

# Although trust in science remains high, the public questions scientists' adherence to science's norms

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Science is one of the most highly regarded institutions in America, with nearly three-quarters of the public expressing "a great deal" or "a fair

amount" of confidence in scientists. But confidence in science has nonetheless declined over the past few years, since the early days of the COVID-19 pandemic, as it has for most other major social institutions.

In a [new article](#) appearing in *Proceedings of the National Academy of Sciences (PNAS)*, members of the Strategic Council of the National Academies of Sciences, Engineering, and Medicine examine what has happened to public confidence in science, why it has happened, and what can be done to elevate it.

The researchers write that while there is broad public agreement about the values that should underpin science, the public questions whether scientists actually live up to these values and whether they can overcome their individual biases.

The paper relies in part on new data being released in connection with this article by the Annenberg Public Policy Center (APPC) of the University of Pennsylvania. The data come from the Annenberg Science Knowledge (ASK) survey conducted February 22–28, 2023, with an empaneled, nationally representative sample of 1,638 U.S. adults who were asked about their views on scientists and science.

The margin of error for the entire sample is  $\pm 3.2$  percentage points at the 95% confidence level. The survey is directed by APPC director Kathleen Hall Jamieson, a member of the Strategic Council and a co-author of the *PNAS* paper.

## **Decline in confidence comparable to other institutions**

The researchers also examine trends in public confidence in science dating back 20 years from other sources, including the Pew Research Center and the General Social Survey of National Opinion Research at the University of Chicago. These show a recent decline consistent with

the decline seen for other institutions.

"We're of the view that trust has to be earned," said lead author Arthur Lupia, a member of the NASEM's Strategic Council for Research Excellence, Integrity, and Trust, and associate vice president for research at the University of Michigan. "We wanted to understand how trust in science is changing, and why, and is there anything that the [scientific enterprise](#) can do to regain trust?"

## Highlights

"Confidence in science is high relative to nearly all other civic, cultural, and government institutions...", the article states. In addition:

- The public has high levels of confidence in scientists' competence, trustworthiness, and honesty—84% of survey respondents in February 2023 are very or somewhat confident that scientists provide the public with trustworthy information in the scientists' area of inquiry.
- Many in the public question whether scientists share their values and whether scientists can overcome their own biases. For instance, when asked whether scientists will or will not publish findings if a study's results run counter to the interests of the organization running the study, 70% said scientists will not publish the findings.
- The public has "consistent beliefs about how scientists should act and beliefs that support their confidence in science despite their concerns about scientists' possible biases and distortive incentives." For example, 84% of U.S. adults say it is somewhat or very important for scientists to disclose their funders and 92% say it is somewhat or very important that scientists be open to changing their minds based on new evidence.
- However, when asked about scientists' biases, just over half of

U.S. adults (53%) say scientists provide the public with unbiased conclusions about their area of inquiry and just 42% say scientists generally are "able to overcome their human and political biases."

## **Beyond measurements of trust in science**

The Annenberg Public Policy Center's ASK survey in February 2023 asked U.S. adults more nuanced questions about attitudes toward scientists.

"We've developed measures beyond trust or confidence in science in order to understand why some in the public are less supportive of science and scientists than others," said Jamieson, who is also a professor of communication at the University of Pennsylvania's Annenberg School for Communication. "Perceptions of whether scientists share one's values, overcome their human and political biases, and correct mistakes are important as well."

The ASK survey of U.S. adults found, for instance, that 81% regard scientists as competent, 70% as trustworthy, and 68% as honest, but only 42% say scientists "share my values."

A more detailed analysis of the variables and effects seen in Annenberg's surveys was published in September 2023 in *PNAS* in [the paper](#) "Factors Assessing Science's Self-Presentation model and their effect on conservatives' and liberals' support for funding science."

## **Confidence in science and COVID-19 vaccination status**

The research published in *PNAS* was initiated by members of the

NASEM's Strategic Council for Research Excellence, Integrity, and Trust, which was established in 2021 to advance the integrity, ethics, resilience, and effectiveness of the research enterprise.

Lupia said the Strategic Council's conversations asking whether trust in science was declining and if so, why, began during the pandemic. "There was great science behind the COVID-19 vaccine, so why was the idea of people taking it so controversial?" he asked. "COVID deaths were so visible and yet the controversy over the vaccine was also so visible—kind of an icon of the public-health implications of declining trust in science."

The article cites research from the Annenberg Public Policy Center that found important relationships between science-based forms of trust and the willingness to take a COVID-19 vaccine. Data from waves of another APPC survey of U.S. adults in five swing states during the 2020 campaign season—reported in a [2021 article](#) in *PNAS*—showed that from July 2020 to February 2021, U.S. adults' trust in health authorities was a significant predictor of the reported intention to get the COVID-19 vaccine.

## **How to raise confidence in science**

Raising public confidence in science, the researchers write, "should not be premised on the assumption that society would be better off with higher levels of uncritical trust in the scientific community. Indeed, uncritical trust in science would violate the scientific norm of organized skepticism and be antithetical to science's culture of challenge, critique, and self-correction."

"Instead," they propose, "researchers, scientific organizations, and the scientific community writ large need to redouble their commitment to conduct, communicate, critique, and—when error is found or

misconduct detected—correct the published record in ways that both merit and earn [public confidence](#)."

The data cited in the paper, they conclude, "suggest that the [scientific community](#)'s commitment to core values such as the culture of critique and correction, [peer review](#), acknowledging limitations in data and methods, precise specification of key terms, and faithful accounts of evidence in every step of scientific practice and in every engagement with the public may help sustain confidence in scientific findings."

In addition to Jamieson and Lupia, the authors are David B. Allison, dean of the School of Public Health, Indiana University; Jennifer Heimberg, of the National Academies of Sciences, Engineering, and Medicine; Magdalena Skipper, editor-in-chief of the journal *Nature*; and Susan M. Wolf, of the University of Minnesota Law and Medical Schools. Allison is co-chair of the National Academies' Strategic Council; Lupia, Jamieson, Skipper, and Wolf are members of the Council, and Heimberg is the director of the Council.

**More information:** Arthur Lupia et al, Trends in U.S. public confidence in science and opportunities for progress, *Proceedings of the National Academy of Sciences* (2024). [DOI: 10.1073/pnas.2319488121](https://doi.org/10.1073/pnas.2319488121)

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