

**NC STATE UNIVERSITY**



**CHHE**  
Center for Human Health  
and the Environment

# **North Carolina Survey on Human Health and the Environment Overview Report of 2024 Data Collection**

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# North Carolina Survey on Human Health and the Environment

## Overview Report of 2024 Data Collection

### I. Introduction

How did North Carolinians think about environmental health problems in 2024? This question, among others, has remained a motivation for each survey of North Carolina residents on environmental health conducted by the Center for Human Health and the Environment (CHHE) at NC State University. The [mission of CHHE](#) is to understand how human health is impacted by environmental factors and to implement this knowledge to reduce the adverse impacts on human health. We work in the Center's Community Engagement Core (CEC), where we serve as a bridge between environmental health sciences (EHS) researchers and communities. The CEC tackles many projects, including the collection of social science data through a regular survey of North Carolina residents.

The goals of our survey were (1) to get a sense of how residents of North Carolina think about environmental health broadly and (2) to understand their relationship to two specific environmental health issues facing the state in 2024. We measured how North Carolinians might encounter information about environmental health topics, whom they trust for such information, and how much they feel ready and how often they protect themselves from environmental health threats.

This year, we focused on heavy metal contamination (lead, cadmium, arsenic, etc.) and health effects related to the climate. Both topics received significant media attention and drove areas of CHHE research in 2023. While both topics are salient to North Carolina residents, heavy metal contamination is relatively non-controversial, and the related health effects have been widely recognized and accepted for decades. Extreme weather events and long-term impacts of climate, however, have been a more politically controversial topic, with opinions and beliefs about it often closely tied to political ideology. With a presidential election occurring in 2024, we also chose to compare how responses differed between these topics.

In this overview report, we analyzed responses by comparing different subgroups, including political ideology and gender. This survey questionnaire was guided by the academic literature on health communication and environmental health literacy. Details on the survey methodology are included in the final section of the report. Instances where specific numbers are provided when discussing survey results indicate statistical significance.

### II. Attention to EH Information

One aim of our survey is a better understanding of how North Carolinians obtain health information, which might relate to many EHS topics of interest to CHHE researchers. We measured how frequently people use different channels—newspapers, television, and social media—and how much attention they pay to news about health and medicine while using these

information channels. As in 2021, we asked participants how often they use specific social media platforms, and we focused on the five most popular.

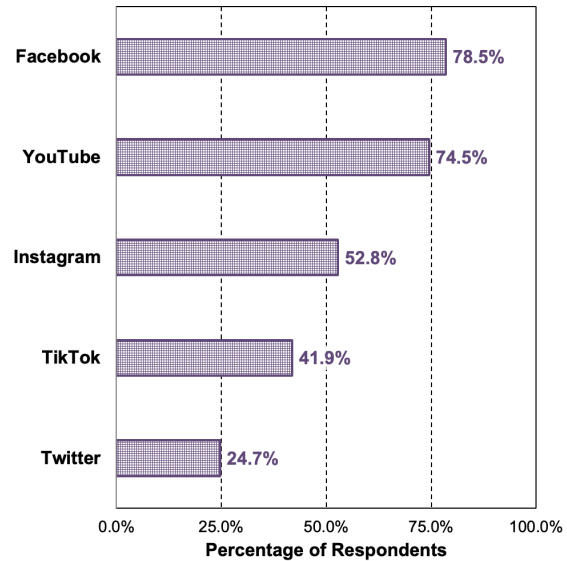
**A. Overview of Social Media Use**

As we described in our 2021 report (Binder, et al., 2025), social media has changed the way people share, search for, and digest information. As a result, it is both harder and even more important to understand how people engage with social media to obtain information—understanding who uses what platforms, how frequently they use them, and what they are using them for.

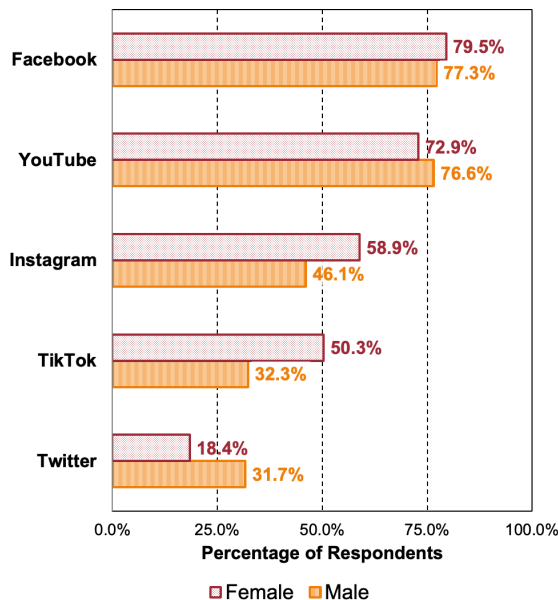
In 2024, most survey respondents reported using Facebook (78.5%) and YouTube (74.5%). Instagram had a share of 52.8%, Tiktok held 41.9%, and X had 24.7% (Figure 1). Compared to our 2021 data, we saw notable increases in reported usage of YouTube (from 66.1% to 74.5%) and of TikTok (34.3% to 41.9%).

For subgroup comparisons, we categorized participants by gender (female, *n* = 777, 52.0%; male, *n* = 718, 48.0%). As shown in Figure 2, female participants reported significantly higher

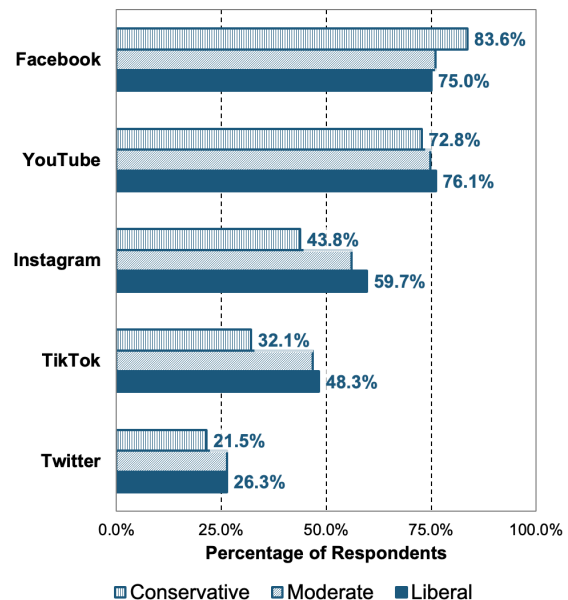
**Figure 1. Social media platforms used most often by survey participants (N = 1,500)**



**Figure 2. Social media platforms used most often by gender groups (N = 1,500)**



**Figure 3. Social media platforms used most often by political ideology groups (N = 1,500)**



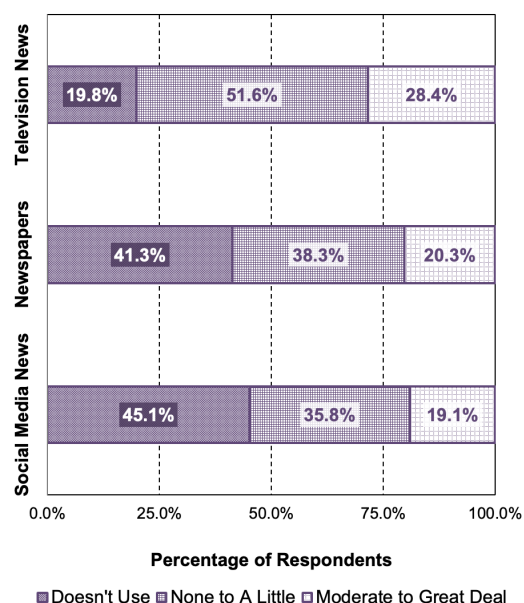
usage of Instagram (12.8% higher) and TikTok (18.0% higher), while male respondents reported significantly higher usage of X (13.3% higher).

To draw comparisons based on political ideology, we categorized participants into three groups: conservative ( $n = 557$ , 37.2%), moderate ( $n = 444$ , 29.7%), and liberal ( $n = 496$ , 33.1%). Comparing these groups (see Figure 3, previous page), survey results indicated more conservatives (83.6%) using Facebook compared to liberals (75.0%). In contrast, liberal respondents reported higher usage of Instagram (59.7% to 43.8%) and TikTok (48.3% to 32.1%). It might be tempting to point toward the rise of Parler and TruthSocial as alternatives to social media for conservatives, but without substantial usage in our total sample (0.7% or 10 respondents for Parler and 2.7% or 41 respondents for TruthSocial), we were unable to make robust numerical comparisons.

## B. Social Media Use for Health News Compared to Traditional Sources

Given the mission of CHHE, we looked at how much attention residents of North Carolina pay to news headlines about health and medicine in various kinds of news outlets. For an initial baseline, we acknowledge that there is a sizable group that does not report using certain channels for news at all: 19.8% report no use of television news, whereas 41.3% report no use of newspapers and 45.1% report no use of social media for news (Figure 4). A majority of NC residents (51.6%) use television for news and say they pay either no or only a little attention to health and medical news. However, residents who use newspapers or social media as their main channel for news are different, with only 38.3% of

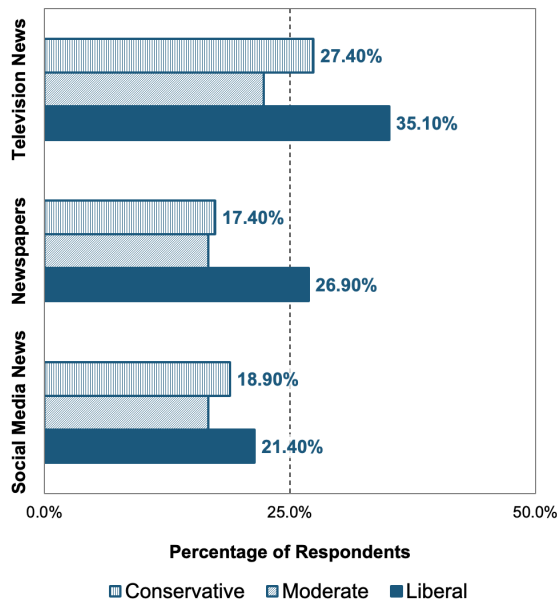
**Figure 4. Attention to news about health and medicine across different news media. (N = 1,500)**



residents who use newspapers and 35.8% who use social media for news saying that they pay little or no attention to news about health and medicine. Still, of the residents who say they pay a moderate or a great deal of attention to health and medicine news, television news was most popular (28.4%); only around one-fifth of residents pay comparable attention to newspapers (20.3%) or social media (19.1%).

We saw no evidence of gender differences in attention to news about health and medicine. In contrast, high levels of attention differed by political ideology. Those with a liberal ideology paid the highest levels of attention overall, followed by conservatives, with moderates the lowest (see Figure 5, next page). Notably, the differences were smallest for social media news—

**Figure 5. Moderate to a great deal of attention to news about health grouped by political ideology. (N = 1,500)**



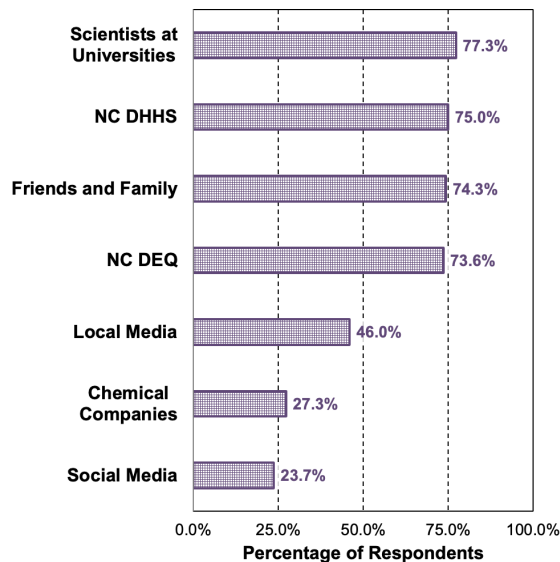
but, just as in the full sample, this channel also saw the lowest levels of attention to health and medicine news overall.

**For 2024, we concluded that television remains a primary source of news about health and medicine for residents of North Carolina.** Coupled with our 2021 recommendation of paying close attention to differences in age, we further concluded that sharing important information about environmental health via television and other video platforms should be prioritized in order to reach the most North Carolinians. This also highlights the importance of media training, engaging with reporters and agreeing to interview requests, and interacting with local news outlets.

### III. Trust in Information Sources

Since 2020, our surveys have tracked levels of trust in various information sources among North Carolina residents. These results (moderate to complete trust) are depicted in Figure 6.

**Figure 6. Moderate to a complete trust in various information sources. (N = 1,500)**

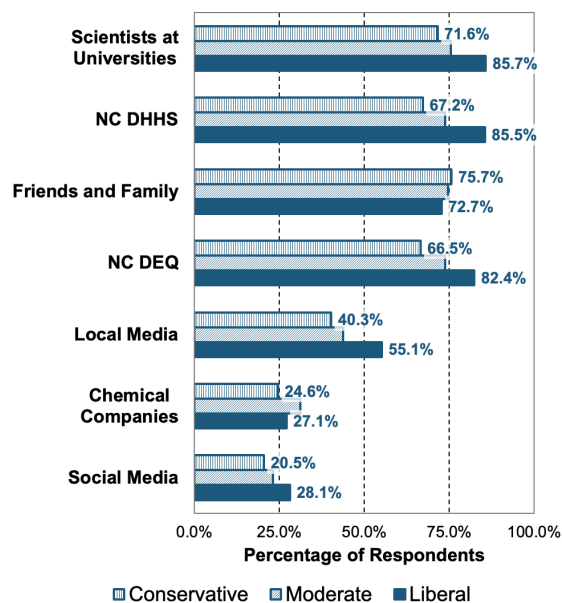


**In 2024, as in each of our previous surveys, scientists were ranked #1 in highest levels of overall trust.** North Carolina Department of Health & Human Services ranked #2 (#2 in 2020, #3 in 2021), friends and family #3 (#4 in 2020, #2 in 2021), North Carolina Department of Environmental Quality #4 (same in 2021 and #3 in 2020), local media #5 (also in 2020 and 2021), chemical companies #6 (also in 2020 and 2021), and people on social media were #7 (same ranking in 2021). The top four trusted sources of information are statistically tied with each other in 2024, as are the bottom two (chemical companies and social media). The rankings in 2024 did not differ between male and female participants (data not shown).

In contrast, we observed lower average levels of trust among conservatives compared to liberals

(Figure 7), and the rankings were slightly different among the two groups. Conservatives reported relatively higher levels of trust in scientists and friends & family, whereas liberals reported relatively higher levels of trust in scientists and the two state government agencies (DHHS and DEQ) than friends and family. **These results show that a majority of North Carolina residents, across the political spectrum, continue to report a high level of trust in scientists.** Thus, these results also reiterate the importance of community engagement with *science* and *scientists* in two ways. First, **engagement is an important means of communicating environmental health information** and conveying the broader importance of environmental health science research. Second, **engagement means interacting with many different audiences on EHS topics—especially family and friends**, who might not otherwise hear about the information.

**Figure 7. Moderate to a complete trust in information sources, comparing political ideology groups. (N = 1,500)**

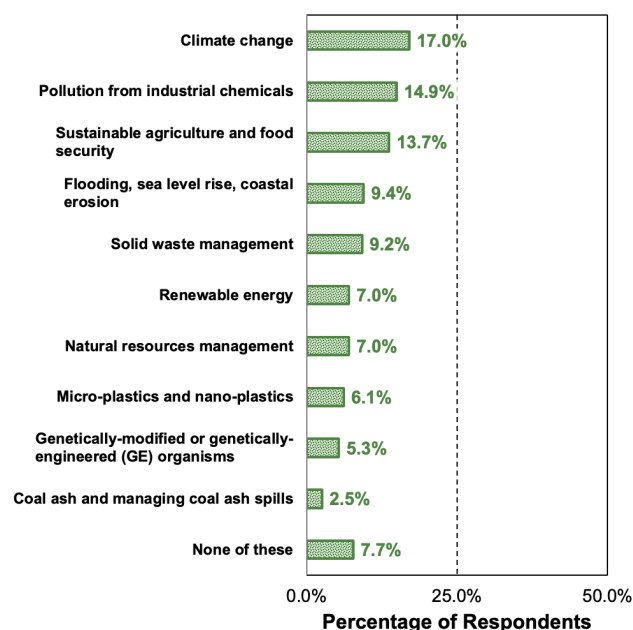


#### IV. Most Important Environmental Problems in North Carolina

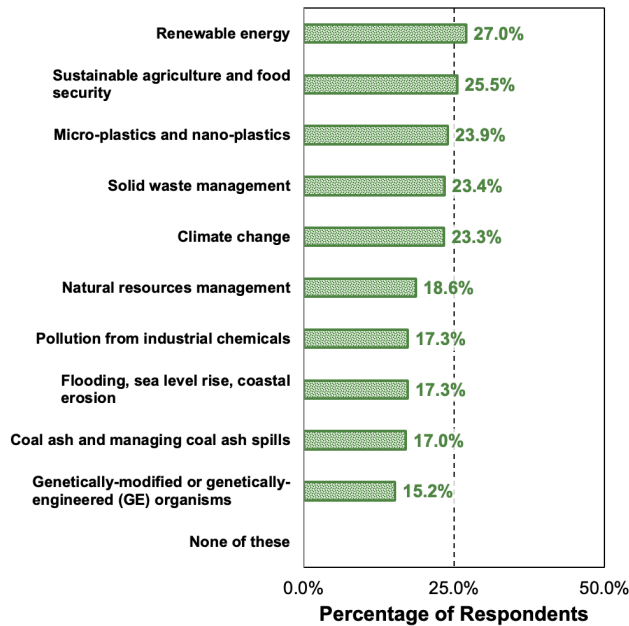
In each North Carolina Survey on Human Health and the Environment, we have been interested in how residents rank various environmental issues in comparison to others. In 2020 and 2021, we used a “fixed choice” method where participants could only select one item from a list.

In this 2024 survey, we collaborated with CHHE member, Dr. Khara Grieger, and research fellow at the Genetic Engineering and Society Center, Dr. Christopher Cummings, to create a “scaled response” method based on their previous work (Grieger & Cummings, 2022). This allowed participants to indicate the perceived importance of each environmental issue. All participants were randomly assigned to either the most important, fixed-choice question (n=752) or the general importance, scaled response question (n=748). In

**Figure 8. Ranking of environmental problems in North Carolina, fixed-choice question. (N = 752)**

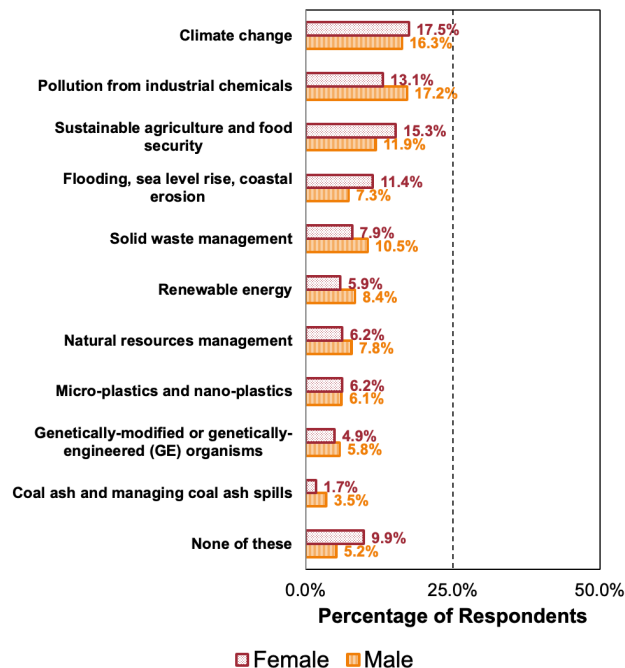


**Figure 9. Ranking of environmental problems in North Carolina, scaled-response question. (N = 748)**



energy ranked #1 here but #6 on the other list.

**Figure 10. Ranking of environmental problems in North Carolina comparing gender groups, fixed-choice question. (N = 752)**



this section, many pairs of percentages are within the margin of sampling error, and the specific rankings of problems should be interpreted with that overlap in mind.

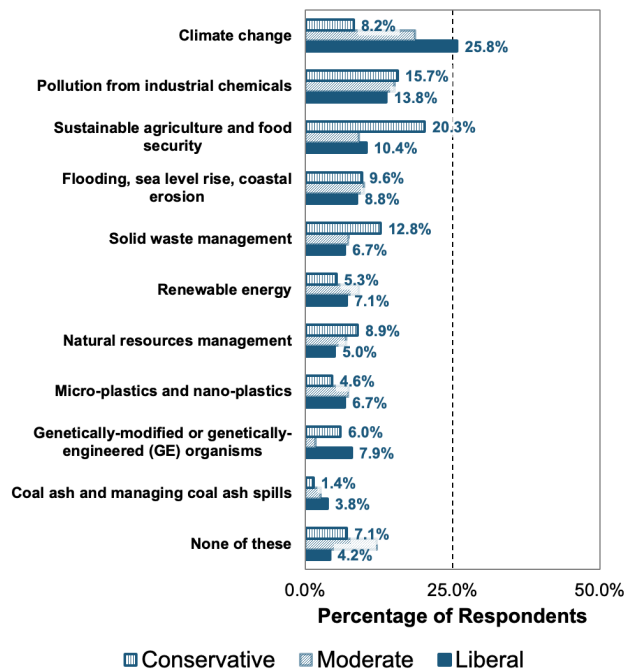
In the fixed choice version (see Figure 8, previous page), the most commonly identified problems were climate (17.02%), pollution from industrial chemicals (14.89%), and sustainable agriculture and food security (13.7%). In comparison, climate ranked #1 here but #5 on the scaled-response list.

In the scaled-response version, where we report the percentage of participants selecting the “extremely important” response option (Figure 9), the most commonly selected important environmental problems were renewable energy (27.0%), sustainable food and agriculture (25.5%), and micro- and nano-plastics (23.9%). In comparison, renewable

Different versions of the same question tell us how residents of North Carolina consider environmental problems in relationship to one another. If one is only able to choose a single problem, perhaps “climate” is selected because it is related to many other items on the list (for example, renewable energy, sustainable agriculture, flooding and sea-level rise, and natural resources management). When able to rate multiple environmental problems as “extremely important,” however, a person is able to make more fine-grained distinctions, allowing them to specifically highlight their perceived importance of sustainable agriculture.

Looking at differences among male and female residents of North Carolina, the rankings reveal slight and not meaningful differences. In the fixed-choice version (Figure 10), female respondents reported the three

**Figure 11. Ranking of environmental problems in North Carolina comparing political ideology groups, fixed-choice question. (N = 752)**



Among conservatives, climate was ranked #6, with 8.2% of conservative participants selecting that option (a difference of 17.6% compared to liberals).

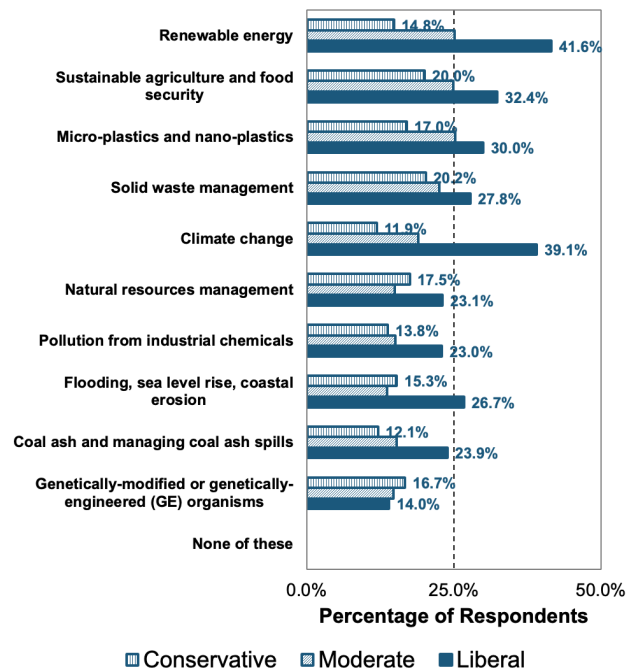
The ideological divide persisted in the scaled-response version of the question (Figure 12). Liberals identified the three most important environmental problems as renewable energy (41.6%), climate (39.1%), and sustainable agriculture and food security (20.3%); conservatives identified solid waste management (20.2%), sustainable agriculture and food security (20.0%), and natural resources management (17.5%). In this version of the question, conservative participants ranked climate 10th out of the 10 problems.

Looking at these results altogether, there does emerge some consensus on environmental problems among the residents of North Carolina, and a number of these are directly related to negative impacts on human health. Pollution

most important problems as climate (17.5%), sustainable agriculture and food security (15.3%), and pollution from industrial chemicals (13.1%); for male respondents, the three most important problems were pollution from industrial chemicals (17.2%), climate (16.3%), and sustainable agriculture and food security (11.9%).

In contrast, when we analyzed differences in political ideology, the top three problems revealed more differences (Figure 11). Liberals mirrored the overall sample ranking, naming climate change (25.8%), pollution from industrial chemicals (13.8%), and sustainable agriculture and food security (10.4%) as the top three problems. Conservatives, on the other hand, identified sustainable agriculture and food security (20.3%), pollution from industrial chemicals (15.7%), and solid waste management (12.8%) as the most important three issues.

**Figure 12. Ranking of environmental problems in North Carolina comparing political ideology groups, scaled-response question. (N = 748)**



from industrial chemicals, micro-plastics and nano-plastics, solid waste management, and even sustainable agriculture have in common documented problems with runoff of pollutants into water supplies and/or particulate matter contaminating the air. Perhaps renewable energy and climate present less concrete connections to human health, but of course those links are nevertheless being investigated by researchers at CHHE.

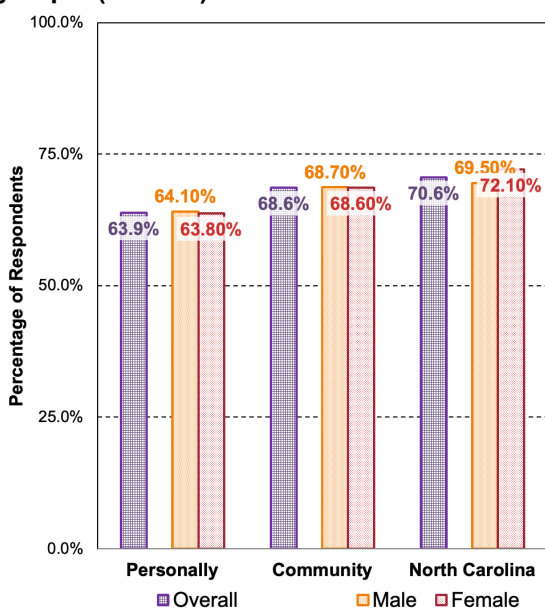
## V. Two Important Issues Facing North Carolinians in 2024

We were also interested in how North Carolinians were responding to two important problems in 2024: heavy metals contamination and health effects of climate.

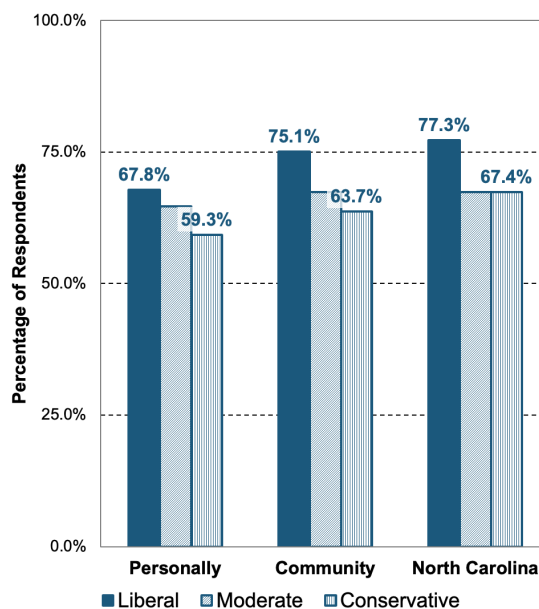
### A. Environmental Contamination from Heavy Metals

In 2024, researchers and local media outlets reported on elevated levels of heavy metals in Durham neighborhoods, which forced multiple parks to close and caused concern among residents. Contamination from lead and other metals is not unique to Durham and we were interested in how residents from across North Carolina thought about the issue. When asked about how much harm they believe heavy metals pose to various groups of people (Figure 13), respondents indicated moderate to a great deal of harm to North Carolina as a whole (70.6%), to their communities (68.6%), and to them personally (63.9%). In aggregate, this "harm distance" suggests that people may externalize the threat rather than seeing it as an immediate personal concern.

**Figure 13. Perceived harm to oneself, one’s community, and North Carolina, both overall (purple checkered bar) and comparing gender groups. (N = 743)**



**Figure 14. Perceived harm to oneself, one’s community, and North Carolina, comparing political ideology groups. (N = 743)**

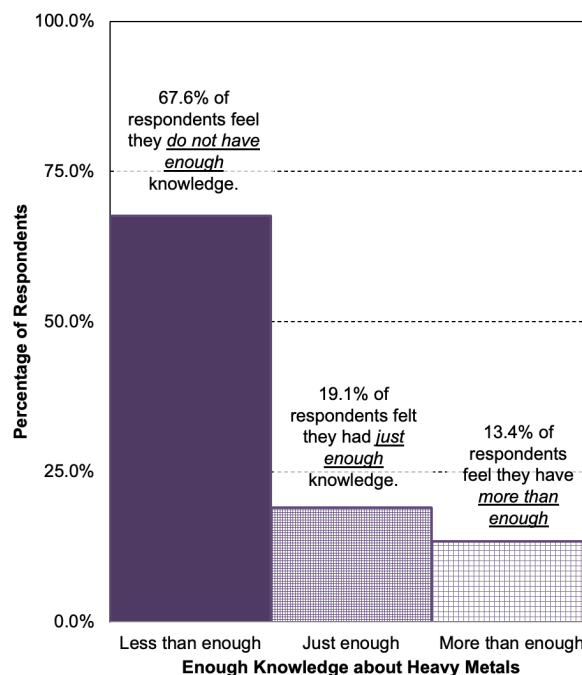


We saw no meaningful differences between male and female participants. Similarly, the results between three political ideology groups (Figure 14) were not statistically different from each other and were proportionally the same as the overall sample.

Building on our previous research on environmental health literacy (Binder, et al., 2022; May, 2025), we examined how much North Carolina residents *know the facts* (objective knowledge), *feel ready to decide* (subjective knowledge), and *believe that preventive behaviors work* (response efficacy).

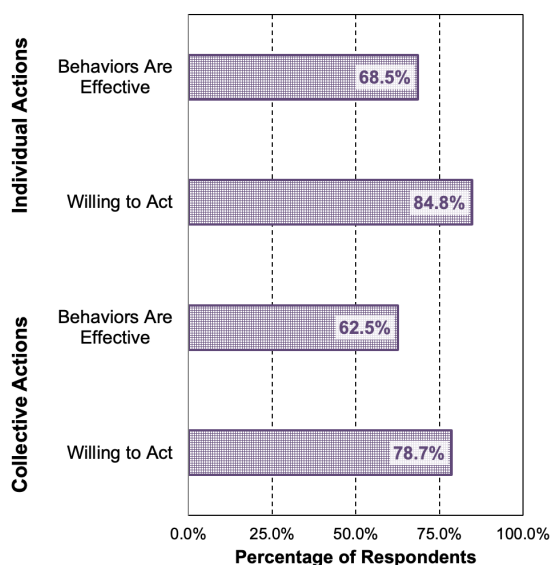
We assessed objective knowledge with two true or false questions: “Heavy metals occur naturally throughout the environment.” (69.9% gave the correct answer of “true”) and “Lead is no longer used in everyday products.” (47.2% answered correctly with “false”). More males answered the first question correctly (79.1% compared to 61.6% of females), but there was no difference on the second question. There were no differences by political ideology.

**Figure 15. Current knowledge relative to desired knowledge about heavy metals contamination. (N = 743)**



A majority of participants (67.6%) reported that they do not have enough knowledge on heavy metals to make informed decisions about metals and their health (Figure 15), with 19.1% feeling

**Figure 16. Response efficacy and willingness to engage in protective behaviors against heavy metals exposure. (N = 743)**



they had enough knowledge and 13.4% feeling they had more than enough knowledge. These responses were the same in proportion between male and female participants and between conservative, moderate, and liberal political ideology groups.

Despite a relatively weaker belief (68.5%) that individual protective behaviors might be effective against heavy metals exposure, North Carolina residents indicated a very strong willingness (84.8%) to engage in such behaviors (Figure 16). The responses were similar for our list of policy and public health behaviors that have collective, societal impacts: 62.5% of participants believed these actions would protect them but 78.7% reported a strong willingness to support such measures. We compared these

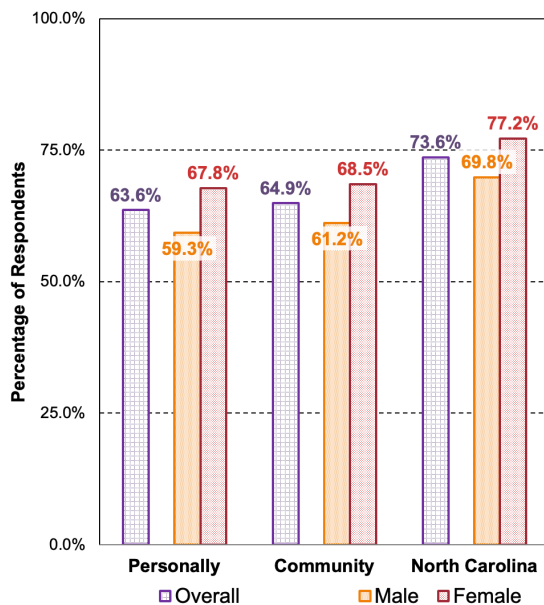
responses in terms of gender and political ideology groups. While there were some slight differences between groups, the overall proportions consistently matched up with the overall results: at least 59% of participants believed that behaviors were effective and at least 75% of participants were willing to engage in individual and collective actions against exposure.

Overall, North Carolina residents exhibited room for growth in their environmental health literacy on heavy metals. In particular, **residents do not feel ready to make decisions about protecting themselves against heavy metals and they are willing to take actions but do not believe with equal strength that these actions will be effective.** We will return to these points below when we compare responses to heavy metals contamination and health impacts from climate.

## B. Health Impacts from Climate

North Carolina, with its varied geography and sizable agricultural industry, is no stranger to the effects of climate and extreme weather. Some of the main issues North Carolina faces include rising temperatures, flooding, coastline erosion, ecosystem loss, saltwater intrusion, and the increasing likelihood of devastating storms such as Hurricane Helene. The year 2024 was the state's second hottest year on record (Davis & Dello, 2025), numerous coastal homes were lost to rising sea levels (McLaughlin, n.d.), and Hurricane Helene inundated communities throughout the western part of the state (Monaghan, 2024). As we did with heavy metals, when asked about the climate and its effects on health (for example, from drought, extreme heat, hurricanes, flooding, wildfires, and other extreme weather), survey participants reported how much they felt these issues would harm them personally, harm their community, and harm North

**Figure 17. Perceived harm from climate to oneself, one's community, and North Carolina, both overall (purple checkered bar) and comparing gender groups. (N = 757)**



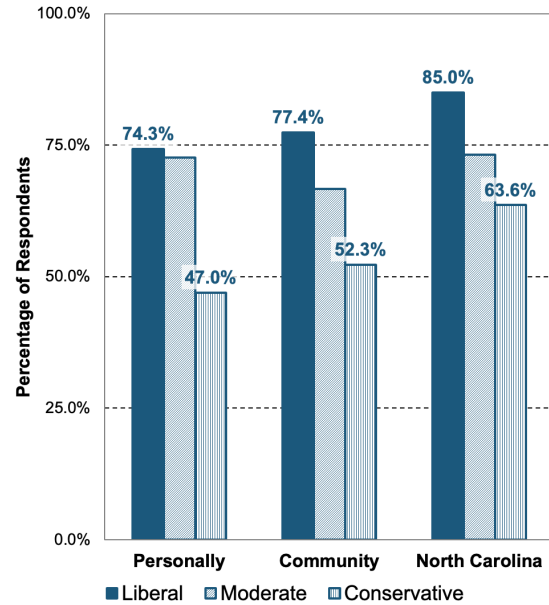
Carolina as a whole (Figure 17). As with heavy metals, more participants perceived moderate or a great deal of harm from climate to North Carolina overall (73.6%), than to their communities (64.9%) or themselves personally (63.6%). This may suggest an overall awareness of NC's vulnerability to things like extreme weather, but a lack of perceived personal connection to its impacts.

When looking at gender differences in these three "harm distance" questions, men and women did not have meaningful differences. We observed bigger differences by political ideology (Figure 18). Similar to the overall results, both liberals and conservatives reported higher perceived levels of harm as the context moved from themselves to their community to the state of North Carolina. (Moderates, in

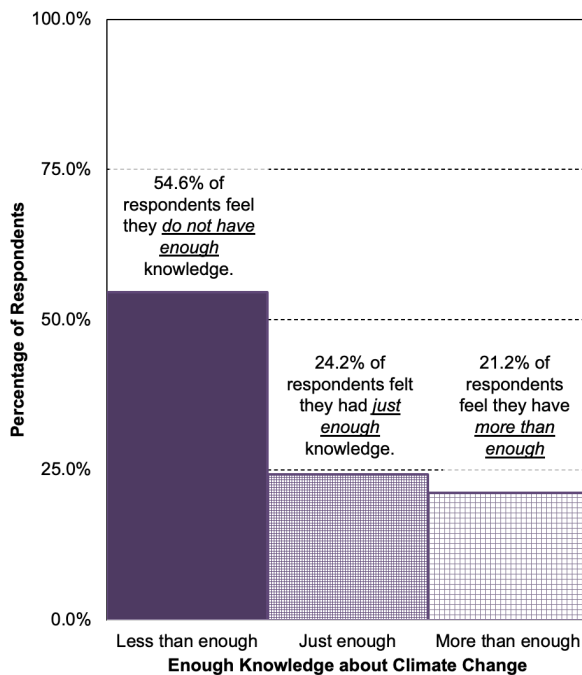
contrast, reported similar levels of harm personally and to the state, but less harm to their communities.) There was a consistently sizable (and statistical) gap between liberal and conservative participants in harm distance responses. More liberals perceived personal harm (27.3% more), harm to their communities (25.1% more), and to the state (21.4% more) than conservatives.

To measure objective knowledge, we asked two true/false questions about climate. The first, “The severity of snowstorms is increasing but it is unrelated to climate change.” was answered correctly (false) by 53.5% of participants. More liberals answered this question correctly than conservatives. The second question, “Climate change will impact all areas of the globe equally.” was answered correctly (false) by 47.8% of participants. Conservatives were more likely to answer this question correctly than liberals. We saw no differences between gender groups.

**Figure 18. Perceived harm from climate to oneself, one’s community, and North Carolina, comparing political ideology groups. (N = 757)**

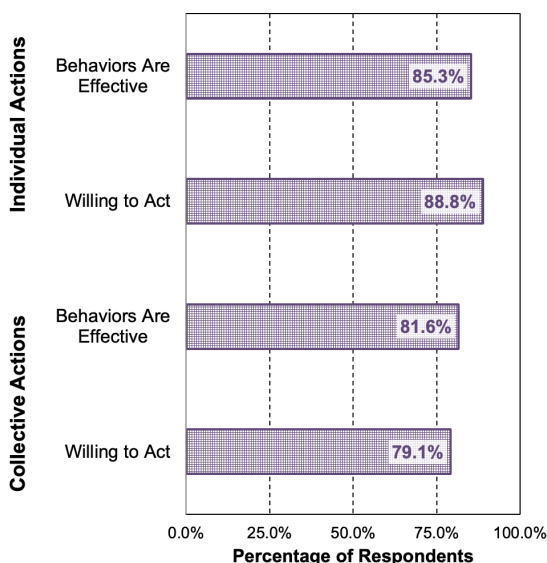


**Figure 19. Current knowledge relative to desired knowledge about health effects of climate. (N = 757)**



We have chosen not to dwell on these differences in objective knowledge because it does not have a consistent relationship with behavior (Rimal, 2000), and the differences in subjective knowledge were more insightful (Figure 19). Overall, just over half of participants (54.6%) felt they did not have enough knowledge to protect themselves from the health effects of climate, with about a quarter (24.2%) feeling they had enough knowledge and a fifth (21.2%) feeling they had more than enough knowledge. Female participants reported not having enough knowledge significantly more than male participants. We observed a similar relationship in political ideology groups. Whereas 48.0% of conservatives felt they did not have enough knowledge, 61.5% of liberals felt the same way. In other words, participants with a conservative political ideology were much more likely to feel they

**Figure 20. Response efficacy and willingness to engage in protective behaviors against health effects of climate. (N = 757)**



had just enough or more than enough knowledge about the climate to make health protective decisions.

Having considered the factors of knowing the facts and feeling ready to decide, we anticipated similar differences in believing that protective behaviors are effective and willingness to engage in those behaviors. This was wrong. On climate behaviors, residents of North Carolina had both strong beliefs that these behaviors are effective and indicated a strong willingness to engage in them (Figure 20). The health risks we presented in the survey (extreme heat, flooding, mosquito/tick-borne diseases, etc.) are all scientifically accepted health effects of a warming climate (EPA, 2025), but were not explicitly described as such to respondents. Of the protective behaviors against climate we

asked about, which included such items as “Staying in air conditioning during very hot days” and “Sheltering in place during flash flood or heavy rain events,” we found both very strong (at least 81%) belief that these behaviors work and very high willingness (at least 79%) to do these behaviors.

What’s more, the overall results perfectly matched the subgroup results. For individual actions, we observed consensus among all groups (by gender and by political ideology). For actions with collective impacts, we observed small and not meaningful differences only in willingness to engage (for example, male participants were less willing than female participants, and conservatives were less willing than liberals). These results beg the question: Why did we observe such strong ideological differences in other questions about climate and not these behavior questions? One explanation could relate to the use of “climate change,” a phrase that was mentioned in some of our survey questions but not others. The behavior questions, for example, focused on specific health threats (drinking water during extreme heat; sheltering from storms during flooding) and not on the broader, more abstract idea of a changing climate (for example, due to framing; see Coleman, et al., 2022) or behaviors directly associated with climate resilience and extreme weather mitigation (e.g., Chan & Faria, 2022).

Overall, for health effects of climate, **we found high levels of believing in protective behaviors and willingness to engage in them, even across the political ideological spectrum.** The facts of climate received more mixed results, with about half of North Carolina residents answering our questions correctly. But we also found **a strong discrepancy in gender and political ideology when it comes to feeling ready to decide on behaviors against health effects of climate.**

## VI. Conclusions

Our data collection in 2024 revealed several insights relevant to both researchers at the Center for Human Health and the Environment and to the community groups and educators with whom the CEC works closely. The data analysis indicates that residents of North Carolina use social media, and use a handful of platforms quite a bit—but not much for news about health and medicine. For information on those topics, television news remains dominant. As with many of the survey items we analyzed in this report, we also found few differences between men and women. It seems that gender as an indicator of health disparities, which is a strong interest of many CHHE researchers, is not an indicator of differential information consumption, knowledge, or behavior.

In addition, North Carolinians identified an array of environmental problems they view as important and that are directly relevant to the goals of CHHE: climate; industrial pollution; sustainable agriculture and food security; flooding, sea level rise, and coastal erosion; renewable energy; micro-plastics and nano-plastics; and solid waste management. Given that these problems were identified by residents across the state, we believe they should be reflected in CHHE research in the next two years.

Finally, from a comparison of responses to two environmental issues—heavy metals contamination and health effects of climate—in 2024, we drew two conclusions. First, **conservatives and liberals do not agree on how much harm environmental health threats pose to them personally, to their communities, and to the state of North Carolina.** Whereas these differences were smaller and within the margin of error on the non-controversial topic of heavy metals (less than 10%), they were larger and significant on climate (25%). Second, **groups defined by political ideology agree on their individual readiness to make health decisions related to heavy metals, but they do not agree on their readiness to make those decisions about health effects of climate.**

All in all, without strong differences in other dimensions of environmental health literacy (levels of objective knowledge or willingness to engage in protective behaviors), **there is a substantial communication gap in the *what* and *how* to protect oneself from health effects of climate** at an abstract level. Why do these survey data matter to CHHE's long-term community engagement activities? They inform how we discuss the climate with ideologically diverse audiences within the state of North Carolina.

## VII. Methodological Notes

These survey data were collected from April 15 to May 15, 2024, at North Carolina State University using the Qualtrics survey platform. The Center for Human Health and the Environment at NC State University contracted with Dynata, a survey research firm, to recruit participants who reside in North Carolina through programs that offer rewards points for completion of survey questionnaires and other activities. This nonprobability-based sampling

approach provides a representative sample of North Carolina residents through the use of quota for sex, age, race, and ethnicity based on U.S. Census population estimates for 2023 in the state of North Carolina. The total sample size of verified (through ZIP code) North Carolina residents was 1,500, yielding a margin of sampling error of +/- 2.53%. The total sample was split between the two topics of heavy metals contamination (n = 743, margin of error +/- 3.60%) and health impacts of climate (n = 757, margin of error +/- 3.56%).

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