

Talking About Climate Change Without Talking About “Climate Change”: How Wisconsin Extension Educators Approach Climate Change Communication

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Abstract

Through its public engagement work in nearly every county in the United States, the Cooperative Extension Service has the potential to meaningfully contribute to local climate change adaptation and mitigation efforts. Previous research has found that Extension professionals tend to view climate change as important to address in Extension programming, but they typically feel unequipped to do so. However, little work has examined the current climate change communication practices of Extension professionals, especially in program areas other than agriculture. I conducted in-depth interviews with 18 Wisconsin Extension professionals (15 educators and 3 program managers) across three programs. Crops & Soils educators view climate change as interwoven with their work, Financial Education educators view climate change as mostly disconnected from their work, and Community Economic Development educators range between these extremes. By and large, educators in all three programs talk about climate change without using the polarizing phrase “climate change,” instead focusing on specific, local, and relatable issues that their constituents face. Educators approach conversations with empathy and emphasize resilience (adaptation) rather than mitigation. To address climate change more effectively, interviewees want resources on local climate impacts, as well as opportunities to learn best practices from colleagues. These findings can inform Extension’s organizational strategy on climate change, and Extension professionals’ on-the-ground experiences offer valuable insights for climate change communication researchers.

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Executive Summary

This thesis explores how Wisconsin Extension educators approach talking about climate change with communities around the state. Insights from my qualitative interviews can guide Extension’s organizational strategy on climate change and inform future climate change communication research.

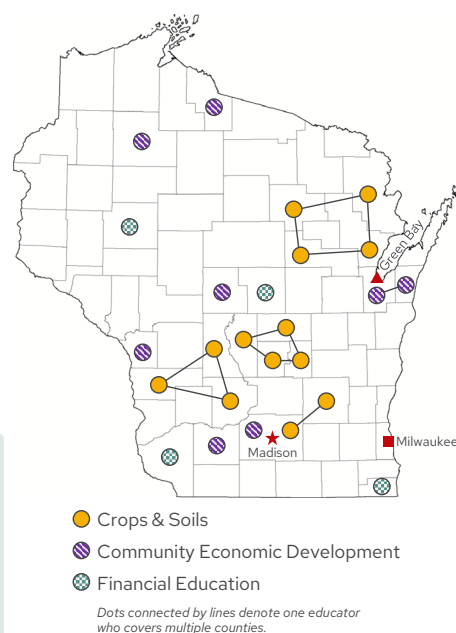
What We Already Know from Other States

- In Arizona, California, Illinois, and Nevada, large majorities of Extension professionals say that climate change programming is important, but less than half currently incorporate climate change into their own programming¹.
- Extension professionals face challenges when communicating about climate change²:
 - They are reluctant to address a politically polarized topic
 - They don’t have relevant curricula or other sources of information
 - They feel unequipped to accurately present complex climate data
 - They feel unprepared to give sound advice
 - They feel unsupported by Extension administrators.
- In Arizona, Illinois, Kansas, and Oklahoma, 60% or more of Extension professionals say that their constituents have not shown an interest in climate-related information³.

What I Did

- I conducted in-depth interviews with a purposive sample of 18 Wisconsin Extension professionals:
 - Crops & Soils—4 educators
 - Community Economic Development—7 educators
 - Financial Education—4 educators
 - The program managers of these 3 programs.
- Interviewees represent both rural and urban counties covering all regions of the state. They have between 6 months and 31 years of experience with Wisconsin Extension. Some actively work on climate change, and some do not.
- I analyzed the interview transcripts to answer three questions:

1. How do educators think about climate change in relation to their work?
2. How do educators approach talking about climate change with clients?
3. What uncertainties and challenges do educators face about climate change and climate change communication, and what resources would they like to have on those topics?



¹ Crimmins et al., 2024; Grantham et al., 2017; Kar et al., 2022; Kratsch et al., 2020

² Bowers et al., 2016; Crimmins et al., 2024; Diehl et al., 2016; Grantham et al., 2017; Jones & Gwin, 2021; Kipp et al., 2020; Kratsch et al., 2020; Prokopy, Carlton, et al., 2015; Telg et al., 2018; Wandersee et al., 2019

³ Becerra et al., 2016; Crimmins et al., 2024; Kar et al., 2022

What I Found

What Educators Think About Climate Change

- In Crops & Soils, educators view climate change as inextricably linked to their work.
- Some Community Economic Development educators view climate change as peripheral to their work (e.g., it feels unrelated to housing, broadband, and childcare), while others view it as directly connected (e.g., they help community groups decrease carbon emissions).
- In Financial Education, educators perceive climate change as disconnected from their day-to-day work.

How Educators Talk About Climate Change with Constituents

- All the Crops & Soils educators talk frequently about climate-related topics. About half of the Community Economic Development educators and all the Financial Education educators rarely bring up climate change, and their constituents rarely mention it.
- Most educators address climate change indirectly, avoiding the polarizing phrase “climate change.” They go in the back door by focusing on specific local impacts of climate change through a lens that resonates with their audience, typically economic considerations but sometimes non-climate environmental considerations.

“I know a lot of farmers are fine talking about [climate change], but I might as well open the tent and talk about it in a way that everyone can connect with and have the consequences down the line of having a good effect on the climate [...] rather than saying it in a way that alienates maybe a couple people because they don't feel comfortable talking about it in that way.”

—Crops & Soils educator (CS2)

“It's not necessarily saying, ‘Well, this would be the best way we should go because it's good for the climate.’ Oftentimes, it's ‘This is the best way to go because it would be beneficial to your particular interests, your particular costs. And it helps the environment too.’”

—Community Economic Development educator (CED2)

- Educators in Community Economic Development and Financial Education intentionally show empathy to constituents when discussing climate-related topics. They listen actively, ask nonjudgmental questions, and demonstrate that their perspective aligns with their constituents' views.

“Sometimes I say, ‘Well, how do you think this change in weather is affecting you or people you know?’ I'm curious to know that because I don't have all those answers, and different people feel differently about that.”

—Financial Education educator (FE1)

- Educators in all three programs focus on resilience (adaptation) rather than mitigation because constituents are concerned with making ends meet in their day-to-day lives. In Crops & Soils, another reason is the lack of scientific clarity on how much carbon can be sequestered in the soil by different agricultural practices.

“Adaptation has to be first, honestly, because if you can get them to understand how [climate change] is going to affect them, you’ll get more buy-in. And if you can give them some solutions on how to protect themselves and how to stabilize their own lives, they’ll have more energy and willingness to go into the mitigation.”

—Community Economic Development educator (CED1)

- One Community Economic Development educator in an urban area does talk about climate change directly and focuses on mitigation to meet the needs expressed by constituents.

What Challenges Educators Face

- The most common challenge is political polarization.
- Secondly, constituents feel powerless to address climate change as a global issue.
- Within Extension, the lack of dedicated climate staffing and the perceived lackluster support from leadership are key institutional challenges.
- Crops & Soils educators do not feel a need to talk more directly about climate change. Community Economic Development educators wish they could talk more directly about it but recognize that the indirect approach is the most practical. Some Financial Education educators are interested in talking more directly about it.

What Resources Educators Want

- Information about local climate impacts relevant to their program.
- Case studies of how similar communities have successfully addressed climate-related challenges.
- Communication trainings on:
 - Talking points to initiate conversations about climate change
 - Strategies to deescalate tense situations
 - Skills to facilitate climate discussion circles.

“How do I [not] detract from these big events that take place, ATV, UTV rallies, snowmobile rallies, things like that? I can’t tell people in the area that you can’t do those things because they’re bad for the environment. But how can I be a part of those things as an economic development person while squaring that up with my own personal beliefs about how bad it is for our air?”

—Community Economic Development educator (CED5)

- Opportunities to learn about the approaches that colleagues are taking, both within and across programs.

Recommendations for Extension

- Infuse climate considerations across existing programming based on constituents' attitudes:
 1. For constituents who actively want to address climate change, use the term directly.
 2. For constituents who acknowledge climate change but do not prioritize it, emphasize tangible non-climate benefits of adaptation and mitigation actions, possibly mentioning climate change but not making it a central piece of messaging.
 3. For constituents who are opposed to the term “climate change,” avoid the term entirely in favor of naming concrete impacts of the changing climate. Note that Extension should not adopt a blanket policy against using the phrase “climate change.”
- Include climate change-related questions in audience surveys to empirically gauge constituents' attitudes.
- Create webpages, printable fact sheets, and infographics about local, program-specific impacts of climate change and how people can take action, including not just data but also stories of local communities.
- Offer professional development opportunities in a wide variety of formats on climate science and climate communication.

“First, there’s learning about what is climate change, right? What does climate change mean for Wisconsin? And then breaking it down to what does climate change mean to the folks that I work with, to my county? And then how do I get that word out? And how do I start incorporating those pieces into the programming that I already do?”

—*Financial Education educator (FE4)*

Recommendations for Climate Change Communication Researchers

- Instead of only using “climate change” or “global warming” in research stimuli, also use phrases that accurately reflect the discourse among the population under study.
- When comparing different emphasis frames, incorporate locally specific examples, use Extension as a message source, and avoid drawing sweeping conclusions.
- Partner with Extension to conduct more local qualitative case studies involving supposedly “hard-to-reach” communities.
- Study climate change communication in other Extension topic areas such as dairy, livestock, mental health, natural resources, and 4-H.

“As important as climate change is, sometimes I worry [...] we spend too much time fixated on the concept and the words ‘climate change,’ as opposed to just being on the ground and doing the solutions.”

—*Crops & Soils educator (CS3)*

Introduction

All universities in the United States have the twin missions of research and education, and land-grant universities have a third: bringing the institution’s research and resources into its state’s communities. The Cooperative Extension Service fulfills this mission, with a presence in nearly all of the country’s 3,000 counties (Croft, 2019). Extension professionals provide their local communities with timely, geographically specific scientific information; conduct site visits, workshops, and other in-person and virtual events; and create spaces for communities to make their voices heard. As such, Extension work is the epitome of applied science communication and public engagement.

What’s more, climate change—arguably the most consequential science-related challenge facing the world today—touches every program area of Extension. Extreme weather events caused or exacerbated by climate change are forcing farmers to rethink their growing practices (Mase et al., 2017), wrecking many families’ finances, and contributing to food insecurity (U.S. Department of the Treasury, 2023). Climate change necessitates new approaches to natural resource management in forests, watersheds, and backyards (Wisconsin Initiative on Climate Change Impacts, 2021). Long-term climate solutions depend on raising a generation of climate-conscious youth leaders (Hunter et al., 2022).

Although national and international policies are crucial, the transition from fossil fuels to clean energy as well as successful adaptation to the changing climate depend on the input, buy-in, and actions of local communities, both urban and rural. Extension professionals have the potential to make meaningful contributions to both adaptation and mitigation efforts—but doing so requires effective communication, especially in a politically purple state like Wisconsin. Wisconsin has a stark urban–rural divide on climate change attitudes and is already experiencing worse droughts and less snowfall due to climate change, with ripple effects in agriculture, recreation, and more (Marlon et al., 2023; Wisconsin Initiative on Climate Change Impacts, 2021).

This study explores how Wisconsin Extension educators in three contrasting programs—Crops & Soils, Community Economic Development, and Financial Education—approach climate change communication. I conducted semi-structured interviews with 15 Wisconsin Extension educators and 3 program managers, seeking to understand how educators think about climate change in relation to their work, how they approach talking about climate change with constituents around the state, and what challenges educators face.

Educators told me that they rarely talk directly about climate change, instead focusing on specific, local, and relatable issues facing their clients. They approach conversations with empathy and an emphasis on resilience in a changing world. While educators expressed a need for more locally tailored climate change resources, these findings reveal that, especially in rural and conservative communities, Extension educators can spur climate change action without talking about “climate change.” The results also indicate that future climate change communication research should move away from the umbrella concept of climate change in favor of specific local impacts and actions.

This paper begins with background on climate change communication, the Cooperative Extension Service, and the local context of this study. I then describe my qualitative data collection and analysis and present the results. Finally, I explore the implications of the findings for climate change communication research and practice.

Literature Review

Climate Change Communication

Climate change is the quintessential example of a post-normal science issue with no unambiguously “best” solution—high-stakes policy decisions need to be made swiftly, stakeholders hold conflicting values, and uncertainty surrounds certain scientific and societal implications of the policy choices (Krauss et al., 2012). As a result, effective action to address climate change depends on more than just physical science and engineering—it also depends on thoughtful communication and public engagement. To that end, a large body of social science research has examined the factors that influence people’s climate change attitudes and how communicators can spur climate action (Bergquist et al., 2023; Constantino et al., 2022; Rode et al., 2021; Van Valkengoed et al., 2023).

People make sense of complex issues such as climate change through mental models, which involve not just factual knowledge, but also past experiences, moral values, social identities, and more (Carlton & Jacobson, 2016; Shome & Marx, 2009). Since climate change is a highly politicized and polarized topic in the U.S. (Chinn et al., 2020; Falkenberg et al., 2022), partisanship is a central component of people’s mental models of climate change. Nationwide, political affiliation is the strongest demographic predictor of belief in climate change, with Democrats more likely than Republicans to accept that climate change is happening (Hornsey et al., 2016). Furthermore, more science-literate and numerate people display more polarized climate change attitudes based on worldviews (Hornsey, 2021; Kahan et al., 2012) and political identity (Drummond & Fischhoff, 2017). Thus, it is unsurprising that simply providing the facts to someone who holds misinformed beliefs about climate change is often insufficient to shift their attitudes (Bolsen & Druckman, 2018; Chinn & Hart, 2021; Rode et al., 2021). Even so, belief in climate change is not a prerequisite for pro-climate action (Davidson et al., 2019; Meyer et al., 2020), especially since many pro-climate behaviors and policies also benefit other aspects of people’s lives (Fifth National Climate Assessment, 2023).

Because climate change touches every aspect of society, communication researchers often investigate how different emphasis framings of climate change influence people’s attitudes, policy support, and intention to engage in pro-climate behaviors (Agin & Karlsson, 2021). Framing refers to variations in how information is conveyed (Entman, 1993); an *emphasis frame* draws attention to one aspect of an issue while deemphasizing other aspects (Badullovich et al., 2020) with the intention of resonating with the audience’s mental models. Common frames studied in the context of climate change are “public health,” “environment,” “economy,” and “national security” (Badullovich et al., 2020; Bolsen & Shapiro, 2018). As one example, some studies find that framing climate change as a public health issue increases people’s concern about climate change and support for pro-climate policies (Dasandi et al., 2022; Kotcher et al., 2018), while others find little to no effect (Bernauer & McGrath, 2016).

Even more fundamental than which aspects of the issue are emphasized, the very term used to refer to climate change can influence people’s attitudes toward it in nuanced ways (Benjamin

et al., 2017). For example, people in the U.S. may be more likely to attribute “global warming” to human activities and “climate change” to natural processes, regardless of political affiliation (Schuldt et al., 2020). Other effects of that terminology choice may be strongest among political independents and those disengaged from the topic of climate change (Benjamin et al., 2017). Compared to “climate change,” referring to “extreme weather” instead can increase Republicans’ willingness to engage in personal and collective adaptation behaviors, support for land use regulations, and support for infrastructure protection, while decreasing Democrats’ willingness to engage in collective adaptation behaviors and support for protecting natural spaces (Carman et al., 2022). Some news organizations now use the terms “climate emergency” and “climate crisis” instead of “climate change,” a choice that can decrease perceived news credibility and newsworthiness, though the specific content of the news stories matters more (Feldman & Hart, 2021).

Rural communities are vulnerable to many impacts of climate change, are affected by mitigation and adaptation policies differently than urban communities, and face many barriers to mobilizing collective action on climate change (Myers et al., 2017; Wisconsin Initiative on Climate Change Impacts, 2021). Like urban areas, rural communities exhibit a partisan divide on climate change attitudes (Pechar Diamond et al., 2020), but the details play out differently. Rural residents tend to have colder attitudes toward scientists than urban residents do, even controlling for other demographic factors (Krause, 2023). A majority of rural Republicans say that environmental and conservation issues are important to them, compared with barely one-third who say that it is important that the U.S. take action to reduce climate change (Pechar Diamond et al., 2020). When climate change is not mentioned, rural communities express high levels of support (80–94%) for many pro-climate policies (Pechar Diamond et al., 2020). Meanwhile, farmers across the country are actively working to adapt to the changes in extreme rainfall and drought, temperature, and invasive species, even if they do not attribute these changes to anthropogenic “climate change” (Lane et al., 2019; Petersen-Rockney, 2022). For all these reasons, rural communities are important to consider in climate change communication research and practice.

Interpersonal conversations have great potential to shift people’s climate change attitudes and spur action (Ettinger et al., 2023; Goldberg et al., 2019; McGill et al., 2024). When designed to cultivate intimacy rather than focusing on information alone, small-group discussions can help strangers find common ground on climate change (Bloomfield et al., 2020; van Swol et al., 2022). Climate conversations can also increase people’s efficacy, their sense that they are capable of taking action on climate change at an individual and collective level (Clark et al., 2023). Storytelling can be more effective than information alone at encouraging pro-environmental behaviors (Morris et al., 2019), especially if the audience identifies the storyteller as similar to themselves (Chung et al., 2020). Stories, metaphors, and humor can evoke emotions that shape people’s climate attitudes and behavior—empathy and hope in particular can increase support for mitigation policies and willingness to engage in pro-environmental behaviors (Boykoff & Osnes, 2019; Davidson & Kecinski, 2022; Flusberg et al., 2017; Lu & Schuldt, 2016; Salama & Aboukoura, 2018). Interpersonal conversations can also gradually shift social norms. Beliefs about what other people do (descriptive norms) and what other people think should be done (injunctive norms) influence whether people eat less meat, conserve electricity and water, install solar panels, and buy electric cars, among other pro-environmental behaviors, ultimately transforming individual actions into collective ones (Constantino et al., 2022; Miller & Prentice, 2016).

The Cooperative Extension Service is deeply involved in public engagement work (Gornish & Roche, 2017) that could be the site for meaningful climate change conversations, especially among rural communities. To that end, this study examines how Extension educators approach talking about climate change in Wisconsin.

Climate Change in Wisconsin

Thanks to its inland location far from rising sea levels, as well as its temperate summers, Wisconsin is widely viewed as less vulnerable to climate change than most other states (Environmental Defense Fund et al., 2023), and some commentators even propose Wisconsin as an ideal destination for people migrating away from more hard-hit regions (Kaeding, 2023). Nevertheless, Wisconsin faces many risks from climate change. Key direct impacts in the state include more frequent and severe droughts, more extreme rainfall, more invasive species spreading diseases and harming native ecosystems, and less winter snowfall in the northern half of the state (Wisconsin Initiative on Climate Change Impacts, 2021). Floods and other extreme weather events have already caused severe damage to the built environment (Burakoff, 2022), and such disasters can lead to climate anxiety and post-traumatic stress (Aylward et al., 2022). All these impacts necessitate adaptation, defined by the IPCC (2023) as “the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities.” Examples of adaptation include building flood-resistant infrastructure, shifting communities’ economies to be less dependent on winter recreation, and planting crop varieties that are better suited for the changing climate.

The flip side of climate action is mitigation, “a human intervention to reduce emissions or enhance the sinks of greenhouse gases” (IPCC, 2023)¹. One way Wisconsin can mitigate climate change by transitioning away from fossil fuels toward solar and wind energy (Evolved Energy Research, 2022). Methane gas currently fuels 41% of the state’s electricity, with another 34% coming from coal (U.S. EIA, 2023); meanwhile, more than 20 solar farms in the state generate electricity used by utility companies (RENEW Wisconsin, n.d.), including five large-scale operations that have come online since 2020 (Ebert, 2023). Another three large-scale solar farms are expected to begin generating energy in 2024 (Schulz, 2024). In 2023, Dane County (which contains the capital, Madison) became the fourth county in the United States to reach 100% renewable electricity in all county facilities (Vruwink, 2023).

Sustainable agriculture and forestry practices can also contribute to mitigation (Ontl et al., 2020). Nationwide, agriculture accounts for 11% of the U.S.’s greenhouse gas emissions (U.S. EPA, 2022), and Wisconsin is the tenth-ranking state in agriculture-related greenhouse gas emissions (Jordan & Cordero, 2023). Much of the northern half of the state is wooded and has not fully recovered from unsustainable logging in the 19th century (Gordon, 2016). The Menominee Tribe of Wisconsin, by contrast, has received widespread recognition for their sustainable forestry (Buckley, 2023; Waller & Reo, 2018), and the forest on their reservation is estimated to sequester more than 30,000 tons of carbon dioxide annually (Pearce, 2023). Many practices (such as conservation agriculture) simultaneously decrease carbon emissions and increase resilience to the changing climate, so adaptation and mitigation can overlap (Project Drawdown, n.d.). Also, it is worth noting that some people use the term “mitigation” when referring to actions that reduce the potential damage from future disasters without addressing greenhouse gas emissions, which the IPCC would categorize as “adaptation.”

As for residents’ attitudes, 56% of people in Wisconsin think that global warming is caused mostly by human activities and 60% are worried about it, but only 39% think that they have personally experienced the effects of global warming (Marlon et al., 2023). These figures are all close to but slightly lower than the national averages. Politically, Wisconsin is purple (currently with a Democratic governor and Republican-majority legislature) and a frequent swing state in

¹ A sink is “any process, activity or mechanism which removes a greenhouse gas, an aerosol or a precursor of a greenhouse gas from the atmosphere” (IPCC, 2023).

national elections, making it an especially complex place for climate change communication. Wisconsin has a stark urban–rural divide in politics (Cramer, 2016), which extends to attitudes about climate change. In Dane County, 72% of people are worried about global warming, compared to 50–60% in most rural Wisconsin counties (Marlon et al., 2023). Despite political polarization at the state level, local governments in Dane County, Milwaukee, and other municipalities have adopted climate action plans that address both mitigation and adaptation (City of Milwaukee, 2023; Dane County Office of Energy & Climate Change, 2020).

Climate change is a problem centuries in the making. Extension also has a long history that informs the organization’s approach to climate change today.

History and Structure of the Cooperative Extension Service

In 1862, Congress established the land-grant system, giving federal land to the states to establish institutions of higher learning (Croft, 2019). The goal of making scientific research usable for the public was central from the start: the Representative who introduced the legislation emphasized that it would “enable the farmer to raise two blades of grass instead of one” (Morrill, 1858). Legislation in 1890 triggered the addition of the institutions now known as Historically Black Colleges and Universities to the land-grant system. The last major expansion came in 1994, when Tribal Colleges and Universities joined the land-grant system. Today, these three groups total 112 institutions with an enrollment of more than 1.7 million students (Croft, 2019).

As the number and types of land-grant institutions have risen over time, the mission of the system has also expanded. The initial mission was limited to education in agriculture, mechanical arts, and military strategy. Congress added the research mission in 1887, again focused primarily on agriculture. Over the years, land-grant education and research has grown to encompass a wide variety of fields, with agriculture always remaining an important component. In 1914, the Smith-Lever Act created the Cooperative Extension Service to fulfill the third and final land-grant mission: applying research findings to the practices of local communities through informal education (Croft, 2019).

A unique partnership between federal, state, and local governments, Extension is a *boundary organization* that sits “at the boundary between science and society with accountability to both,” bridging that boundary through the coproduction of knowledge (Brugger & Crimmins, 2015). In the century since its creation, Extension has expanded from its initial focus on agriculture to cover youth and community development, natural resources, and family and consumer sciences while remaining true to its boundary-spanning mission. Extension maintains a strong presence in rural communities but now is also active in urban areas.

Nationwide, the Extension system has some 32,000 employees (Extension Foundation, 2024). Most Extension professionals fall into two categories: specialists and educators. *Extension specialists* work at the university to produce much of the applied science that *Extension educators* (or *Extension agents*) then share with their clients (Prokopy, Carlton, et al., 2015). Educators typically work at the county level and are often hired from the same communities where they work (Prokopy, Carlton, et al., 2015; Wojcik et al., 2014), meaning that they can relate to their clients’ moral values and experiences. Extension also has *program managers* who oversee a (typically statewide) team of educators and specialists working in a particular program area.

Thanks in part to its educators’ similarities to their clientele, Extension is highly trusted by farmers and other rural audiences as a source of unbiased scientific information (Monroe et al., 2015; Prokopy, Carlton, et al., 2015). Extension is one of the most-trusted information sources for agriculture (Hibbs et al., 2014; Settle et al., 2017; Takahashi et al., 2016), soil and water qual-

ity (Mase et al., 2015), food safety (Settle et al., 2017), nutrition (Settle et al., 2017), and even climate change (Bernacchi & Wulfhorst, 2017; Prokopy, Carlton, et al., 2015). Given the importance of trusted messengers in communicating about polarized issues (Colvin et al., 2020) and encouraging conservation behaviors (Ranjan et al., 2019), Extension is well positioned to make inroads on climate change mitigation and adaptation.

Each state structures their Extension service differently. The University of Wisconsin–Madison Division of Extension (henceforth “Wisconsin Extension”), consists of six institutes: Agriculture, Natural Resources, Health & Well-Being, Community Development, Positive Youth Development, and Human Development & Relationships². Among the nearly 1,000 total employees (including administrative staff not affiliated with a particular institute), around one-quarter are educators who work at the local level. Extension professionals communicate with their audiences via a wide range of media, but the core work of educators remains synchronous, whether in person or via phone and video calls. As the work of Extension continues to evolve, programs across the country have begun to address climate change, but many gaps remain, at both the systemic and individual levels.

Climate Change Programming in Extension

In 2020, a nationwide inventory found 43 current Extension programs that explicitly focus on climate or extreme weather (Kipp et al., 2020). Covering 30 states in total, most of these programs operate at the state level, though 19 of them are regional or national. The majority of these programs address adaptation but not mitigation; those that do address mitigation tend to deal with food, agriculture, and land use. For example, local Extension offices are key partners in the U.S. Department of Agriculture’s Climate Hubs, which were established in 2014 (USDA, 2024). An additional 160 Extension programs mention climate change or extreme weather or have implicit connections to those topics (Kipp et al., 2020), and 26 states have centralized or distinct energy-related Extension programs (Thomas & Brain, 2016), indicating the potential to more actively incorporate climate considerations into Extension’s existing programming.

Some states have hired Extension specialists in climate change, beginning with Florida in 2004 (Breuer et al., 2010). But for most other Extension professionals, climate change is a small component of their work, if they work on climate change at all. The vast majority of Extension professionals in the Northeast spend less than 20% of their time working on climate change (Thorn et al., 2017), and only around 20% of Extension professionals nationwide are involved in sustainability-focused programming (McCann et al., 2020). In surveys of Extension professionals in Arizona, Illinois, and Nevada (in all program areas), as well as California (in agriculture and natural resources), large majorities of respondents said that climate change programming is important, but less than half currently incorporate climate change into their own programming (M. A. Crimmins et al., 2024; Grantham et al., 2017; Kar et al., 2022; Kratsch et al., 2020). What’s more, two-thirds of Extension professionals nationwide have not heard of the USDA Climate Hubs (McCann et al., 2020).

Two nationwide organizations seek to incorporate climate change more deeply into Extension’s work. The National Extension Climate Initiative (NECI) is a grassroots organization run mostly by volunteers, which aims to “coordinate and manage climate outreach activities, share resources, provide networking opportunities, and promote professional development” (National Extension Climate Initiative, 2023). Now counting more than 1,000 members, NECI holds

² The College of Menominee Nation and Lac Courte Oreilles Ojibwe Community College also have Extension activities in Wisconsin, but this study focuses on the Extension activities of the University of Wisconsin–Madison.

monthly virtual meetings and has an email listserv. Secondly, the Extension Committee on Organization and Policy has a Climate Program Action Team, which convened in person in January 2024 and released a national climate action plan for Extension in June 2024 (Extension Foundation, 2024).

Wisconsin Extension has only one employee dedicated full-time to climate work (the project manager of the multi-state Climate Ready Midwest project through the USDA Midwest Climate Hub), though it is in the process of hiring more climate-focused staff. Many other employees, including the approximately 50 members of the grassroots Climate Leadership Team, incorporate climate change into their work. Examples include past in-person field classes on climate, ecology, and culture; the ongoing Energy On Wisconsin initiative, which seeks to advance the transition to clean energy; and “menus” of adaptation strategies for resilience in communities and food systems (Chisholm et al., 2022; Hershberger, 2023). In May 2024, the Wisconsin State Climatology Office became part of Wisconsin Extension, indicating institutional movement toward deeper integration of climate change in the state’s Extension programming (Call, 2024).

How Extension Professionals Approach Climate Change Communication

Since the early 2010s, a mix of quantitative and qualitative research has examined Extension professionals’ perspectives on climate change. Early work found that a majority of Extension professionals acknowledged that climate change is occurring, but only a minority believed that it is caused mostly by humans (Becerra et al., 2016; Prokopy, Morton, et al., 2015). In the Six Americas framework, which places individuals on a spectrum from Alarmed to Dismissive (Leiserowitz et al., 2021), the distribution of North Carolina Extension professionals in 2011 and Southeast Extension professionals in 2012 closely mirrored the distribution of the general U.S. population at the time (Burnett et al., 2014; Wojcik et al., 2014). Extension professionals in agriculture skewed more toward the Dismissive end of the scale than those in other program areas, and Extension educators skewed more toward the Dismissive end of the scale than specialists or programming personnel (Monroe et al., 2015; Wojcik et al., 2014).

However, more recent work indicates that Extension professionals now tend to be more aligned with the scientific consensus on climate change. By 2023, 62% of Arizona Extension professionals were in the Alarmed Six Americas category, compared with 28% of the U.S. population, and 77% of Arizona Extension professionals believed that global warming will harm them personally, compared with 47% of Arizona residents (M. A. Crimmins et al., 2024; Leiserowitz et al., 2023; Marlon et al., 2023). Although recent needs assessments in other states did not directly assess Extension professionals’ belief in anthropogenic climate change, the consistently high levels of interest in incorporating climate change into programming suggest general acceptance that climate change is an important issue facing society (Grantham et al., 2017; Jones & Gwin, 2021; Kratsch et al., 2020; Rao & Gray, 2021). Yet gaps still exist (Kipp et al., 2020)—in a six-state survey of 4-H educators, only 35% of respondents said climate change is caused by humans (Hunter et al., 2022).

Regardless of their beliefs about its causes, Extension professionals in agriculture perceive numerous connections between climate change and their work. Water scarcity, hot temperatures, and pests and diseases are salient concerns among those in the Southeast (Diehl et al., 2017), and nearly three-quarters of agricultural Extension educators in the Midwest agree that their role includes helping farmers prepare for increased weather variability (Prokopy, Carlton, et al., 2015). Less is known about how Extension professionals in other program areas think about climate change in relation to their work. A study in the Southeast found that those in 4-H; food, nutrition,

or health; and community economic development were more likely than those in other program areas to view climate change as not relevant to their program area, but the study did not probe the reasons why (Monroe et al., 2015).

As the Extension professionals who most regularly interact directly with local communities, educators represent the “front lines” of climate change communication in the organization. Since climate change touches all facets of society, it is important to compare the perspectives of educators across program areas, not just in agriculture. The perceived (dis)connections between climate change and Extension work provide important context for understanding how educators talk about climate change with clients, and they can inform future Extension programming. These considerations motivate my first research question:

RQ1: How do Wisconsin Extension educators think about climate change in relation to their work, and how do their perspectives vary by program?

Although research on climate change communication in Extension tends to focus on Extension professionals’ barriers or professional development needs, some work has examined the communication strategies that Extension professionals use to address climate change. Across program areas, but especially in agriculture, Extension professionals often avoid the terms “climate change” and “global warming” in favor of phrases such as “climate variability,” “weather variability,” or “extreme weather” when interacting with clients (Bowers et al., 2016; Chatrchyan et al., 2017; Diehl et al., 2016; Kipp et al., 2020; Wojcik et al., 2014; Wright Morton et al., 2016). More than half of Arizona Extension professionals who address the topic in their programming do not use the term “climate change” (M. A. Crimmins et al., 2024).

One of Extension’s core strengths is its deep understanding of local communities (Brugger & Crimmins, 2015). Thanks to these local relationships, Extension professionals can finely tailor their communication strategies to specific audiences and respond to their communities’ needs (Kipp et al., 2020; Susko et al., 2013). In the context of climate change, that means providing locally relevant, practical information about specific climate-related issues, not broad information about the causes of climate change or global impacts (Diehl et al., 2015; Kipp et al., 2020). As for framing, one study found that Southeast Extension professionals across the Six Americas think about climate change in terms of economics and stewardship of the Earth (Bowers et al., 2016), but it is unclear to what extent this translates into their client-facing communication.

Consistent with the landscape of Extension programs related to climate change, Extension professionals tend to express more interest in training on adaptation than training on mitigation (Diehl et al., 2015; Kratsch et al., 2020; Rao & Gray, 2021), though adaptation and mitigation programming were both rated as important by three-quarters of Arizona Extension professionals (M. A. Crimmins et al., 2024). One qualitative study found that Extension professionals in agriculture focus on adaptation-related topics when engaging with farmers (Diehl et al., 2016). However, no studies have examined how Extension educators in other program areas decide whether to prioritize adaptation or mitigation and how they discuss those topics with constituents.

Given that the bulk of Extension educators’ work involves face-to-face conversations and other interpersonal discussions, soft skills form an integral part of their climate change communication efforts (Kipp et al., 2020; Susko et al., 2013). Research to date has not yet examined whether Extension educators use metaphors, tell stories, show empathy, make jokes, or use other strategies when talking about climate change. Furthermore, no studies have directly compared the climate communication approaches taken by Extension educators in different program areas.

By revealing which strategies are common organization-wide and which are particular to agriculture or other specific topics, such comparisons would enable the sharing of best practices and the development of self-consistent climate messaging throughout Extension. At the same time, these comparisons would hone researchers' understanding of how abstract principles of climate change communication translate—or not—into on-the-ground practices. With these considerations in mind, I pose my second research question:

RQ2: How do Wisconsin Extension educators approach talking about climate change with clients, and how do their approaches vary by program?

Extension professionals face numerous challenges when they consider addressing climate change in their work. Many are reluctant to bring up the topic due to its politically polarized nature (Bowers et al., 2016; Diehl et al., 2016; Telg et al., 2018; Wandersee et al., 2019) and related concerns over how constituents will react (M. A. Crimmins et al., 2024; Grantham et al., 2017; Kratsch et al., 2020). Extension professionals also commonly say they don't have access to relevant curricula or other sources of information, don't feel equipped to accurately present complex climate data (M. A. Crimmins et al., 2024; Grantham et al., 2017; Jones & Gwin, 2021; Kratsch et al., 2020), or don't feel prepared to give sound advice (Becerra et al., 2016; Prokopy, Carlton, et al., 2015). Some, especially in the Cautious, Doubtful, and Dismissive segments of the Six Americas, perceive that the science on anthropogenic climate change is inconsistent (Bowers et al., 2016; Clifford & Monroe, 2018; M. A. Crimmins et al., 2024; Monroe et al., 2015).

To fill these gaps, Extension professionals in many states are interested in professional development both on climate science and on climate communication (Bowers et al., 2016; Diehl et al., 2015; Jones & Gwin, 2021; Kratsch et al., 2020; Starzec, 2023; Susko et al., 2013). Most recently, three-quarters of Arizona Extension professionals said that training on “how to effectively present controversial subjects” would be useful to them, and a similar percentage said that training on “climate change information sources and resources” or “basic climate science and effects on Arizona” would be useful (M. A. Crimmins et al., 2024). In an unpublished 2020 survey on Wisconsin Extension's climate change professional development needs, resilience and adaptation, climate justice, economic and public health, and cultural impacts were rated as “very useful” by more than 60% of respondents, while communication was rated as “very useful” by 54% of respondents.

Another challenge is that constituents in many communities are not asking for climate change information. In Arizona, Illinois, Kansas, and Oklahoma, 60% or more of Extension professionals say that their constituents have not shown an interest in climate-related information (Becerra et al., 2016; M. A. Crimmins et al., 2024; Kar et al., 2022). Since Extension programming has historically been guided by the needs expressed by constituents (Kipp et al., 2020), this causes Extension as an organization to deprioritize climate change work. Relatedly, Extension professionals who do engage in climate change programming have identified administrative resistance, a lack of dedicated climate staffing, and the siloed nature of separate program areas as barriers to more meaningful climate-related work (Kipp et al., 2020).

Since past studies have either lumped together all Extension professionals and program areas or focused narrowly on agriculture, it is unclear which challenges are most relevant to educators and how the best way to address these challenges may depend on the program. A better understanding of Extension's climate communication gaps could inform future social science research

and spark ideas for tangible climate communication resources. To this end, I pose my final research question:

RQ3: What uncertainties and challenges do Wisconsin Extension educators face about climate change and climate change communication, what resources would they like to have on those topics, and how do their perspectives vary by program?

Methods

Positionality Statement

In recognition that researchers' backgrounds, identities, and experiences shape their research processes and interpretations of data (Darwin Holmes, 2020), I describe here my positionality in the context of this project. On a personal level, I care deeply about climate change, so my study assumes that climate action is important and urgent. On a professional level, I approached the project with dual roles: as a graduate student studying the social science of science communication, and as a part-time Extension professional. I worked part-time for Wisconsin Extension's Natural Resources Institute from January 2023 through May 2024, so I already had working relationships across the organization before beginning this project. I chose to study programs outside of the Natural Resources Institute to minimize the potential for conflicts of interest. Additionally, I was an active participant in Wisconsin Extension's Climate Leadership Team. A small subset of my interviewees already knew me because they are also members in that group. All these factors influenced my research questions, data collection, data analysis, and writing. At the beginning of each interview, I disclosed my Extension and student affiliations and the goals of my study (see interview protocol in Appendix A), which may have influenced how interviewees responded to my questions.

Choice of Programs to Study

I used a comparative case study research design (Bartlett & Vavrus, 2017) to investigate the commonalities and differences in climate change communication between different Extension programs. Qualitative case studies are well suited to generating an in-depth understanding of social interactions in a contemporary organization (Creswell & Poth, 2017; Prokopy, 2011). I consider each case to be a single Extension program, physically bounded by the state of Wisconsin, temporally bounded by the participants' past and ongoing experiences working for Wisconsin Extension. For my study, this definition of a "case" is more meaningful than one based on physical sites such as county Extension offices because Extension offices typically include educators working on a wide range of topics who might take different approaches to communicating about climate change.

Comparative case studies generally include no more than four or five cases because a larger number of cases dilutes the analysis (Creswell & Poth, 2017). For my study, I examined three diverse cases, purposively choosing one with direct and unavoidable connections to climate change, one with an intermediate degree of connectedness to climate change, and one with easy-to-overlook connections to climate change. By examining diverse cases, my study offers insights

into climate change communication across Wisconsin Extension rather than within just one narrow context (Sovacool et al., 2018).

With feedback from the Wisconsin Extension Climate Leadership Team, I chose the Crops & Soils program in the Agriculture Institute, the Community Economic Development program in the Community Development Institute, and the Financial Education program in the Human Development & Relationships Institute. Each program has an annual plan of work, an internal document created by the program manager in consultation with the educators and specialists in the program to define audiences, goals, an action plan, and an evaluation plan for the year. The program plans of work for the three programs I chose confirm that they exemplify very different relationships to climate change. Furthermore, many other states' Extension services have programs similar to these three, which contributes to my study's relevance for other states.

Crops & Soils

The Crops & Soils program seeks to provide “independent, *evidence-based* information” to guide farmers' agronomic practices for profitability and sustainability (Crops & Soils Program, 2023). The largest crops in Wisconsin are corn, soy, and hay such as alfalfa, which together cover nearly 8 million acres (USDA NASS, 2024). Much of the state's grain production goes toward feeding its 1.28 million dairy cows (USDA NASS, 2024). Wisconsin is also one of the leading states in the production of processing vegetables like potatoes, snap beans, and green peas (Wisconsin DATCP, 2024). Water quality, soil health, pest management, and crop yield are common topics that Crops & Soils educators address. They work with farmers as well as industry and agency partners such as Land and Water Conservation Districts, the Natural Resource Conservation Service, farmer-led watershed groups, and crop consultants. The current program plan of work discusses many climate considerations.

Community Economic Development

The Community Economic Development program strives “to improve the economic well-being and quality of life of all Wisconsin communities [...] in ways that respect and preserve the environment, culture, and all people,” with research and education encompassing the economy, entrepreneurship, placemaking, and infrastructure (Community Economic Development Program, 2023). Community Economic Development educators work with a broad range of constituents, including economic development and workforce development organizations; chambers of commerce; business networks; municipal, county, and Tribal governments; businesses; and nonprofits. The current program plan of work references climate change only once, with “climate adaptation planning and infrastructure” listed as an area for professional development.

Financial Education

The Financial Education program works to support “individuals' and families' financial well-being, health, and inclusion” through one-on-one and group coaching as well as interactive curricula on a wide range of financial literacy and planning topics (Financial Education Program, 2023). Financial Education educators mainly work with low-income individuals, with a particular focus on people impacted by systemic racism, incarcerated people, renters, and older adults. The current program plan of work does not mention climate change.

Recruitment and Data Collection

Between February and April 2024, I conducted one-on-one semi-structured interviews via Zoom. I used Otter.ai to automatically transcribe the audio recordings, and I checked each transcript for accuracy. All participants provided written consent before the interview, and they provided verbal consent at the beginning of the interview. Because my research questions deal with Extension educators' thought processes, data from interviews align well with the aims of my study (Chenail, 1997; Sovacool et al., 2018). With a list of predetermined topics to discuss but the flexibility to ask follow-up questions based on interviewees' responses, semi-structured interviews provide a good middle ground between structured interviews that would elicit easily comparable but less detailed data and completely unstructured interviews that would elicit richer but less comparable data (Tracy, 2013).

To create the sampling frame, I omitted educators who had been on the job for less than one year, since I wanted to focus on interviewees' work in Wisconsin Extension rather than their previous work. This left 10 eligible educators in Crops & Soils (out of 15), 14 (out of 17) in Community Economic Development, and 14 (out of 16) in Financial Education. I used purposive sampling to ensure representation of a range of geographic regions as well as both urban and rural areas, using the definitions of the USDA Economic Research Service Rural–Urban Continuum Codes (2024) (see Table 1) and the Wisconsin Department of Health Services (2024). The recruitment email did not mention climate change, instead referring to “communication strategies” more generally to minimize the chance of response bias related to the topic of climate change. I wanted to understand the full range of educators' perspectives, not just the perspectives of those educators who are interested in talking about climate change.

The Financial Education program manager sent an email to the educators in their program encouraging them to participate in my study if I reached out to them. The other two program managers did not send such emails. If a potential participant did not respond, I sent one follow-up email a week after the original email. As I completed interviews with some educators and did not hear back from others, I contacted additional educators.

When I encountered difficulty recruiting Community Economic Development interviewees from northern Wisconsin, Cathy Techtmann contacted two educators who agreed to participate. At her suggestion, I also interviewed a Community Economic Development educator from northern Wisconsin with only six months of experience who I had omitted from initial recruitment.

I developed an initial interview protocol with feedback from Todd Newman and Cathy Techtmann. After the first two interviews, I slightly modified the protocol to reflect the natural flow of the conversations and to better probe the initial themes that I was noticing. The final interview protocol is in Appendix A. I asked interviewees about (a) their role with Extension and the constituents they serve, (b) the extent to which they view climate change as related to their work, (c) if and how they talk with constituents about topics related to climate change, (d) what resources they would like to have related to climate change or climate change communication, and (e) their perceptions of how other Extension educators approach climate change communication. Although I told interviewees I was interested in all forms of communication, both oral and written, our conversations focused on oral communication because that is the primary medium in which my interviewees work.

Once I had interviewed four educators in each program, I began assessing whether I had reached saturation, the point at which no major new information emerges (Guest et al., 2006). I assessed saturation both within each program and holistically across my entire sample. In Crops & Soils and Financial Education, I reached saturation after four interviews each. In Community

Economic Development, it took seven interviews to reach saturation. (In total, I contacted four educators in Financial Education, nine in Community Economic Development, and ten in Crops & Soils.)

Table 1. USDA ERS rural–urban continuum codes

Code	Description	
1	Counties in metro areas with population:	>1,000,000
2		250,000–1,000,000
3		< 250,000
4	Nonmetro counties with urban population:	>20,000, adjacent to a metro area
5		>20,000, not adjacent to a metro area
6		5,000–20,000, adjacent to a metro area
7		5,000–20,000, not adjacent to a metro area
8		<5,000, adjacent to a metro area
9		<5,000, not adjacent to a metro area

Table 2. List of interviewees

Program	Interviewee code	Role	Characterization of county/counties	
			Wisconsin DHS definition	USDA ERS continuum codes
Crops & Soils	CS1	Educator	Rural	8, 4, 3
	CS2	Educator	Rural and urban	4, 2
	CS3	Educator	Rural	8, 8, 8, 6
	CS4	Educator	Rural and urban	6, 6, 6, 2
	CSPM	Program manager	Statewide	Statewide
Community Economic Development	CED1	Educator	Urban	3
	CED2	Educator	Urban	2, 2
	CED3	Educator	Urban	2
	CED4	Educator	Urban	2
	CED5	Educator	Rural	9
	CED6	Educator	Rural	4
	CED7	Educator	Rural	9
	CEDPM	Program manager	Statewide	Statewide
Financial Education	FE1	Educator	Rural	4
	FE2	Educator	Urban	3
	FE3	Educator	Rural	6
	FE4	Educator	Urban	3
	FEPM	Program manager	Statewide	Statewide

Figure 1. Map of educators interviewed

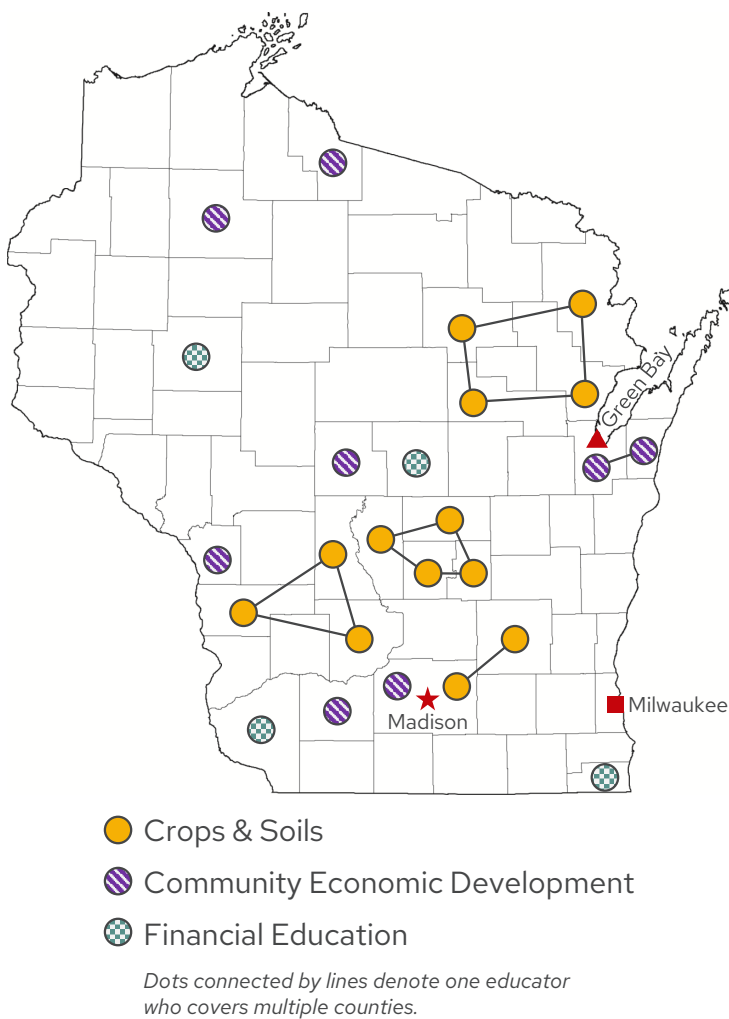


Table 2 and Figure 1 show the geographic distribution of the final sample of educators. Six educators had less than 5 years of experience at Wisconsin Extension, three had 5–10 years of experience, three had 11–20 years of experience, and the remaining three had 21–31 years of experience. Nine educators interviewed were female, and the other six were male; most interviewees were white. The interviews with educators lasted 35–73 minutes, with an average duration of 55 minutes.

After I had completed all interviews with educators, I interviewed each program manager as a way of triangulating my findings and deepening my understanding of the cases. I asked each program manager to react to what their educators had said and provide their own perspective on climate change communication in their program. The interview protocol is in Appendix A. Before interviewing the Crops & Soils program manager, I reviewed the transcript of an interview with them conducted in January 2023 for the Climate Ready

Midwest program (North Central Climate Collaborative, 2023). Before interviewing the Financial Education program manager, I reviewed the transcript of an informal interview with them that I conducted in July 2023. I also included these previous interviews in my formal data analysis. I had no prior interview to reference for the Community Economic Development program manager. All three program managers indicated that my findings aligned with their experiences interacting with their educators, confirming my conclusion that no further interviews were necessary.

I asked interviewees to send me any relevant web materials, handouts, or webinars that they share with constituents. I also reviewed each program's fiscal year 2023–2024 plan of work. Instead of coding these documents in detail, I used them to triangulate my findings from interviews and provide additional context (Petersen-Rockney, 2022). All procedures were approved by my university's institutional review board (IRB).

Data Analysis

I undertook my research with a constructivist paradigm, holding the view that meaning is socially constructed (Crotty, 1998). Specifically, I explored how Extension educators and their cli-

ents co-create the meanings of climate change by interpreting the physical changes in the world through the lenses of cultural, political, and social contexts. Thus, the emphasis was on understanding the details of my interviewees' experiences rather than making broad generalizations.

I conducted thematic analysis on the interview transcripts (Braun et al., 2016, 2019) with the software NVivo. For preliminary analysis, I used structural coding (Saldaña, 2016) based on my research questions and the major topics that I asked about in every interview. For each structural code, I wrote memos about the salient points made by each interviewee. Next, I developed themes by synthesizing these inductive observations with deductive ideas guided by the above research on Extension climate change communication. I created a detailed codebook as I refined the themes and subthemes. For this second round of coding, I primarily used process coding (Saldaña, 2016) to illuminate how interviewees approach the process of climate change communication and what challenges they face. Throughout the analysis, I wrote other memos to clarify my understanding of both the detailed findings and the big-picture takeaways. The final codebook is in Appendix B.

Due to my constructivist approach and small sample size, I did not seek to precisely quantify how many times each code appeared, nor did I measure inter-coder reliability (Anderson & Dudo, 2023; Dudo et al., 2021; Yardley, 2000). This choice is also appropriate in light of the fact that some relevant topics were not discussed in every interview. Reporting exact numbers would generate misleading assumptions about the views of interviewees who did not discuss the topic in question.

Results

A Wide Range of Connections with Climate Change (RQ1)

Clear differences emerged between programs regarding how educators view climate change in relation to their work. In Financial Education, educators perceive climate change as disconnected from their day-to-day work. All Financial Education educators I interviewed help clients save money on energy bills by making their homes and habits more energy-efficient, but most (FE1, FE3, and FE4) did not mention energy efficiency until I asked about it directly: "You brought up the energy thing as far as utilities and like, well duh. But I don't think about that, right? I'm not thinking 'climate change is affecting this'" (FE3).

When prompted, Financial Education educators acknowledged that climate change will affect constituents' finances and, in some communities, already has. FE2 and FE4 mentioned that the lack of winter snowfall in the northern part of the state has strained seasonal workers in the snowmobiling, skiing, and snow removal industries. FE1 mentioned the financial impacts on maple syrup and cranberry producers in their community. Still, the prevailing sentiment was that "I don't feel like the topic of climate change is really impacting what I'm doing" (FE3). FEPM actively participates in national groups at the intersection of climate and finances, but they so far have not incorporated those efforts into their Wisconsin Extension work.

On the other end of the spectrum, every interviewee in Crops & Soils described climate change as inextricably linked to their work: "I feel like it's behind the scenes of everything that I'm doing, whether I make that known or not" (CS2). Even CS4, who said that recent climate change is due in equal parts to human activity and natural variability, acknowledged that "adapting to what the climate gives us in a given growing season is the crux of what I do as an Exten-

sion educator.” CSPM said that the entire Agriculture Institute is actively considering climate change impacts in the development of new initiatives.

Interviewees in Community Economic Development expressed the widest range of perspectives on the connections between climate change and their work. Some described “peripheral” (CED2) or “loose” (CED6) connections but do not view climate change as directly impacting their work. Others indicated that “it’s 100% related to my work” (CED4) and “anything is related with climate change” (CED7). CED1 views broadband access, housing availability, and childcare affordability as unrelated to climate change, while CED3 views those same three issues as key ways that rural Wisconsin communities can attract new residents from other states more severely impacted by climate change. CEDPM said that climate change ties in directly to educators’ work on clean energy infrastructure, but otherwise, whether they think about climate change depends on the requests coming from the community.

How Educators Talk About Climate Change (RQ2)

The degree to which educators view their work as related to climate change is reflected in whether they talk about it with constituents. All the Financial Education educators and about half of the Community Economic Development educators I interviewed said that they rarely bring up climate change in their work and that constituents likewise rarely mention it. However, over the course of our conversations, it became clear that these educators *do* talk about topics that intersect with climate change—they just don’t make those connections explicit in their communication strategies. All four Crops & Soils educators said that they talk frequently about topics related to climate change, whether or not they use the words “climate change.”

Educators’ climate communication happens in the context of two potentially contradictory goals: providing unbiased factual information and promoting specific actions. Many interviewees, including CSPM and CEDPM, indicated that Extension’s role is to provide objective information to aid constituents’ decision-making without telling them what to do. CEDPM explained that neutrality (especially political neutrality) is crucial to maintaining communities’ long-term trust in Extension. However, the line between informing and advocating is “very blurry,” CSPM acknowledged:

“If we say, ‘There’s a huge problem of an invasive weed that is herbicide-resistant, [...] and the only way that you can manage it is by implementing conservation practices,’ that’s information, but there’s a pretty strong ‘This is the right answer’ that we’re promoting at the end of it. [...] Beyond that, it’s not our job to say what you should do.”

Some of the same interviewees who claimed to focus on informing also made statements implying that they sometimes promote specific actions. Others made a behavior-change goal explicit: “My role is to encourage best management practices with farmers” (CS3).

Regardless of the nuances of educators’ goals, three major communication strategies emerged in the interviews: going in the back door, showing empathy, and focusing on resilience. These strategies are used in all three programs, though the specifics of how they play out vary between programs.

Going in the Back Door

When asked how they approach (or would approach) talking about climate change in their work, nearly all interviewees said that they do so indirectly. Educators outside of Dane County avoid the term “climate change” because of its status as a politically polarized buzzword. Regardless of the words they choose, educators rarely talk about the umbrella concept of climate change, instead zeroing in on *specific local impacts* of climate change. When choosing how to frame climate-related topics, educators in all three programs tend to primarily emphasize economic considerations, sometimes also mentioning non-climate environmental considerations. Most of these strategic choices of words and frames are tailored to the interests, concerns, identities, values, and worldviews of constituents.

According to Crops & Soils interviewees, farmers “see that weather patterns are changing and different and unreliable” (CSPM), but the term “climate change” causes many farmers to “turn off because that’s the liberal conspiracy” (CS3). When needing to appeal to a broad audience, educators strategically avoid using the polarizing term (CS2):

“I know a lot of farmers are fine talking about [climate change], but I might as well open the tent and talk about it in a way that everyone can connect with and have the consequences down the line of having a good effect on the climate [...] rather than saying it in a way that alienates maybe a couple people because they don’t feel comfortable talking about it in that way.”

Instead, educators talk about “extreme weather,” “climate variability,” or even “a changing climate,” none of which carry negative political associations.

More often than these general terms, however, Crops & Soils educators focus on “on-the-ground pragmatic outcomes” (CSPM), especially soil health and water quality. Educators know that farmers care about soil and water, so by tailoring their messaging this way, educators provide more relevant and useful information—and if they are encouraging a specific management practice, they increase the likelihood that the farmer will adopt the practice. However, all four recognize that for most farmers, environmental considerations are secondary to the need to remain financially viable: “Economics is probably the number one thing we got to break it down to. If everybody was only interested in conservation, they’d [...] rotationally graze every acre in the state, but we’re not doing that, because we need to make a profit” (CS1).

Political polarization also motivates Community Economic Development educators to go in the back door. CED2 said that the phrase “climate change” is just as polarizing in their county as “diversity, equity, and inclusion,” but “the words are what they object to, not necessarily to the activities that are being done under those words.” This educator finds a receptive audience by talking about warmer winters or more storms without mentioning “climate change” directly.

The fact that climate change is not a focus of most Community Economic Development educators’ work reinforces their indirect approach. One educator described climate change as a “contributing factor, the same way that cost of living is a contributing factor and changes in inflation are a contributing factor. [...] We’re not talking about it overtly all the time. We recognize that it’s there, and we see it as just another part of the puzzle” (CED6).

Community Economic Development educators most commonly frame climate-related issues in terms of economics. For example, CED3 (unsuccessfully) encouraged a hotel to install electric vehicle chargers by emphasizing the potential to draw more customers, while CED2 (successful-

ly) helped a new library take advantage of an energy assistance program to install rooftop solar panels and save on energy costs. As for the winter industries in northern Wisconsin, “focusing on it from an economic perspective [is] the safest way to engage with people,” in CED5’s experience. “Saying ‘The amount of carbon we released is what’s causing the lack of snowfall’ is probably not going to start a fruitful discussion.”

However, educators do not use one cookie-cutter economic framing with all their constituents. Instead, they tailor their messaging to people’s individual interests. CED2 summed up their approach like this:

“It’s not necessarily saying, ‘Well, this would be the best way we should go because it’s good for the climate.’ Oftentimes, it’s ‘This is the best way to go because it would be beneficial to your particular interests, your particular costs. And it helps the environment too.’”

In Financial Education, educators also go in the back door. But for them, this is less an intentional strategy and more a natural result of their goals to support families’ holistic wellbeing. When engaging with seasonal workers struggling with the economic consequences of the lack of snow, for instance, talking about climate change writ large is simply not the most relevant way to help constituents problem-solve. Instead, “it’s more goal-setting. [...] What does this mean, yes for right now, but also [...] for next year? [...] What kind of steps can you take? [...] Because this could happen again next year” (FE4). Educators are thus helping constituents account for the fact that climate change is a long-term trend, not a one-off year—but without ever uttering the words “climate change.” FE1 also mentioned that depending on the education level of the constituent, the phrase “changes in weather” might be more understandable than “climate change.”

A small number of educators did indicate that they talk more directly about climate change. Most notably, CED4 works in an urban area with community organizations and local governments that explicitly want to mitigate climate change. In that context, a “straightforward and specific” communication style is more effective than going in the back door. In rural northern Wisconsin, CED5 sometimes uses the words “climate change,” but with mixed results.

Showing Empathy

Many educators, mainly in Community Economic Development and Financial Education, intentionally show empathy to their constituents when discussing climate-related topics such as the lack of snow in northern Wisconsin. Some do so by listening actively and asking nonjudgmental questions. For example, FE1 uses this approach when clients make small talk about recent unusual weather, regardless of the client’s attitude toward climate change:

“Sometimes I say, ‘Well, how do you think this change in weather is affecting you or people you know?’ I’m curious to know that because I don’t have all those answers, and different people feel differently about that. So I usually ask for more on what their feelings are. [...] But if someone brings it [climate change] up, and they say, ‘That’s ridiculous nonsense,’ I say, ‘That’s interesting. Tell me more on why you think that.’”

If clients are passionate about the topic, FE1 told me, these questions get them to open up and share more about their personal experiences. Here, the goal is not to change anyone's mind, but rather to better understand their perspectives.

In Community Economic Development, educators ask questions to help clients find their own solutions to climate-related problems: "Usually, Scott, they know the answer, but they don't know they know the answer. And the Extension person knows how to pull that answer out of them: you ask the right questions" (CED7). A second way Community Economic Development educators show empathy is by demonstrating their similarity to their constituents. CED2 handles the polarization of climate change by bringing in an Extension specialist to broach a climate-related topic with the community. Rather than aligning themselves with the specialist, the educator aligns themselves with the community to preserve their trust while still making progress on climate action:

“I can say, ‘[The specialist] is coming from a different perspective of things. But maybe there is some truth to what she’s saying.’ [...] We can continue the conversation, [...] and maybe there’s aspects of it that weren’t considered before that we could now talk about. And I can be seen as not the radicalist, but the partner or part of the same group as those that I’m talking with.”

Educators occasionally mentioned how specific demographic groups respond differently to climate change information. According to CED2, members of the Oneida Nation and the Menominee Tribe tend to value multigenerational considerations in their decision-making, which makes them more receptive to information about long-term climate change mitigation benefits than many non-Native people are. CED7 mentioned the importance of culturally relevant communication in Tribal communities, for example centering the Tribal value of food sovereignty rather than the business considerations that might be more typical in other communities. According to CS3, climate change as a political issue is not on the radar of Amish farmers, but this difference does not influence the educator's communication approach because their work is focused on "extremely practical [...] troubleshooting."

Crops & Soils educators rarely mentioned communication strategies related to empathy. CS3 did mention the importance of not making farmers feel "threatened," and CS4 shows similarity to constituents by only using the term "global warming" when the farmer they are talking with uses it first. However, a different strategy featured far more prominently in my conversations with Crops & Soils educators: focusing on resilience.

Focusing on Resilience

Most interviewees in all three programs view climate change adaptation as more relevant to their work than climate change mitigation. Whether they are helping a farmer deal with a drought, small towns plan for flooding, or a seasonal worker set financial goals, local impacts of climate change affect the day-to-day lives of their constituents. By contrast, mitigation relates to a global problem that constituents feel is out of their control, according to multiple educators in Financial Education and Community Economic Development: "People are so focused on what they can do to help themselves and their families survive that the long-term survival of mankind seems unreachable and unimportant when it comes to how they're going to find a place to live for themselves and their three kids" (FE4).

As a result, interviewees' climate change communication centers on adaptation-related topics. Even several educators who do not see strong links between their work and climate change perceive that adaptation resonates more than mitigation with Extension's primary audiences (CED1):

“Adaptation has to be first, honestly, because if you can get them to understand how [climate change] is going to affect them, you'll get more buy-in. And if you can give them some solutions on how to protect themselves and how to stabilize their own lives, they'll have more energy and willingness to go into the mitigation.”

However, educators do not necessarily stick to the term “adaptation.” Many interviewees, including all Crops & Soils interviewees, also talk about “resilience” or “resiliency.” Consistent with this finding, the Crops & Soils program plan of work includes the word “resilient” or “resiliency” 13 times and “adaptation” not a single time. CS3 said that in their conversations with commercial vegetable producers, “a lot of it comes down to building resiliency into their systems. That, they hear and are willing to think about because they want to be able to weather the next flood and the next drought, because they do know it's coming. They just don't want to think about why.”

Crops & Soils interviewees gave an additional reason for focusing on resiliency rather than mitigation: current scientific knowledge does not offer clarity on how much carbon can be sequestered in the soil by different agricultural practices. Interviewees doubt that carbon credits in agriculture can effectively mitigate climate change, and they worry about farmers getting locked into contracts that further scientific evidence could reveal to be impossible to fulfill. Meanwhile, the influx of federal funding for “climate-smart agriculture” has made farmers more open to considering practices that carry climate change mitigation benefits, but the discussions still center on personal economic and soil health considerations. “Most farms don't approach making a soil management change from thinking about, ‘Well, I'm going to store more carbon in the soil,’” CS4 noted. “It's, ‘I'm going to improve productivity because we've got better water holding capacity, better nutrient holding capacity, better water infiltration.’ They don't care where it comes from.”

CS2 does sometimes talk about mitigation. However, they only do so when discussing climate-smart agriculture with farmers who they know will be receptive to the idea. In other workshops and field days, the educator instead emphasizes tangible benefits to the farmer, like increasing water infiltration and increasing crop yields. In CS2's view, “it's impossible to tear [adaptation and mitigation] apart, really, when we're talking about ag, which is cool. It's just [...] the adaptation standpoint [is] so much easier to grasp” than the nebulous idea of mitigation.

Only one interviewee, the same Community Economic Development educator in an urban area who takes a direct approach (CED4), indicated that they focus more on mitigation than on adaptation. This communication choice reflects the priorities of the governments and nonprofits they work with. Several educators were unfamiliar with the distinction between adaptation and mitigation in the context of climate change, consistent with the findings of previous qualitative research on public understanding of climate change terminology (Bruine de Bruin et al., 2021).

Communication Challenges and Desired Resources (RQ3)

Challenges from Constituents and Institutions

As interviewees described their approaches to talking about climate change, they referenced a range of intersecting challenges relating to constituents' climate change attitudes, with similar themes expressed across all three programs.

By far the most common challenge was the political polarization described earlier. The next most common was that constituents feel powerless to address climate change as a global issue—this barrier was mentioned by educators in all three programs, including more than half of the Community Economic Development educators. CED2 described constituents' views like this: “It’s so big, and how can one thing make any difference if it’s global? [...] So what if I turn my temperature in my house down two degrees? [...] I don’t see how that changes the world.”

Although a few interviewees said that their constituents need more reliable information about climate change, interviewees in all three programs also pointed out that constituents make decisions based on emotions, social factors, or biases rather than facts alone. This reality sometimes comes into conflict with Extension’s role as a source of research-based facts. Yet educators’ empathy-driven approach to communication enables them to address emotions and social factors.

A final audience-related challenge is that many constituents, even those who acknowledge that the climate is changing, don’t want to talk about it. In some cases, the reluctance stems from a desire to focus on the positive and ignore the negative. In other cases, constituents view climate change as a problem affecting people elsewhere in the world but not in their Wisconsin communities.

Educators and program managers in all three programs cited institutional barriers to addressing climate change more deeply in their work. Institutional barriers within Extension included the lack of dedicated climate staffing and perceived lackluster support from leadership. FEPM said that their supervisor instructed them to deprioritize climate-related work because the program plan of work did not mention climate change. (With the continuing rollout of rebates from the Inflation Reduction Act, the program manager intends to include climate change in next year’s plan of work.) CS3 perceives that science-focused colleagues have an insufficient understanding of social science and communication best practices:

“There’s been times where I’ve written something that I was really proud of in terms of how it communicated the message, [...] and people who have PhDs in life science comm told me, ‘This is a fabulous article. I’m really proud of you.’ And then I was told that I could not publish it because it did not comply with our dry style guide [for our website].”

Beyond Extension, Crops & Soils interviewees mentioned policies, like federal price supports for corn grown for ethanol, that create economic incentives for non-climate-friendly farming practices.

Interviewees’ tendency to talk indirectly about climate change raises a natural question: do they wish they could talk about climate change more directly? In Crops & Soils, the answer is no. These educators feel that their current communication strategies are successful in helping farmers be resilient to the changes they are experiencing.

Community Economic Development interviewees were split on this question. Using the example of a neighborhood planning process they participated in, CED2 said it would have been

beneficial to talk about climate considerations at the same time as housing, amenities, and traffic flow, rather than later in the process. Yet CED2 also acknowledged that the indirect approach remains the most practical in Wisconsin’s political landscape.

In Financial Education, educators did state an interest in talking more directly about climate change. They said it could empower constituents by helping them understand their current financial challenges in the context of long-term trends and plan accordingly. FEPM said more direct climate communication would contribute to climate equity by giving people “the knowledge and tools to advocate for themselves.” For example, they said, awareness of racial disparities in energy efficiency—and thus cost—in Milwaukee’s neighborhoods “fueled a lot of engagement” among Black and Latinx community members and led in part to the city’s recently adopted Climate & Equity Plan (City of Milwaukee, 2023).

Locally Specific Climate Information and Case Studies

When asked what resources they would find valuable for communicating about climate change with constituents, interviewees mentioned both scientific information and information on communication strategies. Of these two categories, scientific information was mentioned more frequently. Financial Education educators in particular said that they don’t know enough about climate change to be able to talk about it in detail.

Interviewees consistently expressed a desire for information about local climate impacts relevant to their program. Such information in the form of webpages, printable fact sheets, and infographics would help both educators and constituents understand how climate change impacts each community—and what they can do about it. For Crops & Soils, that would take the form of “easy-to-absorb weather data on [...] things that are changing” (CS1) and information showing how neighbors’ conservation practices led to better soil retention in the face of droughts and extreme rainfall (CSPM). For Financial Education, the county-level trends in temperature, snow, energy prices, and natural disasters need to be presented not in the abstract, but rather in terms of their impacts on local families. The Community Economic Development educator active in climate change mitigation efforts said constituents would appreciate action-oriented resources on “what’s your community doing about solar, what’s your community doing about transportation, so that you’re more connected to the place you live?” (CED4).

Several interviewees recommended that climate communication resources go a step further by providing case studies of how similar communities have successfully addressed a climate-related challenge. In addition to making the amorphous concept of climate change tangible, case studies can empower communities to take action, interviewees said: “Those stories are incredibly powerful, and it’s really easy for a community to see, ‘Okay, from this case study or this story, I can now see what it looks like in my place’” (CEDPM).

Interviewees in Crops & Soils also pointed to the need for further scientific research on the dynamics of soil carbon sequestration in order to better quantify the mitigation benefits of different farming practices. According to CSPM, “there’s always way more variables than we could possibly manage. And so then that makes our messaging really hard, because we can’t just say, ‘Yes, do this practice, and we’ll be in good shape.’ It just looks different on every farm.”

Learning Best Practices from Colleagues

Many educators are confident in their communication skills thanks to years of personal and professional experience navigating contentious issues. Other interviewees are interested in communication trainings on talking points to initiate conversations about climate change, strategies

to deescalate tense situations, or skills to facilitate climate discussion circles. CED5 offered a concrete example of a difficult communication situation they would like to learn how to navigate:

“How do I [not] detract from these big events that take place, ATV, UTV rallies, snowmobile rallies, things like that? I can't tell people in the area that you can't do those things because they're bad for the environment. But how can I be a part of those things as an economic development person while squaring that up with my own personal beliefs about how bad it is for our air?”

Educators frequently expressed an interest in learning about the approaches their Extension colleagues are taking, both within and across programs. They suggested informal networking, site visits, and sharing outreach materials (such as presentation slides) as ways to establish best practices. CS4 pointed out the importance of consistent messaging across Extension, since some constituents may interact with educators in multiple programs.

Discussion

Talking About Climate Change Without Talking About “Climate Change”

Through semi-structured interviews with Extension educators and program managers, this comparative case study reveals how Wisconsin Extension educators talk about climate change with constituents and how these approaches vary by program. Consistent with each program's internal plan of work, Crops & Soils educators view climate change as tightly interwoven with their work, Community Economic Development educators view climate change as connected with or disconnected from their work depending on the specific topics they focus on, and Financial Education educators view climate change as largely separate from their day-to-day work.

Despite this range of perspectives, the three programs share several commonalities in communication approaches. First and foremost, “How do you talk about climate change?” is in a sense the wrong question to ask most Extension educators. Very few educators have conversations with constituents that are outwardly “about climate change,” for two main reasons: (1) the term “climate change” is politically polarizing, and (2) the umbrella concept of climate change is so broad as to be practically useless in many contexts. Educators focus on the specific, local, and relatable issues facing their clients—issues that clients can take meaningful action to address, not a global issue that feels overwhelming to educators and constituents alike.

As a result, educators frame climate-related issues in terms of their economic costs and benefits to constituents, also sometimes mentioning environmental considerations like water quality that are more specific than climate change and more likely to resonate with rural audiences (Pechar Diamond et al., 2020). When they do refer to the overarching concept, educators avoid the term “climate change” in favor of less politically polarizing phrases, and they focus on resilience (or adaptation) rather than mitigation. The notable exception to this approach was an educator who explicitly focuses on climate change mitigation in an urban area.

Wisconsin Extension educators' strategy of going in the back door on climate change is consistent with the approach taken by Extension professionals in other states (Bowers et al., 2016; Chatrchyan et al., 2017; M. A. Crimmins et al., 2024; Diehl et al., 2016; Kipp et al., 2020; Wojcik et al., 2014), and talking about resilience aligns with the emphasis of most Extension

programs that address climate change (Kipp et al., 2020). These findings also show that Extension educators understand the importance of self-efficacy (a client's perception that they have the capacity to take action) and response efficacy (a client's perception that their action will make a difference), two factors that can increase people's support for pro-climate policies and intention to engage in pro-climate behaviors (Bostrom et al., 2019; Doherty & Webler, 2016; Feldman & Hart, 2016).

One difference between programs was the extent to which educators articulated strategic reasons for their climate communication choices. Crops & Soils educators had clearly thought deeply about how to navigate the complexities of climate change communication with farmers. Financial Education educators use the same strategies to talk about climate change that they use to talk about other topics that evoke strong emotions, without a justification specific to climate change. Community Economic Development educators ranged between these two extremes, with the educators who talk more frequently about climate change articulating more detailed strategies than those who rarely discuss it. Also, when asked in an open-ended way about the communication strategies they use to talk about climate change, educators in Community Economic Development and Financial Education described several strategies related to showing empathy, while those in Crops & Soils focused more on the type of scientific information they provide their clients.

All in all, Wisconsin Extension educators' approaches to talking about climate change are largely consistent with best practices recommended by climate communication scholars and practitioners, particularly centering audiences' needs, focusing on concrete experiences rather than abstract data, and discussing solutions (Rakhimov et al., n.d.; Shome & Marx, 2009; Wright Morton et al., 2016). However, educators may not be using the full range of climate communication tools available to them—storytelling (Morris et al., 2019; Roche et al., 2019), humor (Boykoff & Osnes, 2019), metaphors (Flusberg et al., 2017; Nerlich et al., 2010), and tapping into social norms (Constantino et al., 2022; Nolan, 2021) were rarely mentioned in interviews. If educators use these techniques, they may do so intuitively rather than deliberately and strategically.

Limitations

Before discussing this study's implications for climate communication practitioners and researchers, I will note some limitations. As a qualitative case study, this project generated nuanced insights into the perspectives of interviewees and is not intended to be generalized to broad populations. Despite the small sample size, the triangulation of findings with program managers (educators' direct supervisors) means the findings are likely representative of educators in the three program areas studied within Wisconsin Extension. However, differences could exist among Extension specialists, in other programs, or in other states. In particular, the three programs I studied have an economic focus, which is not true of all Extension programs. That said, the findings are highly consistent with previous qualitative and quantitative research on Extension professionals' climate change attitudes, communication approaches, and barriers.

Using Extension programs as the unit of analysis for comparison is imperfect because the distinctions between Extension program areas can be fuzzy. Several interviewees work in two programs, with some projects or client interactions that might not fit neatly into just one program. I asked educators to talk about their communication approach in the program I was studying, but their experiences in the other program likely informed their answers nonetheless.

This study cannot draw conclusions about how educators' demographics influence their communication approaches, nor can it draw conclusions about specific geographic regions of the state. There is no single best definition of "urban" and "rural" (Wisconsin Office of Rural Health, n.d.), and the rural–urban continuum codes do not always accurately reflect the subpopulation in a county who Extension educators interact with. For example, despite working in an "urban" county (ERS code 2), CED1 described their constituents as mainly "rural." Since I was comparing programs, not geographic regions, ensuring representation from a wide range of counties was sufficient for the purposes of this study.

Due to the wide-ranging nature of the interviews, some relevant topics came up in some interviews but not others, and some interviewees may use strategies that they did not mention. For example, it is possible that Crops & Soils educators strive to show empathy to their clients more often than the interviews suggested. Relatedly, the interviews focused more on big-picture communication approaches rather than the specific content of educators' climate communication.

Another limitation of this study is that the data consisted of what educators say they do, not observations of how they actually communicate with constituents in practice. Although this choice was necessary for practical reasons, the research questions were designed to match the data collected and offer a valuable window into educators' thought processes.

Implications for Extension's Approach to Climate Change Communication

My findings reveal that Wisconsin Extension educators across programs are contributing to climate change adaptation and mitigation, even when they are not talking about climate change. At the same time, the interviews offer insights on how Extension in Wisconsin and beyond can amplify its impact by developing a coherent organization-wide strategy on climate change communication.

Although it is crucial that communicators address climate change directly in contexts such as national policy negotiations, Extension work is most effective when it meets people where they are. This often means talking about specifics rather than the umbrella concept of climate change. One potential drawback to talking about climate change without using the term "climate change" is that it could lead to *agnostic adaptation* in which people adapt to the immediate symptoms of climate change while ignoring the root causes, potentially exacerbating long-term problems (Carman et al., 2022; Castro & Sen, 2022; Koslov, 2019). However, my findings show that avoiding the term "climate change" really is necessary in some contexts, and the risk of agnostic adaptation can be minimized with a nuanced approach based on three different constituent categories:

1. For constituents who actively want to address climate change, Extension professionals should use the term directly.
2. For constituents who acknowledge climate change but do not prioritize it, Extension professionals should emphasize the tangible non-climate benefits of adaptation and mitigation actions, possibly mentioning climate change but not making it a central piece of their messaging.
3. For constituents who are opposed to the term "climate change," Extension professionals should avoid the term entirely in favor of naming concrete impacts of the changing climate.

When distinguishing between these three groups, it is important to keep in mind the possibility of *pluralistic ignorance*, the collective misperception of others' attitudes. People tend to dramatically underestimate the percentages of the general public who think global warming is happening, think it is human-caused, are concerned about it, and support a wide range of pro-climate policies (Andre et al., 2024; Mildemberger & Tingley, 2019; Sparkman et al., 2022). In particular, the Dismissives in the third category above form only 11% of the general U.S. population (Leiserowitz et al., 2023), so my findings do *not* imply that Extension should completely avoid mentioning climate change in public-facing materials. Although Extension educators likely have a better grasp of their constituents' views than the views of the broader public, audience surveys that include questions about climate change would verify whether educators' intuition matches the reality. For all three audience categories, Extension professionals can provide constituents information that leads to long-term adaptation and mitigation rather than short-sighted agnostic adaptation, but to do so more effectively, they will need additional resources and training.

Many educators who want to incorporate climate change into their work feel unsure how to do so and would like to have easily digestible resources—for both themselves and their clients—on the science, local meteorological impacts, and local societal impacts of climate change. Many good resources on the science of climate change already exist (Emanuel, 2024; NASA, 2024) and could be compiled into a resource list to share internally. As for local impacts, Minnesota Extension recently released an interactive map of local climate projections (Liess et al., 2023); such a tool for Wisconsin or other states could be beneficial but would not fully address the gaps my interviewees identified. Rather, climate projections need to be presented in terms of their implications for specific program areas. How will increased flooding affect insurance rates (Financial Education)? How would installing electric vehicle charging stations affect a rural community's tourism revenue (Community Economic Development)? How will different crops respond to the increases in severe droughts and extreme rainfall (Crops & Soils)? Whenever possible, answers to these questions should involve not just data and facts, but also the stories of local communities that others can learn from. Ideally, Extension would create these resources as both websites and printable fact sheets with the word choices and framing tailored to specific constituencies.

The challenges that interviewees described were mostly not program-specific, instead relating to the functioning of Extension as a whole. My findings reiterate the importance of professional development on both climate science and climate communication in a variety of formats—formal and informal, in-person and virtual, synchronous and asynchronous (Diehl et al., 2015; Extension Foundation, 2024; Susko et al., 2013). These should be tailored to each program area, with an emphasis on incorporating climate change considerations into programs' existing work rather than siloing it into a separate initiative. Extension could also create an internal mechanism for employees to share with each other case studies of successes in climate communication, adaptation, and mitigation.

In all these efforts, Extension needs to be strategic, with clearly articulated short-term objectives and long-term goals (Besley & Dudo, 2022; Extension Foundation, 2024) and self-consistent messaging across the organization. In Wisconsin, the Climate Leadership Team's ongoing development of a logic model for climate work is a good step in this direction. Regional Extension partnerships and hiring more staff focusing on climate communication would also help synchronize individual states in the context of the national Extension climate action plan (Extension Foundation, 2024).

Ultimately, both explicitly climate-focused programming *and* existing non-climate-focused programming can make meaningful contributions to local adaptation and mitigation efforts, as

long as Extension administrators actively support their professionals with the proper resources, training, and staffing. As CEDPM told me,

“It doesn’t mean that everyone needs to be pushing climate as part of their main thing, but I think considering how it impacts the work they’re doing will just make better work. [It] creates more innovative work, it creates more meaningful work, and it will meet [...] the needs that communities are looking for.”

Implications for Climate Change Communication Researchers

As a case study of how one group of science communication practitioners approaches climate change communication, this study can inform the research questions and methods of future climate communication research, both quantitative and qualitative (Prokopy, 2011).

Just as a fixation on the term and concept “climate change” can be counterproductive in Extension work, in science communication research it runs the risk of overlooking the nuances of individuals’ climate-related attitudes and behaviors, especially in rural and conservative communities. In particular, people’s concern about specific climate-related issues may be higher than their concern about “climate change” as an umbrella concept, and their willingness to engage in specific pro-climate actions may be higher than their willingness to take action against climate change writ large.

Instead of only using the phrases “climate change” or “global warming,” research stimuli for quantitative work should accurately reflect the discourse among the population under study. In some situations, that will mean using a phrase like “weather variability”; in others, it will mean creating messages about specific impacts of climate change or specific adaptation or mitigation actions rather than the umbrella concept. Along the same lines, my interviewees described very context-dependent ways that they phrase economic and environmental frames based on constituents’ interests. This points to the difficulty of drawing sweeping conclusions about the relative effectiveness of different emphasis frames in climate change communication. Future climate change framing research should seek to incorporate locally specific examples (Degeling & Koolen, 2022) and employ trusted message sources such as Extension.

Ultimately, all climate impacts and all climate action are local, so local qualitative climate communication case studies are a crucial complement to large-scale quantitative work (McGill et al., 2024). Extension can be a valuable partner in future locally focused communication research. The organization has deep relationships with communities that may seem “hard to reach” to university-based researchers, and Extension educators have years of experience in the day-to-day practice of applied science communication. Involving practitioners from boundary organizations like Extension throughout the research process will improve the real-world applicability of climate communication research and facilitate the adoption of communication best practices (Kahan, 2014; Prokopy et al., 2017). This approach harmonizes with broader calls to move climate science away from an objectivist physics-first perspective in favor of centering usability for policymakers and community interest groups (Jebeile & Roussos, 2023).

Future research should continue to examine climate change communication in specific Extension topic areas. For example, CS2 is curious to learn about climate change communication in the Dairy and Livestock programs. Those sectors have received widespread attention for their methane emissions, so difficult discussions related to mitigation are likely more common in those programs than in Crops & Soils. FE2 and FE3 mentioned that natural disasters have harmed

adults' and children's mental health in their communities. Programs in the Natural Resources Institute connect to both the environmental and cultural impacts of climate change. Finally, climate change conversations with youth in 4-H programs might be very different from those in adult-focused programs but are no less important. Across program areas, research should examine the factors that help or hinder feelings of efficacy among constituents, and it should explore whether the demographics of Extension educators influence their approaches to talking about climate change. In addition to interview-based research, ethnographic research could offer further insights on how constituents respond to educators' communication strategies as well as the communication choices that educators may make subconsciously.

Conclusion

In many contexts, the most effective way to talk about climate change is *not* to talk about climate change as an umbrella concept. Instead, communicators should focus on concrete issues that are salient to people, approach conversations with empathy, and empower communities to be resilient in a changing world. Educators in the Cooperative Extension Service understand this, and as a result, their on-the-ground public engagement already advances local climate solutions. Even so, Wisconsin Extension currently lacks a unified strategic approach to incorporating climate change considerations into all program areas. Extension educators need plain-language resources, case studies of successes, and training on both climate science and communication. The insights of my interviewees offer a promising way forward to amplify Extension's contributions to climate action. In the words of FE4:

“First, there's learning about what is climate change, right? What does climate change mean for Wisconsin? And then breaking it down to what does climate change mean to the folks that I work with, to my county? And then how do I get that word out? And how do I start incorporating those pieces into the programming that I already do?”

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Appendix A: Interview Protocols

Protocol for Interviews with Educators

Background information

(to be explained orally to the participant at the beginning of the interview):

- I am a second-year M.S. student in Life Sciences Communication, and I have also been working part-time as a project assistant in Extension since January 2023.
- This research is for my thesis project on how Wisconsin Extension educators approach communicating about climate change with the people you serve, whether that's in oral, written, or visual formats.
- I hope that the results will be useful both for social science researchers and for Extension employees seeking to advance climate-related work.
- The three program areas I'm comparing are Crops and Soils, Community Economic Development, and Financial Education.
- In each program area, I plan to interview four educators, plus the program manager.
- My thesis may include quotes from you, but they will be anonymous, only mentioning your program and whether you work in an urban or rural area.
- I value your perspective, even if you don't think about climate change much, and I want to learn from you.
- Do you have any questions before we begin?
- Do I have your consent to participate in this interview and record it for data analysis purposes?

Interview questions:

1. Can you tell me about your role and work with Extension?
 - a. [prompt] Can you tell me about the communities you work with?
 - b. [prompt] How much of your work is in person versus Zoom versus written forms of communication?
 - c. [prompt] As an Extension educator, what are the most common issues the people you serve discuss with you?
 - d. [prompt] What are your main goals when working with constituents?
2. To what extent do you think climate change is related to your work as an Extension educator?
 - a. [prompt] In what ways does climate change seem connected to your work? Why?
 - b. [prompt] In what ways does climate change seem disconnected from your work? Why?
3. Do you talk with constituents about climate change?
 - a. [If answer to 3 is "no"] Why not?
 - b. [If answer to 3 is "yes"] In general, how do you approach talking about climate change with constituents?
 - i. To refer to climate change itself, do you mainly use the phrase "climate change" or other terms? Why? [give examples such as "extreme weather," "weather variability," and "global warming" if necessary]

- ii. How do you choose which aspects of climate change to emphasize? [give examples such as “economic impacts,” “health,” and “stewardship of the land” if necessary]
 - iii. Do you tend to talk more about mitigation or adaptation, and how does your approach differ between the two? Why? [define “mitigation” and “adaptation” if necessary]
 - iv. What have you found to be the most effective ways to talk about climate change with the people you serve?
 - c. [if they do not directly talk about climate change] Do you ever wish you could talk about climate change more directly, or are you able to achieve your goals with your current approach?
4. When you think about talking about climate change with the people you serve, what questions or concerns related to communication strategies come up for you?
 - a. Where would you try to find answers to these questions? Why?
 - b. What resources do you wish existed for climate change communication for Extension educators like yourself? Why?
5. How do you think your approach compares to how other Extension educators approach communicating about climate change?
6. What are you most interested in learning about how other Extension educators approach climate change communication?
7. Do you have any written or online materials related to climate change that you often share with constituents, and if so, could you send them to me for my project?
8. Is there anything else about climate change communication and Extension work that you would like to mention?

Protocol for Interviews with Program Managers

Background information

(to be explained orally to the participant at the beginning of the interview):

- I am a second-year M.S. student in Life Sciences Communication, and I have also been working part-time as a project assistant in Extension since January 2023.
- This research is for my thesis project on how Wisconsin Extension educators approach communicating about climate change with the people they serve, whether that’s in oral, written, or visual formats.
- I hope that the results will be useful both for social science researchers and for Extension employees seeking to advance climate-related work.
- The three program areas I’m comparing are Crops and Soils, Community Economic Development, and Financial Education.
- In each program area, I have interviewed four educators and will interview the program manager (you).
- My thesis may include quotes from you, and I won’t use your name, but I will attribute the quotes to the program manager in [interviewee’s program area], so you will be identifiable.
- Do you have any questions before we begin?
- Do I have your consent to participate in this interview and record it for data analysis purposes?

Interview questions:

1. Can you tell me about your role and work with Extension?
 - a. How much do you talk about climate change and climate change communication with educators in your program area?
2. Let's talk more about how educators in your program area think about climate change:
 - b. What is your perception of the extent to which educators in your program area think climate change is related to their work?
 - c. In my interviews with educators in your program area, here's what I learned: [summary of answers to "To what extent do you think climate change is related to your work?" and follow-up questions]. What is your reaction to that?
 - d. [prompt] How do these perspectives fit into the big picture of your program area's work?
 - e. [prompt] Is there anything else you would add about the connections between climate change and your program area?
3. Now let's talk about how educators in your program area approach climate change communication:
 - f. What is your perception of how educators in your program area approach talking about climate change with constituents? What strategies do you think they use?
 - g. In my interviews with educators in your program area, here's what I learned: [summary of answers to "Do you talk with constituents about climate change?" and follow-up questions]. What is your reaction to that?
4. Now let's talk about the climate communication resources that educators in your program area already use or could potentially benefit from:
 - h. What questions related to climate communication strategies do you think educators in your program area have?
 - i. [prompt] Where do you think educators look for answers?
 - j. In my interviews with educators in your program area, here's what I learned: [summary of answers to "what questions related to communication strategies come up for you?" and follow-up questions]. What is your reaction to that?
 - k. What other communication resources do you think would be valuable for educators in your program area?
5. What are you most interested in learning about how other Extension program areas approach climate change communication? Why?
6. Is there anything else about climate change communication and Extension work that you would like to mention?
7. Can you send to me your program area's annual plan of work and any other documents that you think would be relevant for my project?

Appendix B: Final Codebook

RQ1: Climate Change (Un)related to Work

- **Connections between climate change and Extension work**—aspects of the interviewee’s work that they view as related to climate change.
- **Disconnections between climate change and Extension work**—aspects of the interviewee’s work that they view as unrelated to climate change.
- **Realizations about connections between climate change and Extension work**—aspects of the interviewee’s work that they realized are connected to climate change during the interview.

RQ2: Communication Strategies

- **Goals, individual and organizational**—discussion about the interviewee’s goals either in their Extension work in general or when talking about climate change specifically, as well as discussion of the role that Extension as an organization plays (or should play) in climate change communication. Includes general statements about why climate change communication is important. When relevant, also use the following subcodes:
 - **Providing factual information**—the view that the interviewee/Extension does or should provide objective/factual/scientific information without expressing personal opinions, taking a political stance, or promoting specific actions.
 - **Promoting specific actions**—the view that the interviewee/Extension does or should promote changes in constituents’ behavior, changes in policy, or other course of action.
- **Going in the back door**—discussion about addressing climate change indirectly rather than directly. When relevant, also use the following subcodes:
 - **Choosing words and frames strategically**—using alternatives to the phrase “climate change” such as “extreme weather”; using non-climate emphasis frames. When relevant, use the following subcodes:
 - **Environmental frames**—talking about climate change by focusing on stewardship of the land, soil health, water quality, environmentally friendly practices, or other environmental topics.
 - **Economic frames**—talking about climate change by focusing on the finances of individuals, governments, or communities.
 - **Tailoring to constituents’ interests/worldviews**—tailoring the content of messages to constituents’ interests, concerns, identities, values, and worldviews. Includes small talk about the weather.
- **Being direct and straightforward**—in opposition to “Going in the back door,” discussion about talking directly about climate change, generally by using the words “climate change” or “global warming”.
- **Adaptation vs mitigation**—discussion about whether the interviewee views adaptation or mitigation as more relevant to their work, as well as whether they talk more about actions related to adaptation or mitigation. When relevant, also use the following subcodes:
 - **Focusing on adaptation/resilience**—work or communication that focuses on adaptation or resilience (even if they do not use those terms with constituents).

- **Focusing on mitigation**—work or communication that focuses on mitigation (even if they do not use that term with constituents).
- **Not knowing the distinction**—the interviewee is not familiar with the distinction between adaptation and mitigation.
- **Showing empathy**—discussion about using empathetic communication strategies. When relevant, use the following subcodes:
 - **Listening actively**—listening actively to constituents, expressing interest in their perspectives, and asking them thoughtful questions.
 - **Demonstrating similarity to constituents**—showing constituents that the educator is similar to them. This includes mirroring the word choice of constituents, as well as distancing themselves from people perceived as dissimilar to constituents.
- **Storytelling**—discussion about using storytelling strategies such as narrative arcs, humor, repetition, and conversational/informal style. Includes avoiding jargon.

RQ3: Challenges and Gaps

- **Challenges**—discussion about the challenges the interviewee/Extension faces related to climate change communication. Each challenge falls into one of two categories:
 - **Extension’s challenges**—challenges related to the interviewee’s/Extension’s role, knowledge, resources, etc. When relevant, use the following subcodes:
 - **Wanting to be more direct (or not)**—discussion about whether the interviewee wishes they could address climate change head-on in order to achieve their goals.
 - **Facing institutional barriers**—institutional barriers within Extension or other institutions prevent the interviewee from addressing climate change in their work in the way that they want. Includes risking damaging trust as well as capacity limitations.
 - **Navigating a polarized issue**—climate change’s status as a politically polarized issue impedes communication, either because it leads to contentious conversations or because Extension is supposed to provide politically neutral information.
 - **Constituents’ challenges**—challenges related to constituents’ lived experiences. When relevant, use the following subcodes:
 - **Not wanting to talk about it**—constituents avoid talking about climate change. Includes avoiding talking about the overarching topic as well as avoiding talking about specific climate impacts.
 - **Making decisions based on emotions or social factors**—constituents’ decision-making process involves emotions or social factors, not facts alone.
 - **Making ends meet takes priority over climate**—constituents are often struggling to make ends meet so are unable or unwilling to think about climate change.
 - **Feeling powerless to address a global issue**—constituents think of climate change as a global problem that is completely out of their control.
 - **Perceiving climate change as distant in space or time**—constituents perceive climate change as not affecting them personally because its effects are either elsewhere in the world or decades in the future.

- **Needing reliable information**—constituents are misinformed or underinformed about climate change. Includes mentions of climate change skeptics or deniers.
- **Existing resources**—discussion of resources about climate change and climate change communication that the interviewee already uses personally or shares with constituents. Includes discussion of where the interviewee searches (or would search) for answers to their questions. When relevant, use the following subcodes:
 - **Other Extension employees**—other Extension employees who are more knowledgeable about climate change or the specific topic being discussed.
 - **Fact sheets**—digital or printed fact sheets, produced by Extension or other organizations.
 - **Websites**—websites, news articles, and blog posts by Extension or other organizations. Includes search engines.
 - **Webinars**—public-facing webinars by Extension or other organizations.
 - **Previous experience**—formal or informal training, workshops, education, or other experience that helps the interviewee be an effective communicator.
- **Desired resources**—discussion of resources about climate change and climate change communication that the interviewee would like to have. When relevant, use the following subcodes:
 - **Local climate impacts**—discussion of the need for information about local climate impacts in fact sheets or other formats.
 - **Case studies of successes**—discussion of the need for examples of ways that other communities or individuals have successfully addressed a climate-related challenge experienced by the interviewee’s constituents.
 - **Scientific research**—discussion of the need for more scientific research due to a gap in knowledge about climate change impacts, adaptation, or mitigation.
 - **Training**—discussion of the need for formal or informal professional development, trainings, or workshops in Extension. When relevant, use the following subcodes:
 - **Communication skills**—training on how to communicate more effectively, especially on contentious or complex topics.
 - **Integrating with existing programming**—training on how to incorporate climate change information into existing Extension programming.
 - **Climate science**—training on the science of climate and climate change.

Throughout all rounds of coding, I also used the following ad-hoc codes to aid me in the writing process:

- **Quotes**—insightful excerpts that could potentially be quoted verbatim in the paper.
- **Examples**—illuminating examples that could potentially be paraphrased in the paper.
- **Demographic differences**—discussion about differences between various constituencies (Tribal communities, Amish communities, pro-solar vs anti-solar farmers, urban vs rural residents, etc.) in the context of climate change communication.