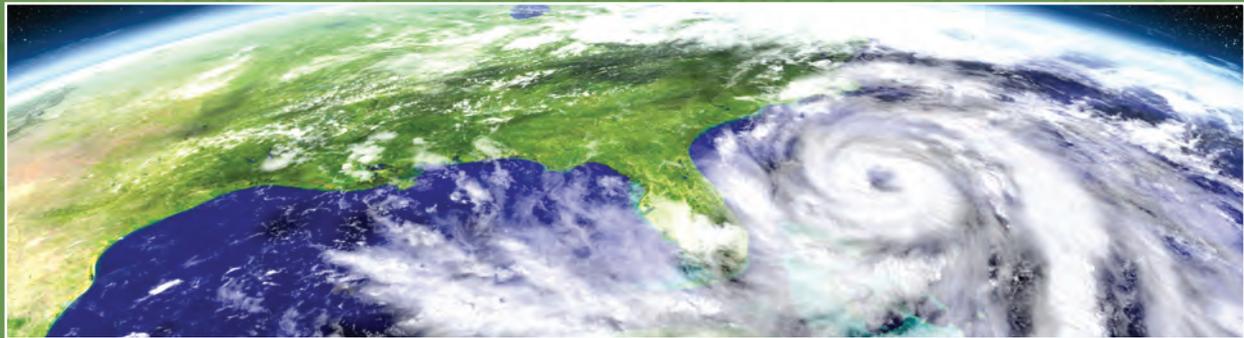


A 2017 NATIONAL SURVEY OF BROADCAST METEOROLOGISTS

Initial Findings



GEORGE MASON UNIVERSITY
CENTER for CLIMATE CHANGE
COMMUNICATION

A 2017 National Survey of Broadcast Meteorologists: Initial Findings

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Introduction

This report provides initial findings from the fifth nationally representative survey of broadcast meteorologists conducted by George Mason University and partner organizations (American Meteorological Society, Climate Central). The overarching aim of these surveys—the first four of which were conducted in 2010, 2011, 2015, and 2016—is to explore broadcast meteorologists’ views and activities related to reporting on climate change.

The current survey also investigated a broader range of broadcast meteorologist’ day-to-day activities and engagement with their viewership. These topics included: weathercasters’ use of social media; activity and secondary forecasts; the influence of news consultants on the weather segment; familiarity with the American Meteorological Society station scientist initiative; and reporting longer-format science stories.

The first two surveys (in 2010 and 2011) were limited to broadcasters who were current members of the American Meteorological Society and/or the National Weather Association. In 2015, 2016, and again for the 2017 survey, we attempted to reach all broadcast meteorology professionals currently working in the United States. Of these 2,358 professionals we were able to contact 2,220 via email.

Our survey was administered via email between January 9 and January 27, 2017. After making an initial request to participate, we sent up to five additional requests/reminders to participate to those people who had not yet completed a survey. A total of 486 broadcasters participated, yielding a survey participation rate of 22%.

We wish to sincerely thank all of the 486 broadcast meteorologists who took time out of their busy schedules to participate in this research. We hope the following report is useful to them.

Funding for this research was provided by NSF Award # DRL-1422431.

Summary of Findings

The practice of broadcast meteorology:

- Nearly all weathercasters (97%) use activity and other secondary forecasts to engage their viewership. School-related and commute-related are the most common categories of secondary forecasts, used once per week or more frequently by more than half of all weathercasters. Other commonly used secondary forecasts include outdoor sports and recreation (not water-related), local events, outdoor sports and recreation (water-related), and allergy/pollen forecasts—each of which is used twice per month or more frequently by more than half of all weathercasters—and overnight travel forecasts and seasonal-themed forecasts which are used at least once per month by more than half of all weathercasters.
- Nearly nine in ten (88%) weathercasters maintain separate social media accounts for personal and station use and more than eight in ten (84%) have full control of the social media accounts that bear their name.

The role of news consultants:

- Six in ten weathercasters (60%) work at a station where a news consultant has made suggestions about the weather segment in the past year.
- The most common advice offered by consultants included: present local weather impacts (92%); use more audience engagement tactics (90%); better tailor the message to viewers (89%); use more social media (85%); simplify message delivery (80%); and make weather presentations forecast-driven (75%).
- Few weathercasters had received advice regarding climate change reporting: 3% stated they had been advised to discuss climate change; and 3% stated they had been advised not to discuss climate change.

Station scientist initiative:

- Nearly seven in ten weathercasters (68%) said that they were familiar with the American Meteorological Society's Station Scientist initiative.
- Of those weathercasters, nearly nine in ten (88%) felt they were filling the station scientist role at their station to some extent.
- Of those weathercasters who were not familiar with the Station Scientist Initiative, one third of them (33%) stated that they were interested in filling the role at their station.

Longer-format science stories:

- About one in four (27%) weathercasters currently report longer-format science stories on-air outside the weather segment. Of those weathercasters not currently doing so, over half (57%) are at least "somewhat" interested in reporting such stories.

Views of climate change:

- Nearly all weathercasters (95%) think climate change—as defined by the American Meteorological Society—is happening; relatively few think it isn't happening (2%) or don't know (3%).
- Nearly half of weathercasters (49%) are convinced that the climate change over the past 50 years has been mostly or entirely due to human activity, and an additional two in ten (21%) think it is more or less equally caused by human activity and natural events. About two in ten (21%) think the change has been primarily or entirely due to natural events.
- Weathercasters have diverse views on the extent to which additional climate change can be averted over the next 50 years if mitigation measures are taken worldwide: only 17% think a large amount or all additional climate change can be averted; many more think a moderate (38%) or a small (31%) amount of additional climate change can be averted; and 13% think almost no additional climate change can be averted. Only 1% believe there will be no additional climate change over the next 50 years.
- Weathercasters also have diverse views on the extent to which harm from climate change can be averted over the next 50 years if adaptation measures are taken in the United States: only 19% think a large amount or all additional harm can be averted; many more think a moderate (45%) or a small (26%) amount of harm can be averted; and 7% think almost no harm can be averted. Only 4% believe there will be no harm from climate change over the next 50 years.
- When asked if they had witnessed any positive outcomes in their communities as a result of climate change mitigation or adaptation activities, about a third (31%) of weathercasters reported that they had witnessed such outcomes.
- More than eight in ten (85%) of all weathercasters feel they understand the science of climate change at least "somewhat well," although less than two in ten (17%) believe that they understand it "very well."
- Nearly two thirds (62%) of weathercasters think the local climate in their area has changed in the past 50 years as a result of climate change, while about two in ten (19%) think it hasn't, or don't know (19%). About half of the weathercasters who think their local climate has changed say the impacts have been approximately equally mixed between beneficial and harmful (49%); nearly four in ten (39%) say the impacts have been primarily or exclusively harmful, and about one in ten (12%) say the impacts have been primarily or exclusively beneficial.
- Weathercasters who think the local climate has changed their area over the past 50 years were asked to identify which specific impacts have occurred. The most commonly cited harmful impacts were harm to agriculture (50%), harm to seasonal cycles (48%), harm to water resources (47%), harm to ecosystems and forests (43%), harm to coastal property (34%), harm to human health (33%) and harm to infrastructure (31%), although many weathercasters (ranging from 23% to 56%) indicated that they didn't know if these harmful impacts were occurring or not. The most commonly cited beneficial impacts were benefits from milder seasons and/or more pleasant weather (42%), benefits to tourism, recreation or leisure (26%), and benefits to agriculture (20%).

Reporting on climate change:

- Nearly two-thirds (63%) of weathercasters are “moderately” or “very” interested in reporting on-air about local historical climate statistics, and about four in ten are interested in reporting on-air about a range of other climate topics including: current local climate change impacts (43%); what audience members can do to protect themselves from climate change (43%); local adaptation efforts (42%); local mitigation efforts (41%); and future projected local climate change impacts (39%).
- Nearly three quarters (72%) of weathercasters feel at least “somewhat confident” in their ability to report climate change topics on-air.
- Weathercasters think the large majority of their audience is at least “slightly” interested in learning about a range of climate topics including: local historical climate statistics (92%); current local climate change impacts (89%); future projected local climate change impacts (86%); local adaptation efforts (84%); what audience members can do to protect themselves from climate change (84%); and local mitigation efforts (78%).
- Over the past year, large numbers of weathercasters had informed their viewers—or others in their community—about the local impacts of climate change. The channels most commonly used were: their own social media accounts (49%); school visits (41%); community events (39%); on-air reporting (36%); station website (35%); and their station’s social media (32%) accounts.
- Among those weathercasters who had reported local impacts of climate change on-air, 20% did so once a month or more frequently, and 65% did so at least once per quarter. Approximately one-third (34%) of these weathercasters said their viewer feedback is predominantly positive, while another quarter (26%) said that their viewer feedback is mixed “about 50/50.” About one in ten (12%) said their viewer feedback was predominantly negative, but many (28%) said they get very few viewer reactions either way.
- Conversely, weathercasters who had not reported about local climate change topics on-air were very likely to expect predominantly negative (44%) or equally mixed feedback (38%); few expected predominantly positive feedback (11%).
- Among those weathercasters who had reported local impacts of climate change using social media, 27% did so once a month or more frequently, and 62% did so at least once per quarter. Nearly four in ten (38%) said their viewer feedback was predominantly positive, while another quarter (25%) said that the feedback is mixed “about 50/50 negative and positive.” Nearly two in ten (18%) said their viewer feedback was predominantly negative, but many (19%) said they get very few viewer reactions either way.
- More than one in four (28%) weathercasters indicated that they had reported a longer-format climate change story on-air outside the weather segment at some point over the past 12 months. Among those who hadn’t, 44% indicated that they would be at least “somewhat” interested in doing so.

- Weathercasters were more or less equally divided into four groups with regard to how their management responds, or was expected to respond, to their reporting on climate change. About one quarter (27%) felt they get or would get few reactions either way. About two in ten (22%) felt they get or would get predominantly positive reactions from management. Another two in ten (21%) felt the feedback is or would be mixed “about 50/50 negative and positive.” And lastly, about one quarter (24%) felt the feedback from management is or would be predominantly negative.
- Four in ten (40%) weathercasters present an “opposing viewpoint” at least sometimes when reporting climate change information: 10% do so “always or almost always;” 12% do so “most of the time;” 7% do so “about half the time;” and 11% do so “less than half the time.” Only 24% do so “never or rarely.”
- A majority of weathercasters (62%) say the recent changes in the political climate in the United States will not alter how they present or plan to present climate change information to their viewers. Of the 19% who do plan to alter their reporting, 27% (5% of the total sample) say they will decrease their reporting, 24% (4.5% of total) say they will increase their reporting, 16% (3% of total) will change their reporting venue, and 24% (4.5% of total) will change the focus of their reporting.

***Climate Matters* – A comprehensive climate change educational resource for broadcast meteorologists:**

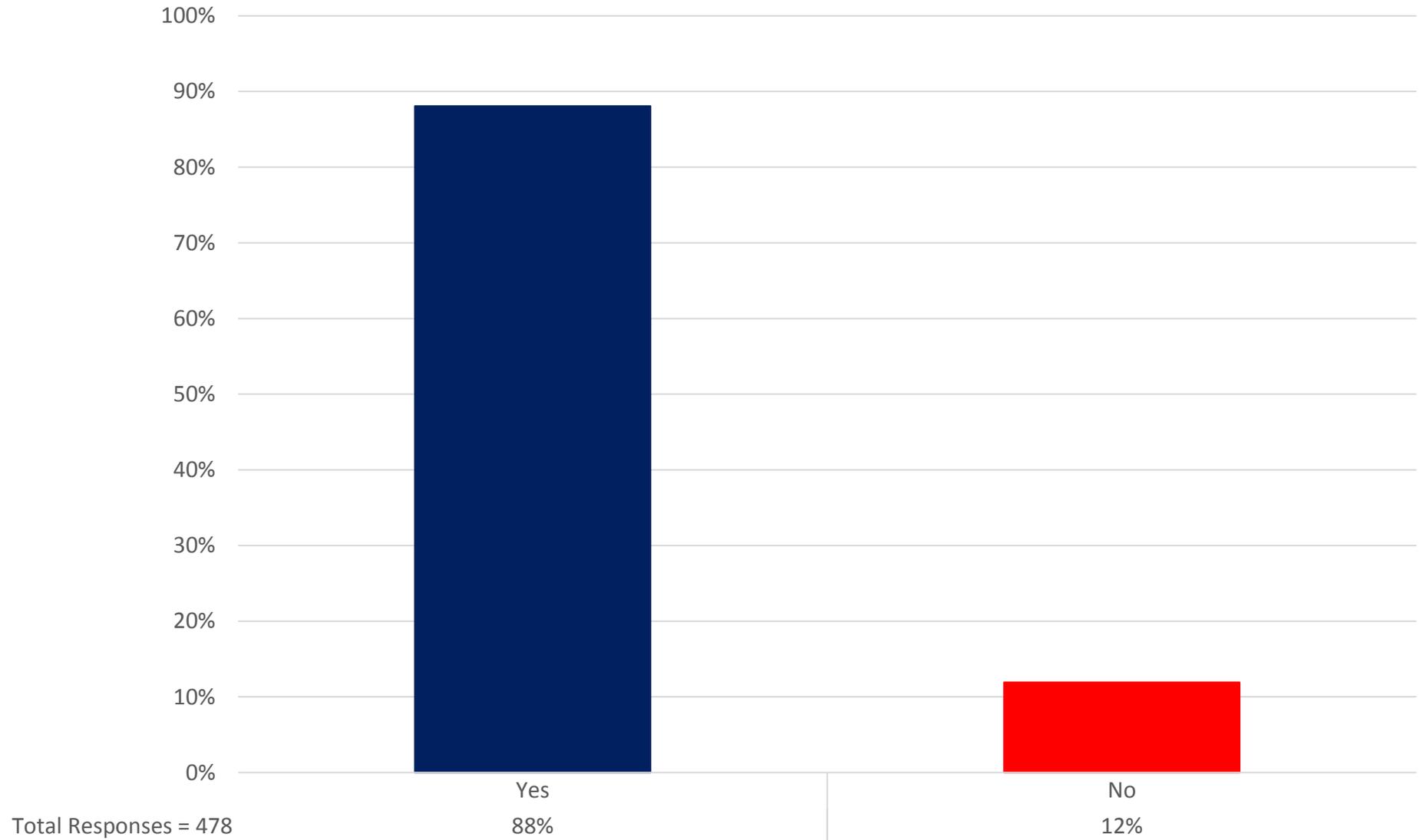
- Just over half (56%) of weathercasters had heard of *Climate Matters*. Of those who had, just over half (56%) currently receive the materials (via email), and 80% of those weathercasters use the materials.
- Most weathercasters who use *Climate Matters* materials found them to be easy to use in social media (92%), on-air (63%) and on their station’s website (67%). Fewer than 13% found the materials hard to use.
- Of those who used *Climate Matters*, about nine in ten (88%) had visited the *Climate Matters* online archive at least once or twice. More than one third (34%) visited the archive at least once a month. Three quarters (75%) of those visiting the archive found it easy to use.
- Of those who used *Climate Matters*, about two thirds (65%) had visited the *Climate Matters* Facebook at least once or twice. About one in five (21%) visited the Facebook page at least once every other month. More than eight in ten (82%) who had visited the Facebook page found it at least “somewhat useful.”
- More than nine in ten (91%) weathercasters using *Climate Matters* materials are currently participating in or are interested in learning more about online webinars that discuss climate science and the impacts of climate change.
- Weathercasters’ most common requests for the *Climate Matters* team were: more localized content (64%); information on refuting common misperceptions regarding climate change (54%); more specific evidence in the weekly *Climate Matters* releases; and more emphasis on how climate change impacts people (42%).

A diverse group of weathercasters participated in the survey:

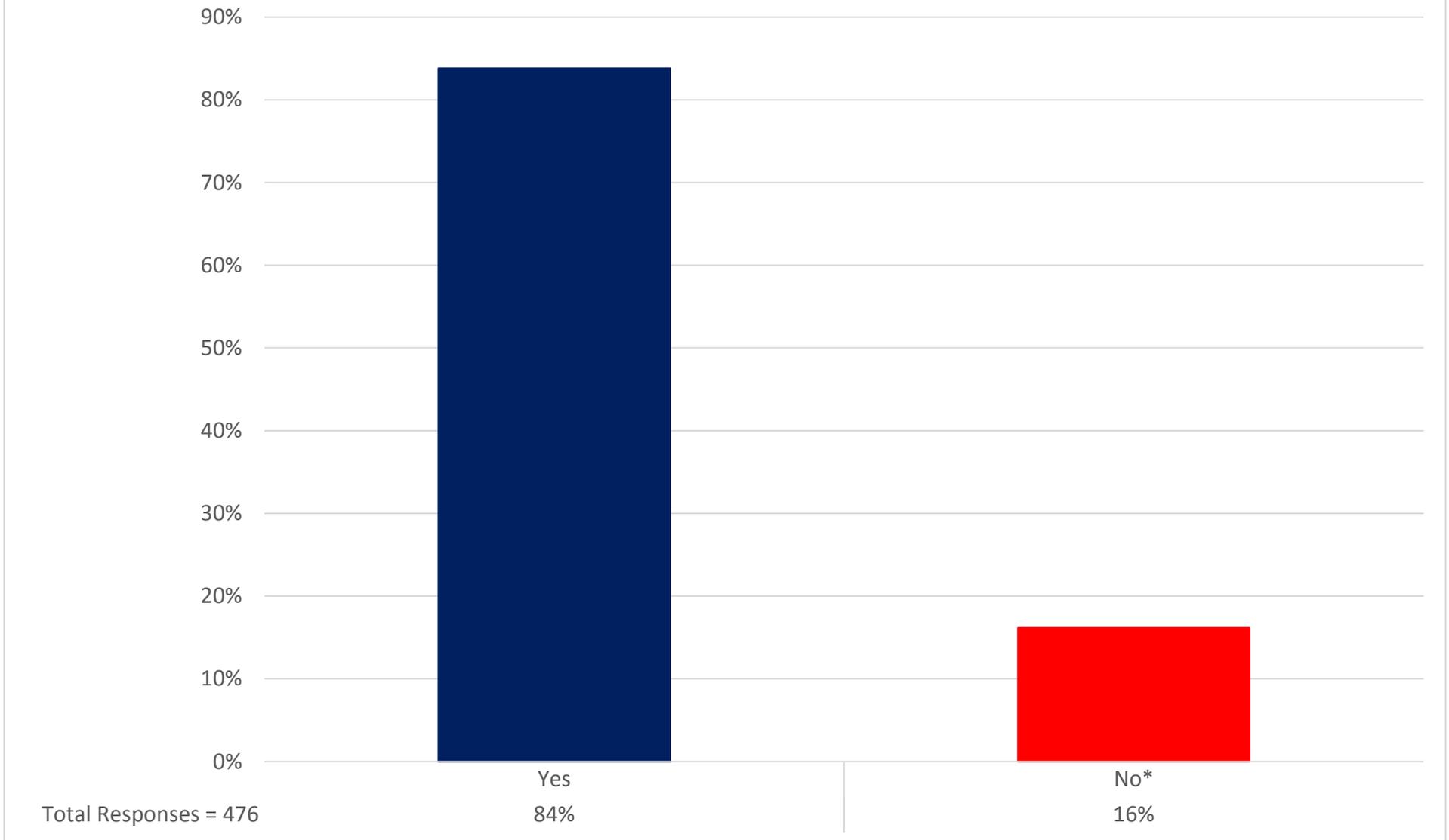
- Three-quarters of the respondents are male (75%) and one quarter are female (25%); they ranged in age from 22 to 70 with a median age of 39.
- Most hold a BS (65%) or MS (9%) in meteorology/atmospheric science, or a BS or BA (7%) or MS or MA (3%) in broadcast meteorology. Other commonly reported degrees are a certificate in meteorology/broadcast meteorology (19%), a BA in journalism/mass communication (17%), and a BA or BS in other disciplines (7%).
- Many respondents have had some formal academic or post-graduate training on the topic of climate science, including: as part of an undergraduate course (49%); an entire undergraduate course (38%); continuing education or certification course (29%); in certificate program coursework (19%); in a major and/or minor devoted to climate science (12%); and in a graduate course in climate science (28%).
- Respondents have worked as broadcast meteorologists from less than a year to 46 years, with a median of 14 years.
- About two-thirds hold a professional certification—the AMS Certified Broadcast Meteorologist designation (33%), the AMS Seal of Approval (32%), or the National Weather Association Seal of Approval (20%)—while 36% hold no seal of approval.
- Nearly all (94%) respondents were working full-time in broadcast meteorology.
- Respondents have worked at their current station from less than a year to 41 years, with a median tenure of 6 years.
- They hold a range of positions including Chief Meteorologist (35%), Morning/Noon/Mid-Day Meteorologist (25%), Weekend Meteorologist (23%), Primary Weather Anchor (7%), Weekend Weather Anchor (6%), On-Call Weather Anchor/Meteorologist (6%), Weather Producer (6%), Morning/Noon/Mid-Day Weather Anchor (4%), and Environmental Reporter (3%).

DETAILED FINDINGS: THE PRACTICE OF BROADCAST METEOROLOGY

Do you maintain separate social media accounts for personal use and station use?

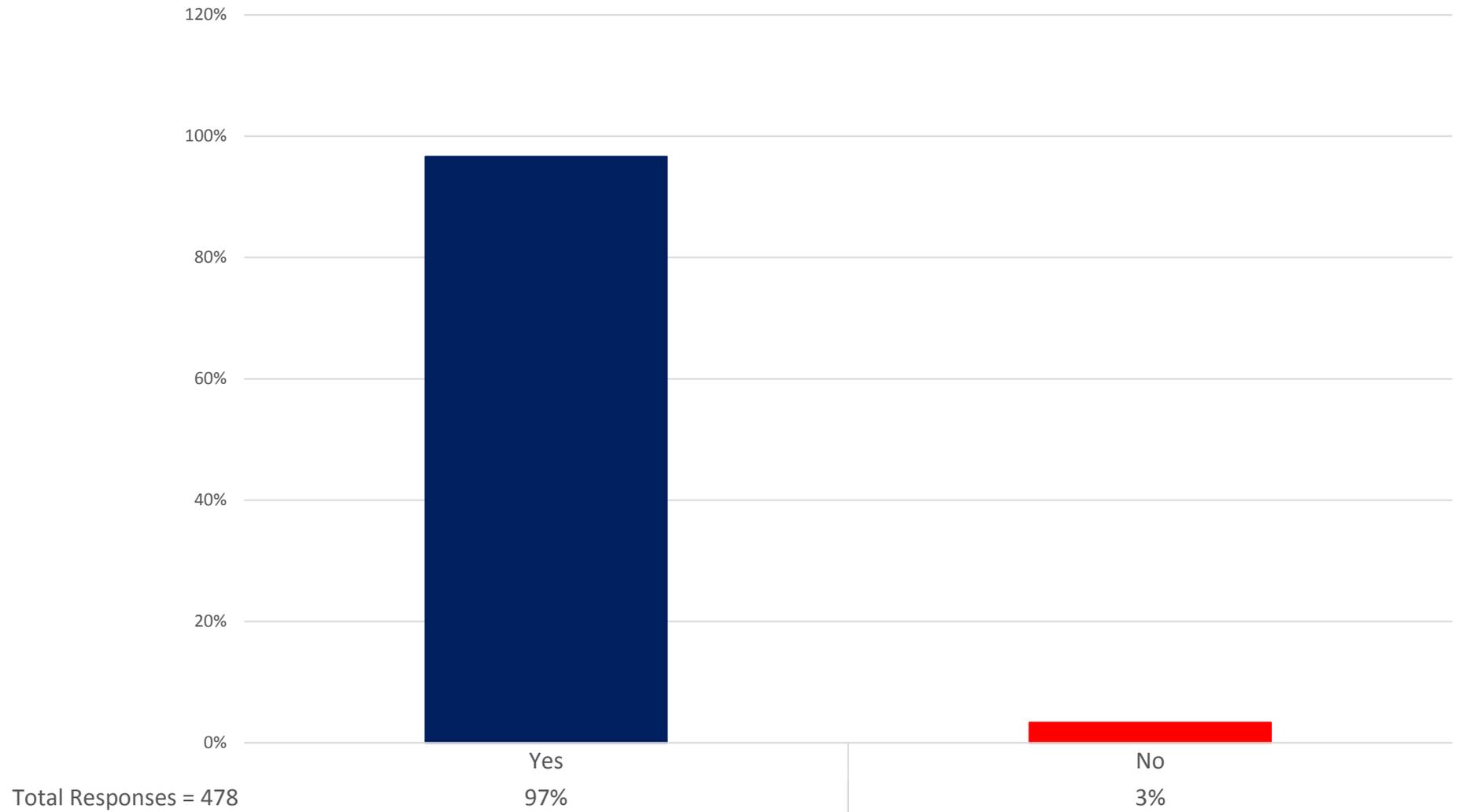


Do you have full control of social media accounts that bear your name?

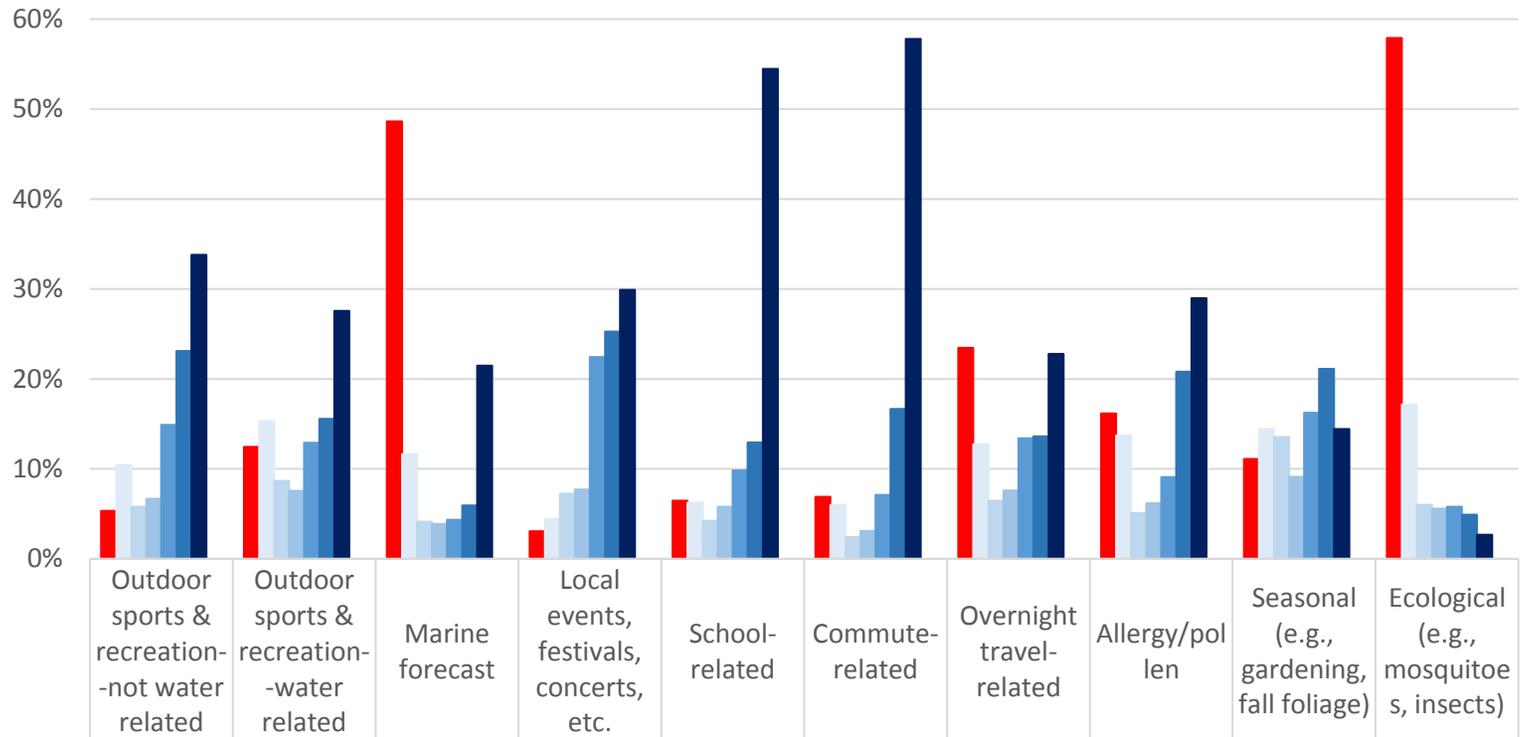


*Participants were given the opportunity to further explain their response. Responses have not yet been coded. n=75.

In the past 12 months, have you used an activity forecast or other secondary forecast (e.g., school, marine, allergy, recreation, commute) to engage your viewership?



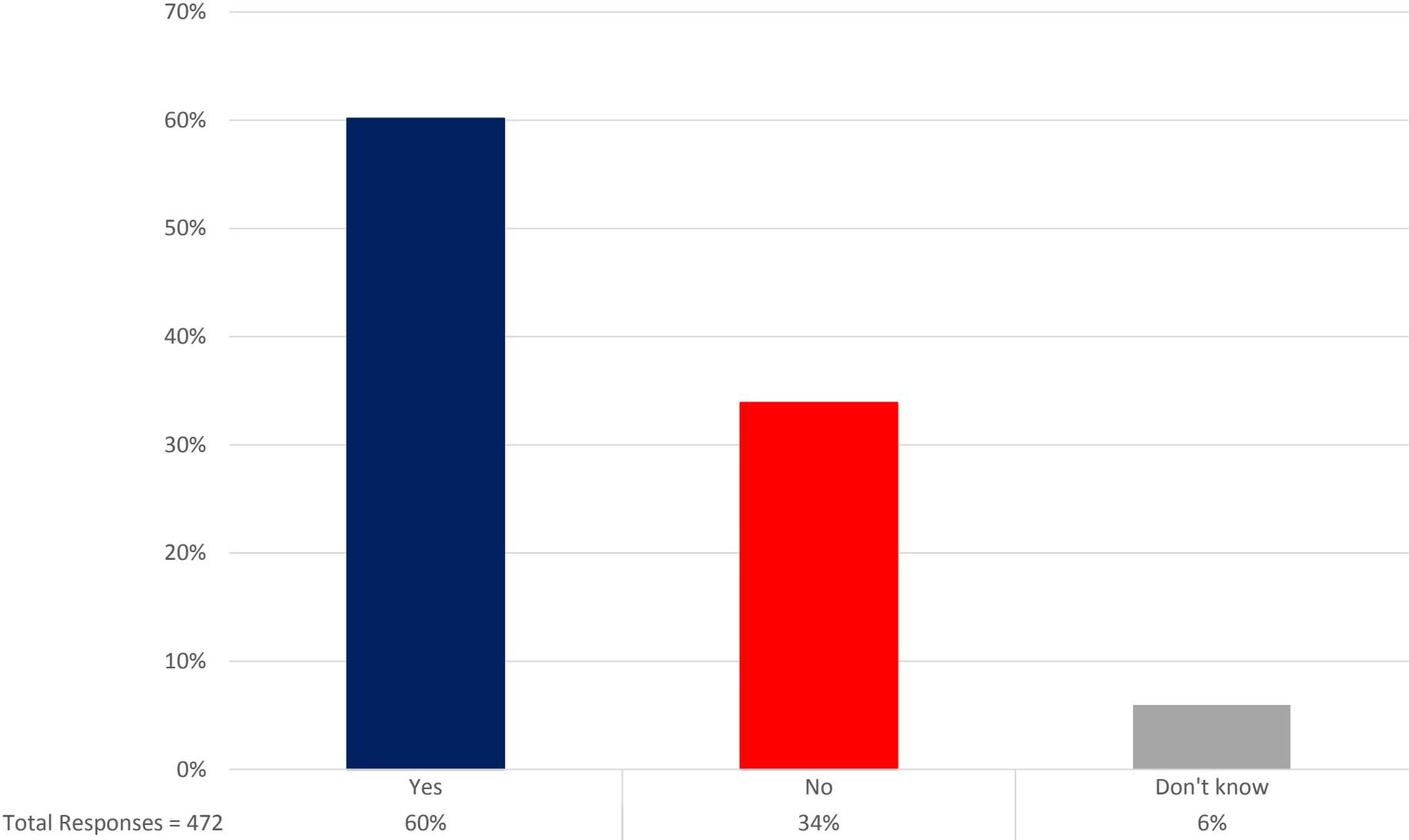
*In the past 12 months which types of activity or other secondary forecast(s) have you used, and how frequently? **



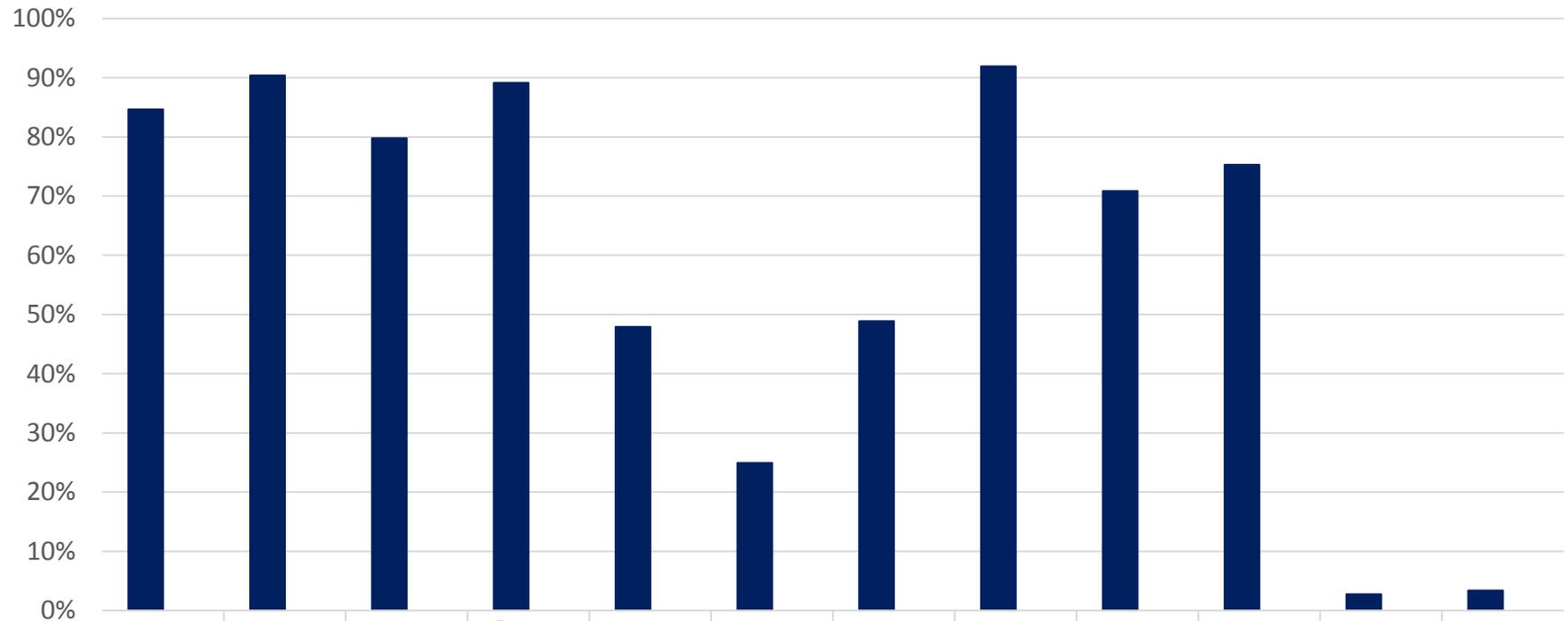
■ Never	5%	12%	49%	3%	6%	7%	23%	16%	11%	58%
■ Once or twice	10%	15%	12%	4%	6%	6%	13%	14%	14%	17%
■ About once per quarter	6%	9%	4%	7%	4%	2%	6%	5%	14%	6%
■ About once every other month	7%	8%	4%	8%	6%	3%	8%	6%	9%	6%
■ About once a month	15%	13%	4%	22%	10%	7%	13%	9%	16%	6%
■ Two or three times per month	23%	16%	6%	25%	13%	17%	14%	21%	21%	5%
■ About once per week or more	34%	28%	21%	30%	54%	58%	23%	29%	14%	3%
Total Responses	450	450	438	455	448	450	448	452	450	449

*This question was administered to anyone who responded “yes” to: “In the past 12 months, have you used an activity forecast or other secondary forecast (e.g., school, marine, allergy, recreation, commute) to engage your viewership?” n=478.

In the past 12 months, has your station worked with a consultant who gave suggestions on your station's weather segments?



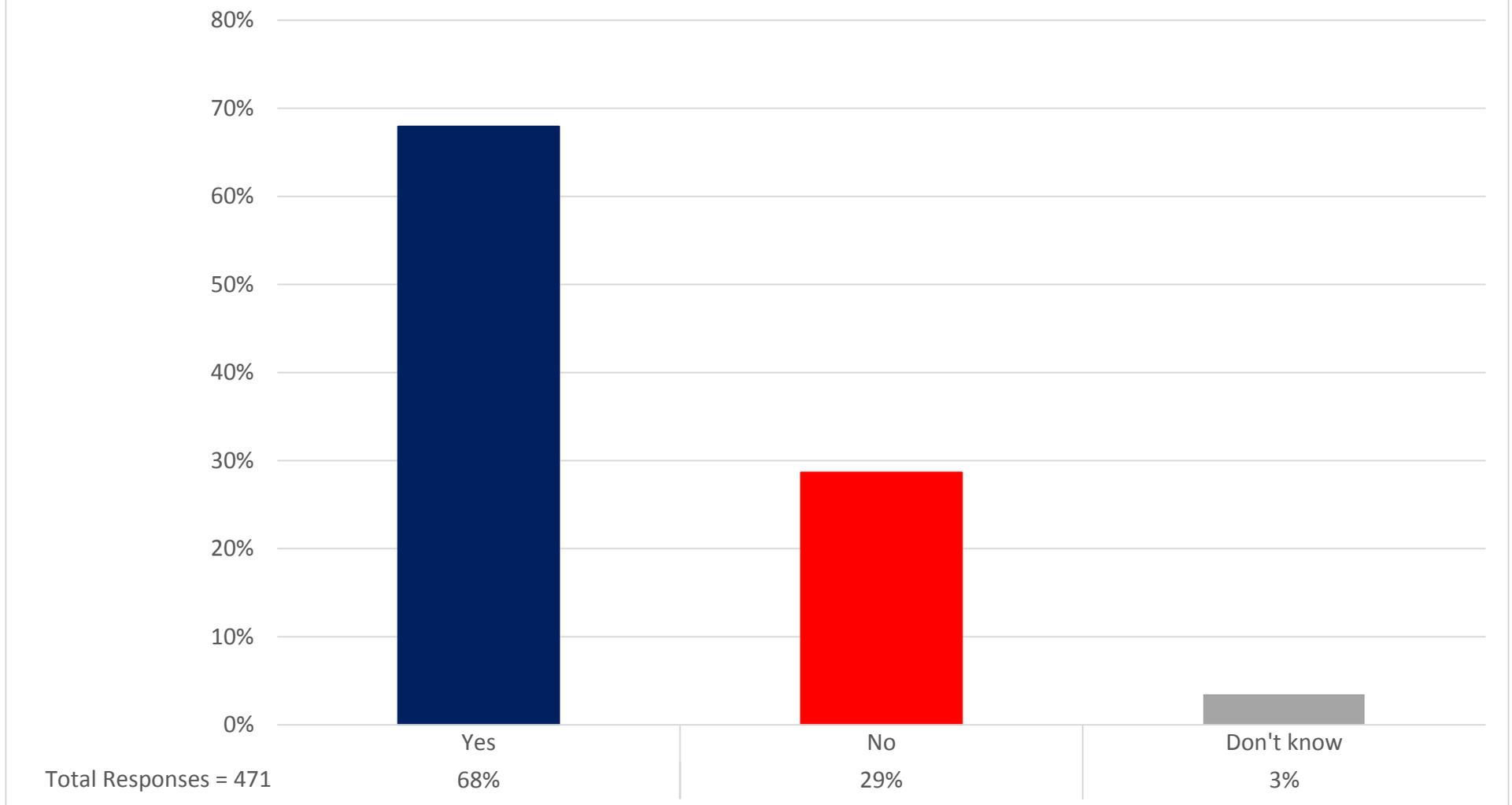
*Did the consultant give the weather team each of the following types of advice? **



	Use more social media	Use more engagement tactics (i.e., teasers)	Simplify the messages	Better tailor the messages (i.e., provide lifestyle information)	Improve oral presentation	Improve dress	Improve graphics	Present local weather impacts	Make weather presentations event-driven	Make weather presentations forecast-driven	Discuss climate change	Don't discuss climate change
Percentage 'yes'	85%	90%	80%	89%	48%	25%	49%	92%	71%	75%	3%	3%
Total Responses	274	270	267	267	263	265	268	273	261	263	253	236

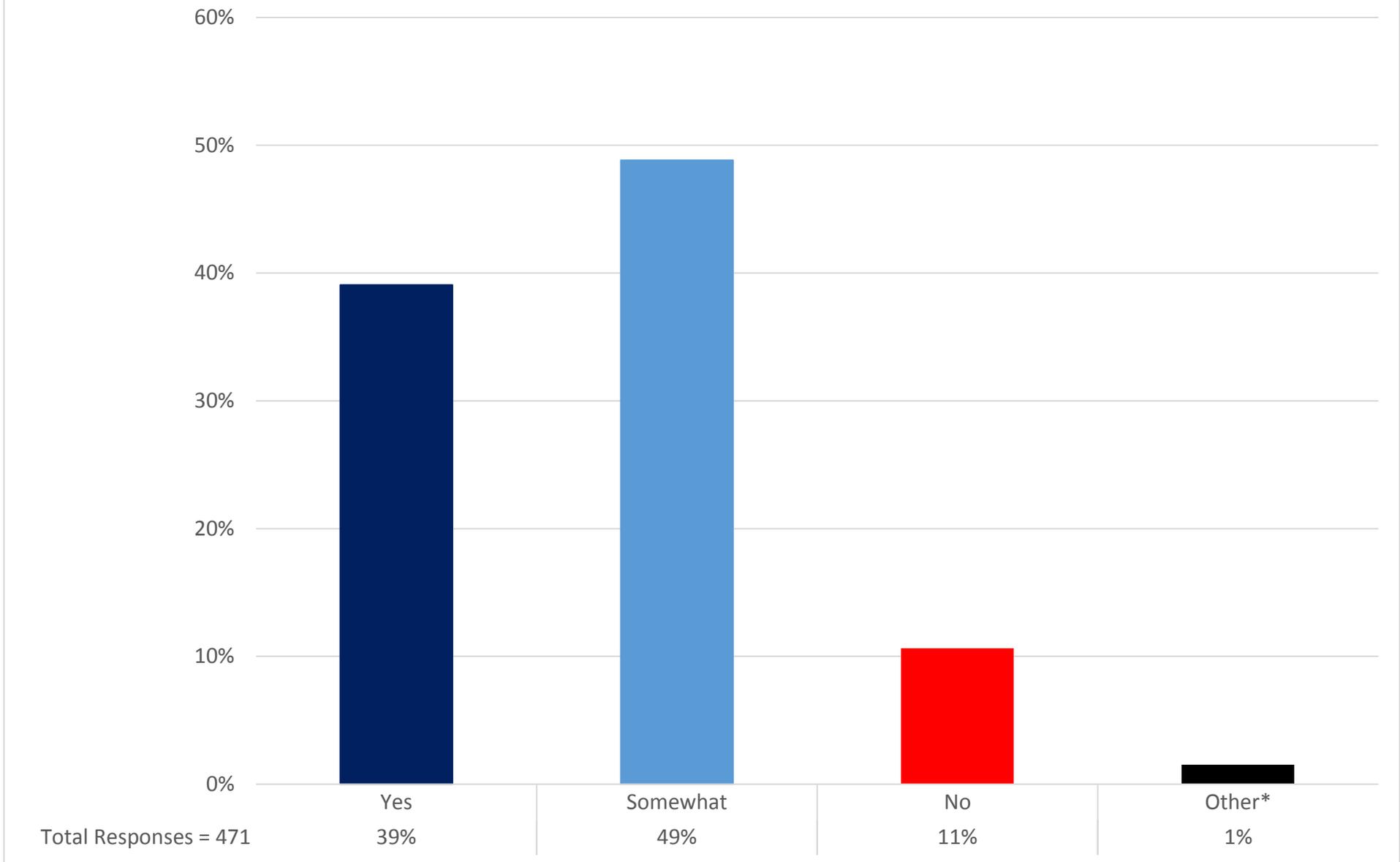
* This question was administered to anyone who responded "yes" to: "In the past 12 months, has your station worked with a consultant who gave suggestions on your station's weather segments?" n=472.

*Are you familiar with the American Meteorological Society's (AMS) Station Scientist initiative?**



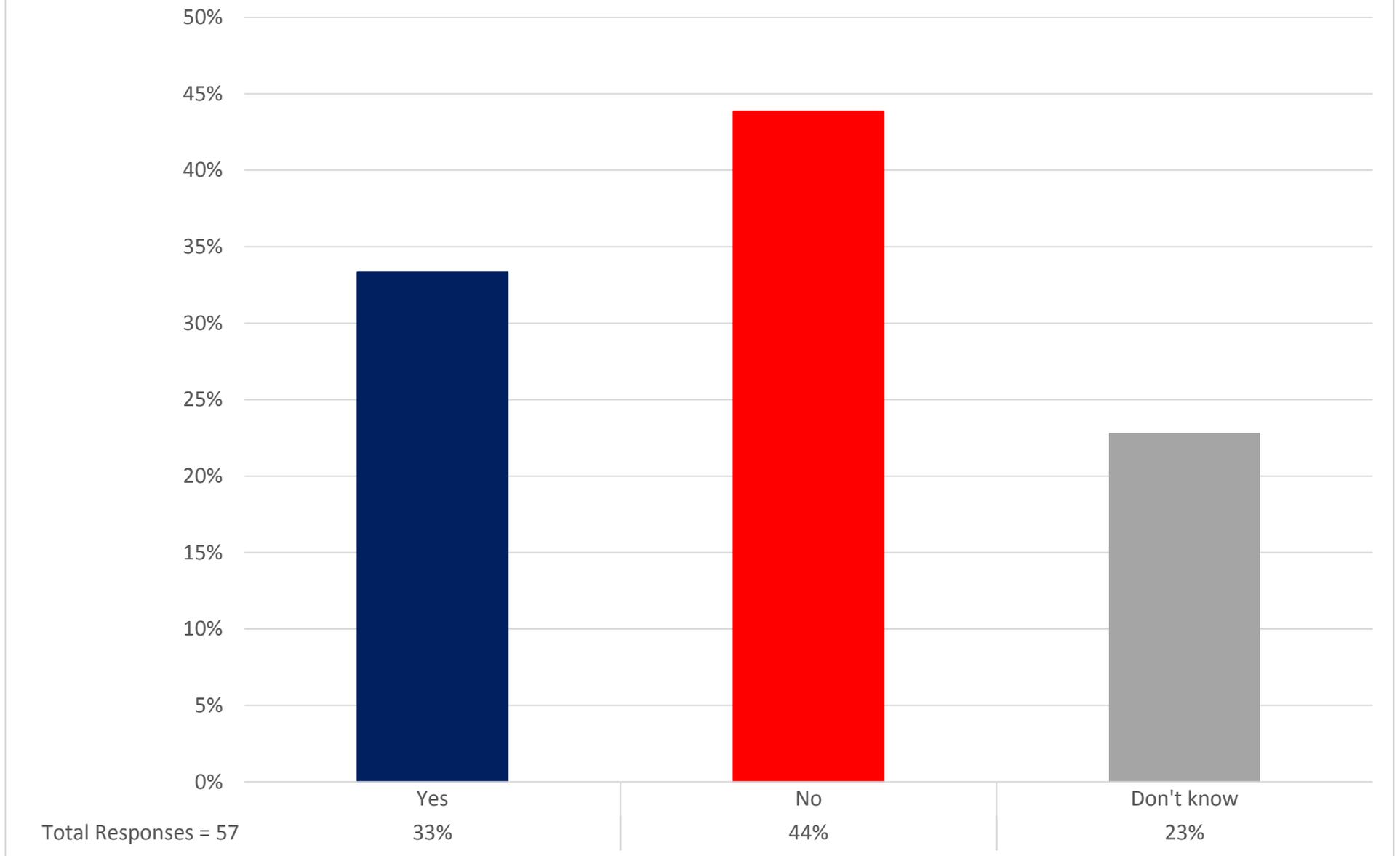
*The AMS defines this initiative as an effort for broadcast meteorologists to cover a broader range of science topics for their station in addition to tomorrow's weather. This includes environmental and space issues, weather and climate impacts on public health, transportation, agriculture, energy use, and other topics.

Do you currently fill the "station scientist" role at your station?



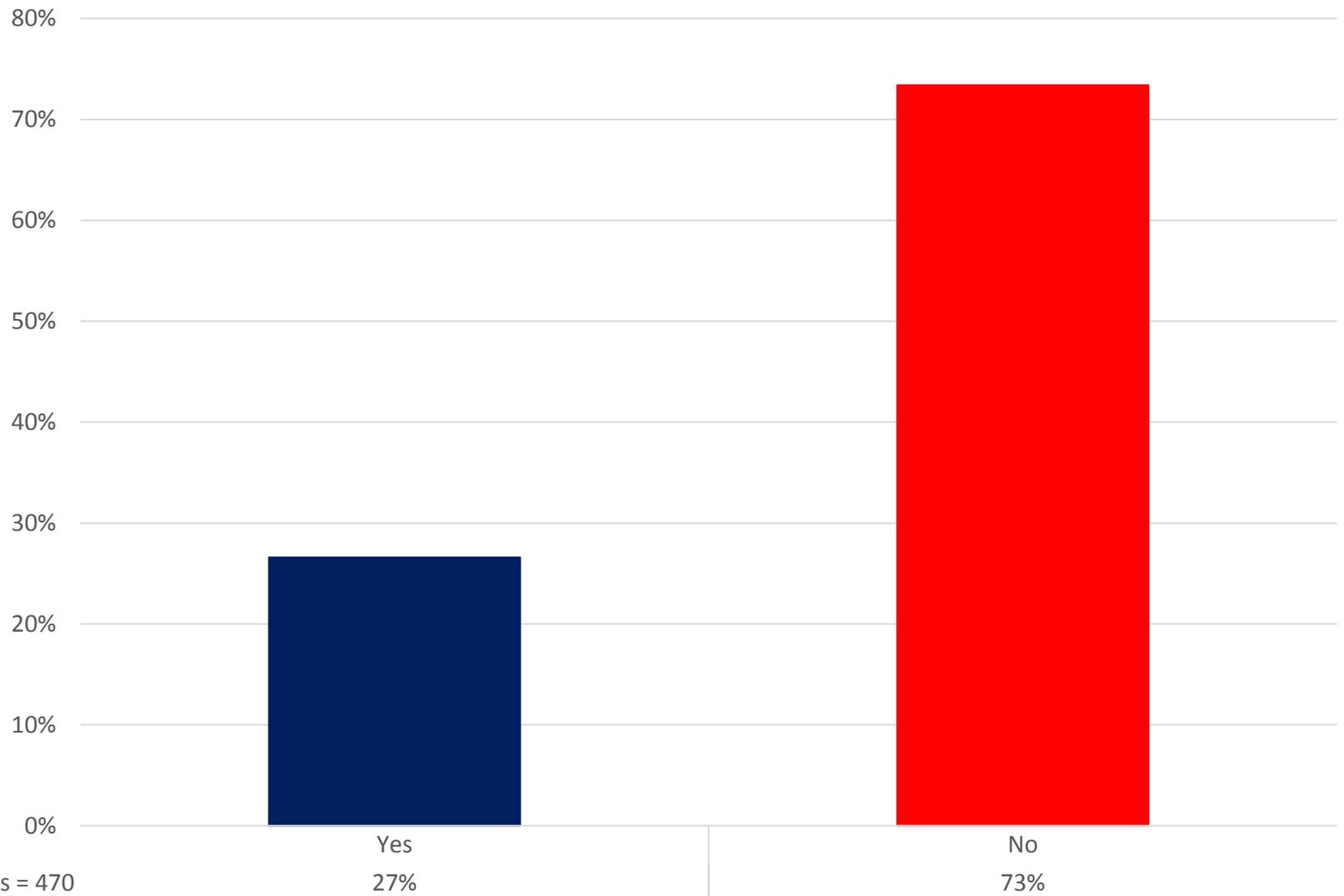
*Participants were given the opportunity to further explain their response. Responses have not yet been coded. n=7.

*Would you like to fill the "station scientist" role at your station? **

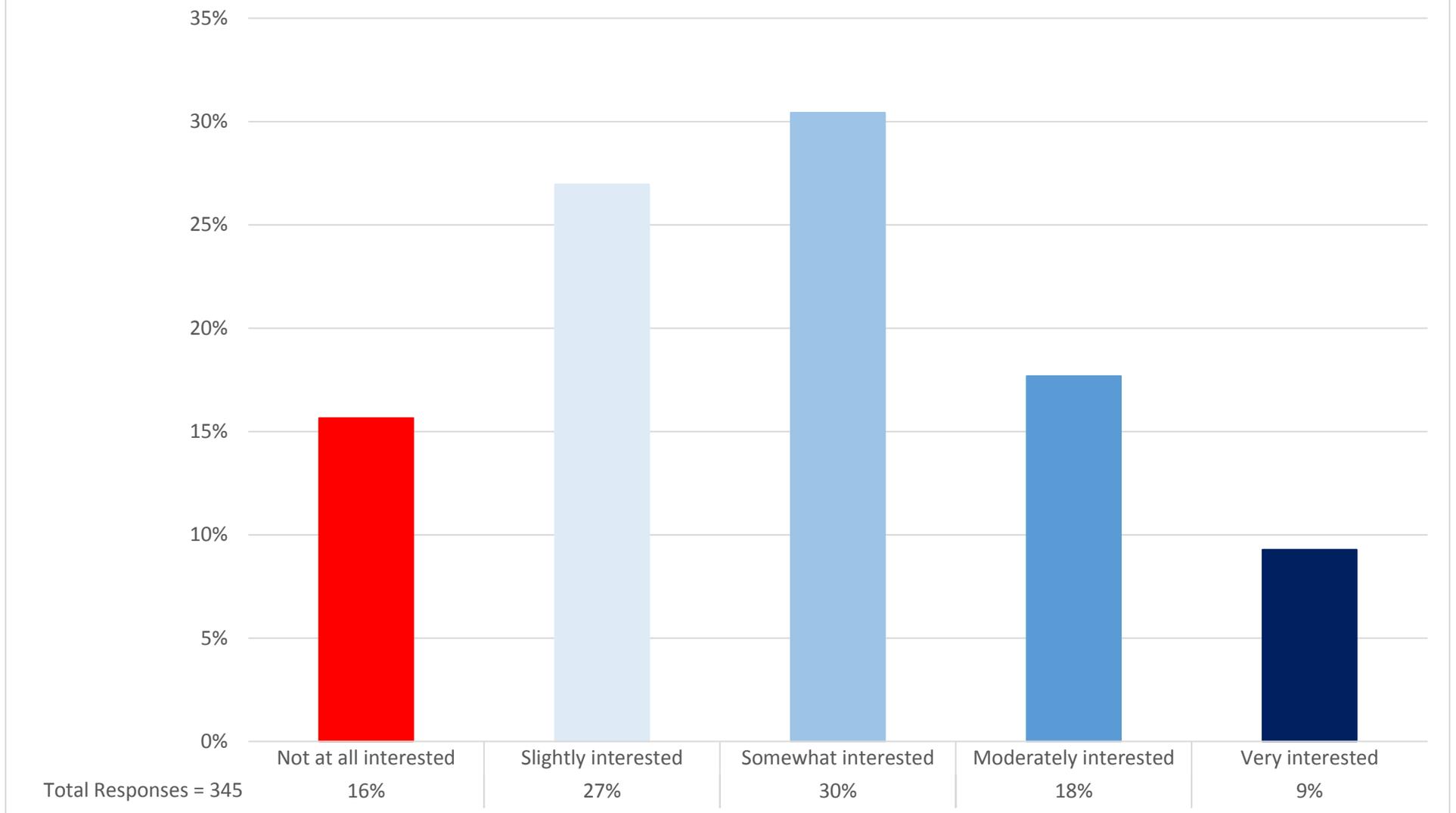


*This question was administered to anyone who responded "no" or "other" to: "Do you currently fill the 'station scientist' role at your station?"

Are you currently reporting longer-format science stories on-air outside the weather segment?



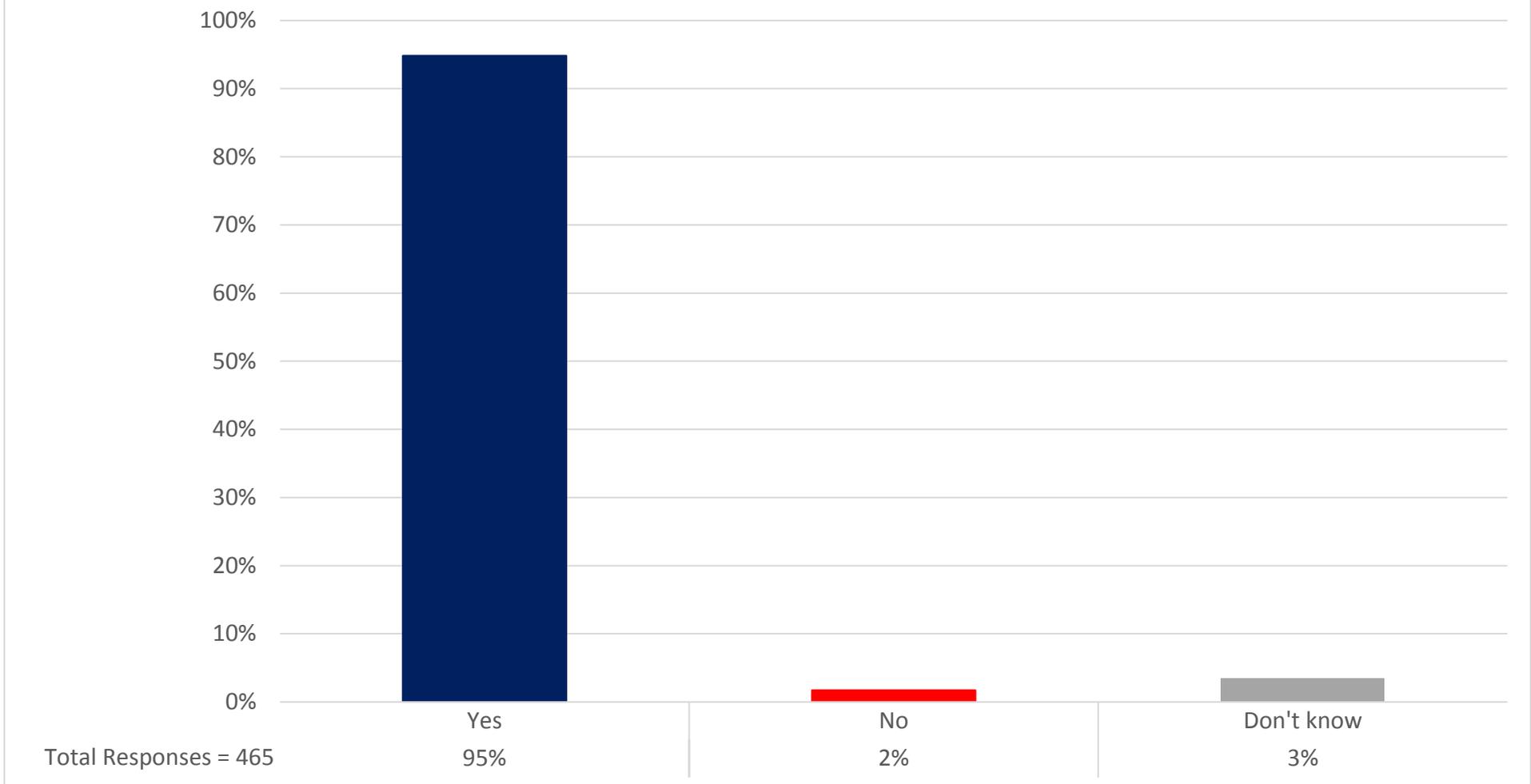
*To what degree are you interested in reporting longer-format science stories on-air outside the weather segment? **



*The following question was asked as a follow-up: “What kinds of longer-format science stories do you – or would you like to – report on-air outside the weather segment?” Responses have not yet been coded. n=335.

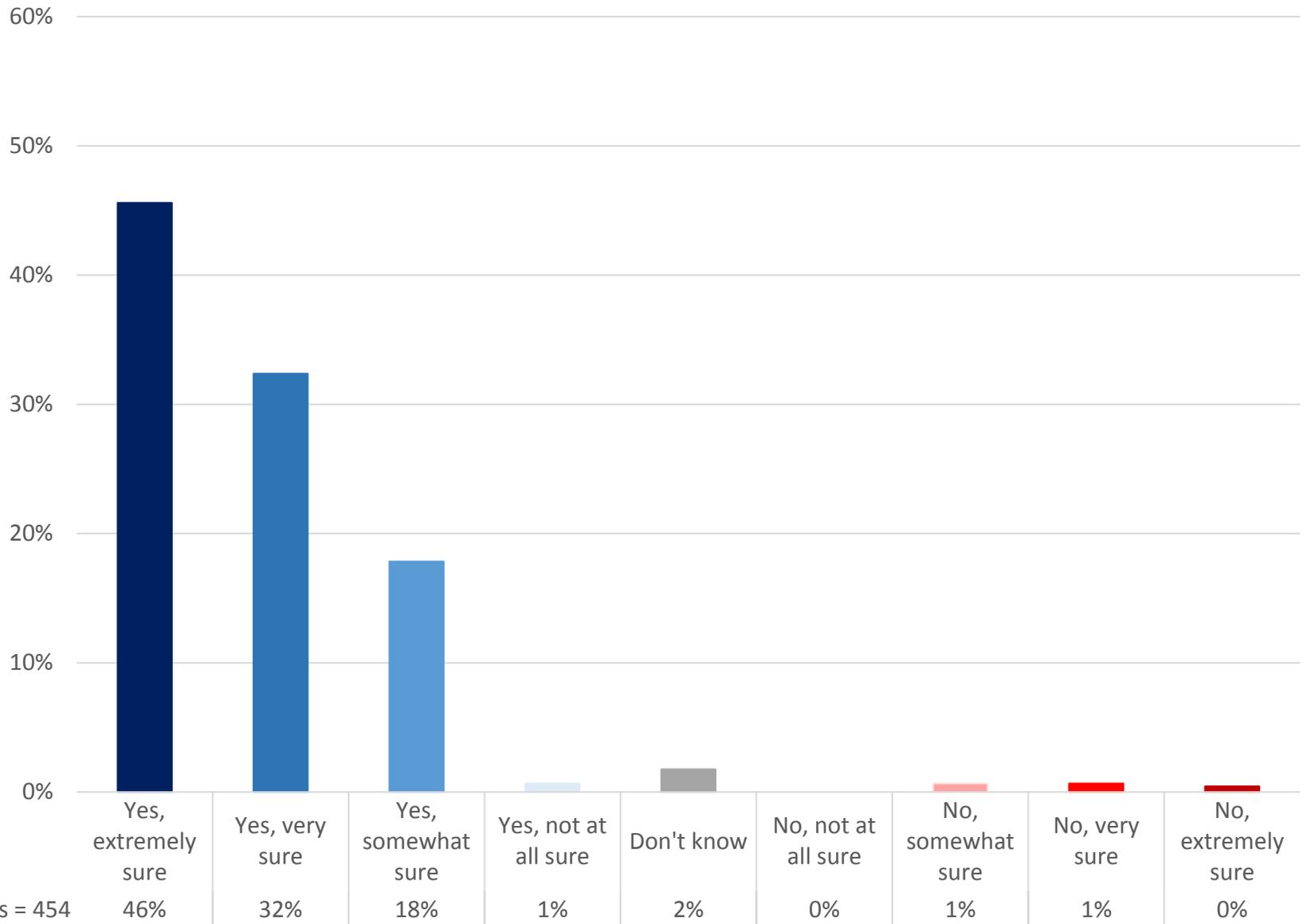
VIEWS ON CLIMATE CHANGE

*Regardless of the cause, do you think that climate change is happening? **

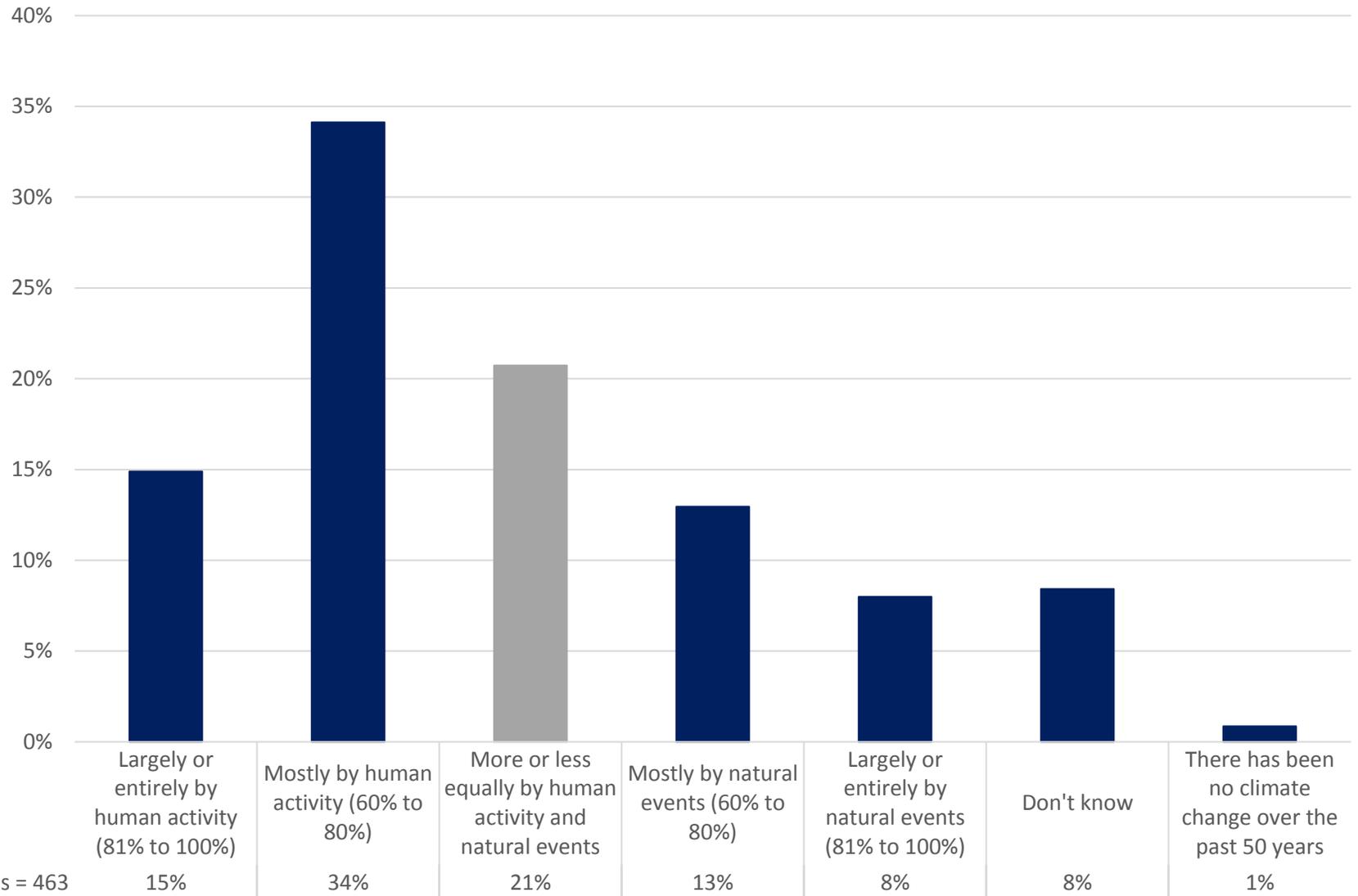


*This question was preceded by the following language: "Please read the following information: The American Meteorological Society (AMS) defines climate change as: Any systematic change in the long-term statistics of climate elements (such as temperature, pressure, or winds) sustained over several decades or longer. Climate change may be due to: natural external forcings, such as changes in solar emission or slow changes in the earth's orbital elements; natural internal processes of the climate system; or anthropogenic forcing."

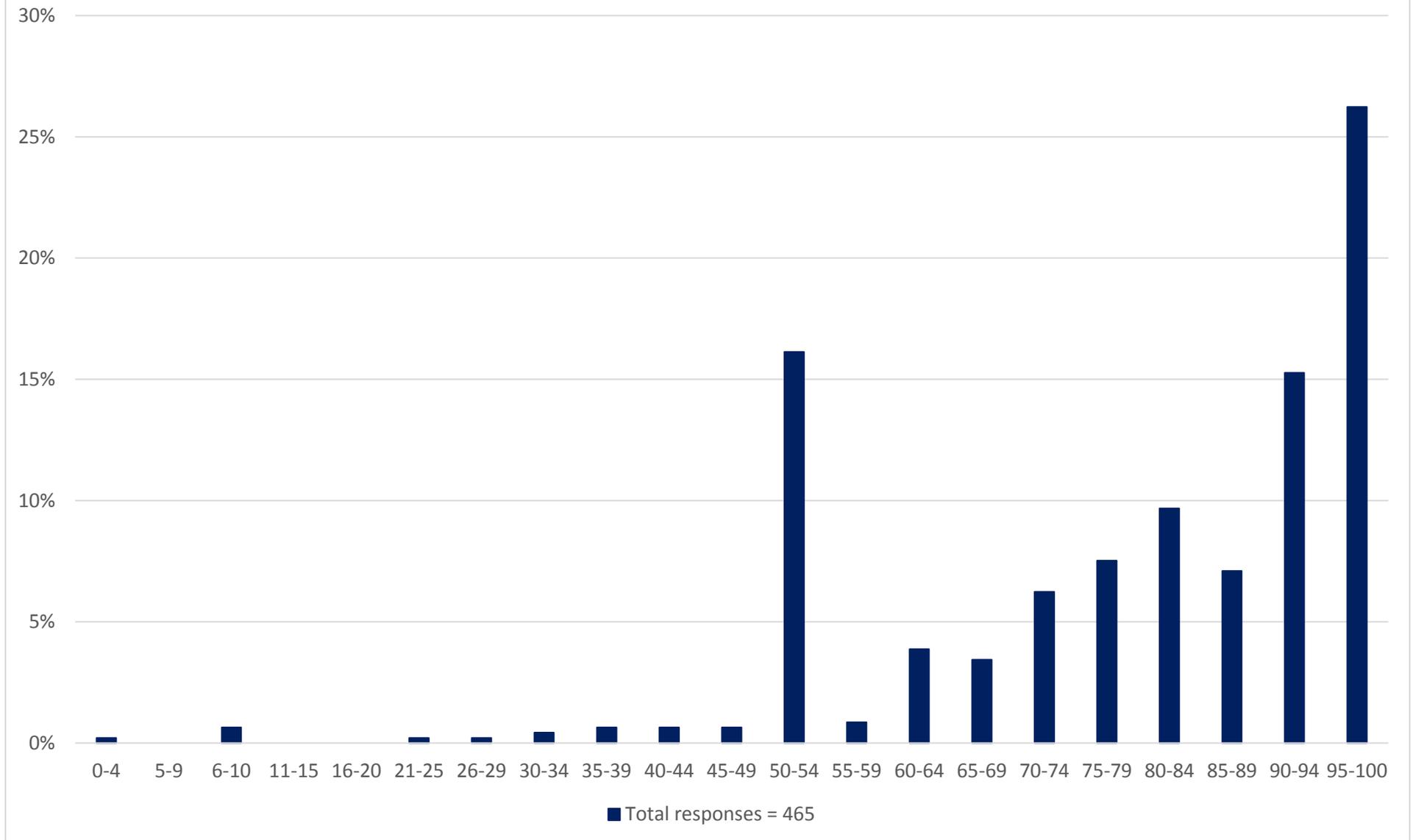
How sure are you that climate change is (is not) happening?



Do you think that the climate change that has occurred over the past 50 years has been caused...

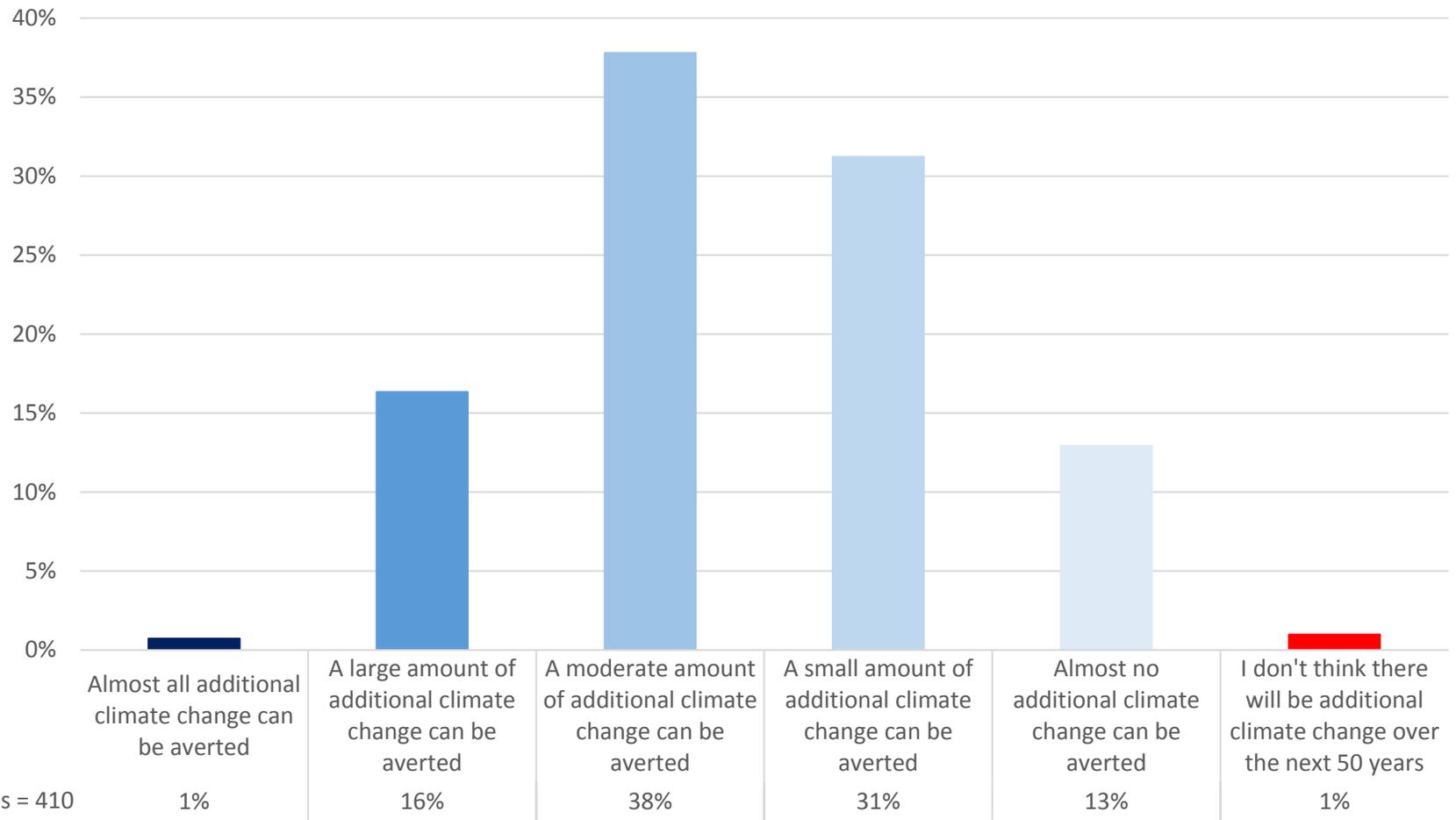


*To the best of your knowledge, what percentage of climate scientists think that human-caused climate change is happening?**

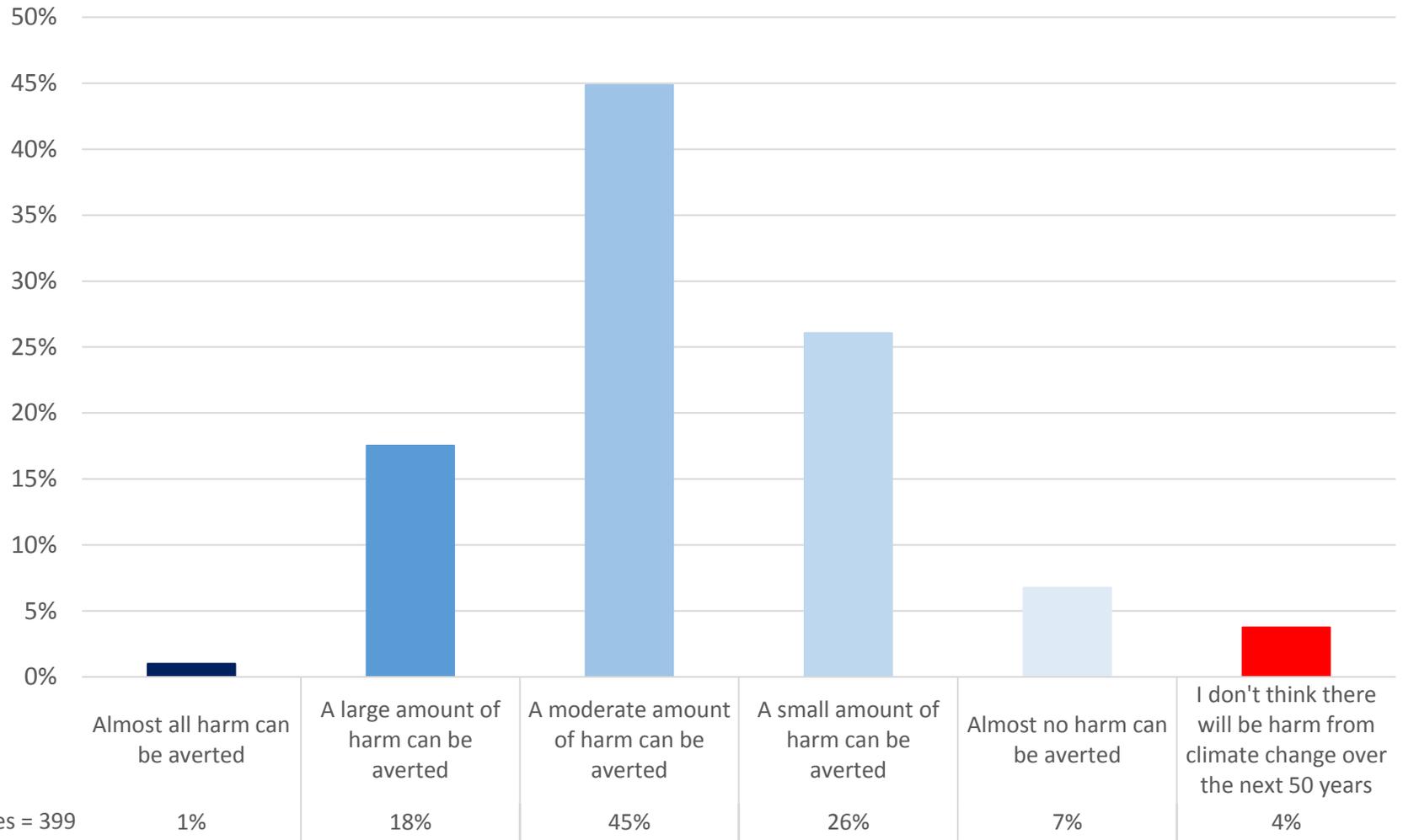


*Respondents were given the option to indicate if they were 'unsure' of their answer. n=117

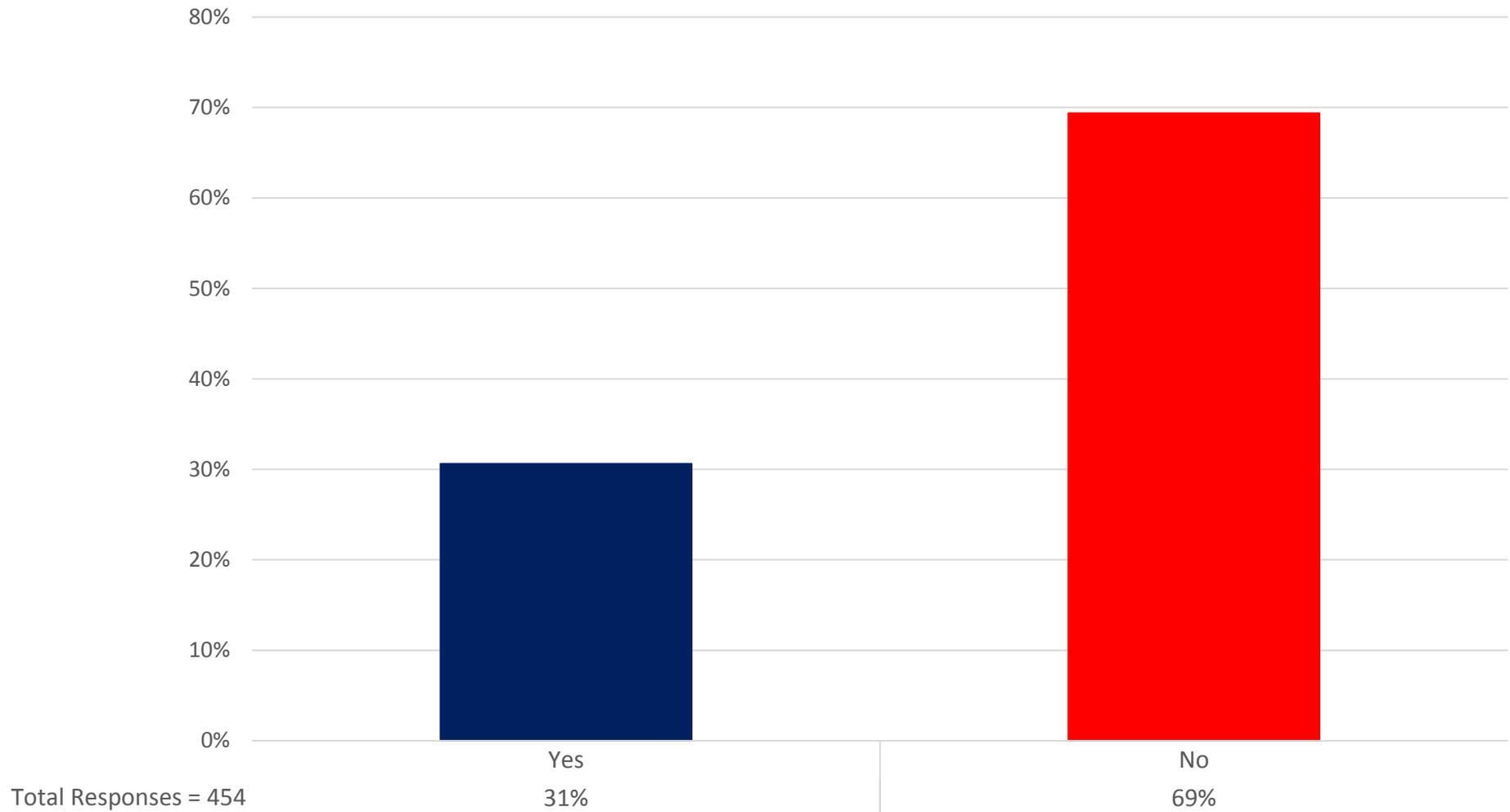
Over the next 50 years, to what extent can additional climate change be averted if mitigation measures are taken worldwide (i.e., substantially reducing emissions of carbon dioxide and other greenhouse gases)?



Over the next 50 years, to what extent can harm from climate change be averted in the United States if adaptation measures (i.e., actions to reduce vulnerability) are taken?

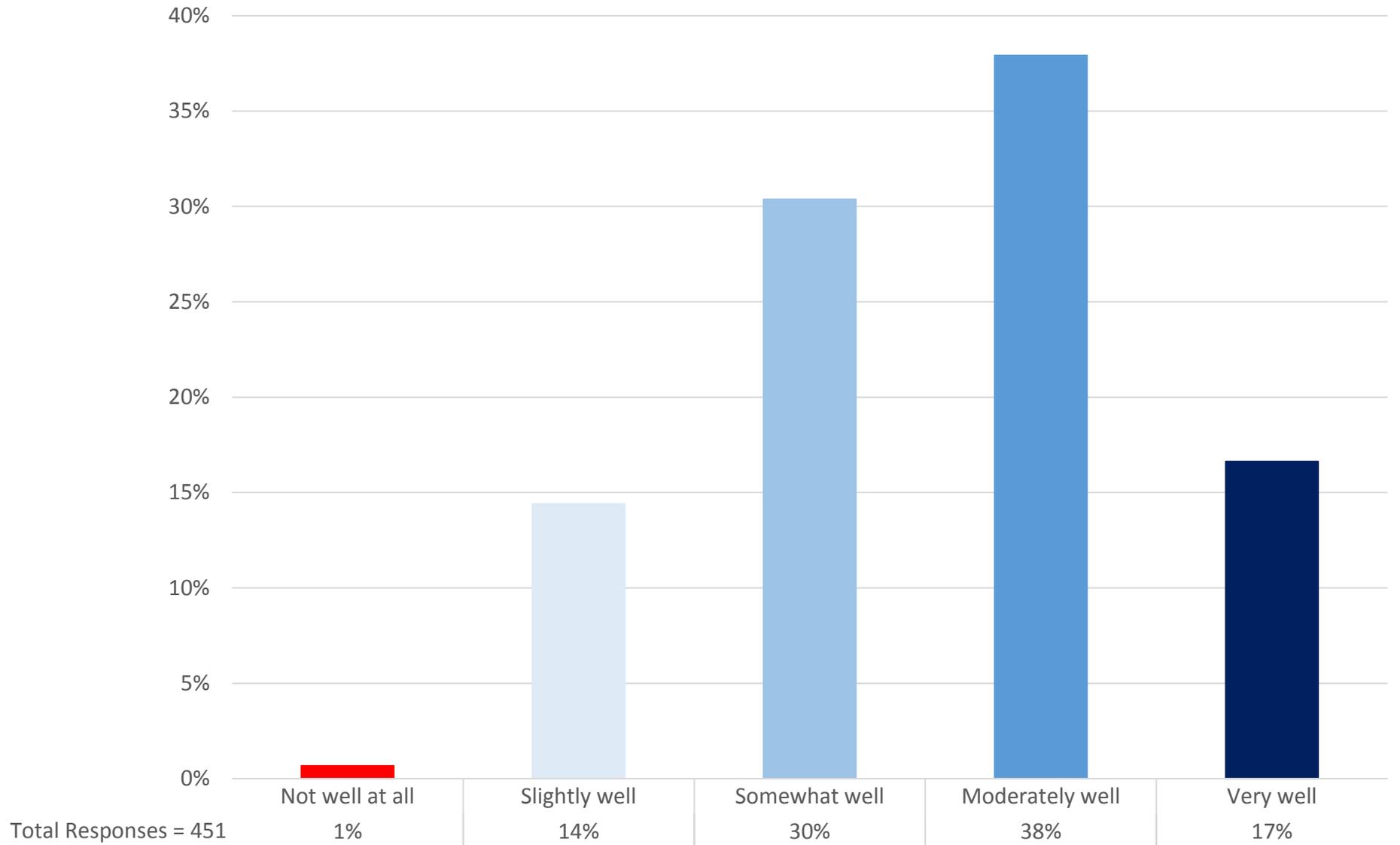


*Are you aware of any positive outcomes that have occurred in your community as a result of climate change mitigation or adaptation activities? **



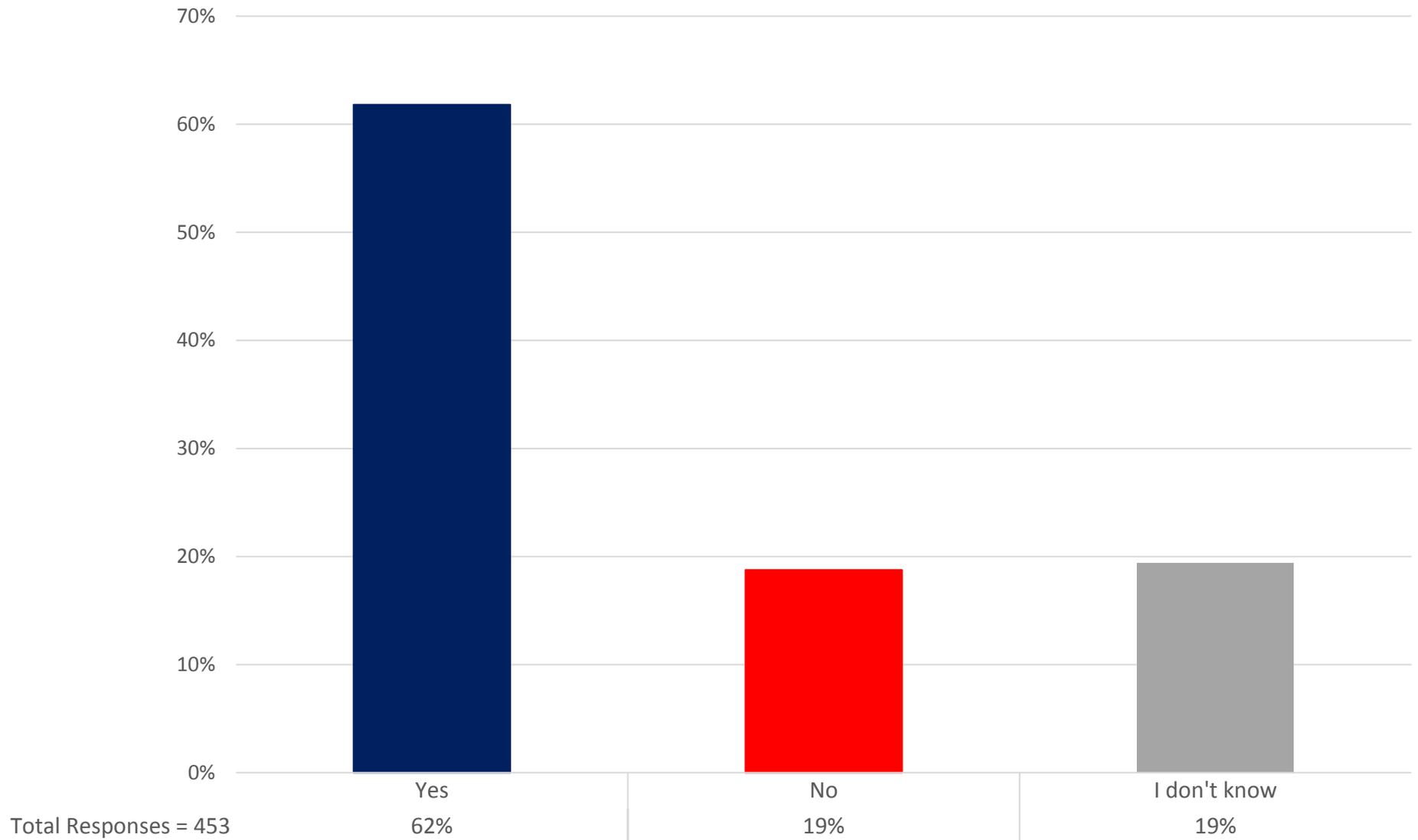
*The following question was asked as a follow-up: "Please briefly describe one or two of those positive outcomes that have occurred in your community as a result of climate change mitigation or adaptation activities." Responses have not yet been coded. n=117.

How well do you understand the science of climate change?

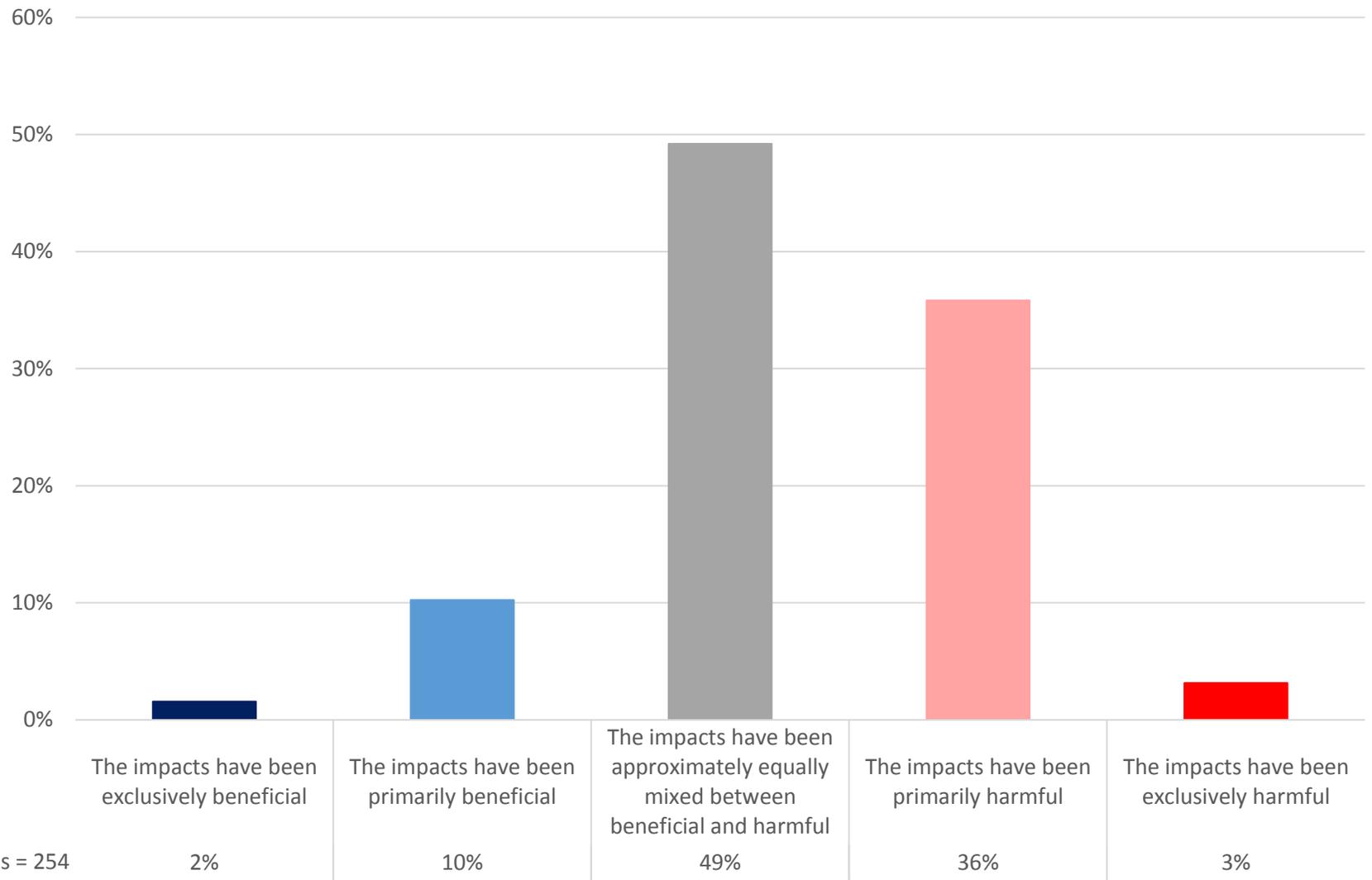


LOCAL IMPACTS OF CLIMATE CHANGE

To the best of your knowledge, has the local climate in the area covered by your media market changed over the past 50 years?

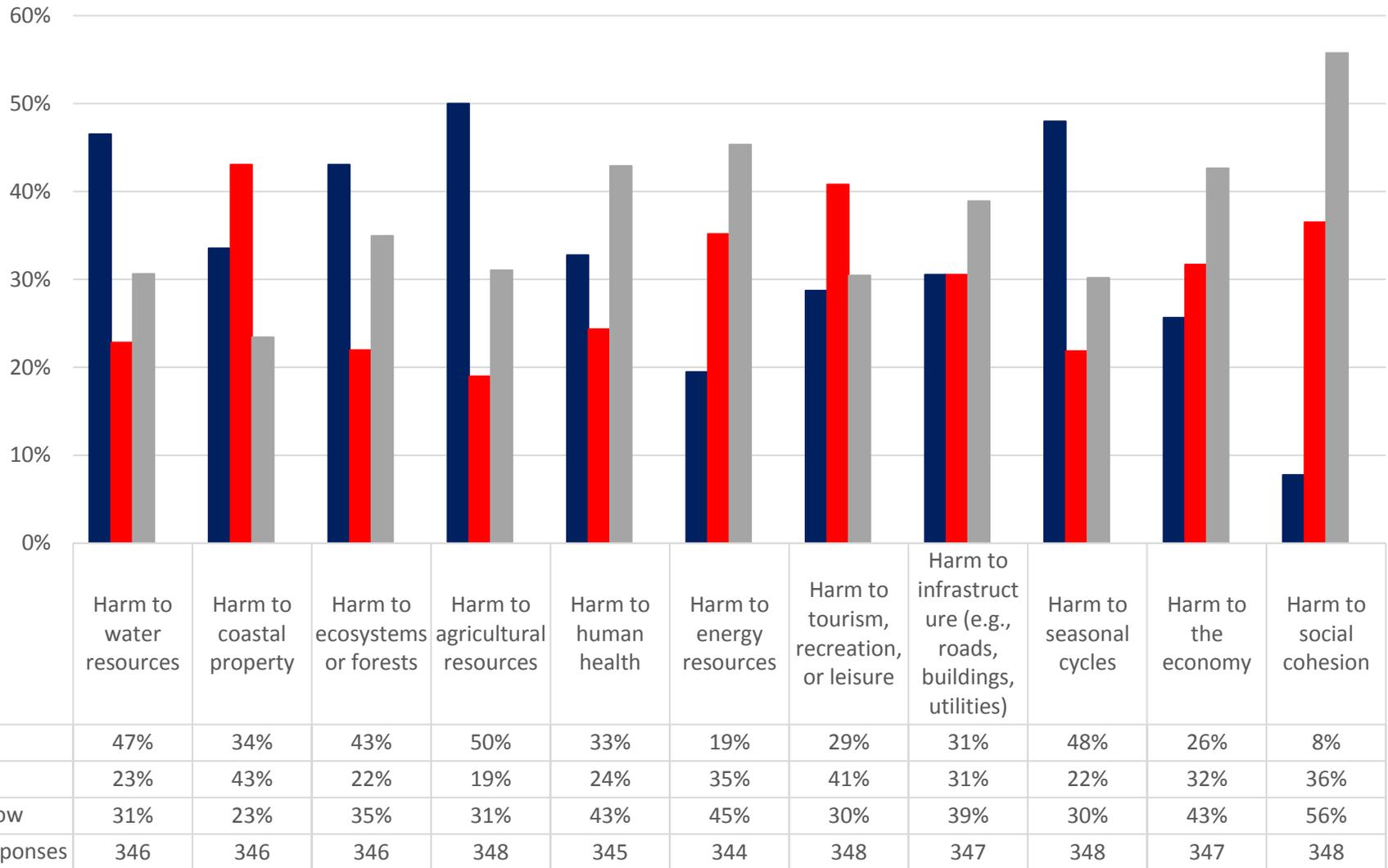


*Which of the following best describes the impact(s) of local climate change in your media market over the past 50 years? **



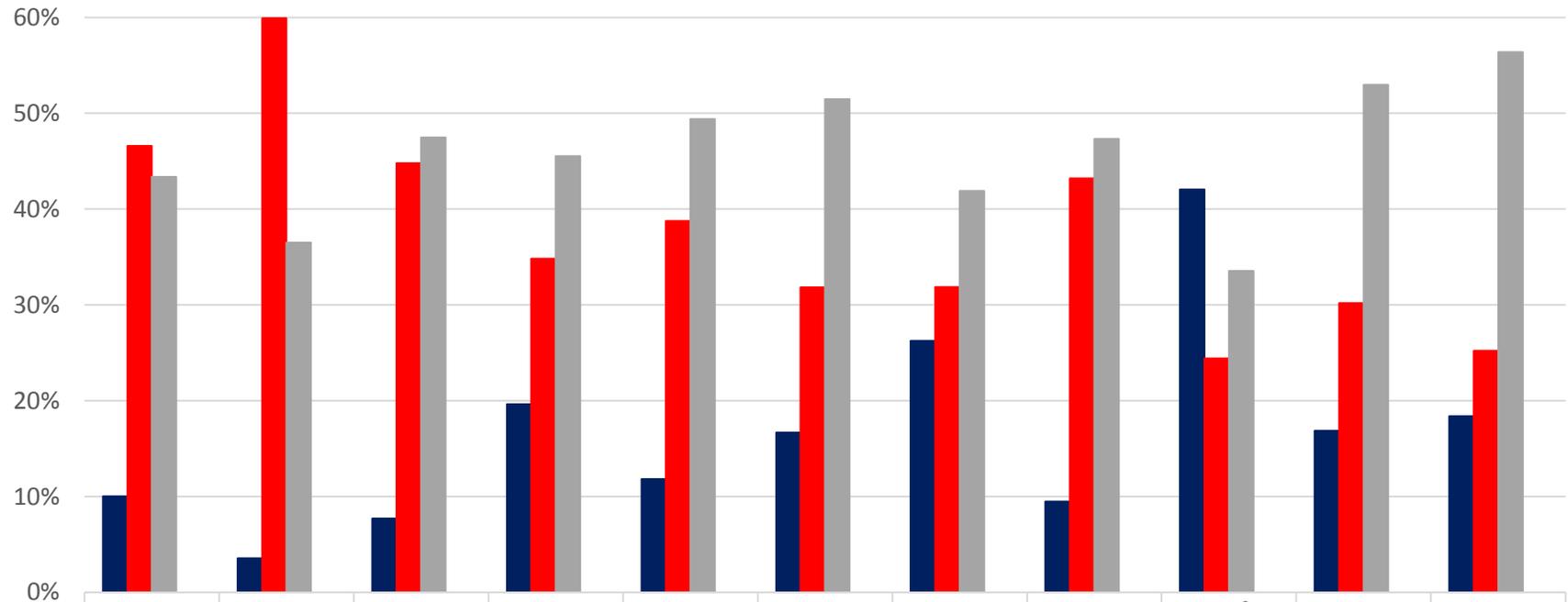
*This question was administered to anyone who responded “yes” to: “To the best of your knowledge, has the local climate in the area covered by your media market changed over the past 50 years.” n=453.

*Have any of the following harmful impacts of climate change occurred in your media market over the past 50 years? **



*This question was administered to anyone who responded “yes” to: “To the best of your knowledge, has the local climate in the area covered by your media market changed over the past 50 years.” n=453.

*Have any of the following beneficial impacts of climate change occurred in your media market over the past 50 years? **

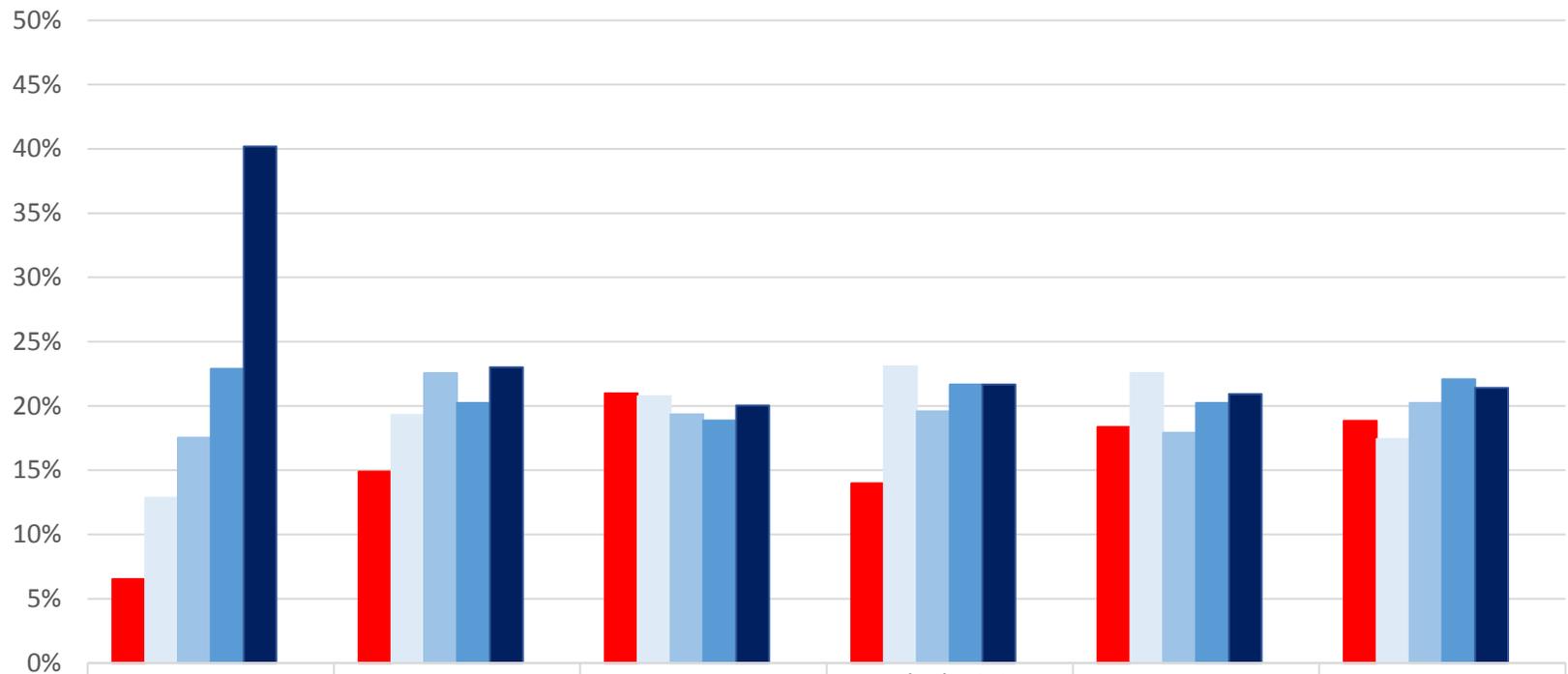


	Benefits to water resources	Benefits to coastal property	Benefits to ecosystems or forests	Benefits to agricultural resources	Benefits to human health	Benefits to energy resources	Benefits to tourism, recreation, or leisure	Benefits to infrastructure (e.g., roads, buildings, utilities)	Benefits from milder seasons and/or more pleasant weather	Benefits to the economy	Benefits from increases in sustainable behavior
■ Yes	10%	4%	8%	20%	12%	17%	26%	9%	42%	17%	18%
■ No	47%	60%	45%	35%	39%	32%	32%	43%	24%	30%	25%
■ Don't know	43%	37%	47%	46%	49%	51%	42%	47%	34%	53%	56%
Total Responses	339	337	337	336	338	336	339	338	340	338	337

*This question was administered to anyone who responded “yes” to: “To the best of your knowledge, has the local climate in the area covered by your media market changed over the past 50 years.” n=453.

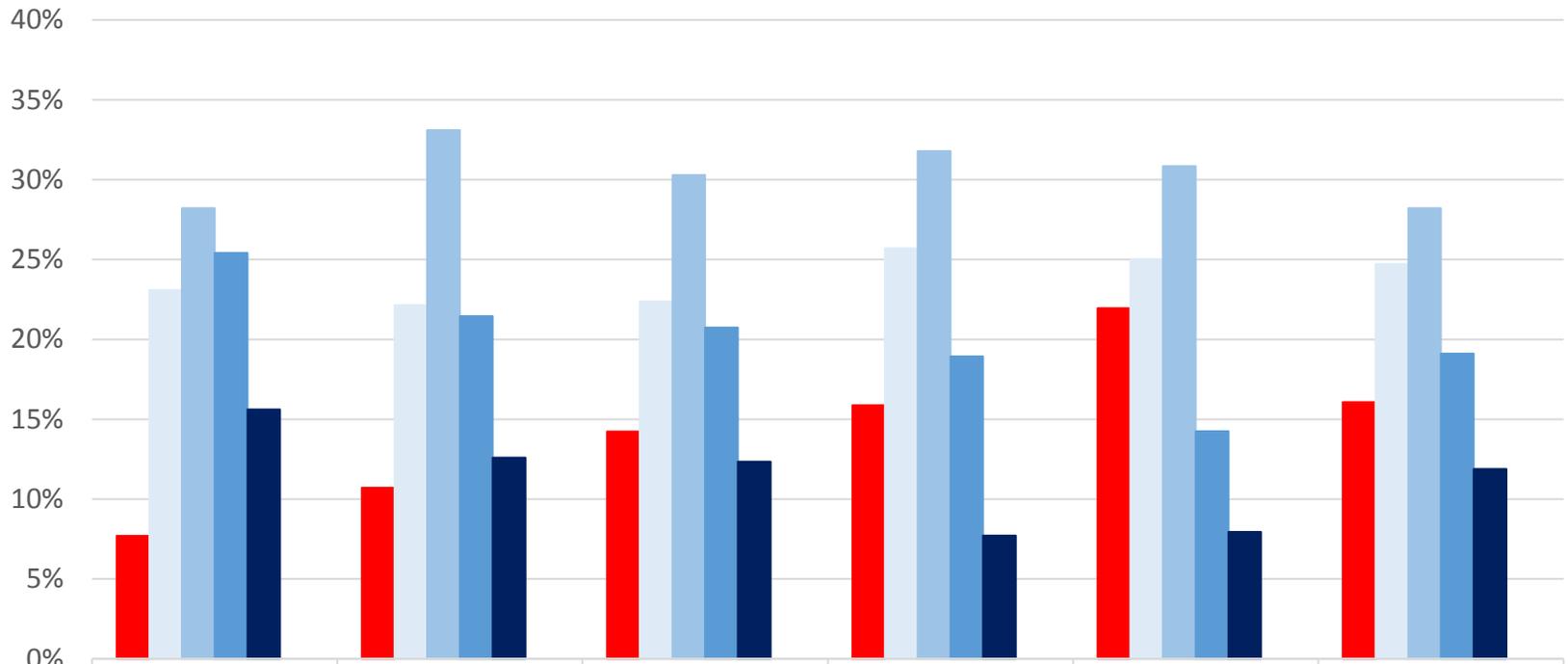
REPORTING ON CLIMATE CHANGE

How interested are you in presenting on-air about the following climate topics?



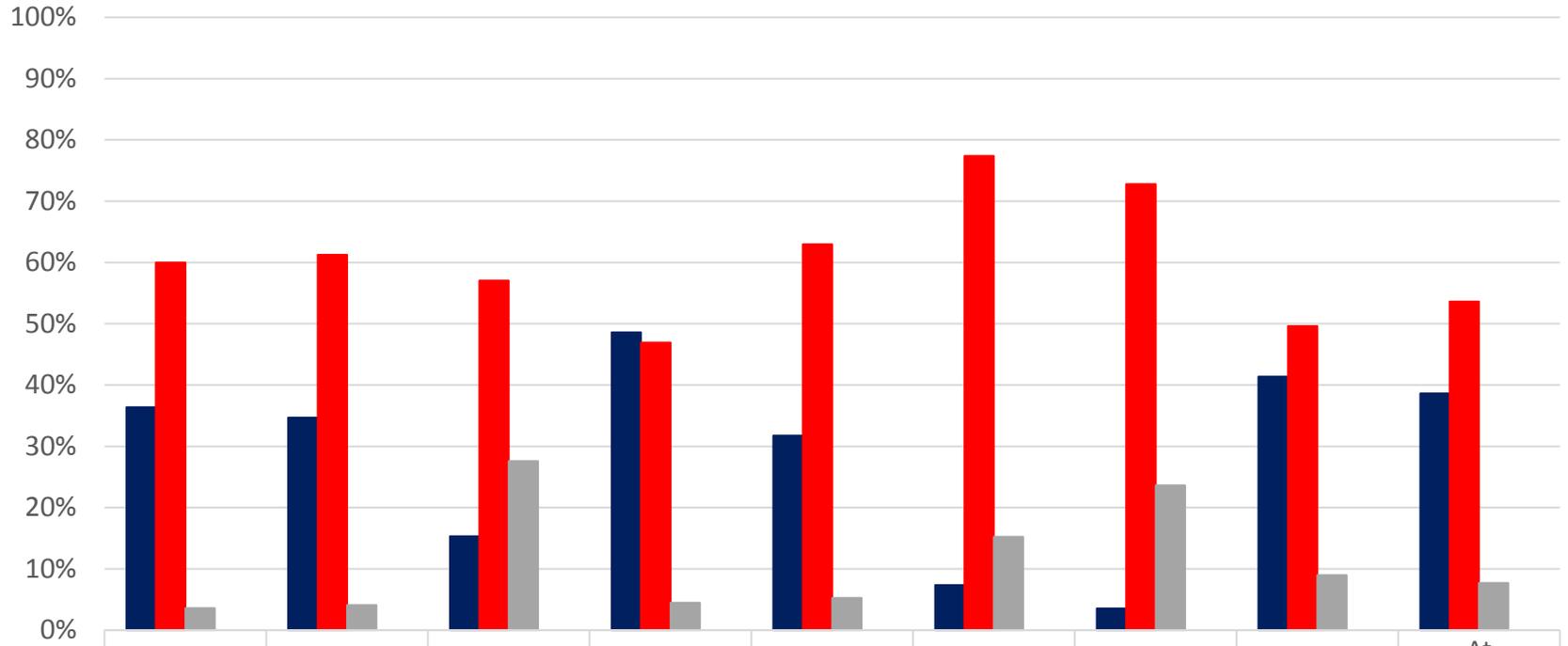
	Local historical climate statistics (e.g., past 50 years)	Current local climate change impacts	Future projected local climate change impacts	Local adaptation efforts (i.e., vulnerability reduction)	Local mitigation efforts (i.e., carbon emission reduction)	What audience members can do to protect themselves
■ Not at all interested	7%	15%	21%	14%	18%	19%
■ Slightly interested	13%	19%	21%	23%	23%	17%
■ Somewhat interested	18%	23%	19%	20%	18%	20%
■ Moderately interested	23%	20%	19%	22%	20%	22%
■ Very interested	40%	23%	20%	22%	21%	21%
Total Responses	428	430	429	429	430	430

How interested do you think your audience is in learning about the following climate topics?



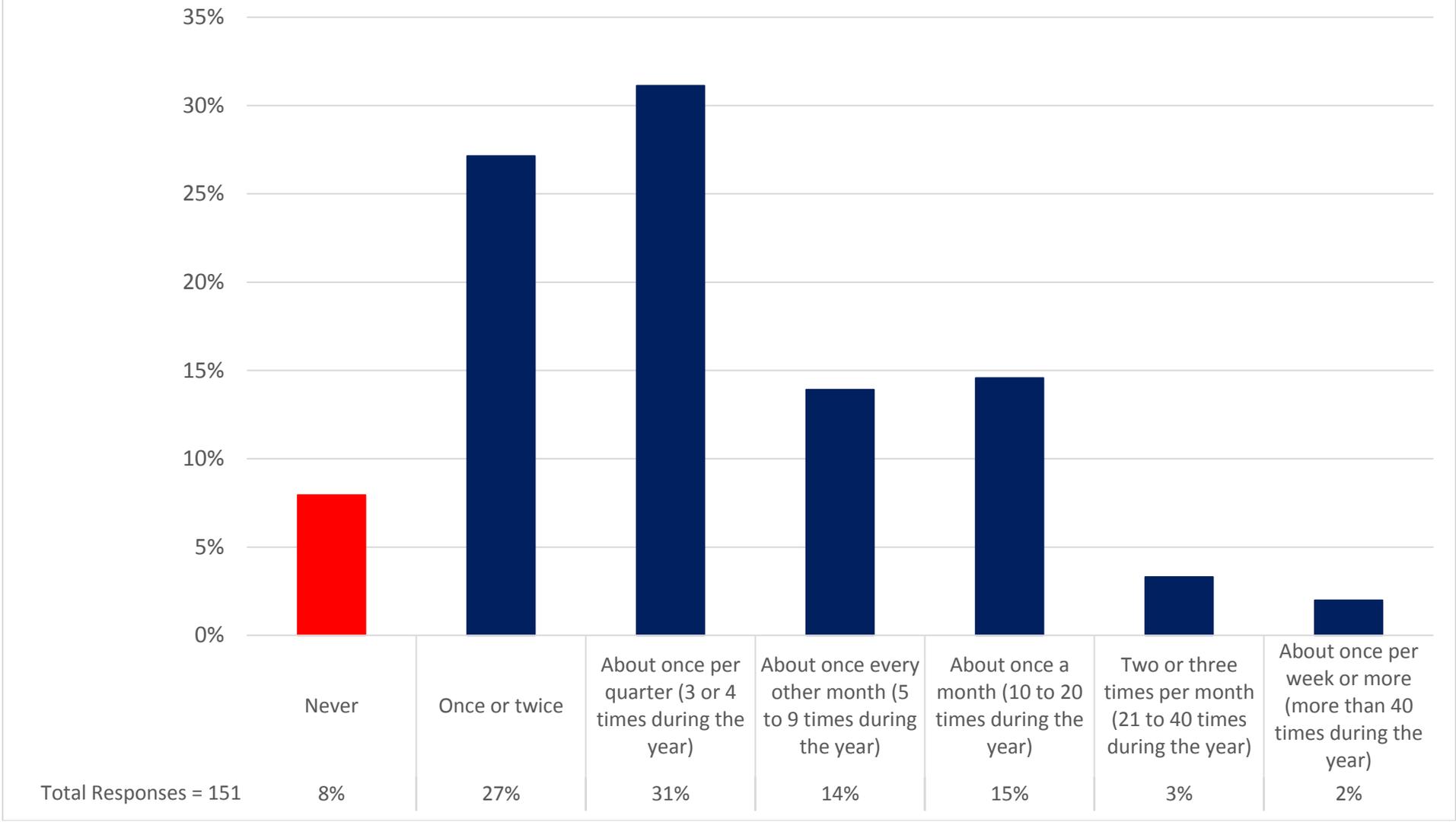
	Local historical climate statistics (e.g., past 50 years)	Current local climate change impacts	Future projected local climate change impacts	Local adaptation efforts (i.e., vulnerability reduction)	Local mitigation efforts (i.e., carbon emission reduction)	What audience members can do to protect themselves
■ Not at all interested	8%	11%	14%	16%	22%	16%
■ Slightly interested	23%	22%	22%	26%	25%	25%
■ Somewhat interested	28%	33%	30%	32%	31%	28%
■ Moderately interested	25%	21%	21%	19%	14%	19%
■ Very interested	16%	13%	12%	8%	8%	12%
Total Responses	429	429	429	428	428	429

Over the past 12 months, did you use the following channels to inform your viewers, or other people in your community, about the local impacts of climate change?



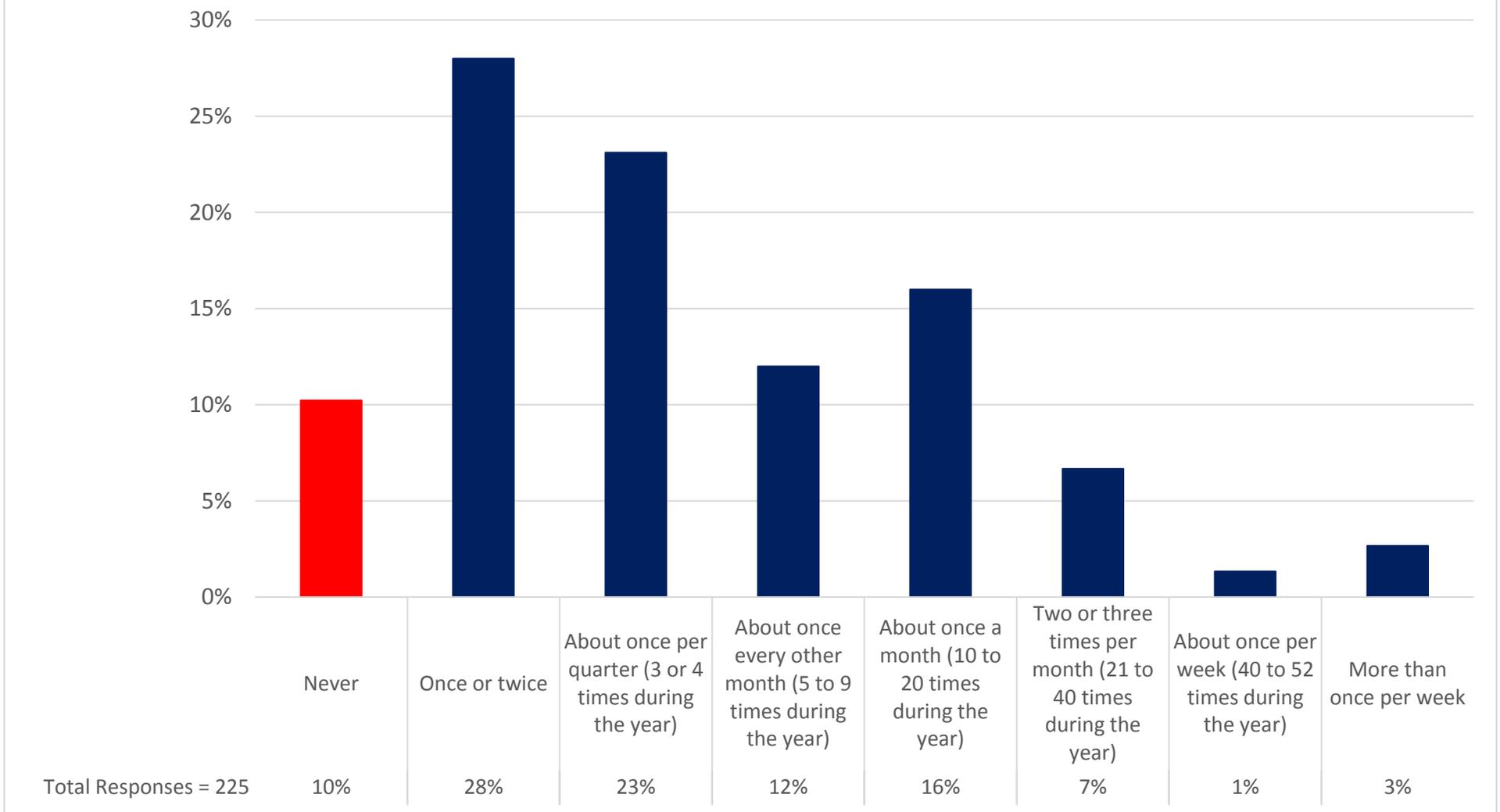
	On-air	On my station's website	On my personal blog	On my social media	On my station's social media	On radio	In a newspaper column	At school visits	At community events (other than school visits)
■ Yes	36%	35%	15%	49%	32%	7%	4%	41%	39%
■ No	60%	61%	57%	47%	63%	77%	73%	50%	54%
■ Not applicable to me	4%	4%	28%	4%	5%	15%	24%	9%	8%
Total Responses	415	418	424	424	416	420	423	423	414

*Over the past 12 months, about how often did you report on the local impacts of climate change on-air? **



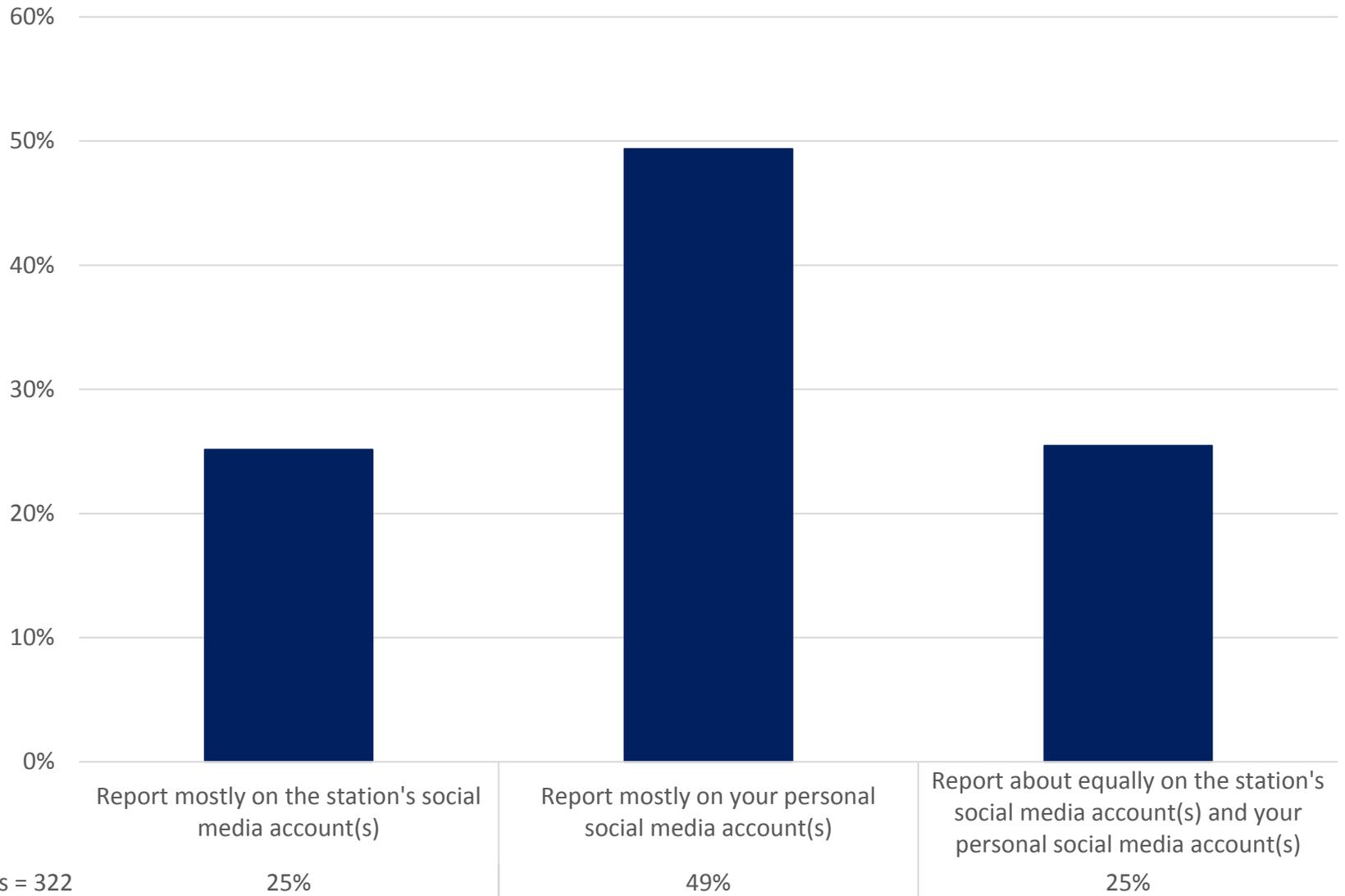
*This question was administered to anyone who responded “yes” to “on-air” to: “Over the past 12 months, did you use the following channels to inform your viewers, or other people in your community, about the local impacts of climate change?” n=415.

*Over the past 12 months, about how often did you report on the local impacts of climate change in social media? **

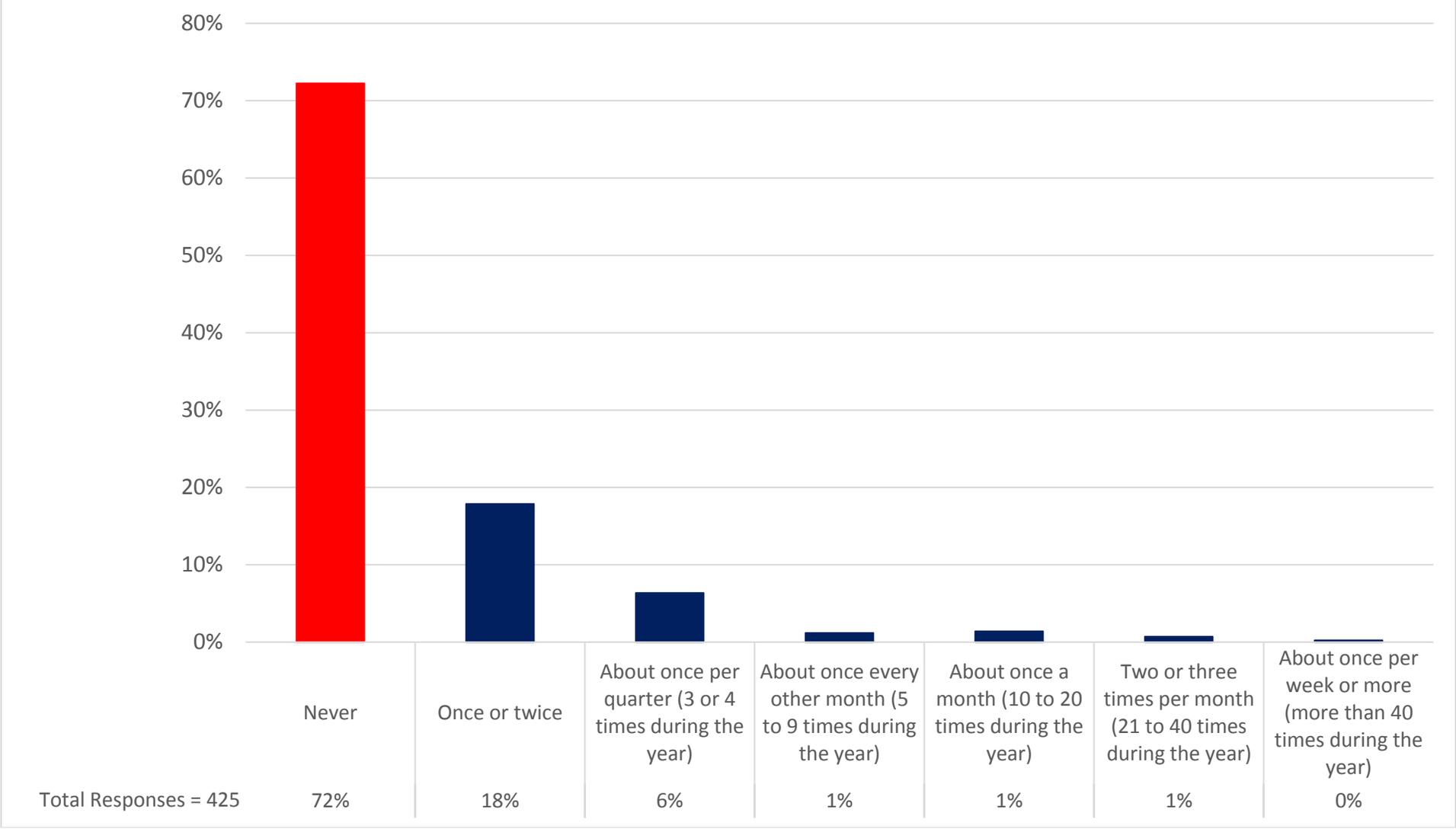


*This question was administered to anyone who responded “yes” to “my station’s website, my personal blog, my social media, and/or my station’s social media” to: “Over the past 12 months, did you use the following channels to inform your viewers, or other people in your community, about the local impacts of climate change?” n=424_{station website}, 424_{personal blog}, 416_{social media}.

When you report on the local impacts of climate change using social media, do you:

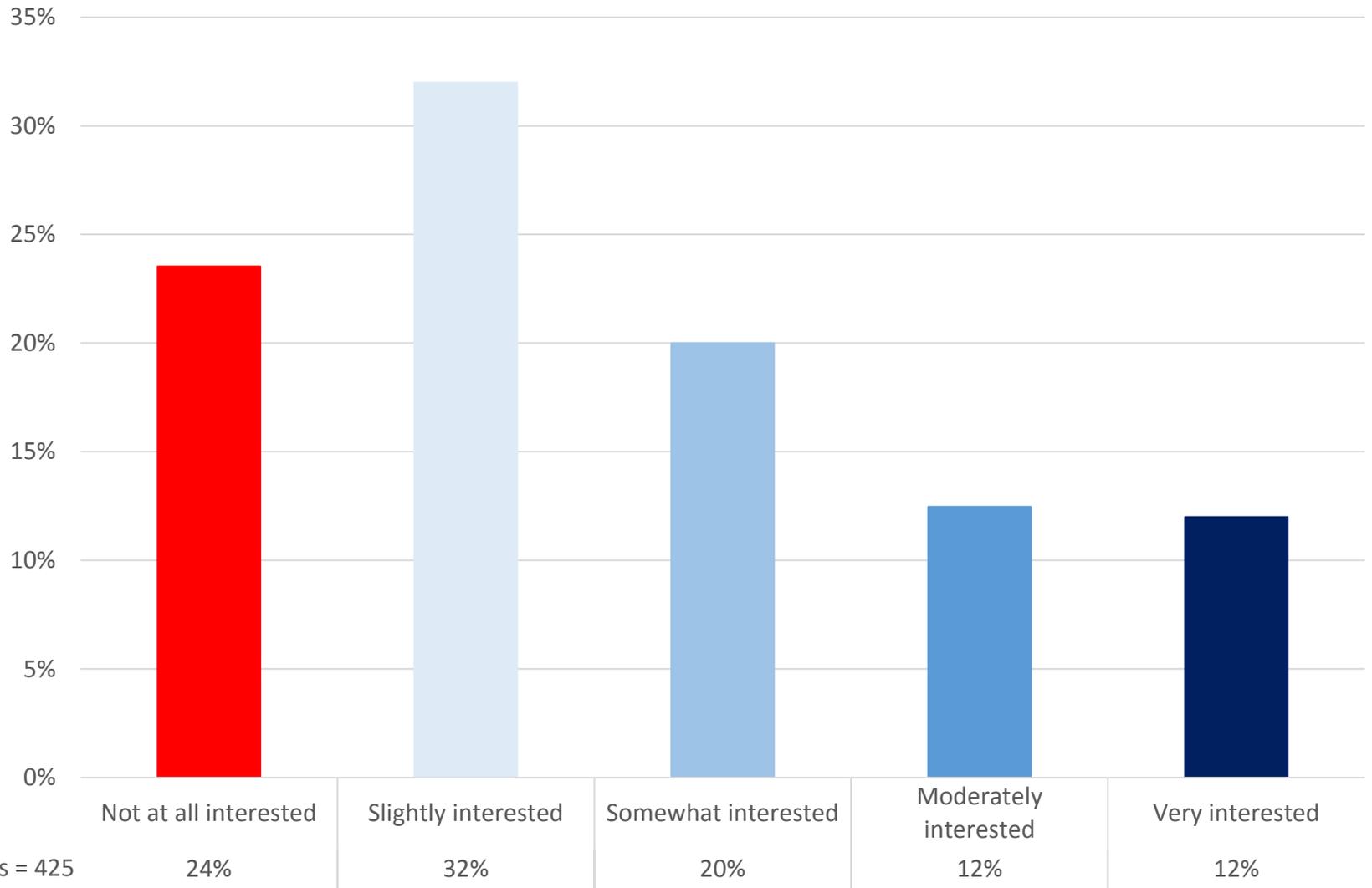


*Over the past 12 months, about how often did you report a longer-format climate change story on-air outside the weather segment? **



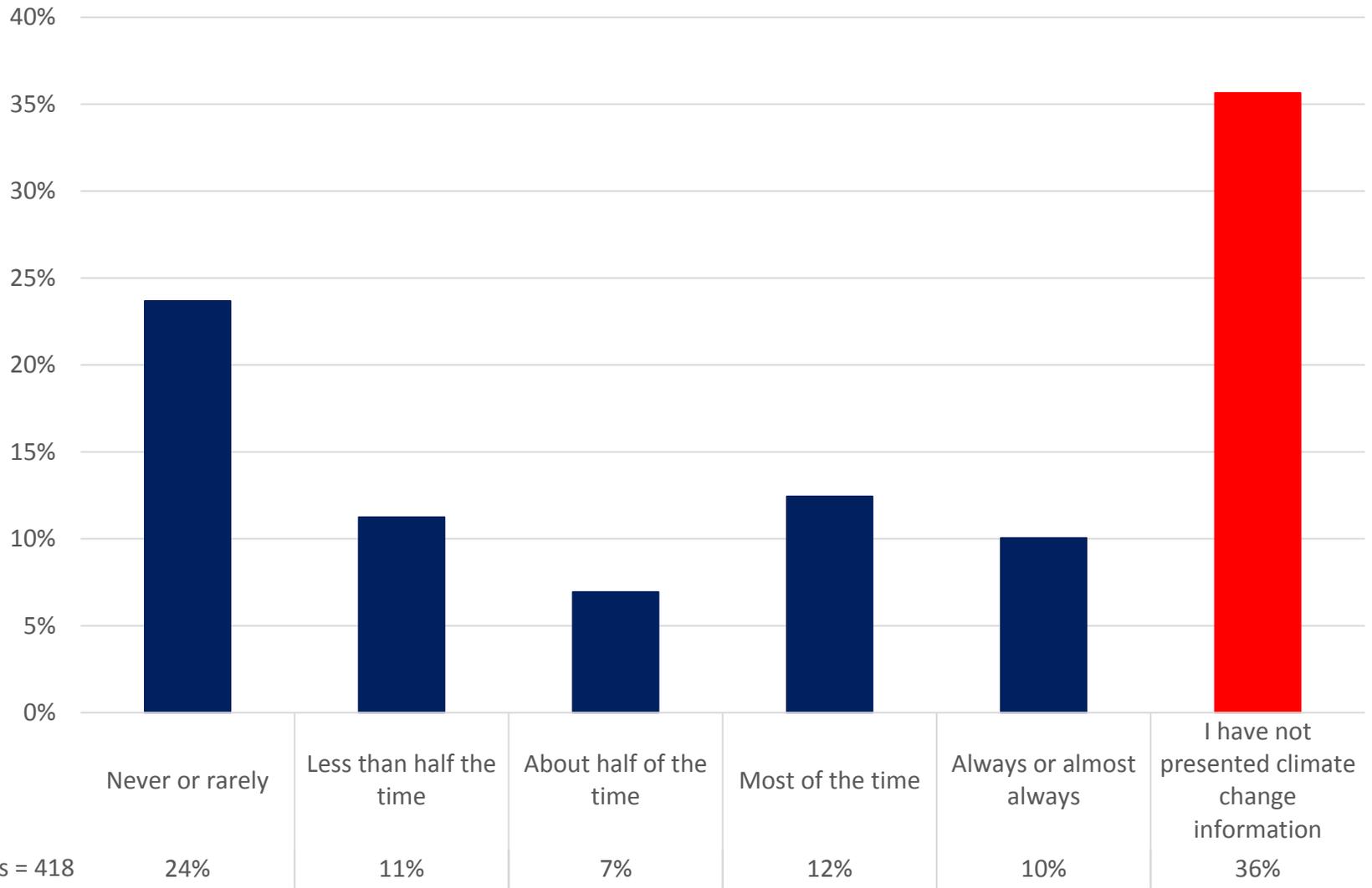
*The following question was asked as a follow-up: “What was the focus of the most recent longer-format climate change story that you reported outside the weather segment?” Responses have not yet been coded. n=98.

*How interested would you be in reporting longer-format climate change stories on-air outside the weather segment? **



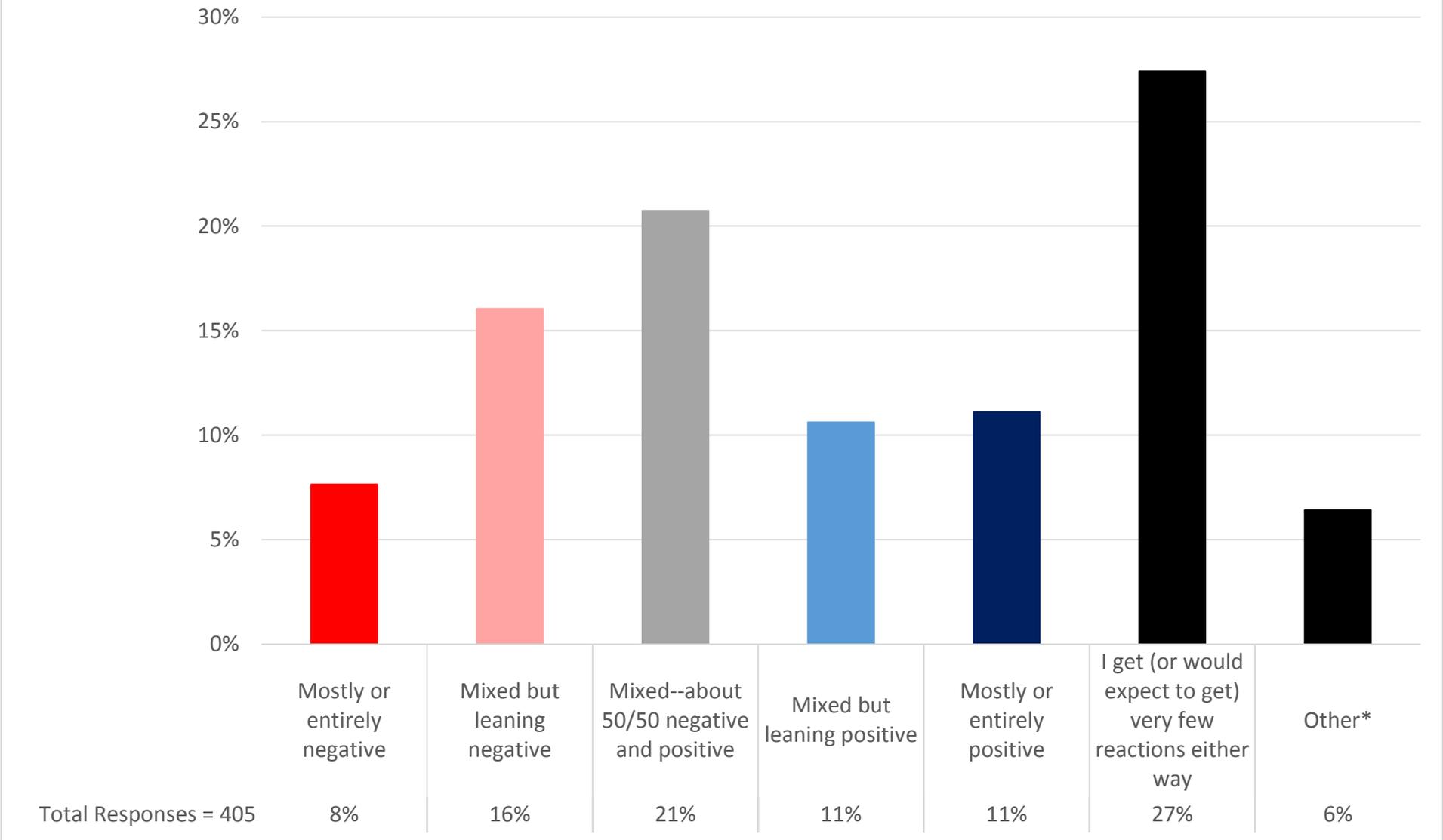
*The following question was asked as a follow-up: “What kinds of longer-format climate change stories would you like to report on-air outside the weather segment?” Responses have not yet been coded. n=204.

*When you present climate change information, how often do you present an 'opposing viewpoint' to your main story? **



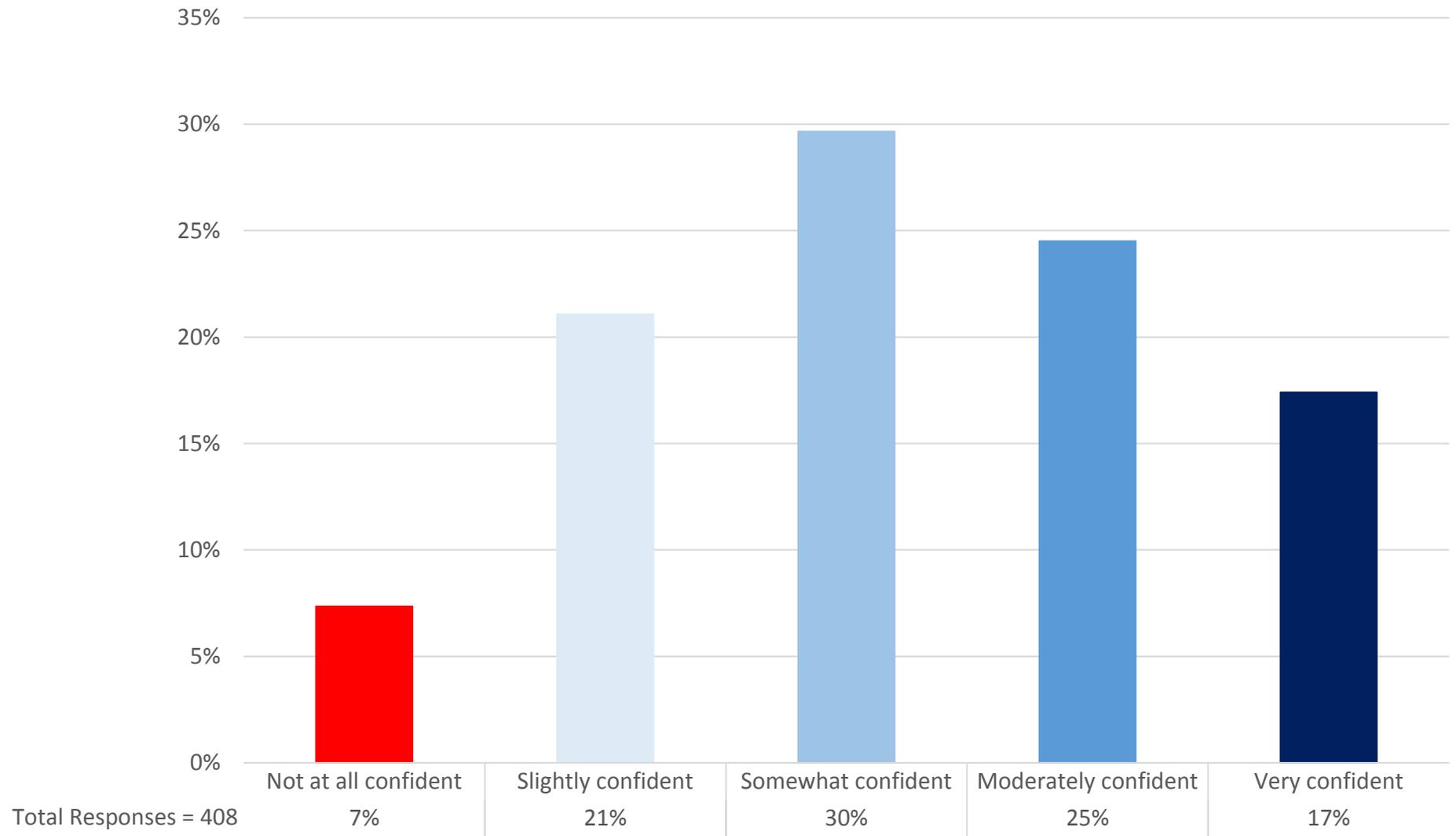
*The following question was asked as a follow-up: "Why do you present an opposing viewpoint?" Responses have not yet been coded. n=125.

Which of the following best describes the responses you get or would expect to get from management when reporting on climate change?

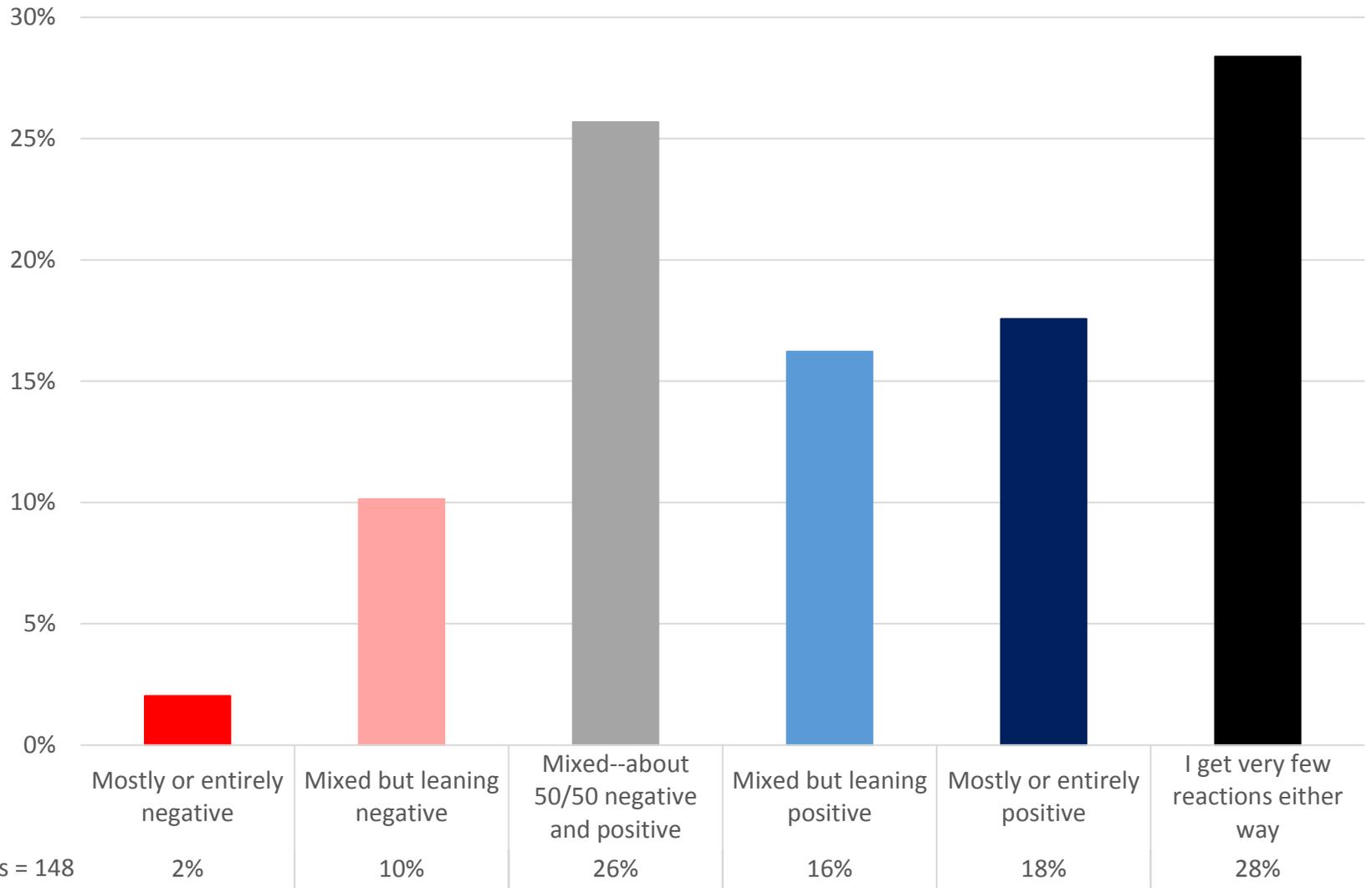


*Participants were given the opportunity to further explain their response. Responses have not yet been coded. n=26.

How confident do you feel in your ability to report effectively about climate change topics on-air?

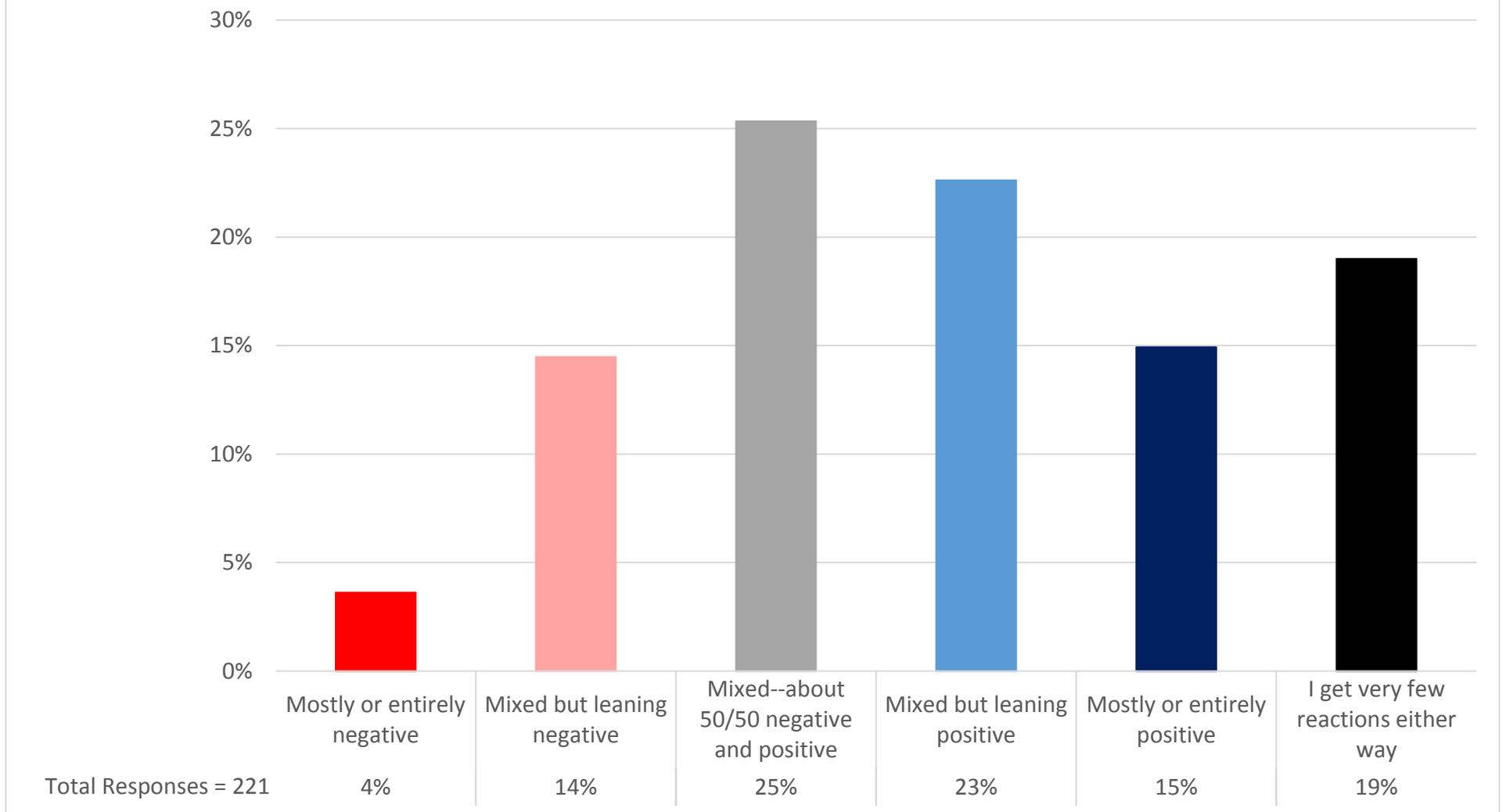


*When you report about local climate change topics on-air, is the feedback you receive from viewers... **



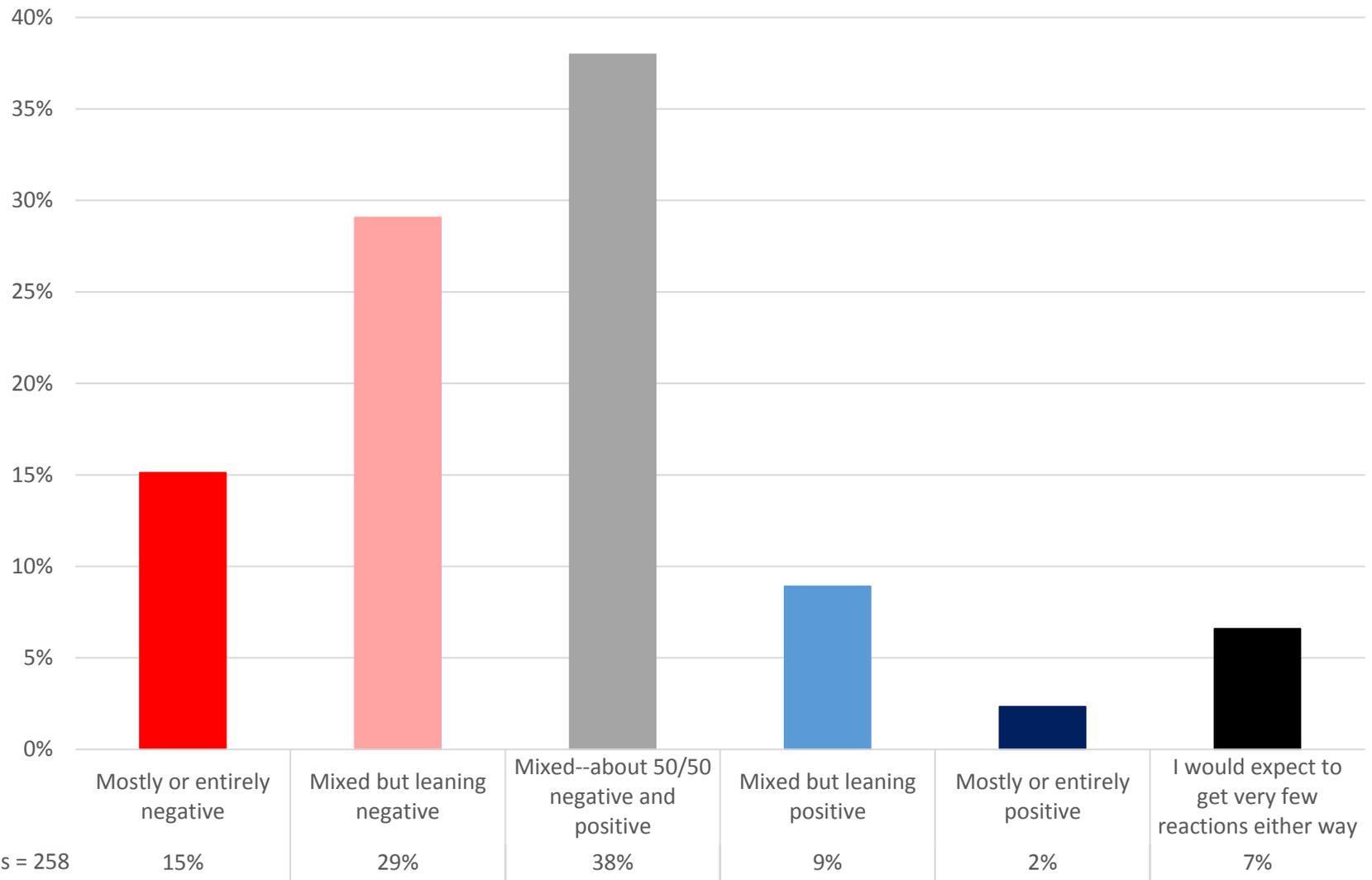
*This question was administered to anyone who responded “yes” to “on-air” to: “Over the past 12 months, did you use the following channels to inform your viewers, or other people in your community, about the local impacts of climate change?” n=415.

*When you report about local climate change topics on social media, is the feedback you receive from viewers... **



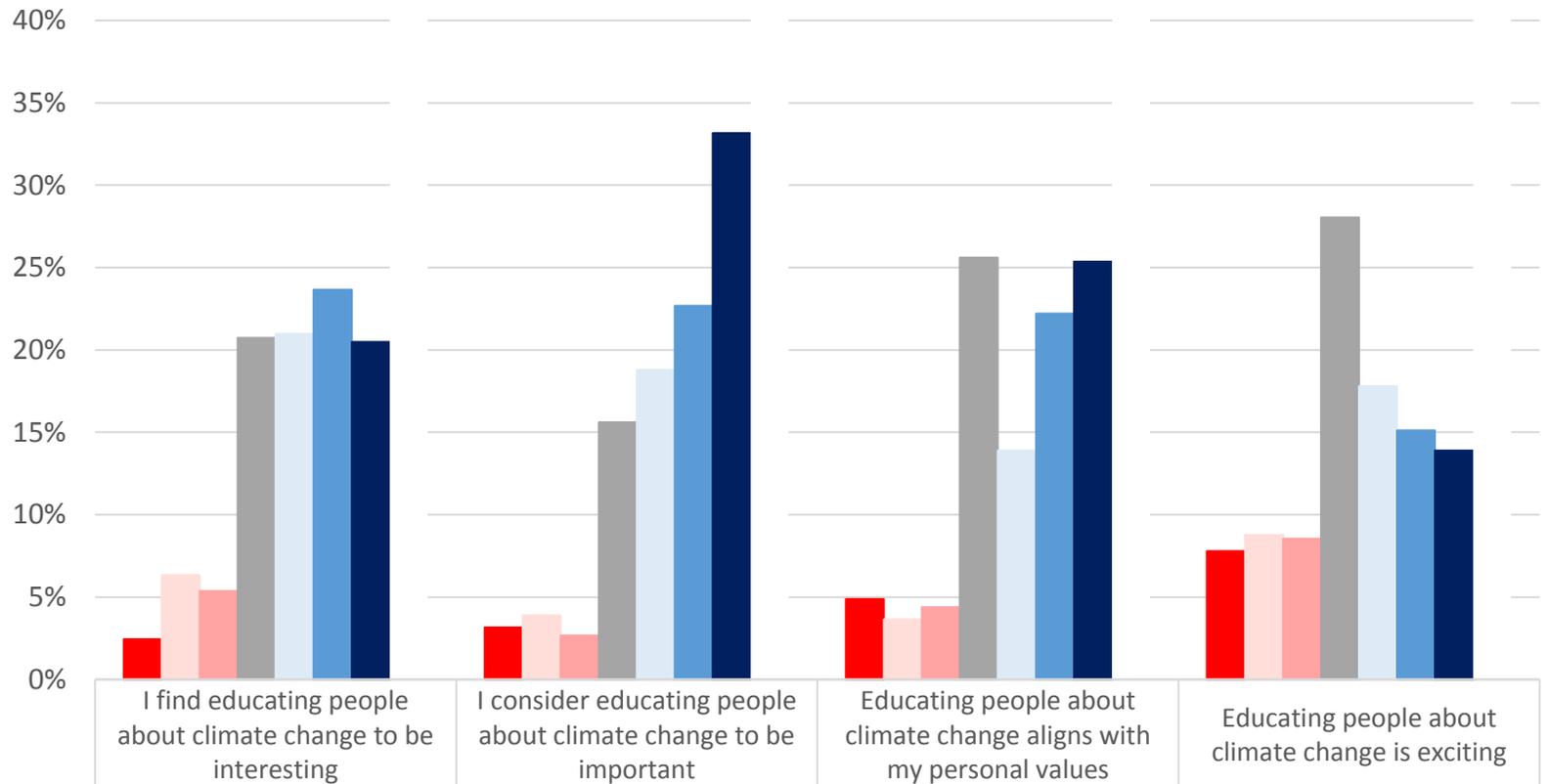
*This question was administered to anyone who responded “yes” to “my station’s website, my personal blog, my social media, and/or my station’s social media” to: “Over the past 12 months, did you use the following channels to inform your viewers, or other people in your community, about the local impacts of climate change?” n=424_{station website}, 424_{personal blog}, 416_{social media}.

*If you were to report about local climate change topics on-air, what kind of feedback would you expect from viewers... **



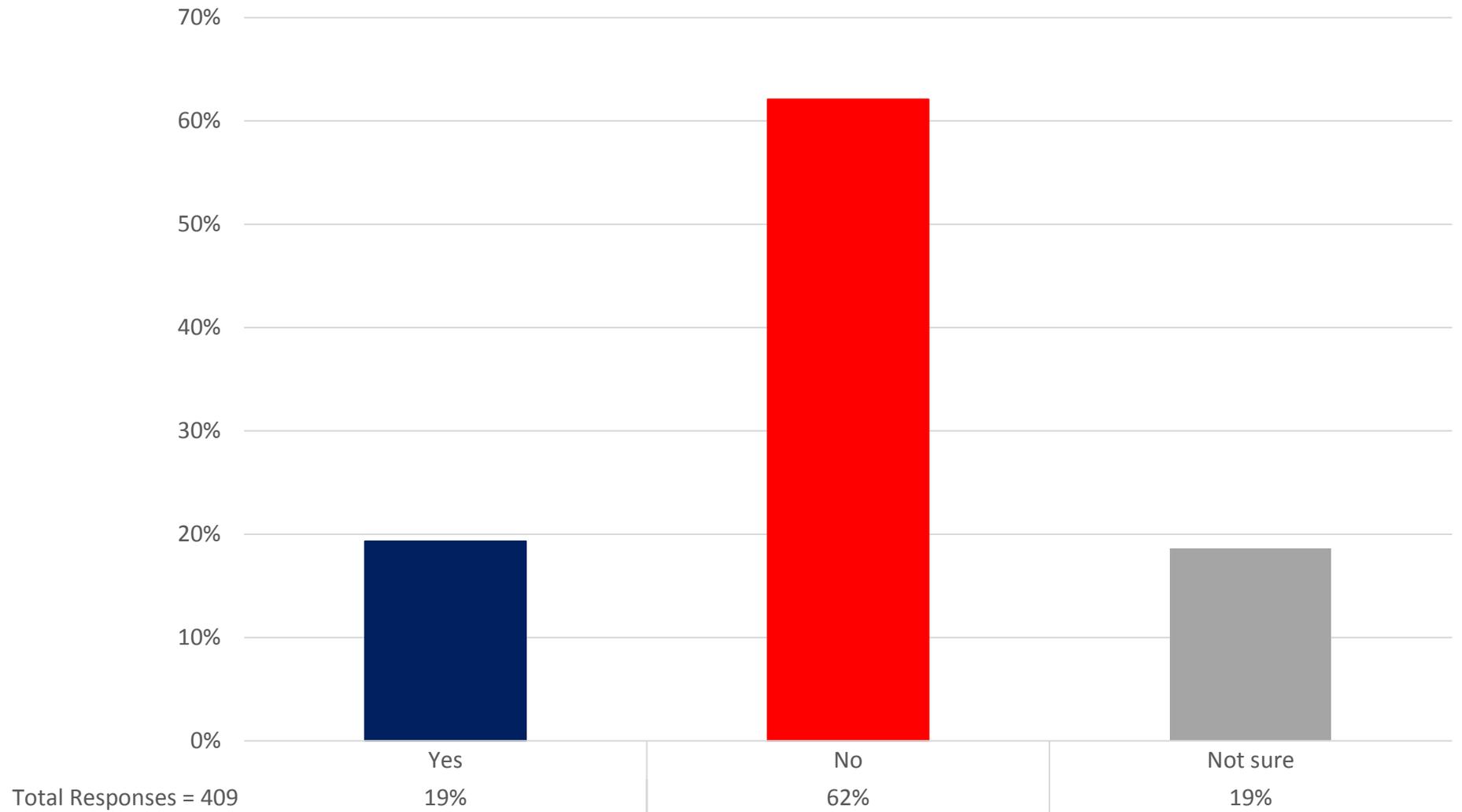
*This question was administered to anyone who responded “no, don’t know, or not applicable to me” to “on-air” to: “Over the past 12 months, did you use the following channels to inform your viewers, or other people in your community, about the local impacts of climate change?” n=415.

How much do you agree or disagree with the following statements?

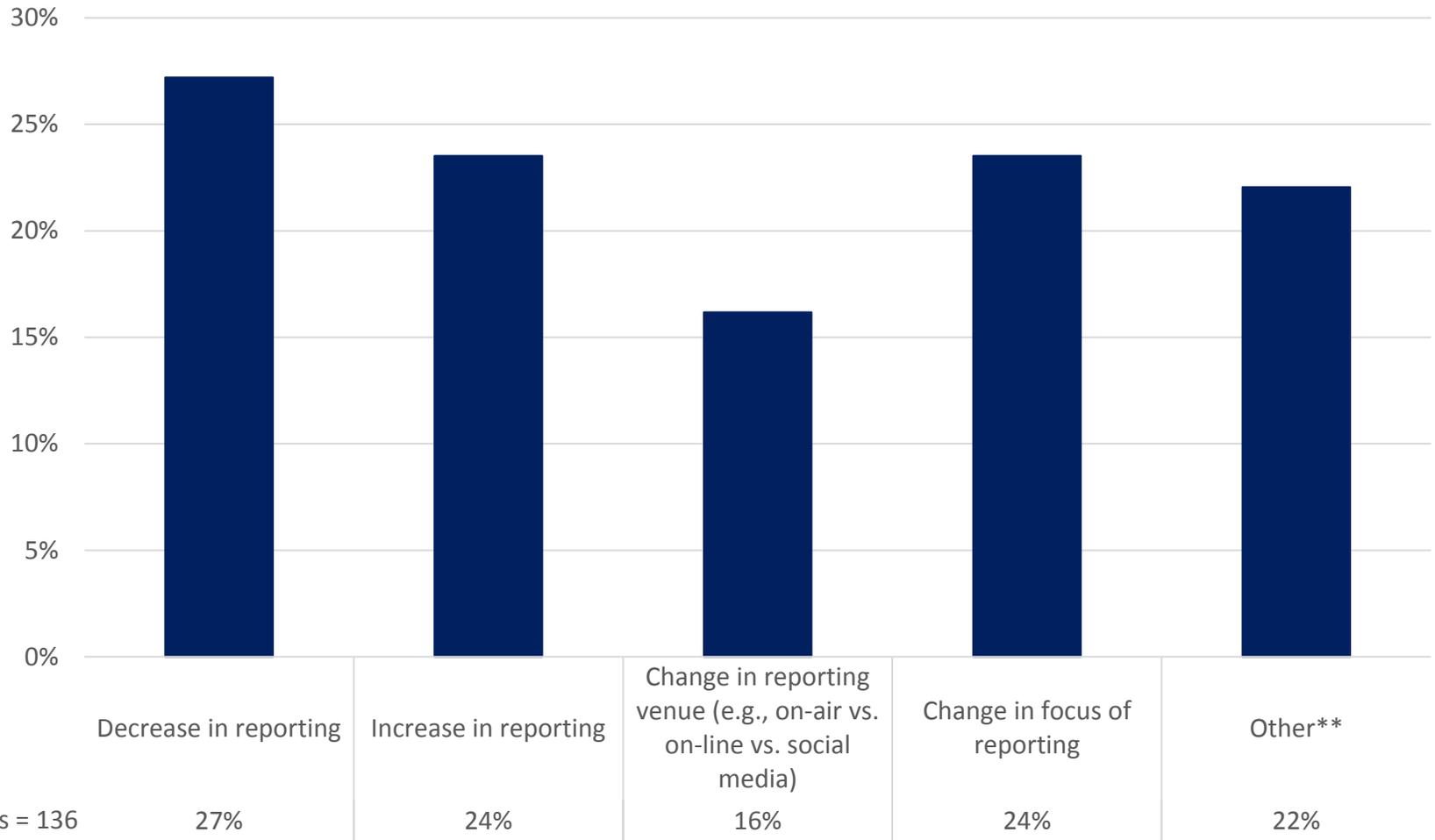


Strongly disagree	2%	3%	5%	8%
Moderately disagree	6%	4%	4%	9%
Slightly disagree	5%	3%	4%	9%
Neither agree nor disagree	21%	16%	26%	28%
Slightly agree	21%	19%	14%	18%
Moderately agree	24%	23%	22%	15%
Strongly agree	20%	33%	25%	14%
Total	410	410	410	410

Have the recent changes in the political climate in the United States altered how you present or plan to present climate change information to your viewers?



*How have the recent changes in the US political climate changed your reporting or your plans to present climate change information (select all that apply)**

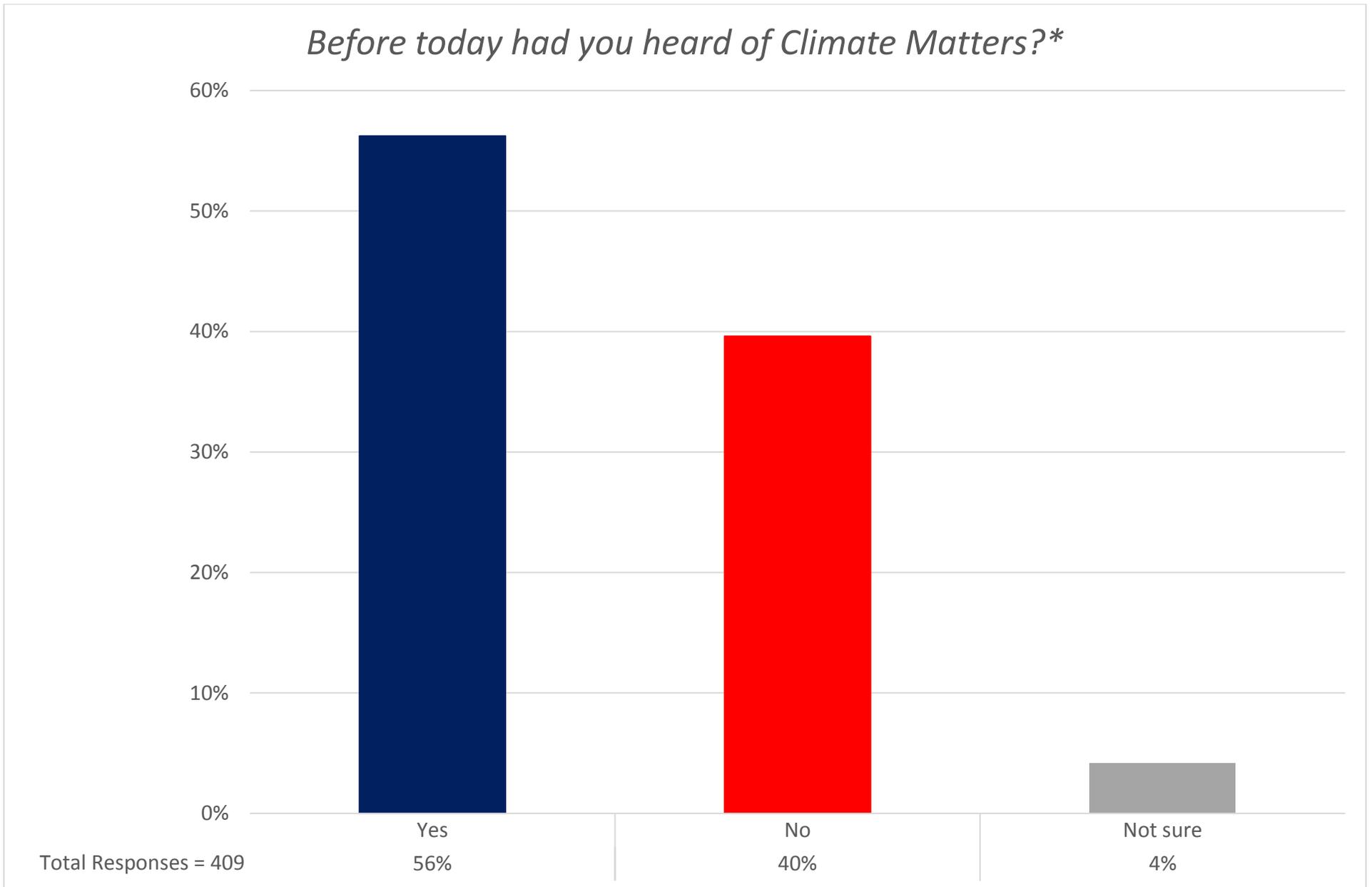


*This question was administered to anyone who responded “yes” or “not sure” to: “Have the recent changes in the political climate in the United States altered how you present or plan to present climate change information to your viewers?” n=409. The following question was asked as a follow-up: “In what ways have you changed or plan to change the focus of your reporting?” Responses have not yet been coded. n=52.

**Participants were given the opportunity to further explain their response. Responses have not yet been coded. n=30.

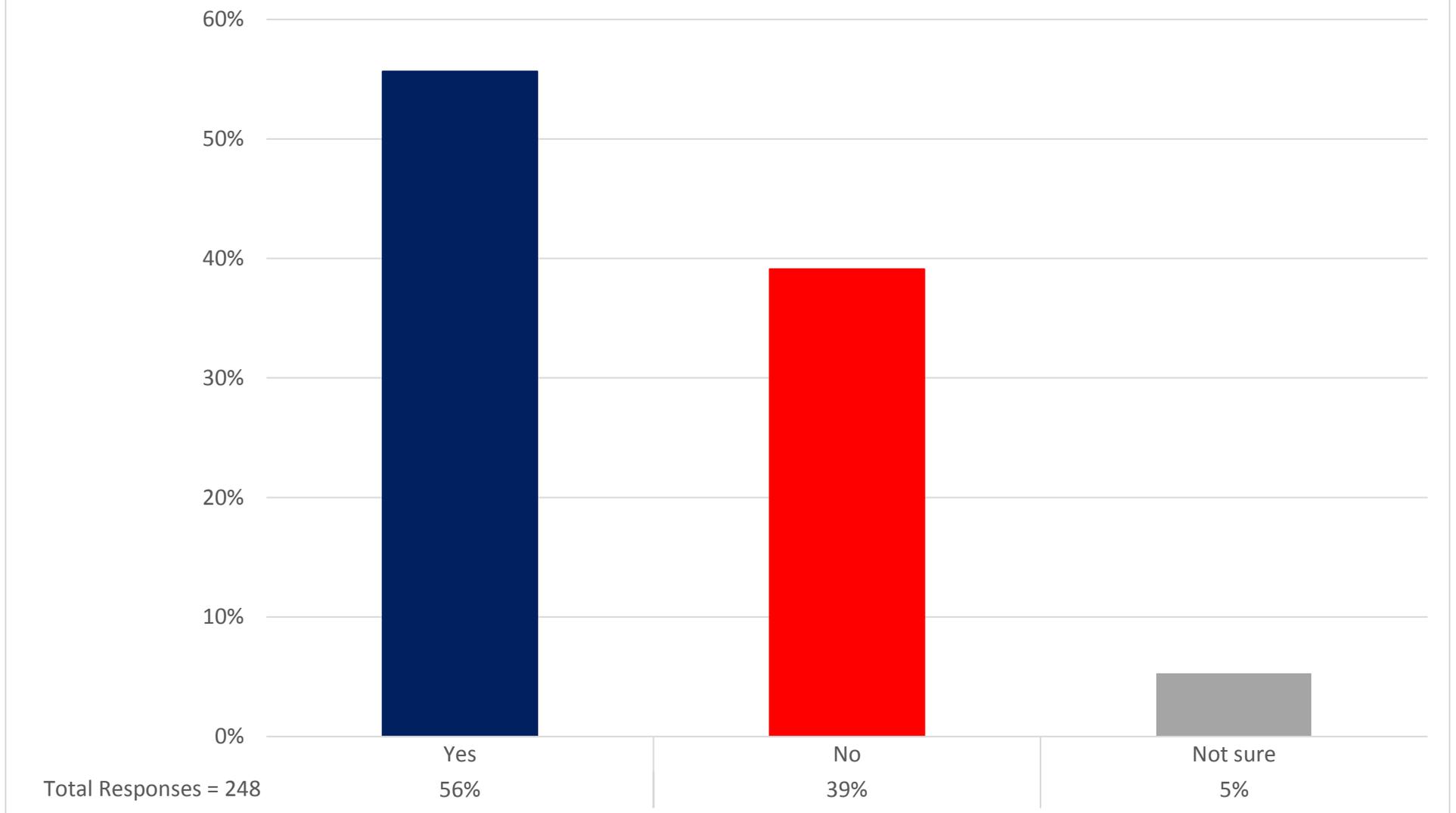
CLIMATE MATTERS USERS SECTION

*Before today had you heard of Climate Matters?**



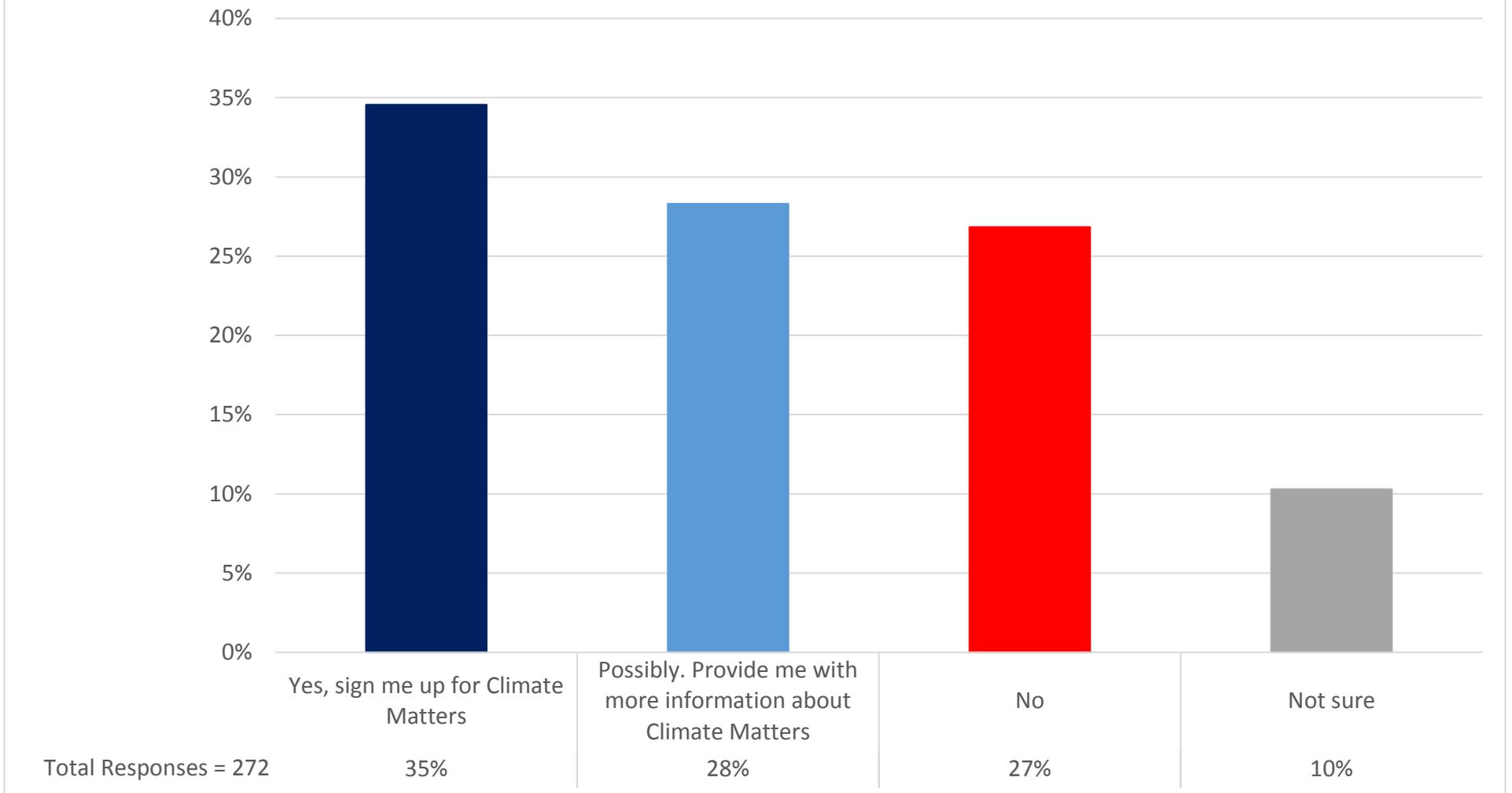
*This question was preceded by the following language: "Climate Matters is a program—produced by Climate Central in association with NOAA, NASA, AMS and George Mason University—that helps TV weathercasters report on climate change with free localized climate analyses, broadcast-ready visuals, peer-reviewed climate research, news, resources, and continuing education (CE) opportunities."

*Do you currently receive Climate Matters materials (via email) from Climate Central? **



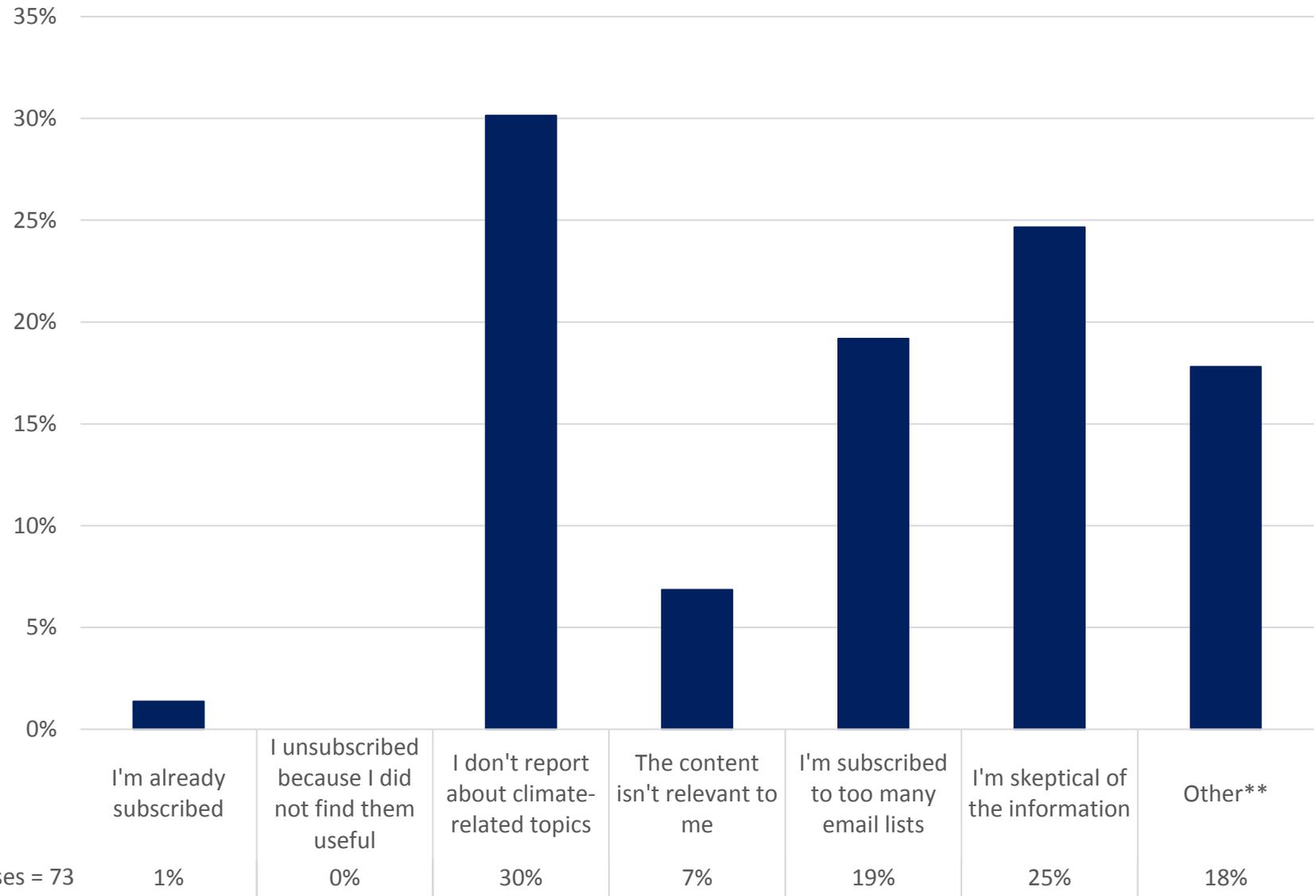
*This question was administered to anyone who responded “yes” to: “Before today, had you heard of Climate Matters?” n=409.

*Are you interested in signing up to receive free weekly Climate Matters materials, or in learning more about Climate Matters (via email) to determine your interest? **



*This question was administered to anyone who responded “no” to: “Before today, had you heard of Climate Matters?” n=409.

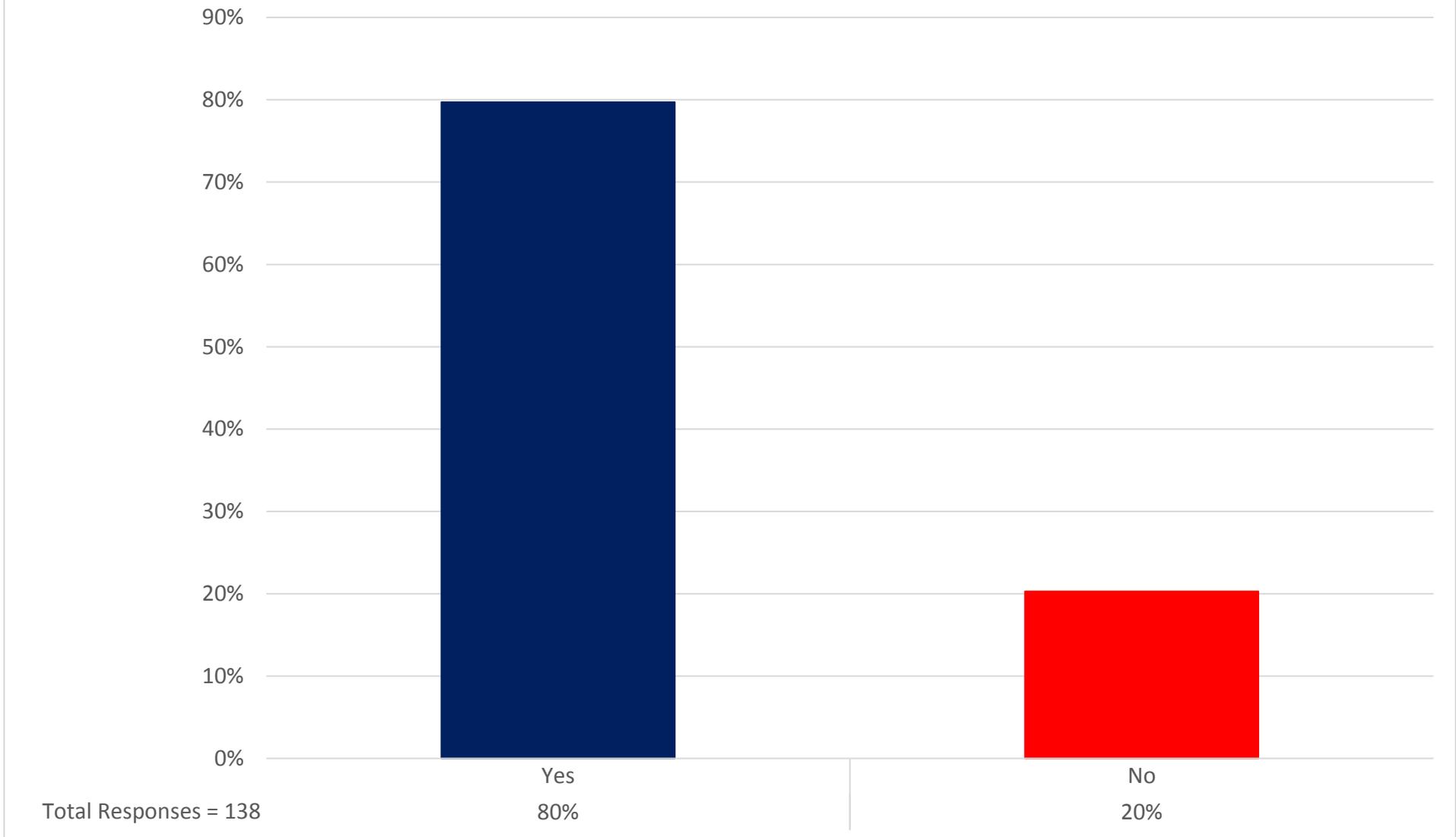
Why aren't you interested in receiving Climate Matters materials?*



*This question was administered to anyone who responded “no” to: “Are you interested in signing up to receive free weekly Climate Matters materials, or in learning more about Climate Matters (via email) to determine your interest?” n=272.

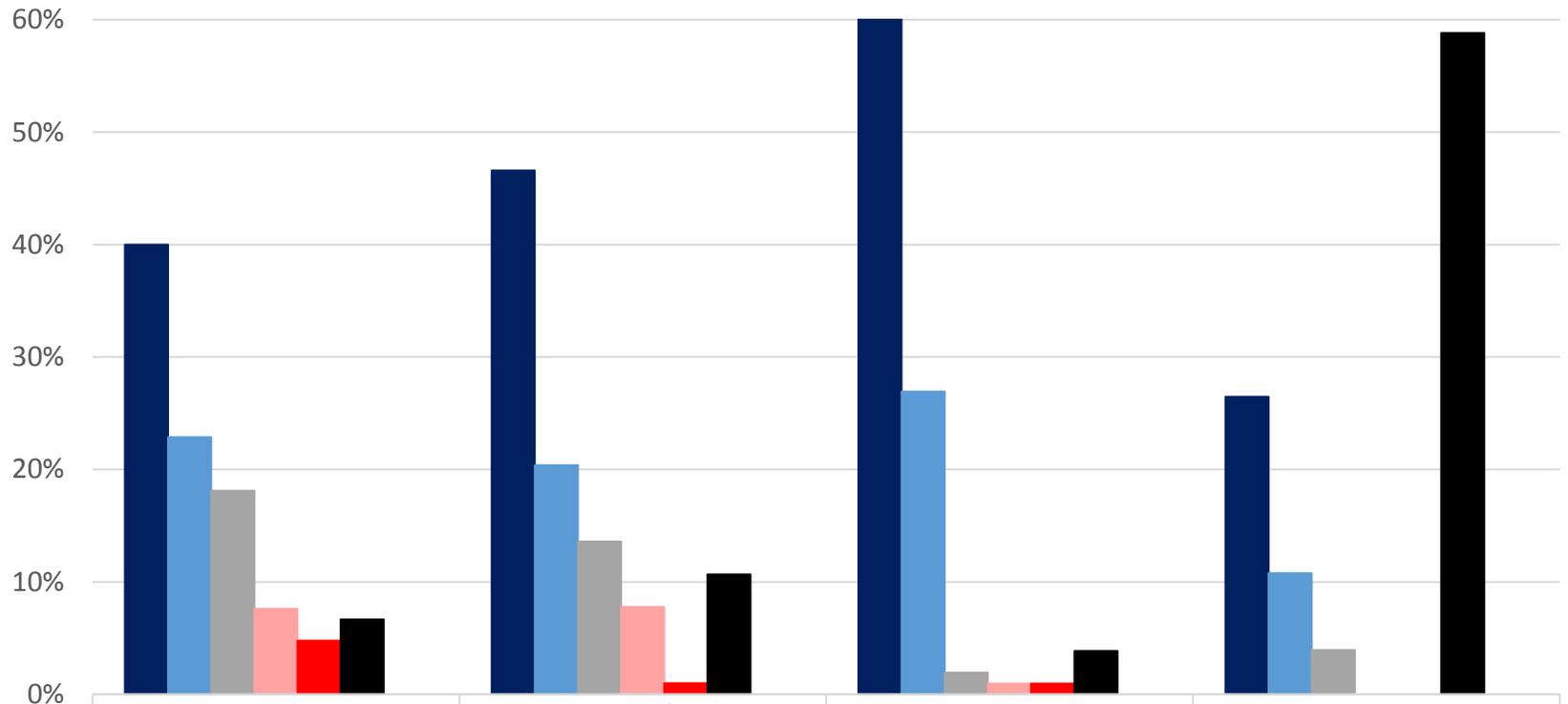
** Participants were given the opportunity to further explain their response. Responses have not yet been coded. n=13.

*Do you use Climate Matters materials from Climate Central? **



*This question was administered to anyone who responded “yes” or “not sure” to: “Do you currently receive Climate Matters materials (via email) from Climate Central?” n=248. The following questions were asked as a follow-up: “What do you like most about the weekly Climate Matters emails?” n=91 and “What do you dislike most about the weekly Climate Matters emails?” Responses have not yet been coded. n=77.

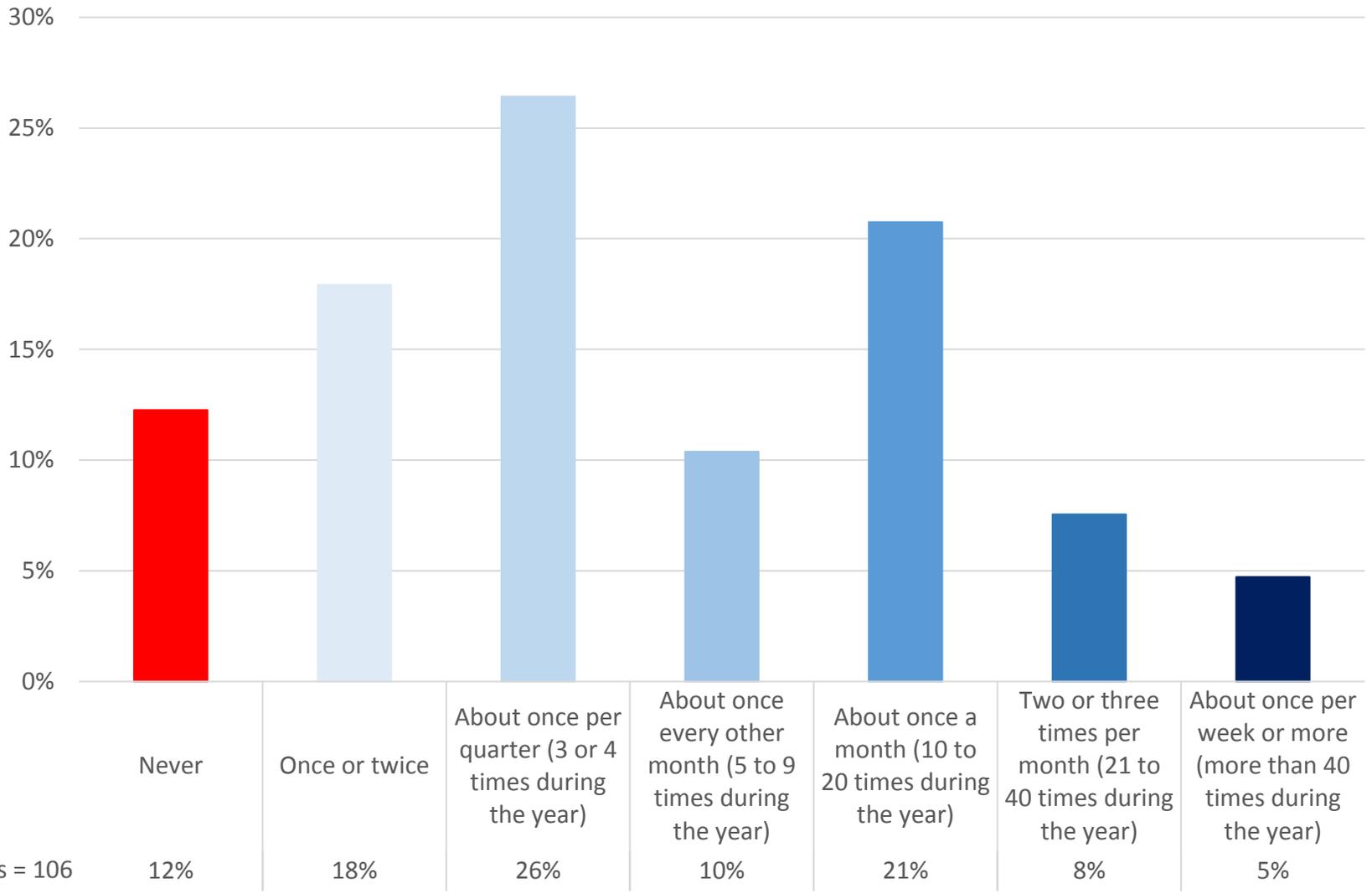
*How easy or hard is it for you to use Climate Matters graphics in your reporting? **



	On-air	On my station's website	In social media	On my personal blog
Very easy	40%	47%	65%	26%
Somewhat easy	23%	20%	27%	11%
Neither easy nor hard	18%	14%	2%	4%
Somewhat hard	8%	8%	1%	0%
Very hard	5%	1%	1%	0%
Not applicable	7%	11%	4%	59%
Total Responses	105	103	104	102

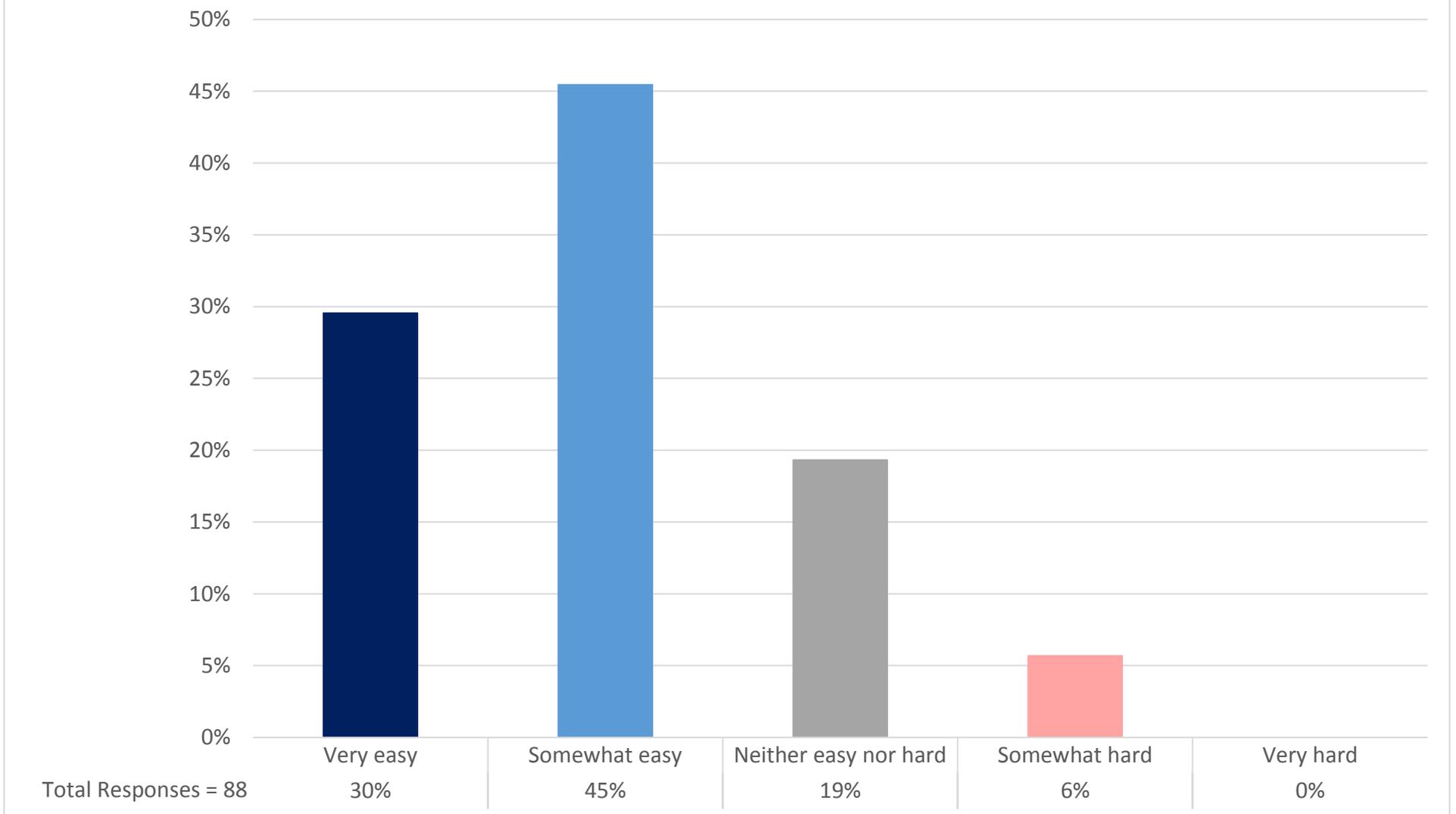
*This question was administered to anyone who responded “yes” to: “Do you use Climate Matters materials from Climate Central?” n=138.

*Over the past 12 months, how often have you visited the Climate Matters archives on-line? **



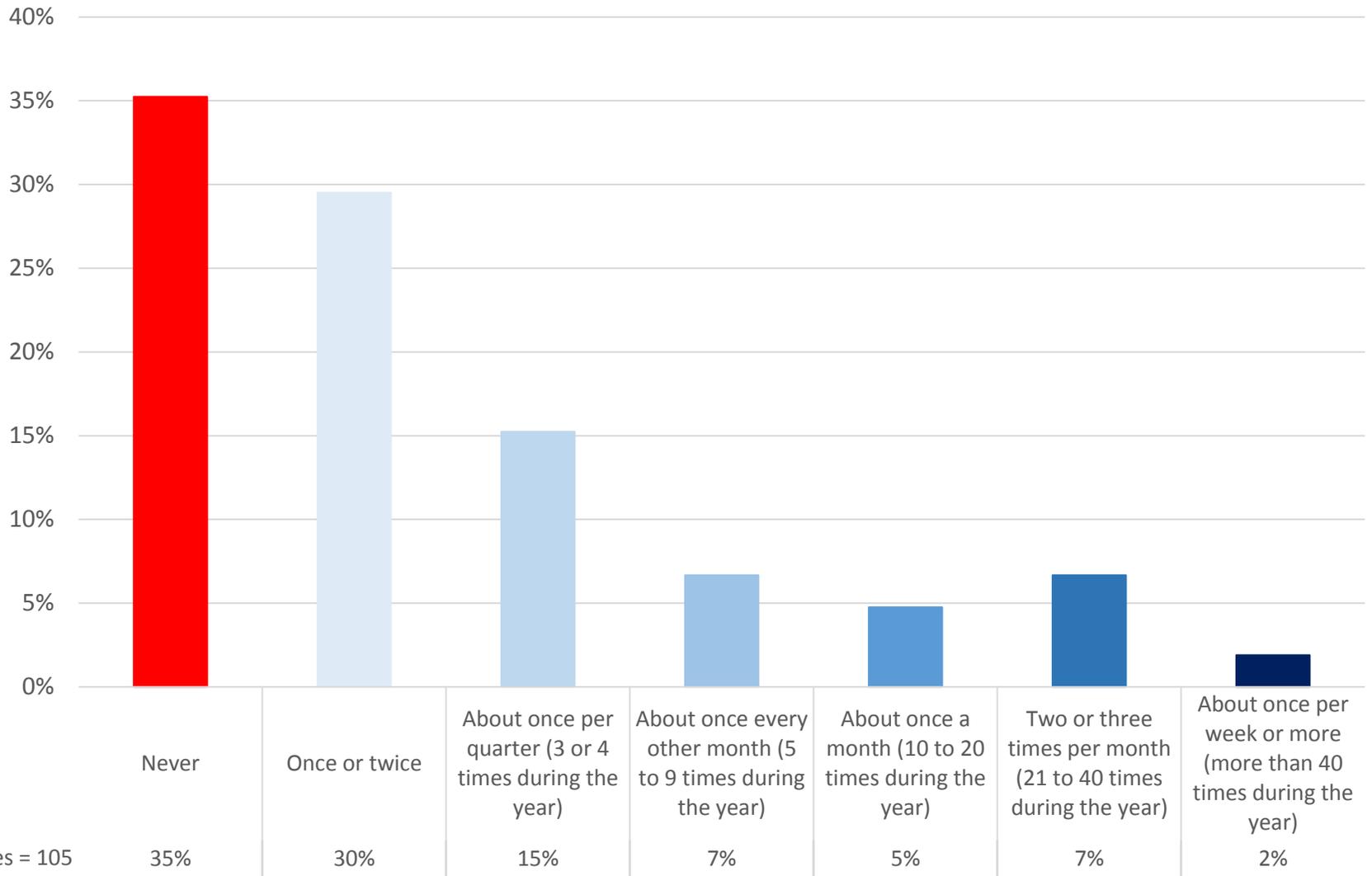
*This question was administered to anyone who responded “yes” to: “Do you use Climate Matters materials from Climate Central?” n=138.

*How easy or hard is it for you to find what you are looking for in the on-line Climate Matters archive? **



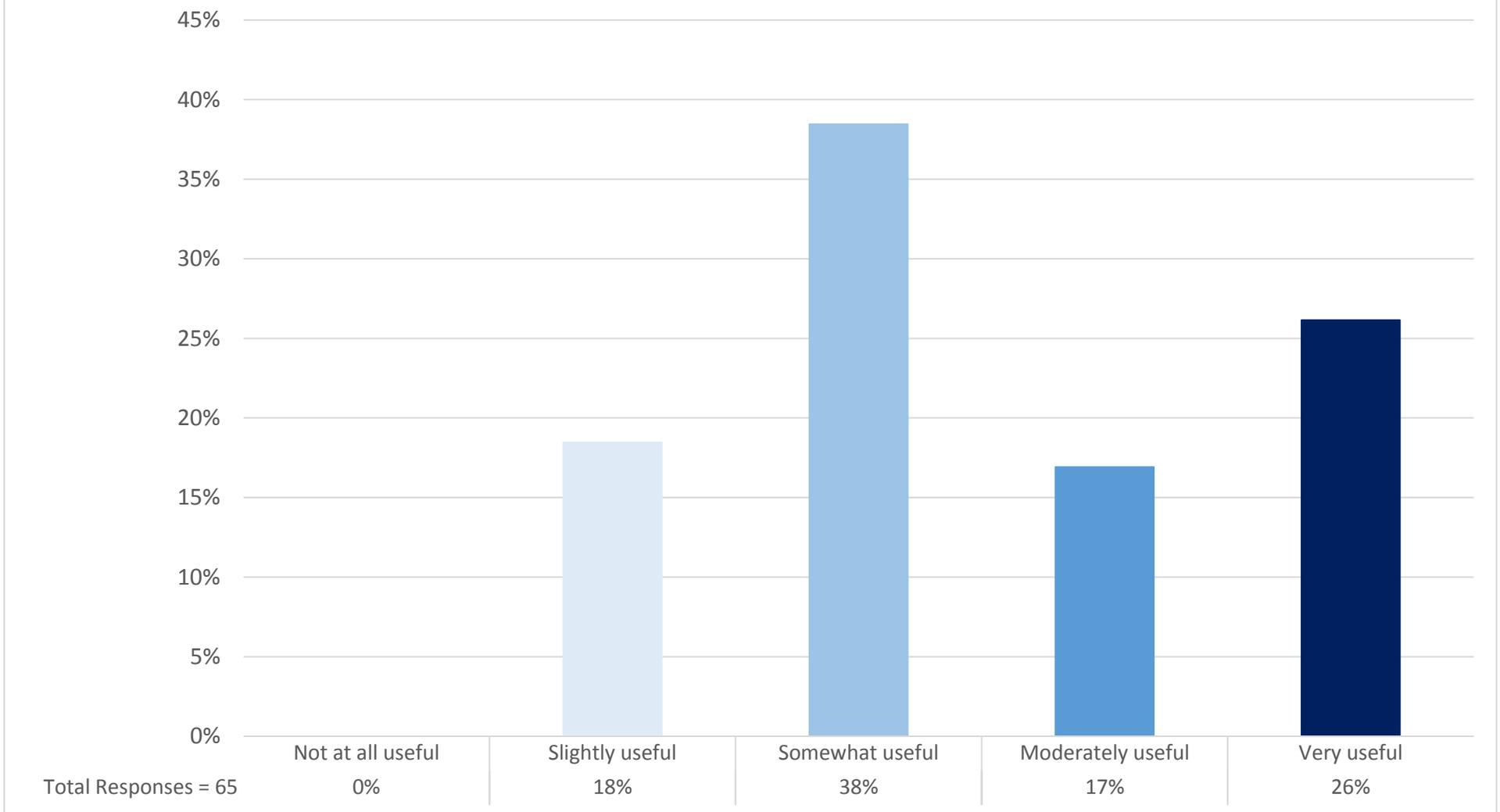
*This question was administered to anyone who responded “yes” to: “Do you use Climate Matters materials from Climate Central?” n=138.

*Over the past 12 months, about how often did you visit the Climate Matters Facebook page? **



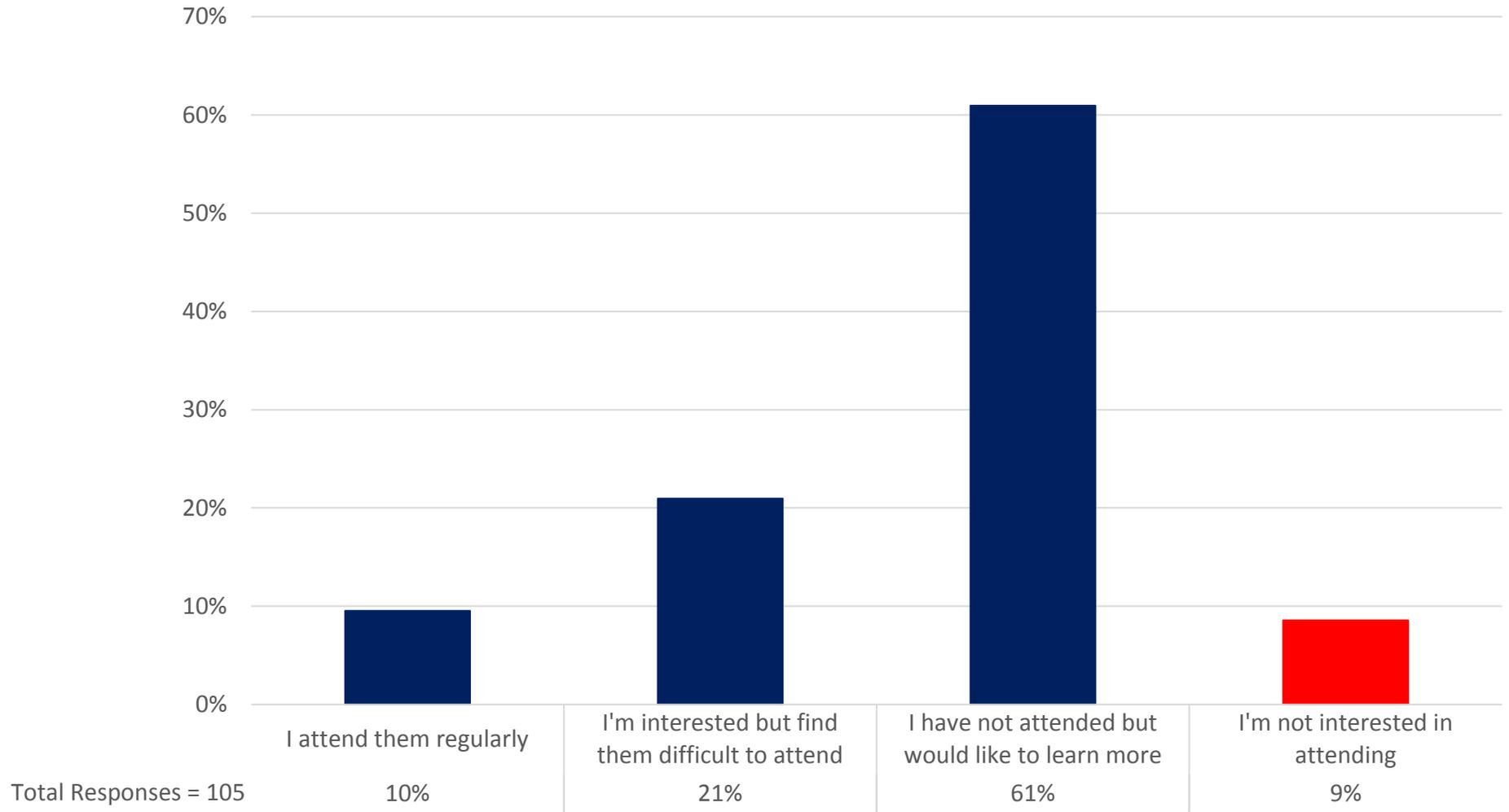
*This question was administered to anyone who responded “yes” to: “Do you use Climate Matters materials from Climate Central?” n=138.

*How useful do you find the content on the Climate Matters Facebook page? **



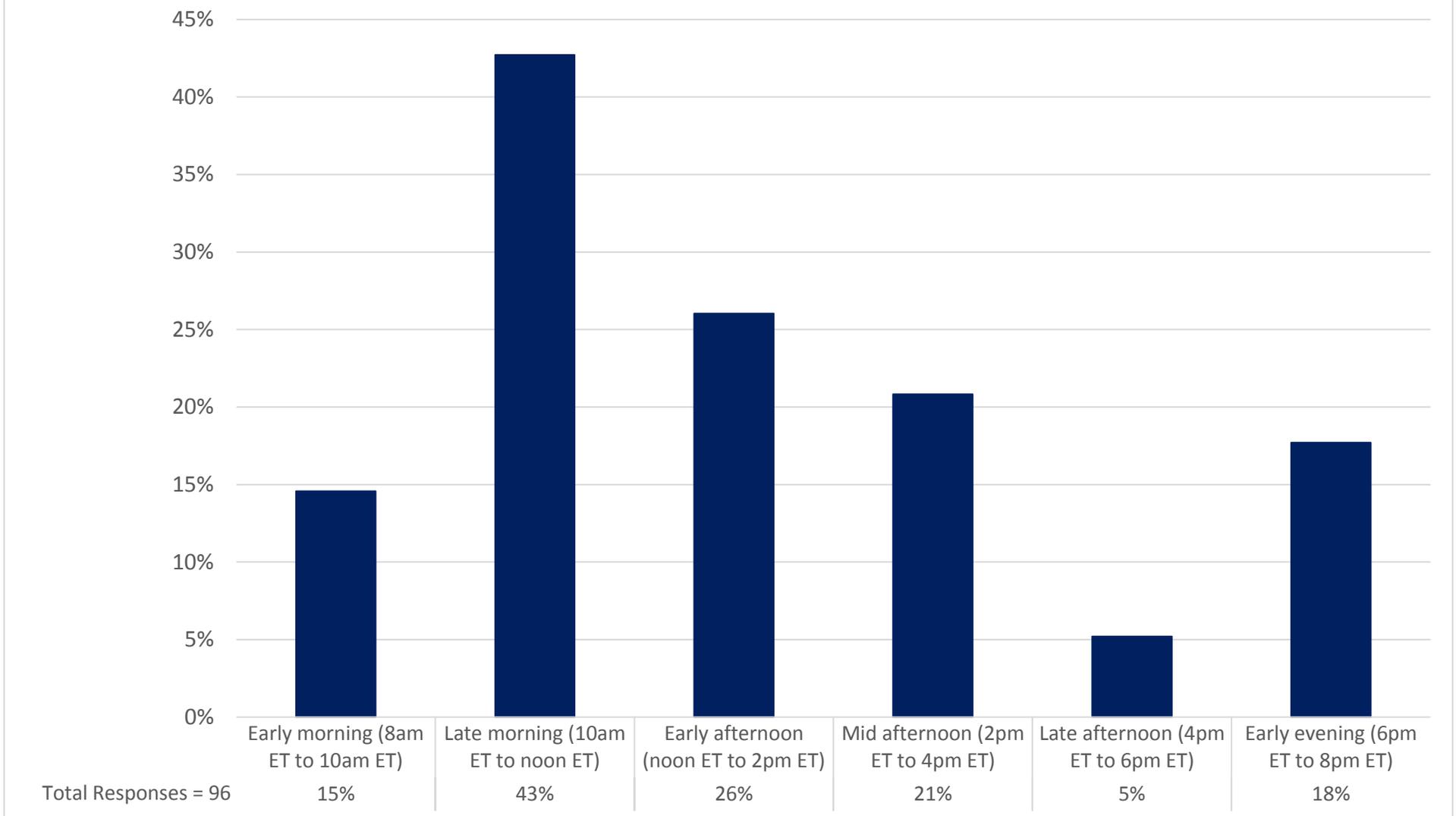
*This question was administered to anyone who responded "yes" to: "Do you use Climate Matters materials from Climate Central?" n=138. The following question was asked as a follow-up: "How could the information on the Climate Matters Facebook page be made more useful to you?" Responses have not yet been coded. n=25.

*Climate Matters offers regular one-hour on-line webinars that discuss climate science and the impacts of climate change. Which of the following options best describes you? **



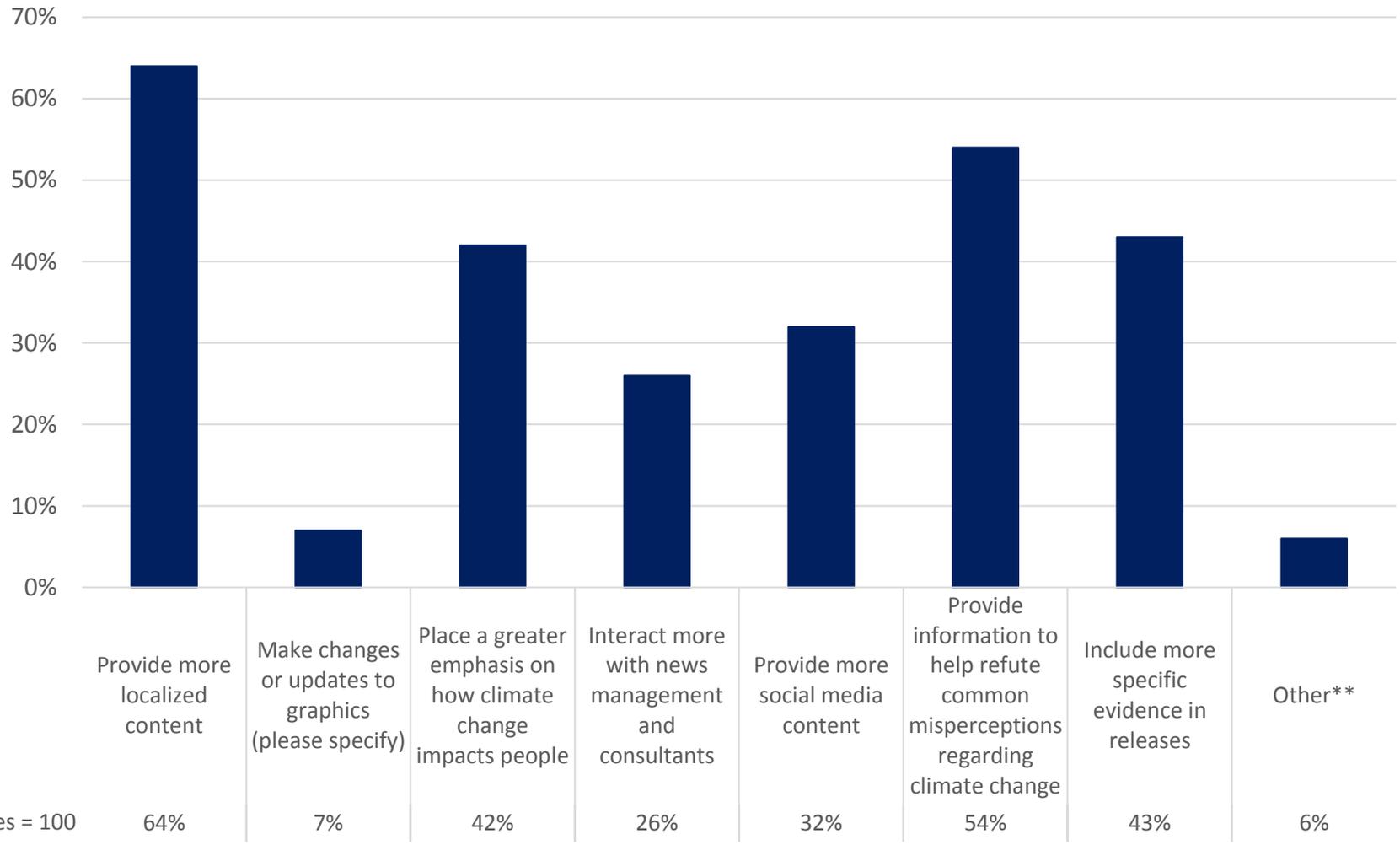
*This question was administered to anyone who responded “yes” to: “Do you use Climate Matters materials from Climate Central?” n=138.

*What time of day is best for you to join the one-hour on-line webinars from Climate Matters? **



*This question was administered to anyone who responded “yes” to: “Do you use Climate Matters materials from Climate Central?” n=138.

*What, if anything, can Climate Central, NOAA, NASA, and/or George Mason University do to help you become a more effective climate educator?**

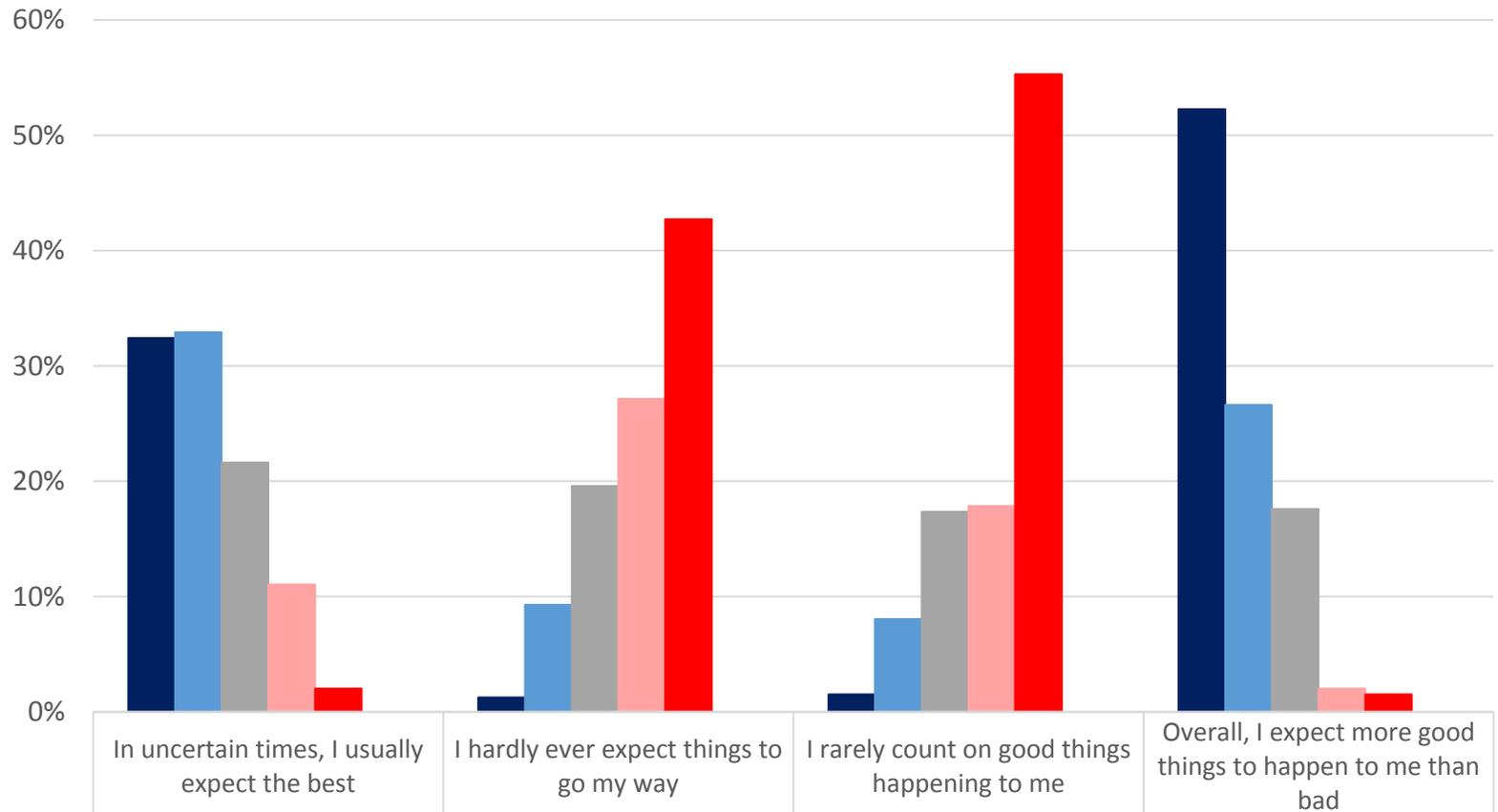


* This question was administered to anyone who responded “yes” to: “Do you use Climate Matters materials from Climate Central?” n=138.

**Participants were given the opportunity to further explain their response. Responses have not yet been coded. n=6.

GENERAL INFORMATION ABOUT THE RESPONDENTS

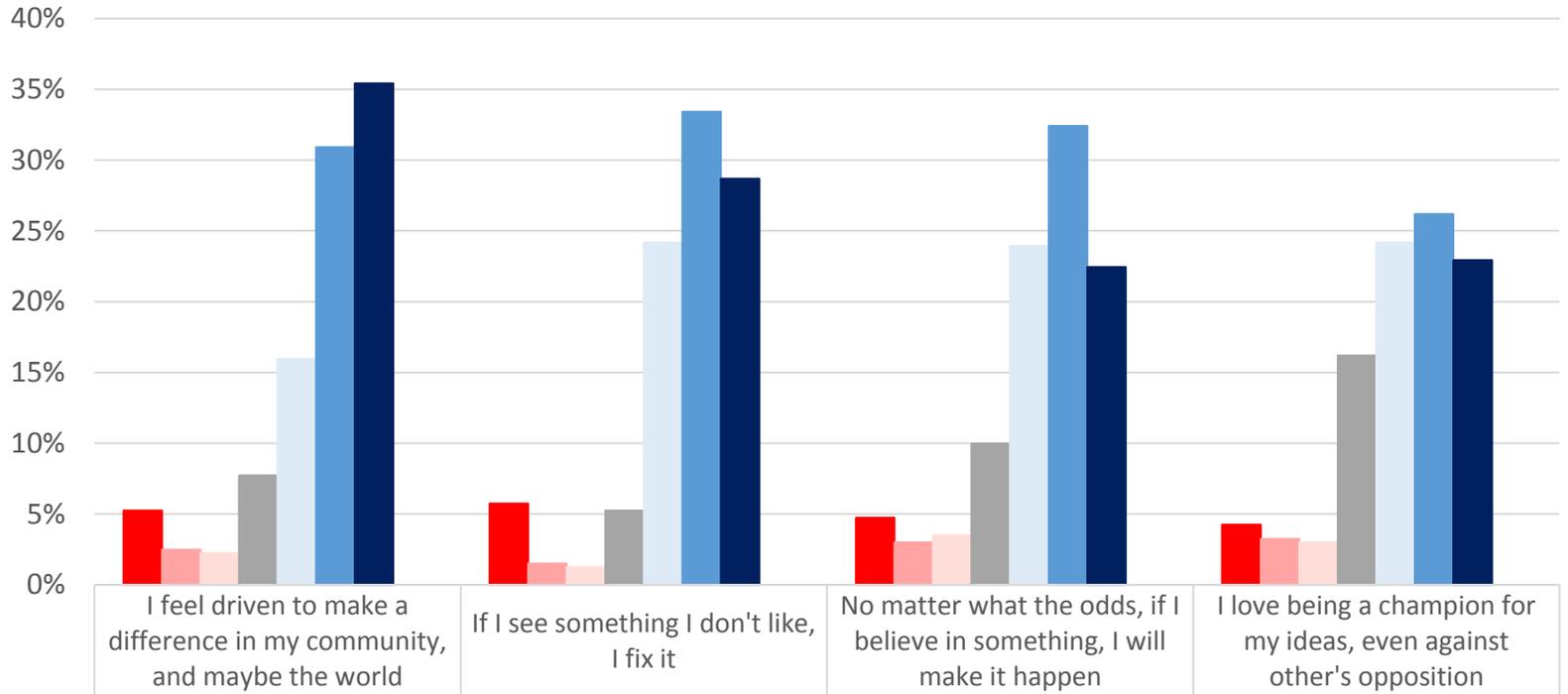
*Please indicate your agreement with the following statements: **



	In uncertain times, I usually expect the best	I hardly ever expect things to go my way	I rarely count on good things happening to me	Overall, I expect more good things to happen to me than bad
■ I agree a lot	32%	1%	2%	52%
■ I agree a little	33%	9%	8%	27%
■ I neither agree nor disagree	22%	20%	17%	18%
■ I disagree a little	11%	27%	18%	2%
■ I disagree a lot	2%	43%	55%	2%
Total Responses	398	398	398	398

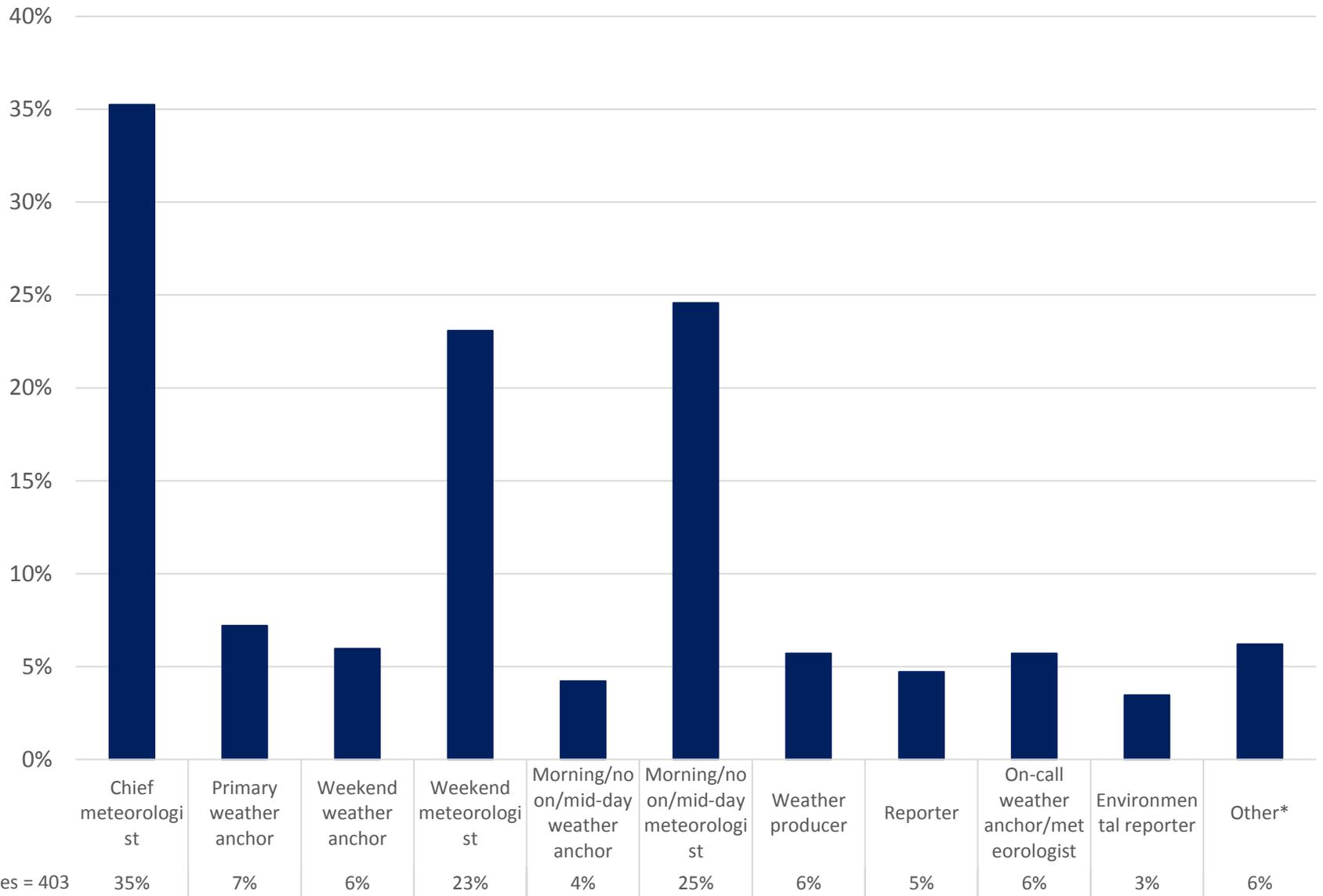
*This question was preceded by the following language: “Lastly, we have just a few final questions about you: your personal outlook on life, your professional background, and some demographics.”

To what degree to you agree or disagree with each of the following statements?



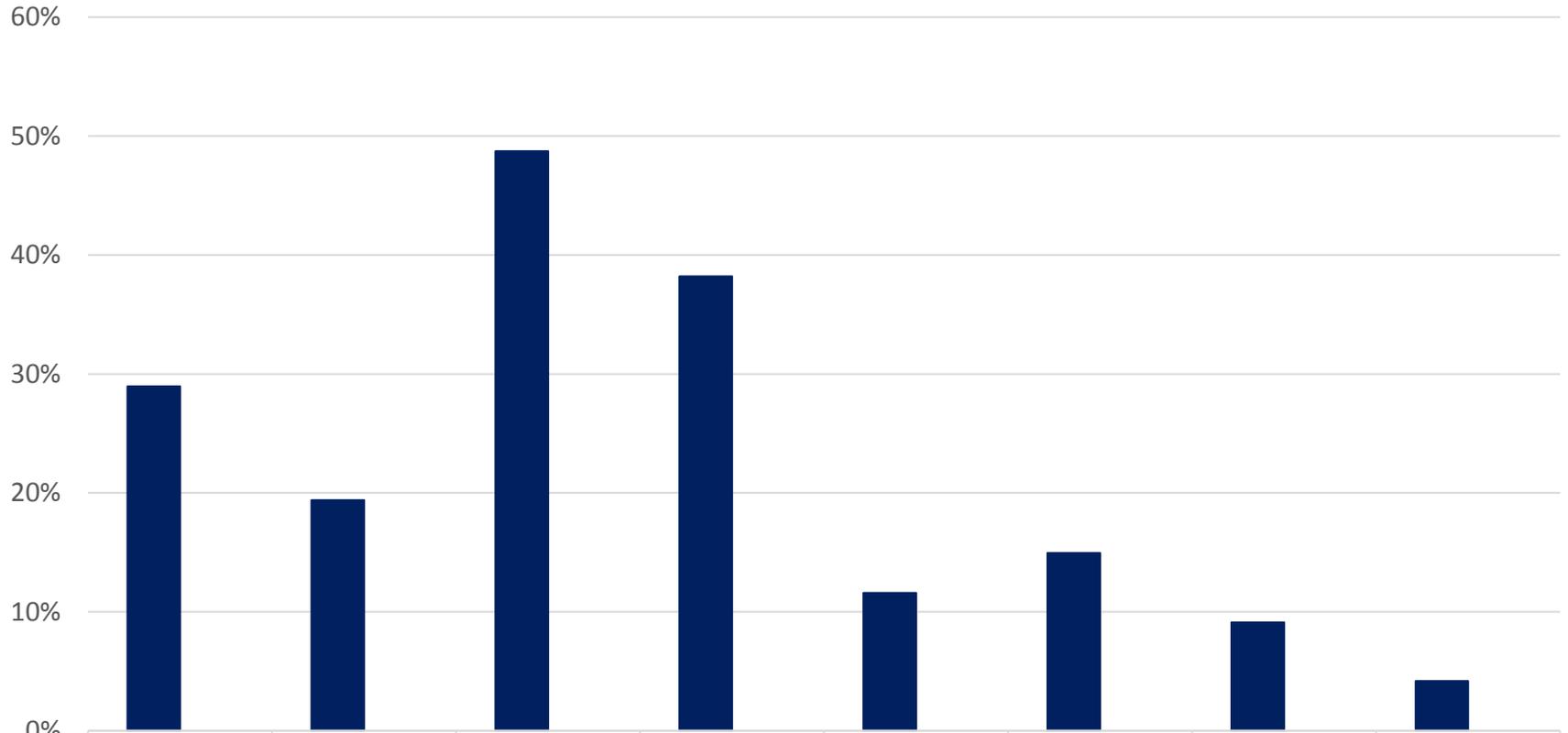
Strongly disagree	5%	6%	5%	4%
Moderately disagree	2%	2%	3%	3%
Slightly disagree	2%	1%	3%	3%
Neither agree nor disagree	8%	5%	10%	16%
Slightly agree	16%	24%	24%	24%
Moderately agree	31%	33%	32%	26%
Strongly agree	35%	29%	22%	23%
Total	401	401	401	401

Which best describes your current position? (select all that apply)



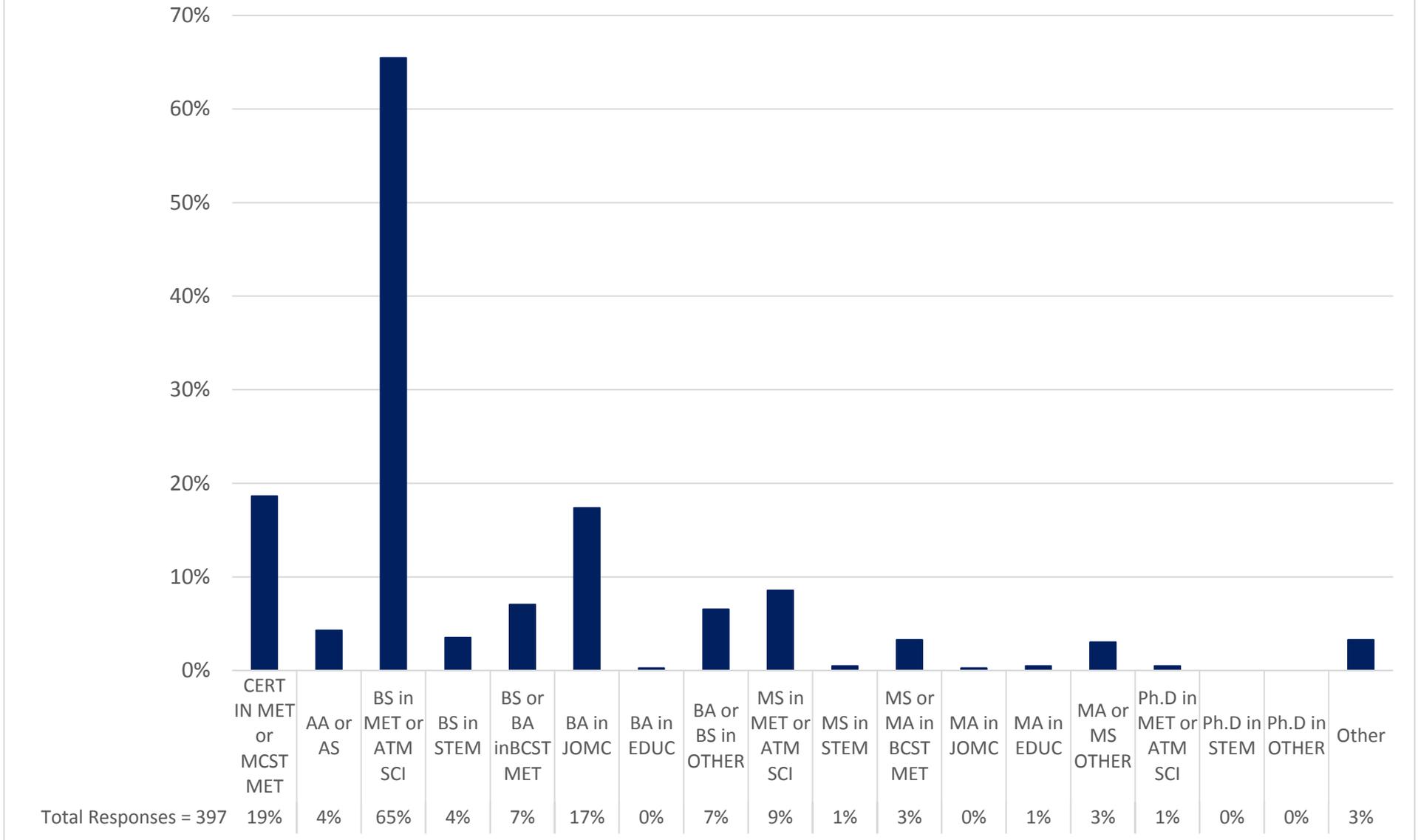
*Participants were given the opportunity to further explain their response. Responses have not yet been coded. n=25.

Have you received formal or academic training on the topic of climate change in any of the following venues?



	Continuing education (CE) or certification course in climate science	Certificate program coursework	Undergraduate: part of a course devoted to climate science	Undergraduate: entire course devoted to climate science	Undergraduate: major and/or minor devoted to climate science	Graduate: part of a course devoted to climate science	Graduate: entire course devoted to climate science	Graduate: major and/or minor devoted to climate science
■ Percentage 'yes'	29%	19%	49%	38%	12%	15%	9%	4%
Total Responses	397	397	396	390	388	388	384	382

Which educational degrees do you hold?



*CERT= Certificate program; BCST MET= Broadcast Meteorology; MET= Meteorology; ATM SCI= Atmospheric Science; STEM= Science, Technology, Engineering, Mathematics; JOMC= Journalism & Mass Communication; EDUC= Education

Which, if any, AMS and NWA Seals of approval do you have? (check all that apply)	
AMS CBM Seal	33%
AMS Seal of Approval	32%
NWA Seal of Approval	20%
No Seal of Approval	36%
Total Responses = 400	

Demographics	Minimum	Maximum	Mean	Median	Standard Deviation	Total Responses
Age	22	70	40	39	13.1	386
Years in Broadcast Meteorology	1	46	15.9	14	11.8	401
Years at Current Station	1	41	9.7	6	9.5	401

Gender	
Male	75%
Female	25%
Total Responses = 395	

Is your job in broadcast meteorology...	
Full-time	94%
Part-time	5%
Internship	0%
Other	1%
Total Responses = 403	

The following question was asked as a follow-up: "Is there anything else you feel we should know to understand your views about any topic(s) on this survey?" Responses have not yet been coded. n=90.

Survey Methodology

Sampling frame. We built upon the methods used in our 2015 and 2016 surveys in which we attempted to survey every person currently working in broadcast meteorology in the United States. In 2015, we used Cision, a commercial database of news professionals (<http://www.cision.com/us/pr-software/media-database>), to obtain an initial list of people currently working in broadcast meteorology. We then verified and updated that list by manually searching the websites of all local broadcast affiliate television stations, regional cable broadcast corporations, and national television stations. We only contacted people who had a valid email. In 2017, using the 2016 list as the baseline, we performed the same procedure to validate and update the list. This process yielded a total of 2,358 names and 2,325 emails, 227 more emails than in 2016.

Survey procedure. The survey was administered online using Qualtrics survey software. Prior to the survey release, we sent an email notifying the weathercasters of the upcoming survey. This procedure allowed us to check for bounces and further clean our sampling frame of 2,325 emails. On January 9, 2016, an invitation to participate was emailed to 2,224 broadcast meteorology professionals. We received 4 bounced emails for which no alternative email address could be located, resulting in a revised sampling frame of 2,220. The survey was fielded between January 9 and January 27; non-respondents were sent up to five email reminders, approximately once per week. For each person who participated, a \$10 donation was given to the AMS or NWA Student Fund; participants were allowed to direct the donation to the fund of their choice. (Note: Philanthropic funds, not NSF funds, were used to make the donations to AMS and NWA.)

Response rates. Of the 2,220 people in our sampling frame, 486 completed at least a portion of the survey – yielding a participation rate of 21.9%, while 404 of those completed the survey in its entirety – yielding a survey completion rate of 18.2%. It is important to note that 1,701 people (76.6% of our total sample) received but did not open any email associated with this survey. We are therefore unable to determine if these people choose not to participate, or if our emails were captured by spam filters, denying the opportunity to participate. Of those who participated, 83% completed the entire survey. The median time to complete the survey was 18 minutes.

Comparison of participants to non-respondents. To assess the extent to which survey participants differed systematically from non-respondents, we conducted two follow-up analyses. First, we compared the survey participants to those in the census of all TV weathercasters who did not respond to our survey. We found that regarding job role and gender, survey respondents were more likely to be chief meteorologists (35%) than non-respondents (22%) and male (75% versus 70% non-respondents).

To further compare respondents with non-respondents, we attempted to conduct a brief five-question survey with 100 randomly selected non-respondents; the questions focused on climate change beliefs and climate change reporting-behavior. To that end, we emailed (up to three times) and if necessary then telephoned (at least once) the selected non-respondents. In our first email attempt, 21 of 100 emails came back undeliverable; we replaced them with 25 additional randomly selected non-respondents.

This exercise was ultimately not successful in that only 35 of the 100 non-respondents responded in any way: 25 answered the survey questions; 2 did not consent to participate; 3 said they already completed the survey, and 5 had recently changed stations or left their position.

Of those who did answer the questions (n=25), most (44%) did not provide a reason for why they did not participate. One quarter (24%) said that they did not participate because they lost or forgot about the email, 12% said that they did not have time, 8% did not receive the survey, 4% were not interested in participating, 4% said they already completed the survey, and 4% chose other (offered to fill out the full survey).

Due to the low participation rate, comparing the answers of all respondents (N=486) and all non-respondents (N=25) is problematic and potentially misleading. With that caveat in mind, 88% of non-respondents (as compared to 95% of 465 respondents) think climate change is happening and 56% (as compared to 49% of 463 respondents) think that the climate change that has occurred over the past 50 years is primarily human-caused. Thus, the non-respondents we were able to interview had views of climate change that were more or less similar to those of respondents.