 per cent of respondents with a medium level of formal education think that spending on research should be reduced in the same proportion as public spending in other areas, 34 per cent of respondents with a high level of formal education agree to this. Among them, the majority (60 per cent) thinks that public spending on research should not be reduced at all if possible.

Agreement with various statements on the relationship between science and politics*



- It is right that scientists speak up in public when political decisions do not take research results into account.
- Political decisions should be based on scientific evidence.
- It is not up to scientists to get involved in politics.

*Agreement with the statements above has been surveyed in this general fashion since 2021. In the years prior to that it was surveyed in relation to specific topics. In 2019, for example, agreement was surveyed against the backdrop of the Fridays for Future/Scientists for Future protests for changes in climate policy, and in 2020 against the backdrop of the coronavirus pandemic that had just started.

Aggregated numbers for 'somewhat agree' and 'completely agree' shown;

Different wording 2020: 'Political decisions on handling the coronavirus pandemic should be based on scientific evidence.';

Minimum of 1,000 respondents each survey wave;

Figures are in per cent. Numbers may not add up to 100 per cent due to rounding.

For the second time in a row, the science barometer 2022 included general questions about the relationship between science and politics without referring to any specific topics. This year, 79 per cent of respondents agree somewhat or completely that scientists should speak up in public when political decisions do not take research results into account. A good two thirds of respondents currently think that political decisions should be based on scientific evidence. While these results are similar to those of 2021, the proportion of respondents who do not see it as the role of scientists to get involved in politics is slightly higher (50 per cent) than in the previous year (43 per cent).

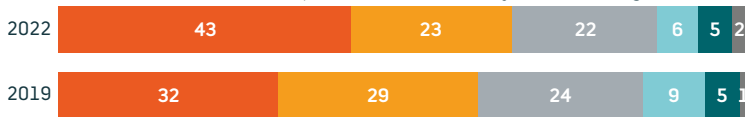
In 2020, between 72 and 81 per cent of respondents stated that political decisions handling the coronavirus pandemic should be based on scientific evidence when asked to assess the relationship between science and politics in light of the coronavirus pandemic. 32 and 42 per cent respectively agreed to the statement that it is not up to scientists to get involved in politics. In 2019, when this question was asked in the context of the Fridays for Future protests, 54 per cent agreed with the idea of science-based policies and 29 per cent agreed that it is not up to scientists to get involved in politics.

To what extent do you agree with the following statements?

Decisions on science and research should be made against the background of whether they contribute to solving societal problems.



Scientists should be allowed to decide for themselves what they are researching.



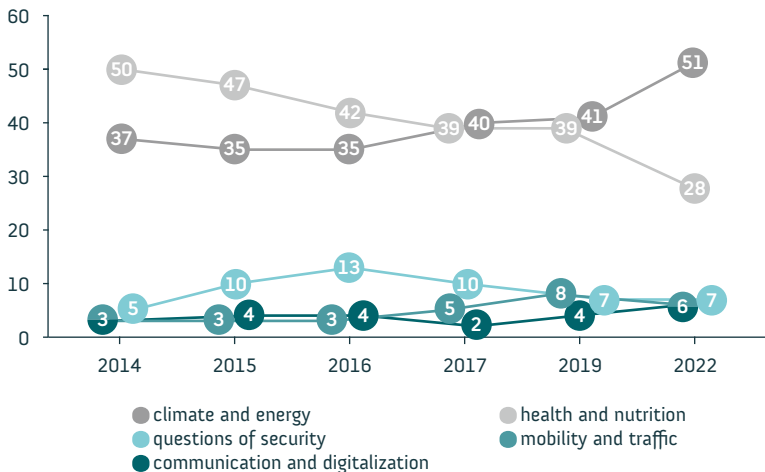
- completely agree
- somewhat agree
- undecided
- somewhat disagree
- completely disagree
- don't know, missing answer

Minimum of 1,000 respondents each survey wave;
Figures are in per cent. Numbers may not add up to 100 per cent due to rounding.

Scientific findings are essential for tackling major societal challenges. At the same time, freedom of science and research are important values in Germany. Against this backdrop, two-thirds of respondents agree somewhat or completely that decisions about science and research should be made while considering whether they contribute to solving societal problems. A similar share of respondents believe that scientists should be allowed to decide for themselves what they conduct research on. In the science barometer 2019, agreement with both statements was at a similar level.

Answers to these questions reveal small gender-specific differences: 61 per cent of men believe that decisions about science and research should be made with the confrontation of societal challenges in mind compared with 73 per cent of women. On the other hand, 73 per cent of men and 59 per cent of women think that scientists should be allowed to independently make decisions about the questions they conduct research on.

In which area should research be conducted most intensively in the future?*



*2014-2016 slightly different wording (question: 'Which research area do you personally find most important for the future?'; response categories: 'internal security' instead of 'questions of security', 'mobility' instead of 'mobility and traffic' (also 2017), additionally 'none of these')

In 2022, this question was asked as split ballot, so that half of the respondents were offered 'climate and energy' as one response category, as in previous years, while 'climate' and 'energy' were offered separately for the other half. For 2022, the sum of the numbers for 'climate', 'energy' and 'climate and energy' for all 1,037 respondents is shown.

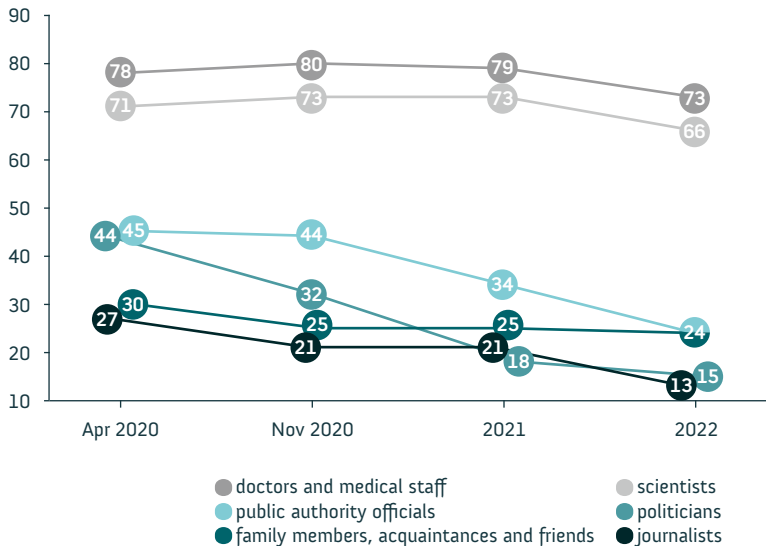
Numbers for 'don't know, missing answer' as well as for 'none of these' not shown;

Minimum of 1,000 respondents each survey wave;

Figures are in per cent. Numbers may not add up to 100 per cent due to rounding.

Energy supply is currently the subject of heated debates in Germany. Against this backdrop, half of the respondents in the science barometer 2022 state that there should be in-depth research on questions of climate and energy in the future. In 2019, the last time this question was asked in the science barometer, 41 per cent of respondents rated climate and energy as the most important research area. In September 2022, 28 per cent of respondents named health and nutrition as the most important future research area (2019: 39 per cent). From 2014 to 2016, on the other hand, health and nutrition actually ranked first. Across all survey waves of the science barometer so far, only small proportions of respondents consider mobility and traffic, communication and digitalization or questions of security to be the most important research area for the future.

Trust in statements on the coronavirus pandemic by different actors



Aggregated numbers for 'trust somewhat' and 'trust completely' shown;
Minimum of 1,000 respondents each survey wave;
Figures are in per cent. Numbers may not add up to 100 per cent due to rounding.

When it comes to the coronavirus pandemic, trust in doctors and medical staff as well as in scientists remains high. Although levels of trust have fallen slightly compared to previous years, statements by these two groups of actors are still trusted the most. 73 per cent of respondents rather or completely trust doctors and medical staff when it comes to statements about the coronavirus pandemic. 66 per cent of respondents trust the statements of scientists. 24 per cent say they trust statements made by public authority officials, and 13 per cent indicate that they trust statements made by journalists. While trust in these two groups of actors has also decreased compared to 2021, respondents' trust in the statements of family members, acquaintances and friends (24 per cent) as well as in the statements of politicians (15 per cent) has hardly changed compared with autumn 2021.

How much do you currently trust statements by the following actors regarding energy supply in Germany?

statements by scientists



statements by representatives of companies and industry



statements by family members, acquaintances and friends



statements by public authority officials



statements by journalists



statements by politicians



Number of respondents: 1,037;

Figures are in per cent. Numbers may not add up to 100 per cent due to rounding.

Considering questions of energy supply in Germany, scientists enjoy a particularly high level of trust among the respondents compared to other groups of actors. This is similar to trust in statements on the coronavirus pandemic (see p. 27/28): 61 per cent of the respondents say that they somewhat or completely trust the statements of scientists on questions of energy supply in Germany. Representatives of companies and industry come in second, with 22 per cent of respondents trusting their statements. Respectively 19 per cent somewhat or completely trust statements on energy supply issues made by family members, acquaintances and friends or by public authority officials, and 18 per cent say they trust statements made by journalists. Akin to the low levels of public trust in statements by politicians on the coronavirus pandemic (15 per cent), trust in their statements on energy supply issues is lowest with 13 per cent.

Data on the survey design of the science barometer 2022

Representative population survey

Population	German-speaking residential population of the Federal Republic of Germany in private households from the age of 14 years and over
Number of respondents	1,037 respondents
Type and period of the survey	The interviews were conducted as telephone interviews (dual frame of landlines/mobile phones, 80:20) from 28 to 29 September 2022. The interviews were part of an omnibus survey carried out centrally by Kantar.
Sampling	The sampling was carried out according to ADM – i.e. using a telephone sample which was created by an initiative of the Arbeitskreis Deutscher Marktforschungsinstitute (ADM) using the Gabler-Häder-Verfahren and which also contains unlisted telephone numbers. Within the selected households from the landline sample, the target person was selected randomly. For the sample of mobile phones, no systematic selection of the target person took place since mobile phones are almost exclusively used by only one person.

- Implementation** The interviews were computer-assisted telephone interviews (CATI). The general working instructions, used by all interviewers at Kantar, were applied in order to conduct all the interviews consistently.
- Weighting and representativeness** The weighting took place in several steps: Firstly, a design weighting compensated for the different selection probabilities of the target persons caused by the numbers of landlines and mobile phone numbers as well as household sizes. Subsequently, the two samples of landlines and mobile phones were merged and weighted based on the characteristics of federal state, size of location, gender, age, occupation, formal education and household size. The weighting ensures that the structure of the sample on which the results are based matches the structure of the population. Therefore, the results of the survey are representative and can be generalised for the population within statistical margins of error. For this survey, the margin of error ranges from ± 1.4 (for a share of five per cent) to ± 3.1 (for a share of 50 per cent).
- Documentation** The original text of the questionnaire as well as result tables are available online via the following link: www.sciencebarometer.com. In order to reduce the length and complexity of the question texts for the survey as telephone interviews, no gender-neutral language is used in the questionnaire and correspondingly also in the direct results reporting on the science barometer, although *Wissenschaft im Dialog* supports and implements the use of such language in other contexts.

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