Science news experiment

Do different media sources affect the perceived trustworthiness of science information by scientists?

To answer this question, we conducted the following experiment: Participants were randomly assigned 1 of 3 vignettes about wildland fire management. Each vignette contained the exact same content, except for a variation in reference to the vignette's source. The three different options for sources, or treatments, were 1) a story presented by scientists, 2) a story presented by traditional media, or 3) a story presented on a community blog distributed by social media. The participants were then asked various questions about the trustworthiness of the story they just read.

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Experiment Methods

Respondents were randomly assigned a treatment as they entered the survey (number of respondents in treatment 1=155; treatment 2=187; treatment 3=187). The sampling frame includes two fields of science: biology and public health.

Vignette wording:

For decades, wildland fire management centered around putting out fires. But the science of wildfire management has changed how we think about managing and responding to wildland fires. Today we work to suppress fires that threaten people and communities, but we recognize the important role fires play in creating healthy ecosystems and sometimes allow wildfires to burn and ignite prescribed fires. Prescribed fires cost less than fighting wildfire, resulting in ecologists calling for more resources dedicated to prescribed burns.

Yet, communities are concerned about the negative impacts from prescribed fires including increased air pollution, which causes respiratory problems; decreased visibility when smoke covers roadways and populated areas; prescribed fire escapes, when poorly contained fires jump from prescribed areas and turn into dangerous wildfires; and excessive costs and manpower as prescribed burns require extensive resources. Finally, there are concerns that the science advocating prescribed burns might be missing a key understanding of the long-term, unintended consequences from humans controlling forest fires and ecosystems.

A recent **[treatment 1: media report from the Associated Press outlined the advancements in fire management science. The AP media report was picked up by National Public Radio, USA Today, The Washington Times, CNN and Fox news.] [treatment 2: community blog post outlined the advancements in fire management science. The blog post was shared widely on social media, trending on Twitter and ranking as one of the top 10 most shared posts on Facebook.] [treatment 3: scientific report prepared by leading fire scientists and ecologists described the science behind modern fire management and community concerns. The report has been widely shared among scientists and fire management experts.]** About 80% of the coverage was dedicated to presenting the scientific data on why prescribed burns are needed. The remainder of the content focused on the controversy surrounding the science, the costs and risks associated with prescribed burns, and the public's concerns about the reliability of the science.

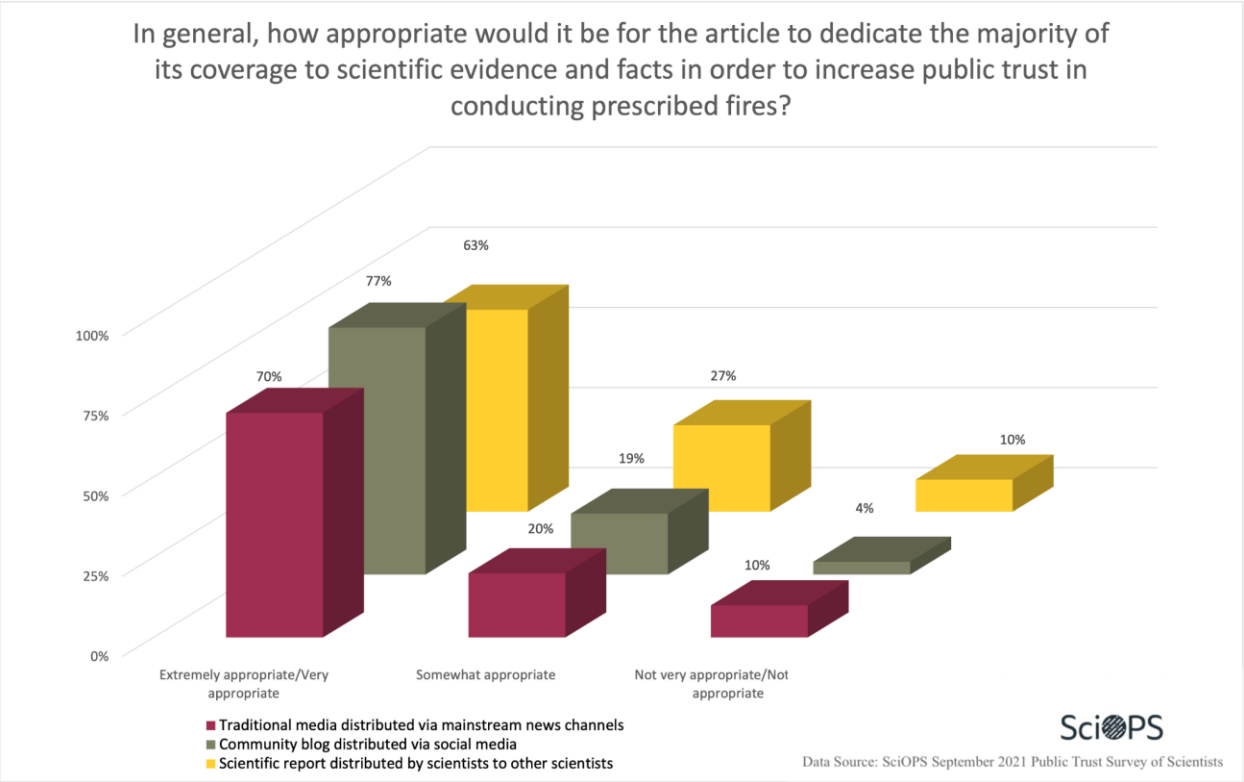
Findings

The following questions were administered to all respondents. The three significant results can be found on the SciOPS website, and all significant and non-significant results are included in this section in the order in which they appeared in the survey. For each graphic, the row sums to 100 by color

Perceived appropriateness for the article to emphasize different issues

[Response categories: Extremely appropriate, Very appropriate, Somewhat appropriate, Not very appropriate, Not at all appropriate]

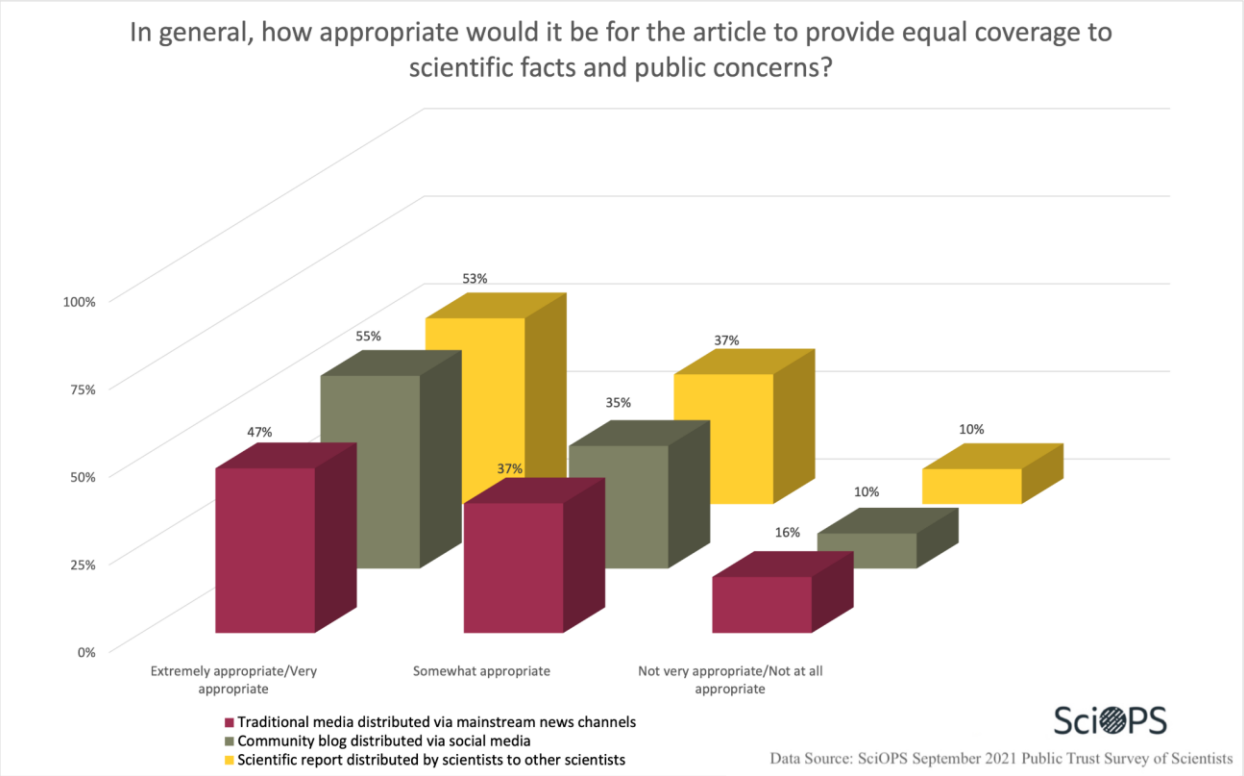
Q1: Majority science facts/ minority public concerns (Statistically significant differences)



Findings

- Respondents felt it was highly appropriate for blogs (77%) and media (70%) to dedicate the majority of story coverage to science fact as compared to scientific reports (63%) (This difference is statistically significant, $p < .05$).

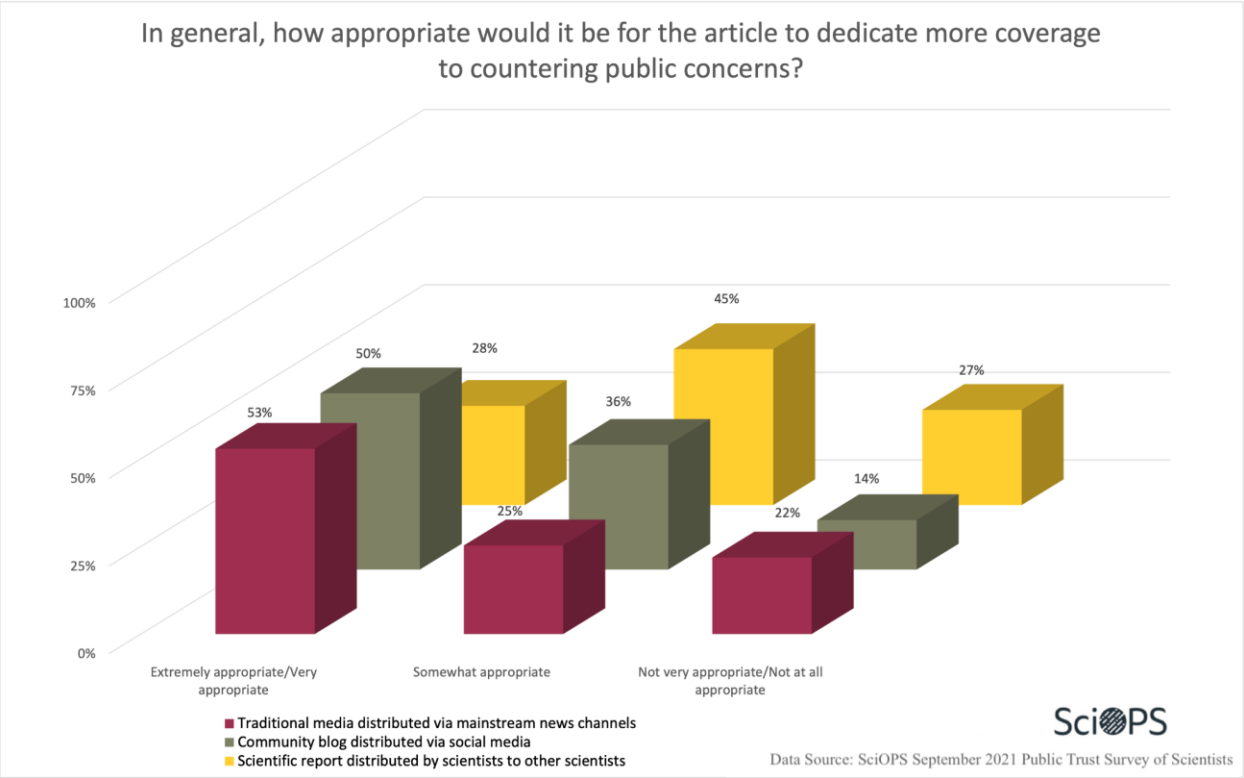
Q2: Equal coverage of science facts and public concerns (Statistically significant differences)



Findings

- For each of the three sources (traditional media, community science blog, scientific report), about the <u>same percentage</u> of respondents (approximately 50%) felt that it was <u>highly appropriate</u> for an article from that source to provide <u>equal coverage of scientific facts and public concerns</u>.
- However, a larger percentage of respondents (16%) felt that it was <u>not appropriate</u> to provide equal coverage in an article from a <u>traditional media source</u>, as compared to a community science blog (10%) or a scientific report (10%). (This difference is statistically significant, $p < .05$).

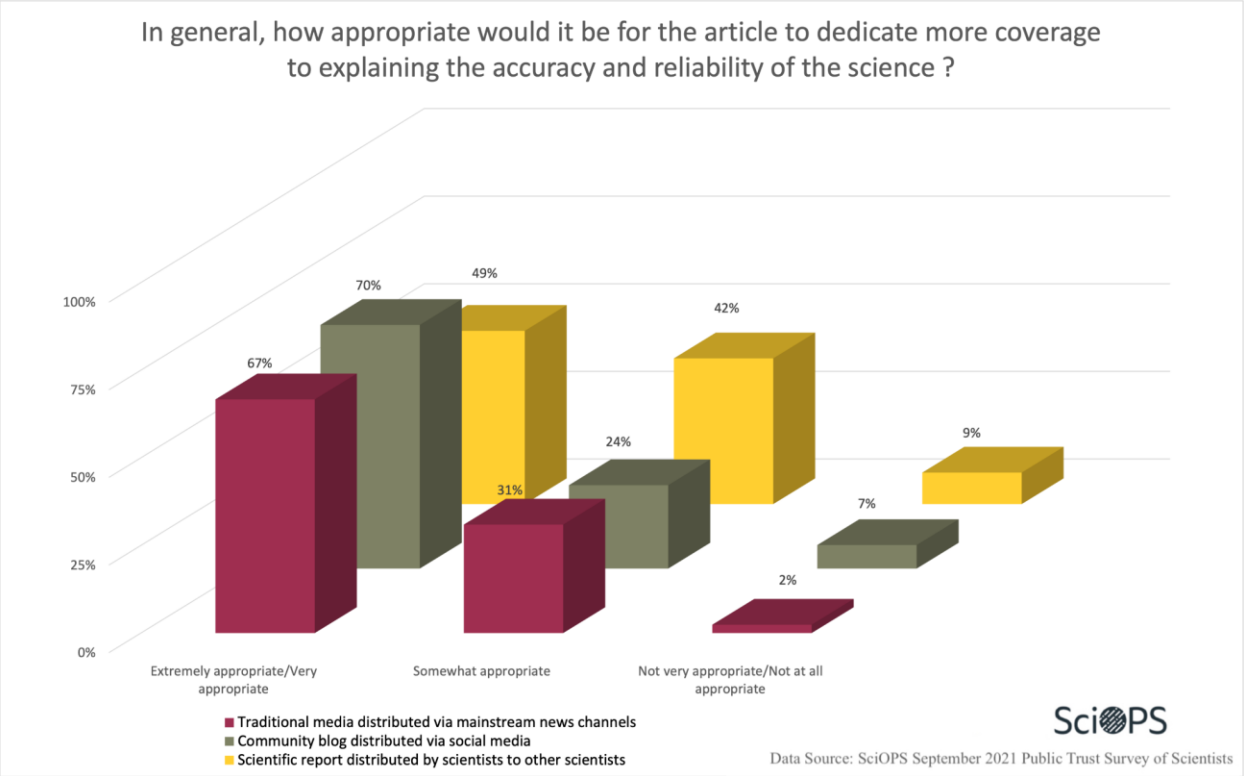
Q3: More coverage to public concerns (No statistically significant differences)



Findings

- The results show no statistically significant differences between the three treatments of communication modes (traditional media, community science blog, scientific report).

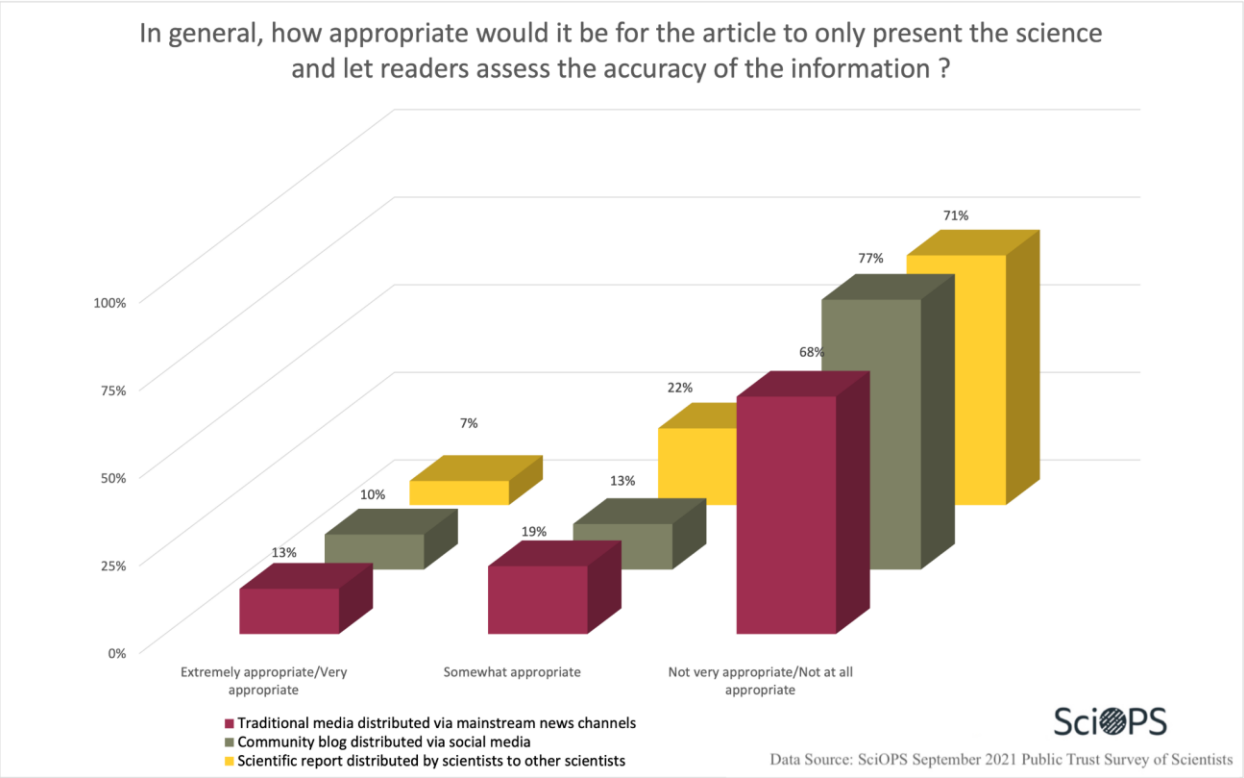
Q4: More coverage to reliability of science (No statistically significant differences)



Findings

- The results show no statistically significant differences between the three treatments of communication modes (traditional media, community science blog, scientific report).

Q5: More coverage to the accuracy of information (No statistically significant differences)



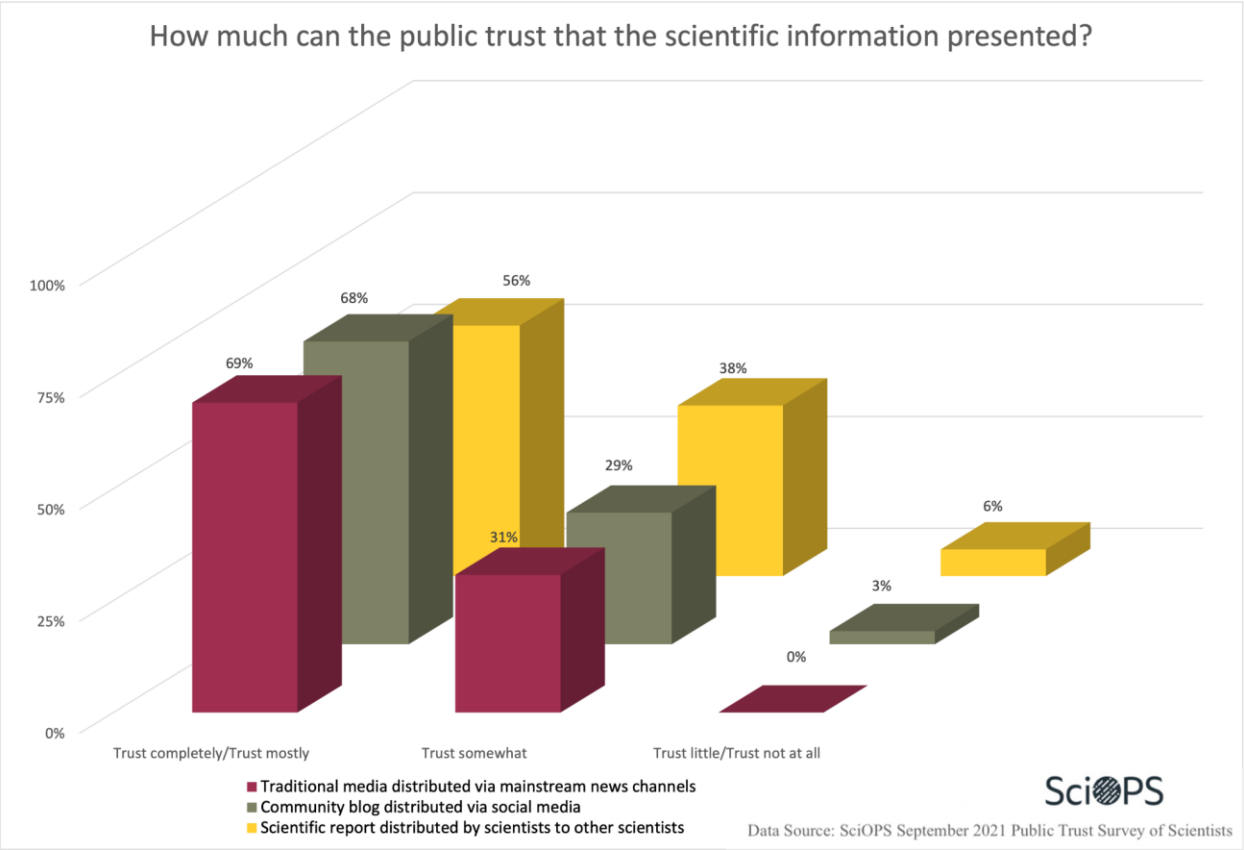
Findings

- The results show no statistically significant differences between the three treatments of communication modes (traditional media, community science blog, scientific report).

Perceived level of trust of the information for each group

[Response Categories: trust completely, trust mostly, trust somewhat, trust little, trust not at all]

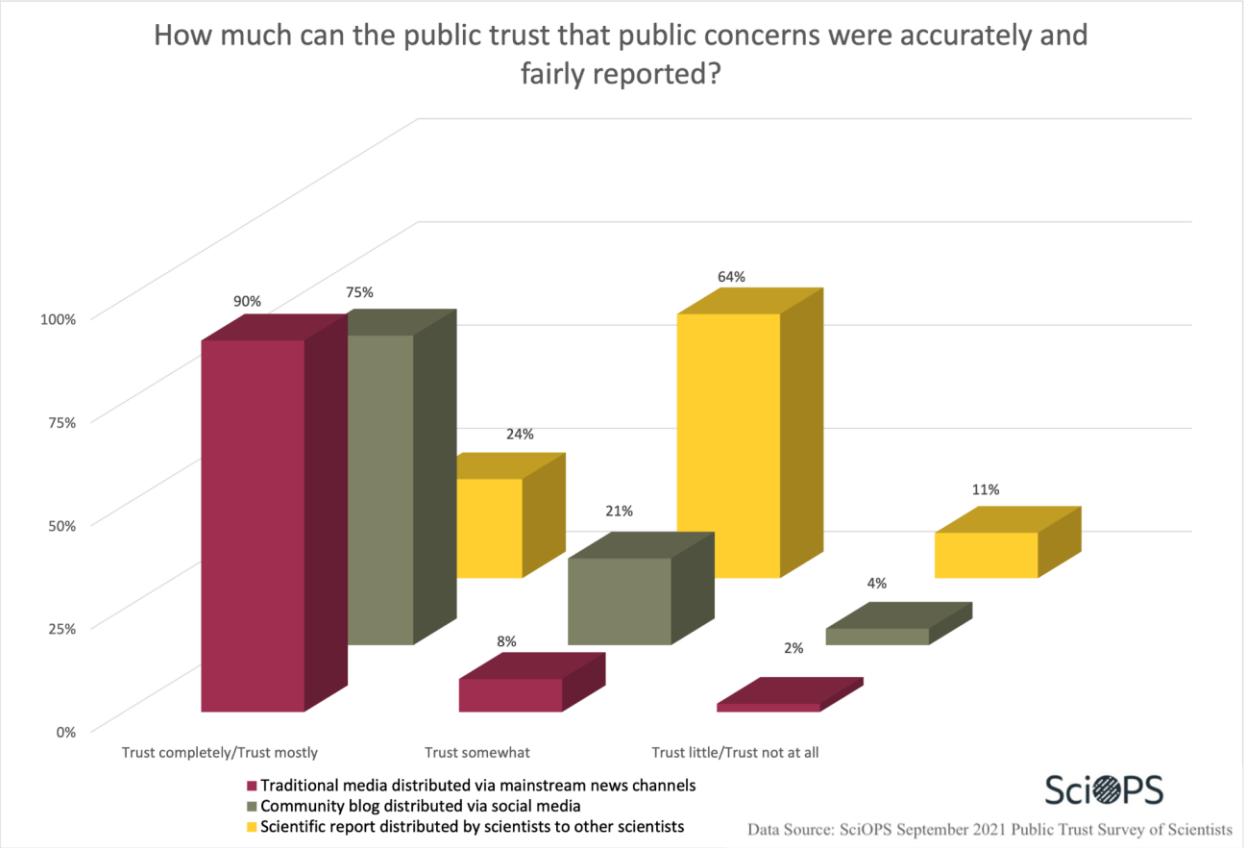
Q1: Trust of scientific information (No statistically significant differences)



Findings

- The results show no statistically significant differences between the three treatments of communication modes (traditional media, community science blog, scientific report).

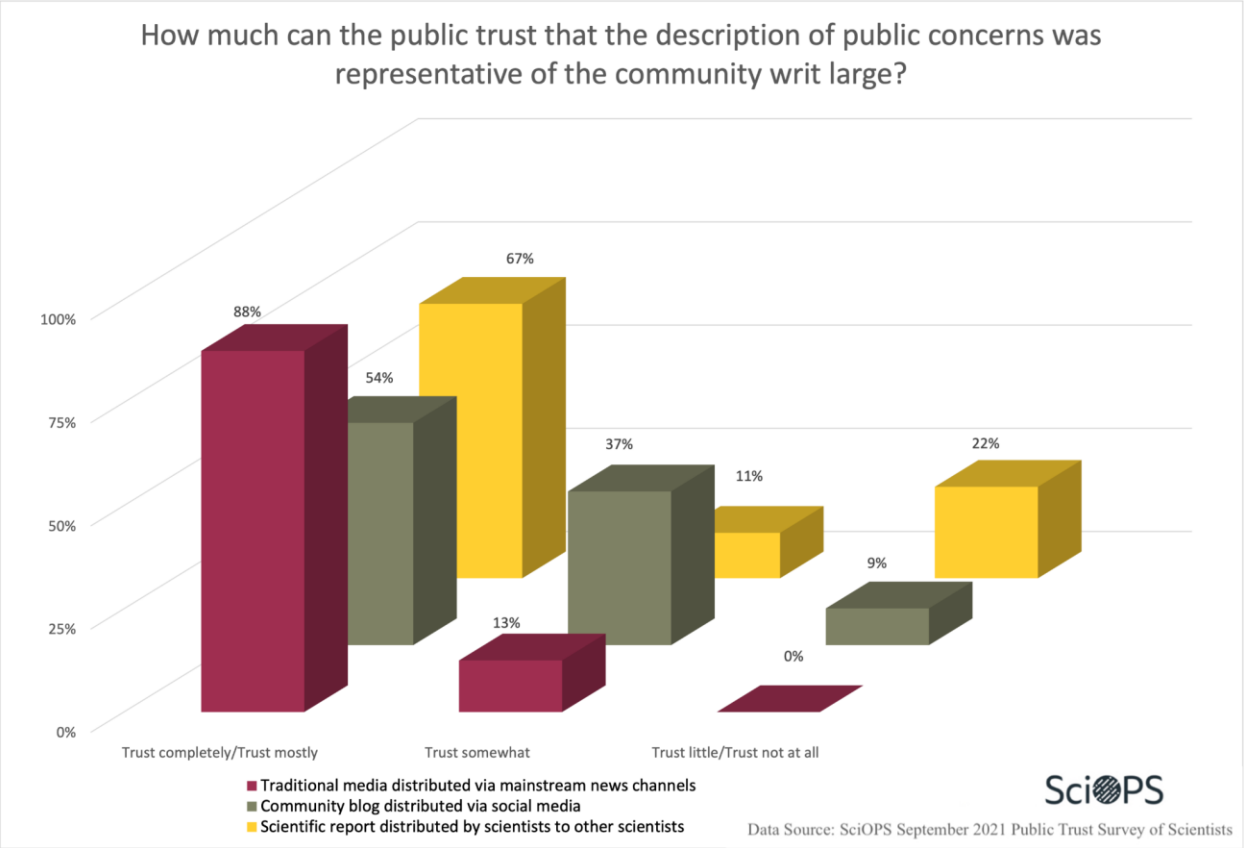
Q2: Trust that public concerns are accurately reported (Statistically significant differences)



Findings

- The majority of the respondents felt that traditional media (90%) and community blogs (75%) could be trusted to fairly and accurately report public concerns. 64% of respondents felt that public concerns were not well represented in scientific reports. (This difference is statistically significant, $p < .05$).

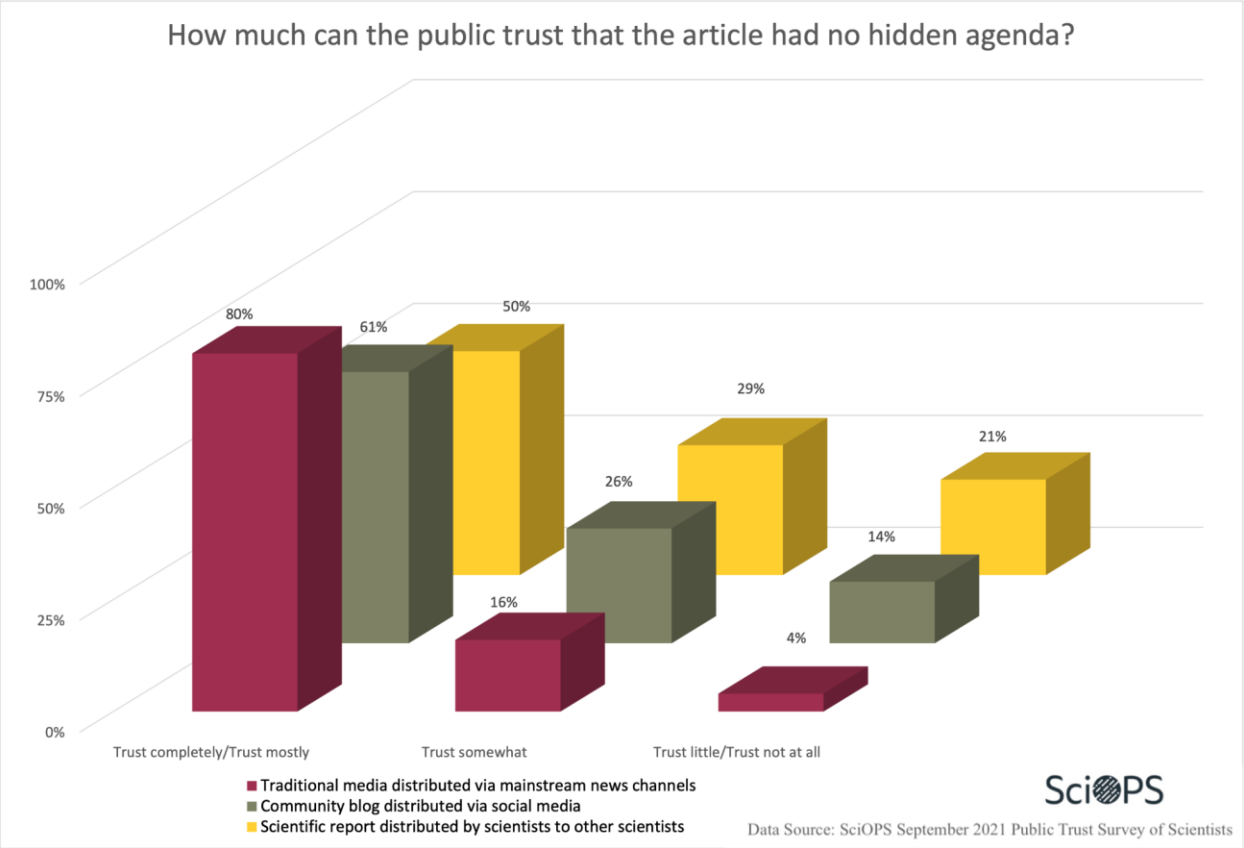
Q3: Trust that descriptions are representative (No statistically significant differences)



Findings

- The results show no statistically significant differences between the three treatments of communication modes (traditional media, community science blog, scientific report).

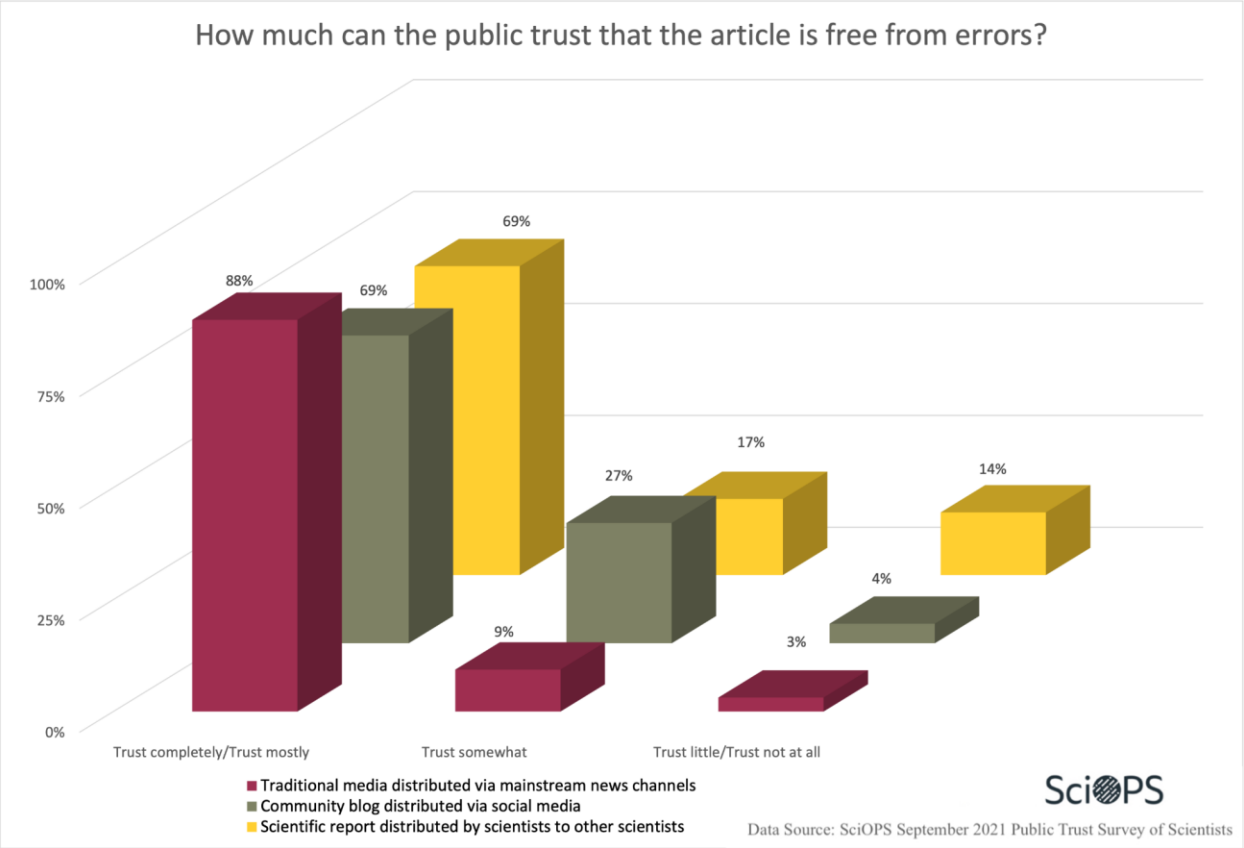
Q4: Trust that there is no hidden agenda (No statistically significant differences)



Findings

- The results show no statistically significant differences between the three treatments of communication modes (traditional media, community science blog, scientific report).

Q5: Trust that the article is free from errors (No statistically significant differences)



Findings

- The results show no statistically significant differences between the three treatments of communication modes (traditional media, community science blog, scientific report).