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LETTER

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Abstract

As climate change impacts increase in frequency and magnitude, policies, and actions to promote climate change adaptation are critical to reduce negative consequences to infrastructure and society. Despite the urgency of adaptation, there have been few systematic efforts to understand the dynamics of public support for adaptation efforts at the local level in the U.S., partly because of the context- and location-specific nature of many adaptation actions. In this paper we use novel survey data to identify the role of demographics, extreme weather experience, awareness of climate change adaptation, risk perceptions, and perceived efficacy in predicting general support for local climate adaptation policy. We utilize a large national sample of U.S. adults ($N = 37,088$) collected over 12 waves between 2019 and 2022. We find that risk perceptions, beliefs about global warming, awareness of climate change adaptation, and perceived efficacy of local governments are key drivers of support for local adaptation policy. We provide policymakers, educators, and communicators with key guidelines for enhancing public support for adaptation policies. These insights are critical to expanding climate adaptation efforts and policy implementation at the local and national levels in the U.S.

1. Introduction

The effects of climate change impacts require adaptive efforts at the individual, community, and national levels [1, 2]. Climate change adaptation refers to the actions of individuals, communities, and governments to prepare and adjust to observed or expected changes in climate to minimize harm to themselves, others, or the environment, and take advantage of new opportunities over the short or long-term [3–5]. Yet barriers remain to broad-scale implementation of adaptation policy, including partisan gaps in support [6], limited resources, disconnects in decision-making, institutional constraints, lack of leadership [7–9], and divergent values [10]. While national adaptation policy in the U.S. has lagged, state and local governments serve as laboratories for climate policy [11, 12]. Understanding the factors that drive public support for adaptation policy is therefore critical to understanding adaptation outcomes, since public support can translate into policy action and implementation [13–15].

We investigate the individual-level drivers of public support for local adaptation policy. Understanding the perspectives of constituents is crucial for the successful implementation of adaptation initiatives developed by national and subnational decision and policymakers [16–23]. Previous research on adaptation policy support has focused on context-specific case studies of unique adaptation policies. While adaptation actions are often specific to the local context, less attention has been paid to understanding the broad-scale drivers of support for general adaptation efforts. In this research, we address this gap by providing a systematic analysis of support for general local-level adaptation policy across the U.S. public.

In this paper, we identify key predictors of support for local climate adaptation policy using novel survey data from a large, national cross-sectional quota sample of respondents in the U.S. collected between 2019 and 2022. We investigate the effects of demographics, political affiliation, extreme weather experience, climate change risk

perceptions, awareness of climate change adaptation, and perceived efficacy of individual and community responses.

Climate change adaptation involves assessing climate risks and developing scale-appropriate plans and policies to reduce the negative consequences of climate change. Public risk perceptions are part of the larger sociopolitical context in which adaptation decisions are made [20]. Risk perceptions are influenced by various factors, including scientific and technical descriptions of danger and psychosocial factors, like personal experience, affect, emotions, values, and worldviews [24–26]. Perceived risk may also influence behavior; in the context of climate change, perceived risk may motivate individuals to reduce psychological discomfort by engaging in adaptive behaviors [1]. For example, multiple studies have found that individuals who perceived climate change as a threat to themselves were more likely to support mitigation and adaptation policies than those who were not concerned [27–30]. A meta-analysis by van Valkengoed & Steg [1] also found that risk perceptions motivated adaptive behavior. Although research has investigated the link between climate change risk perceptions and individual-level or household adaptation behaviors ex [31, 32], the relationship between climate change perceptions and support for adaptation policy has been less studied.

Previous research finds that personal experiences with weather events are associated with greater support for adaptation initiatives [28, 33–40]. Personal weather experiences can increase the saliency and perceived risks associated with climate change [41–43], and may be leveraged as an opportunity for policy action [44]. Construal level theory provides one explanation for how people rely on cognitive shortcuts to connect their own experiences to their attitudes toward climate change [45]: climate change is an abstract representation and, accordingly, a psychologically distant threat [46]. Although most Americans believe that global warming is happening (72%), fewer think that people in the U.S. (65%) or they themselves (47%) will be harmed by global warming [47]. However, personal experiences may reduce the psychological distance of climate change; reframing climate change to the present, spatially proximate, and impacting like people [35, 48–53] thus, eliciting greater concern about climate change and more support for adaptation policy [42, 54–57].

Although research has examined the effects of extreme weather experiences on climate change risk perceptions [33, 56, 58], there have been fewer efforts to investigate the relationship between extreme weather experiences and adaptation policy support. The few studies that have examined this relationship present mixed results. For example, one study [28] found that individuals who experienced recent extreme weather events were more likely to support adaptation policy in general; however, the relationship was inconsistent over specific adaptation policies and decayed as time passed from the event. A UK study found that experience with flooding was associated with greater risk perceptions and support for mitigation policies [42].

The partisan gap in climate change opinion in the U.S. may also present challenges for widespread public support of climate adaptation policies [59]. Democrats are consistently more likely to express belief that climate change is happening compared to Republicans [60–62]. Similarly, Democrats are also more likely to support pro-environmental policies [20, 63–66], and some evidence suggests this support extends to adaptation policies [28, 31]. However, the partisan gaps between support vary across specific policies [28, 49]. Further, political ideology may interact with personal weather experience to influence adaptation policy support [49, 67–70]. For example, individuals who do not believe that climate change is happening were less likely to detect changes in seasonal temperatures [71]. The motivated reasoning hypothesis suggests that individuals process information through the lens of their existing beliefs to arrive at a preconceived conclusion [63], and several studies have identified a relationship between political ideology and climate change perceptions consistent with motivated reasoning [18, 33, 72–75].

Extreme weather experiences may shape policy preferences based on individual and contextual factors [66]. Giordano *et al* [55] found that climate mitigation policy adoption was likely in places experiencing uncommon high-impact extreme weather events. Similarly, Hazlett & Mildenerger [76] found that among block groups that experienced wildfires in California, pro-environmental ballot measures were supported by those in Democratic census block groups, but not among Republican census block groups. Further, Cain *et al* [49] found that personally experiencing an extreme weather event and perceptions of personal harm associated with climate change reduced the partisan gap in support for mitigation policies. This suggests a complex relationship between political ideology and contextual factors in shaping policy preferences. More people will have personal experiences with extreme weather as climate change causes extreme weather events to become more frequent and widespread. Personal experience may help decrease the partisan divide in support of adaptation policy [66] by decreasing the psychological distance to global climate change.

Despite growing research efforts on climate change adaptation over the last decade [77, 78], existing research does not provide a comprehensive understanding of the individual-level predictors of adaptation policy support. First, studies of adaptation policy support often focus on hazard- and location-specific adaptation actions not generalizable to other contexts [30, 79]. Second, there is a disproportionate interest in the drivers of support for mitigation efforts compared to studies interested in predictors of adaptation support [10, 16, 20, 80–85]. Adaptation initiatives can be implemented at various levels to provide contextually relevant support to

communities [42, 83, 86, 87]. In contrast to mitigation, adaptation actions at the local or individual level typically only provide direct benefits to the local community or individual. Although research efforts have prioritized understanding attitudes toward mitigation (to avoid future climate change impacts rather than adapt to them) [88], there is a consensus that investigating the drivers of adaptation support is critically important [49].

2. Method

We collected survey data from U.S. adults between July 2019 and August 2022 at three-month intervals using a repeated, cross-sectional survey design collected over 12 waves. Descriptive results for each survey wave are available in an online tool (<https://peterhowe.org/adaptation-opinion/>). In our analyses, only responses with complete demographic data were included, reducing our sample from 43,593 to 37,088. Surveys in the first eight waves were conducted using Google Surveys. In wave nine, responses were collected using Google Surveys and Prolific. In waves ten through twelve, responses were collected via Prolific. In our surveys with samples sourced from Prolific we were able to exclude previous respondents from subsequent waves. It is possible, though unlikely, that we sampled repeat respondents from the earlier Google Surveys waves, since the population from which that sample is drawn is the total internet-using population. To approximate national representativeness, both survey providers employed quota samples targeted at census demographic categories and geography. To adjust for potential sampling bias, we included demographic categories, region, and political affiliation in our models. In our descriptive statistics we use post-stratification weighting [89] based on age, gender, and state of residence. Respondents who responded via Prolific were additionally weighted by political affiliation, as there were disproportionately more respondents who identified as Democrats than among those who responded via Google Surveys. We benchmark our political affiliation weighting to Pew Research Center national results [90].

2.1. Dependent variable

This study used the following survey item as a measure of support for adaptation policy, ‘Climate change adaptation requires costs now to prevent greater costs in the future. How much do you support or oppose adaptation efforts by your local government?’, respondents indicated (Strongly support; Somewhat support; Somewhat oppose; Strongly oppose; Don’t know). Prior to responding to this item respondents were provided the following definition of climate change adaptation and asked about their familiarity: ‘Climate change adaptation means preparing for extreme weather caused by global warming to reduce risks to people and communities. Have you heard of climate change adaptation?’ (Yes; No).

2.2. Independent variables

2.2.1. Demographics

Individual-level demographic variables include age (18–24; 25–34; 35–44; 45–54; 55–64; 65+), gender (Female; Male), political affiliation (Democrat; Republican; Independent/Other; I prefer not to say), and region (Midwest; Northeast; South; or West). Location was determined using IP address geolocation (Google Surveys) or respondent self-reported 5-digit ZIP code or state of residence (Prolific).

2.2.2. Personal extreme weather experience

Respondents were asked, ‘In the past year, have you personally experienced any of the following?’, respondents indicated which extreme weather events they had experienced (Severe storm; Extreme heat; Drought; Wildfire; Hurricane; Flood; None of the above). Responses were recoded to reflect ‘yes experience’ if respondents indicated that they had experienced at least one extreme weather event, and ‘no experience’ if they did not experience any extreme weather events.

2.2.3. Risk perceptions were evaluated with the following items

Perceived personal harm due to global warming: respondents were asked, ‘How much do you think global warming will harm you personally?’, respondents indicated (Not at all; Only a little; A moderate amount; A great deal; Don’t know). *Perceived harm to community due to extreme weather*: respondents were asked, ‘How much do you think extreme weather (like extreme heat, drought, severe storms, floods, hurricanes, or wildfires) will harm people in your community in the next five years?’ responses included (Not at all; Only a little; A moderate amount; A great deal; Don’t know). *Worry about extreme weather*: respondents were asked, ‘How worried are you about extreme weather in your local area?’, responses included (Very worried; Somewhat worried; Not very worried; Not at all worried). *Worry about global warming*: respondents were asked, ‘How worried are you about global warming?’ responses included (Very worried; Somewhat worried; Not very worried; Not at all worried).

2.2.4. Awareness of climate change adaptation

Respondents were asked, 'Climate change adaptation means preparing for extreme weather caused by global warming to reduce risks to people and communities. Have you heard of climate change adaptation?', respondents indicated (Yes; No).

2.2.5. Confidence in government

Respondents were asked, 'How confident are you that, over the next five years, your local government can prepare your community for extreme weather?', responses included (Very confident; Somewhat confident; Not very confident; Not at all confident; Don't know).

2.2.6. Confidence in self

Respondents were asked, 'How confident are you that, over the next five years, you can prepare yourself for extreme weather?', respondents indicated (Very confident; Somewhat confident; Not very confident; Not at all confident; Don't know).

2.3. Data analysis

To predict support for adaptation (Somewhat or Strongly support), we fit three logistic regression models. Model 1 is a base model that includes demographic information, geography of respondents, and political affiliation. Model 2 expands upon Model 1 and includes extreme weather experience. Model 3 includes predictors from Model 2 but also includes risk perceptions, awareness of climate change adaptation, confidence in self, and confidence in government to prepare for extreme weather. The models illustrated in (table 2) present the coefficients, exponentiated coefficients to odds ratios (OR), *p*-values, and confidence intervals (CI). Odds ratios larger than one indicate an increase in respondents' likelihood of reporting support for adaptation policy and the values less than one indicate a decreased likelihood.

Table 1 summarizes the demographic attributes and survey responses of 37,088 U.S. respondents. Between 2019 and 2022, most respondents (54.1%), supported local adaptation policy and a majority (54.9%) had heard of climate change adaptation when presented with a definition. Nearly 41% of respondents (40.9%) indicated that they had personally experienced an extreme weather event in the past year. Less than half of respondents thought that global warming would harm them personally (45.7%), and 46.3% thought that extreme weather would harm people in their communities within the next five years. Less than half of respondents (46.1%) were worried about extreme weather in their local areas; in contrast, 62.4% of respondents were worried about global warming. Less than one-third of respondents (31.7%) were confident that their local government could prepare their communities for extreme weather, and 58.1% of respondents were confident that they could prepare themselves for extreme weather.

2.4. Model 1. Base model

The predictors in Model 1 include gender, age, political affiliation, and region (table 2). Gender, age, political affiliation, and region were generally predictive of support for local adaptation policy (figure 1). Women aged 18 to 24 years old, Democrats, and those in the Northeast and West were most likely to support local adaptation. Specifically, we found that women were 15% more likely to support local adaptation than men (OR = 0.87, 95% CI = 0.82–0.92). Age also played a role in driving support for adaptation. Those age 35 and older were significantly less likely to support adaptation compared to those 18 to 24 years old. Exhibiting the largest contrast, people in the 18–24-year age group were 61% more likely to support local adaptation than people in the 45–54-year age group (OR = 0.62, 95% CI = 0.55–0.70). Political affiliation was the strongest demographic predictor of local adaptation support. Democrats were nine times more likely to support local adaptation policy than Republicans (OR = 0.11, 95% CI = 0.10–0.12), and six times more likely than politically Independent/Other respondents (OR = 0.16, 95% CI = 0.15–0.17). Those in the West (OR = 1.10, 95% CI = 1.01–1.18) and Northeast (OR = 1.33, 95% CI = 1.23–1.46) were more likely to support local adaptation than those in the Midwest.

2.5. Model 2. extended base model (demographics and extreme weather experience)

In Model 2, we included extreme weather experiences in addition to the demographic predictors (table 2). We find similar patterns in the effects of demographic predictors as in Model 1. However, we found that extreme weather experiences had a strong, positive association with local adaptation support (figure 2). Those who reported experiencing extreme weather were twice as likely to support adaptation policy in contrast to respondents without experience with an extreme weather event (OR = 2.27, 95% CI = 2.14–2.40). Model 2 explained greater variance in adaptation support than Model 1 (AIC = 30,274 compared to 31,133).

Table 1. Frequency counts and percentages of independent and dependent variables (unweighted and weighted). Weighted values are weighted by age, gender, state, and political ideology. Weighted counts are rounded to the nearest whole number.

Variable	Categories	Unweighted count (%)	Weighted count (%)
Age	18–24	2,801 (7.5%)	4,490 (12.1%)
	25–34	6,003 (16.2%)	6,632 (17.9%)
	35–44	6,287 (16.9%)	6,061 (16.3%)
	45–54	6,962 (18.7%)	6,109 (16.5%)
	55–64	7,847 (21.1%)	6,180 (16.7%)
	65+	7,237 (19.5%)	7,625 (20.6%)
Gender	Female	18,738 (50.0%)	19,028 (51.3%)
	Male	18,737 (50.0%)	18,059 (48.7%)
Political affiliation	Democrat	7,814 (26.0%)	6,078 (23.9%)
	Republican	4,960 (16.5%)	4,585 (18.0%)
	Independent/Other	11,317 (37.7%)	9,972 (39.2%)
	I prefer not to say	5,913 (19.7%)	4,824 (18.9%)
Region	Midwest	11,704 (26.9%)	7,731 (20.8%)
	Northeast	6,457 (14.8%)	6,535 (17.6%)
	South	16,002 (36.8%)	14,037 (37.8%)
	West	9,368 (21.5%)	8,785 (23.7%)
Extreme weather experience	Yes	17,019 (39.0%)	15,179 (40.9%)
	No	26,574 (61.0%)	21,908 (59.1%)
Perceived harm to community	A great deal or A moderate amount	17,002 (44.9%)	14,808 (46.3%)
	Only a little or Not at all	10,424 (27.5%)	8,693 (27.2%)
	Don't know	10,428 (27.5%)	8,484 (26.5%)
Worry about extreme weather	Very or Somewhat worried	16,060 (44.9%)	13,902 (46.1%)
	Not very or Not at all worried	19,716 (55.1%)	16,286 (53.9%)
Awareness of climate change adaptation	Yes	18,223 (54.5%)	15,526 (54.9%)
	No	15,241 (45.5%)	12,749 (45.1%)
Adaptation support	Strongly or Somewhat support	16,939 (52.6%)	14,740 (54.1%)
	Somewhat or Strongly oppose	6,310 (19.6%)	5,180 (19.0%)
	Don't know	8,928 (27.7%)	7,335 (26.9%)
Confidence in government	Very or Somewhat confident	9,782 (31.1%)	8,443 (31.7%)
	Not very or Not at all confident	13,647 (43.4%)	11,743 (44.1%)
	Don't know	8,012 (25.5%)	6,465 (24.1%)
Confidence in self	Very or Somewhat confident	17,668 (57.5%)	15,125 (58.1%)
	Not very or Not at all confident	5,696 (18.5%)	4,693 (19.1%)
	Don't know	7,358 (24.0%)	5,962 (22.9%)
Worry about global warming	Very or Somewhat worried	18,622 (61.2%)	16,101 (62.4%)
	Not very or Not at all worried	11,814 (38.8%)	9,717 (37.6%)
Perceived personal harm due to global warming	A great deal or A moderate amount	13,341 (44.1%)	11,709 (45.7%)
	Only a little or Not at all	11,163 (36.9%)	9,374 (36.6%)
	Don't know	5,742 (18.9%)	4,554 (17.8%)

2.6. Model 3. Full model

In Model 3, we expanded Model 2 to include risk perceptions, awareness of climate adaptation, and confidence in self and government to prepare for extreme weather (table 2). We find that Model 3 explained greater variance (AIC: 20,134) than Model 2 (AIC: 30,274). Although there were a few changes in the effects of some predictors, most relationships were maintained (figure 3). Gender was not a significant predictor of adaptation support in this model. Additionally, the regional pattern of adaptation support differed: in Model 1, those in the West were more likely to support adaptation policy (OR = 1.10, 95% CI = 1.01–1.18); however, in Model 3, respondents in the West were less likely to support adaptation policy (OR = 0.89, 95% CI = 0.80–0.99), after accounting for risk perceptions, adaptation awareness, efficacy, and climate change beliefs.

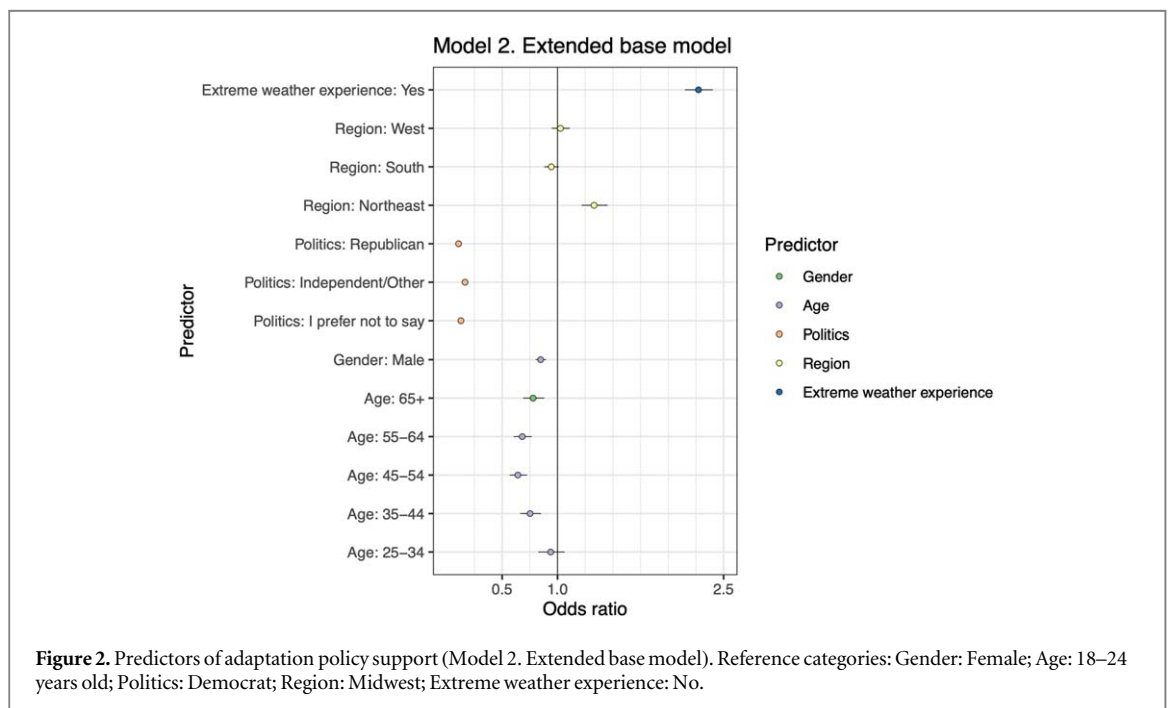
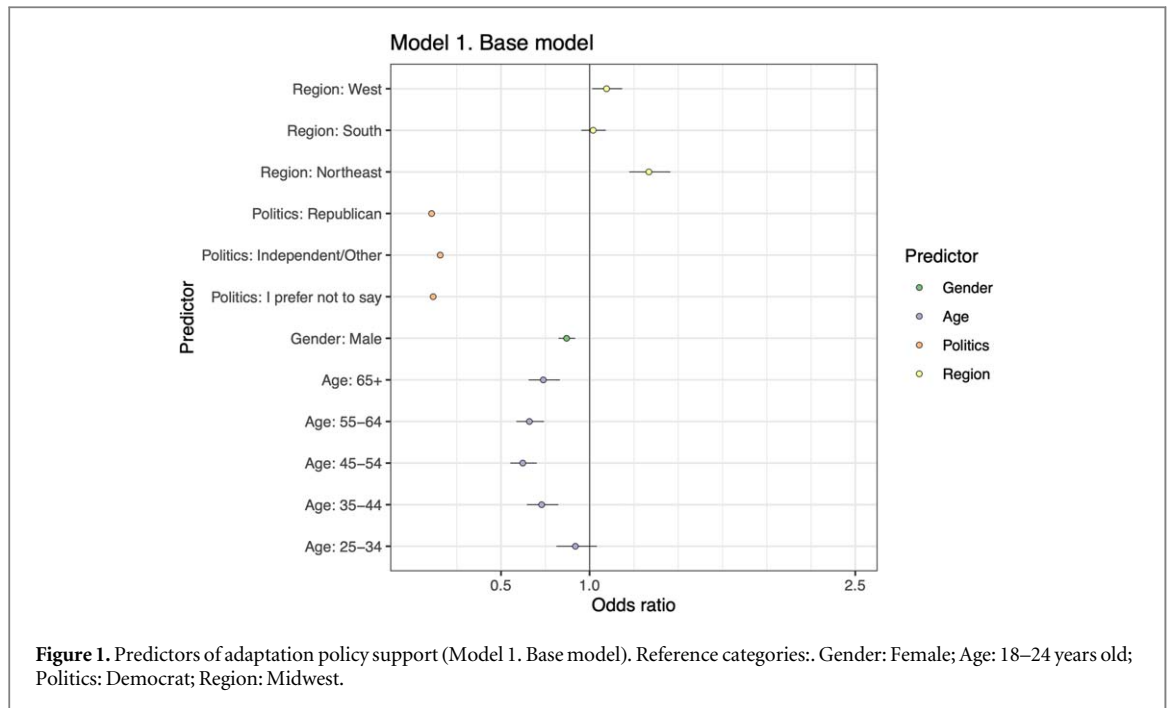
We did not find a relationship between extreme weather experience and adaptation policy support after accounting for additional predictors. However, respondents who believed that they would be personally harmed by global warming were about two times more likely to support adaptation policy (OR = 1.90, 95% CI = 1.73–2.08). Similarly, those who perceive that their community members will be harmed by extreme weather over the next five years were 1.4 times more likely to support adaptation (OR = 1.39, 95% CI = 1.27–1.52). Worry about extreme weather exhibited a significant, positive relationship with adaptation support. Those who were worried about extreme weather in their local areas were 1.3 times more likely to support local adaptation policy (OR = 1.43, 95% CI = 1.23–1.46).

Table 2. Results of Model 1, Model 2, and Model 3.

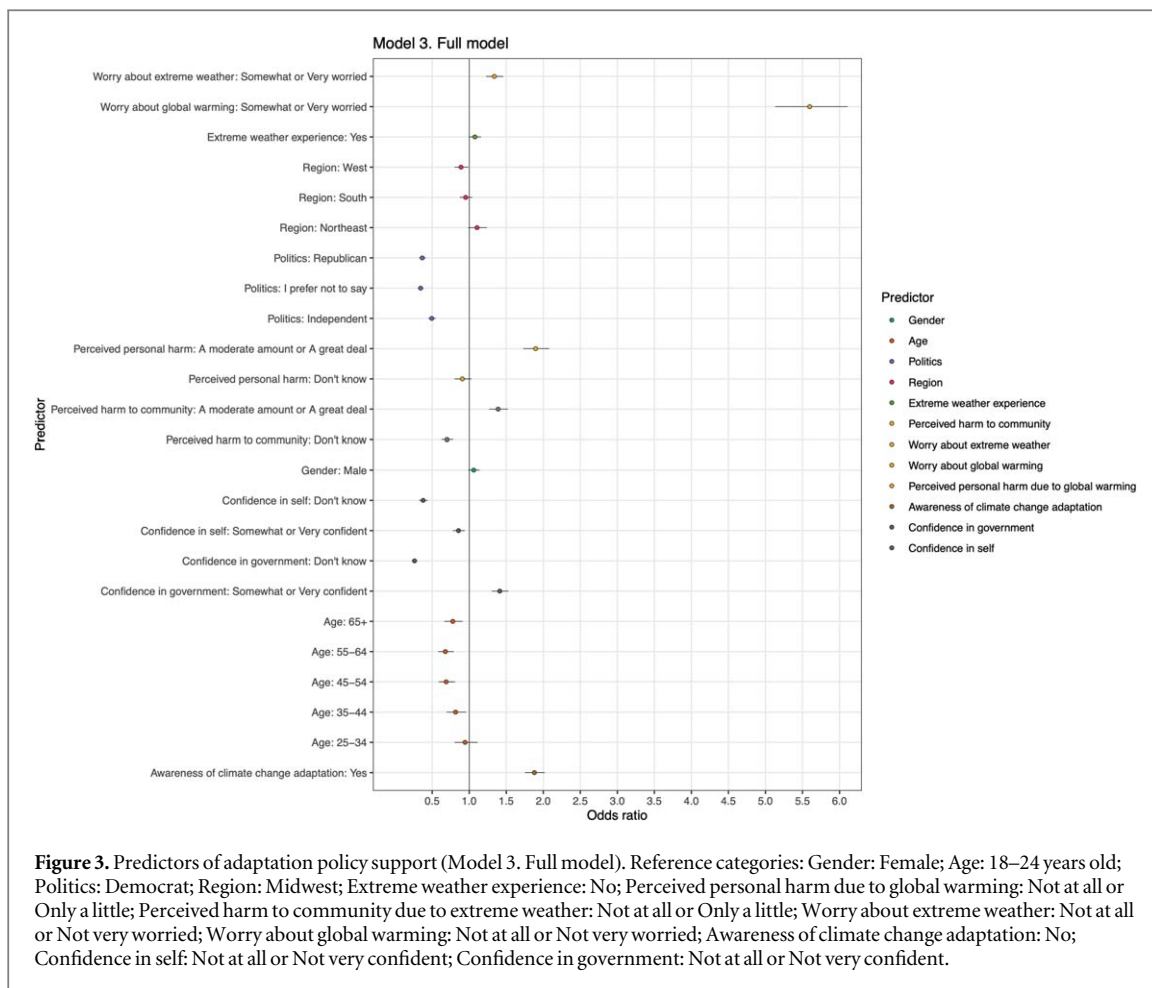
Variable	Model 1. base model		Model 2. extended base model		Model 3. full model	
	Coefficients (OR)	CI (2.5%–97.5%)	Coefficients (OR)	CI (2.5%–97.5%)	Coefficients (OR)	CI (2.5%–97.5%)
Intercept	2.09 (8.11)***	7.14–9.22	1.72 (5.61)***	4.92–6.40	–0.33 (0.72)**	0.59–0.88
Gender (Male)	–0.14 (0.87)***	0.82–0.92	–0.17 (0.85)***	0.80–0.90	0.06 (1.06)	0.99–1.14
Age (25–34)	–0.08 (0.92)	0.81–1.04	–0.06 (0.94)	0.83–1.06	–0.06 (0.94)	0.80–1.11
Age (35–44)	–0.32 (0.73)***	0.65–0.82	–0.28 (0.75)***	0.66–0.85	–0.20 (0.82)*	0.69–0.96
Age (45–54)	–0.47 (0.62)***	0.55–0.70	–0.44 (0.64)***	0.57–0.72	–0.37 (0.69)***	0.59–0.81
Age (55–64)	–0.42 (0.66)***	0.59–0.74	–0.38 (0.68)***	0.60–0.77	–0.39 (0.68)***	0.58–0.79
Age (65+)	–0.30 (0.74)***	0.66–0.83	–0.25 (0.78)***	0.69–0.88	–0.25 (0.78)**	0.66–0.91
Politics (Republican)	–2.22 (0.11)***	0.10–0.12	–2.24 (0.11)***	0.10–0.12	–1.01 (0.37)***	0.33–0.41
Politics (Independent/Other)	–1.85 (0.16)***	0.15–0.17	–1.80 (0.16)***	0.15–0.18	–0.70 (0.49)***	0.45–0.55
Politics (I prefer not to say)	–2.15 (0.12)***	0.11–0.13	–2.06 (0.13)***	0.12–0.14	–1.07 (0.34)***	0.31–0.38
Region (Northeast)	0.29 (1.33)***	1.23–1.46	0.29 (1.33)***	1.22–1.45	0.10 (1.11)	0.99–1.24
Region (South)	0.02 (1.02)	0.95–1.09	–0.06 (0.94)	0.88–1.01	–0.05 (0.95)	0.87–1.04
Region (West)	0.10 (1.10)*	1.01–1.18	0.03 (1.03)	0.95–1.11	–0.12 (0.89)*	0.80–0.99
Extreme weather experience (Yes)			0.82 (2.27)***	2.15–2.40	0.07 (1.08)	1.00–1.16
Perceived personal harm (A moderate amount or A great deal)					0.64 (1.90)***	1.73–2.08
Perceived personal harm (Don't know)					–0.10 (0.91)	0.80–1.03
Perceived harm to community (A moderate amount or A great deal)					0.33 (1.39)***	1.27–1.52
Perceived harm to community (Don't know)					–0.36 (0.70)***	0.63–0.79
Worry about extreme weather (Somewhat or Very worried)					0.29 (1.43)***	1.23–1.46
Worry about global warming (Somewhat or Very worried)					1.72 (5.60)***	5.13–6.11
Awareness of climate change adaptation (Yes)					0.63 (1.88)***	1.75–2.02
Confidence in self (Somewhat or Very confident)					–0.16 (0.85)**	0.78–0.94
Confidence in self (Don't know)					–0.97 (0.38)***	0.33–0.44
Confidence in government (Somewhat or Very confident)					0.35 (1.41)***	1.30–1.53
Confidence in government (Don't know)					–1.34 (0.26)***	0.23–0.30
N included in model:	25,775		25,775		25,723	
AIC:	31,133		30,274		20,134	

Significance values: 0 ****) 0.001 ***) 0.01 **) 0.05 *) 0.1) 1.

Reference categories: Gender: Female; Age: 18 to 24 years old; Politics: Democrat; Region: Midwest; Extreme weather experience: No; Perceived personal harm due to global warming: Not at all or Only a little; Perceived harm to community due to extreme weather: Not at all or Only a little; Worry about extreme weather: Not at all or Not very worried; Worry about global warming: Not at all or Not very worried; Awareness of climate change adaptation: No; Confidence in self: Not at all or Not very confident; Confidence in government: Not at all or Not very confident



Worry about global warming was the strongest predictor of support for local climate adaptation policy. Respondents worried about global warming were nearly six times more likely to support local adaptation policy (OR = 5.60, 95% CI = 5.13–6.11). Awareness of climate adaptation was also positively associated with adaptation support: those who were aware of climate change adaptation were about two times more likely to support local adaptation policy than those who had not heard of climate change adaptation (OR = 1.88, 95% CI = 1.75–2.02). Perceived self-efficacy, or confidence in preparing for local extreme weather, was associated with decreased local adaptation policy support; those who were not confident that they could prepare themselves for extreme weather were 1.18 times more likely to support adaptation (OR = 0.85, 95% CI = 0.78–0.94). In contrast, we found the opposite effect on adaptation support for community efficacy or confidence in local government: those confident that their local government can prepare their communities for extreme weather over the next five years were 1.4 times more likely to support local adaptation policy (OR = 1.41, 95% CI = 1.30–1.53).



3. Discussion

In this research we evaluated individual-level predictors of local climate adaptation policy support. Using a large, national, repeated cross-sectional survey of U.S. adults, we identified predictors of local adaptation policy support. Most Americans have heard of climate change adaptation, and a majority support local adaptation policy. We provide evidence that awareness about the concept of climate change adaptation is a strong predictor of adaptation policy support. When presented with a short definition of climate change adaptation, respondents who reported that they had heard of the concept were more likely to express support for local adaptation policy. While not causal, these findings suggest that future research should investigate the relationship between learning about climate change adaptation and support.

We further investigated demographic factors associated with adaptation support. Across models, younger respondents (18 to 24 years old) and self-identified Democrats were most likely to support adaptation policy. This is consistent with existing research which finds that Democrats are more likely to support pro-environmental policies [20, 63, 64, 66, 91]. We encourage policymakers to be aware of the effects of political affiliation on climate adaptation support. In particular, recent evidence suggest that the effectiveness of messages regarding ‘climate change adaptation’ or ‘preparing for extreme weather’ may depend on an audience’s political orientation [92].

The effect of gender on policy support diminished in Model 3, suggesting that other variables like risk perceptions absorbed the effect of gender exhibited in previous models. Risk perception literature provides strong evidence that men systematically underweight most risks [93]. Further, we found that participant location is a predictor of adaptation support, however, the effects of region varied between models. Varying regional effects may be explained by geographic variation in climate change opinions and personal extreme weather experiences [19]. Future research should investigate the nuances of geographic variation in adaptation policy support, as this may have important implications for local policymakers.

We investigated the effects of four aspects of risk perceptions on support for local adaptation policy. Perceived harm to self and community, worry about extreme weather, and worry about global warming were key drivers of support for local adaptation policy. This work aligns with research on climate change risk perceptions

and public opinions on climate change taxes and laws support for general climate policy (in the U.S.) [79, 94]. Indeed, risk perceptions were some of the strongest drivers of adaptation support in our model. Our findings support the motivational hypothesis in the context of climate change risk perceptions and adaptation support: as individuals perceive greater harm to themselves and their communities, and greater worry about extreme weather and global warming, the more willing they are to support local adaptation policy (reduce the risk). This further supports the notion that the psychological distance of risks is important for adaptation support. As our data illustrate, those who perceive climate change as a proximate threat were more likely to support adaptation. Policymakers may find success in framing adaptation policy as a tool to reduce harm to individuals and communities.

Existing evidence provides mixed findings on the effects of extreme weather experience and adaptation policy support. We identified a strong, positive effect of extreme weather experience on adaptation support in Model 2 that decreased after accounting for risk perceptions. Decision makers should be aware that extreme weather experiences are not likely to drive support for adaptation policy alone. Contextual factors may affect the interpretation of the event as a signal of climate change [58, 95]. As climate change impacts continue to increase in frequency and magnitude, however, public support for adaptation policy is unlikely to shift due to experience with extreme weather events alone [96].

Perceived efficacy exhibited varying effects on support for local adaptation policy. Those who were confident that they can prepare themselves for extreme weather were less likely to support local adaptation policy. In contrast, respondents who were confident that their local governments could prepare their communities for extreme weather were more likely to support adaptation policy. Individuals were more likely to support policy initiatives when they believe that their government will be effective. Similarly, existing research emphasizes the necessity of trust in politicians and scientists to gain support for policy [13].

4. Conclusion

As climate change impacts accelerate, understanding what drives support for adaptation policy is key for the successful broad-scale implementation of adaptation efforts. In this research, we investigated the role of demographics, extreme weather experience, climate change risk perceptions, awareness of climate change adaptation, and perceived efficacy.

Climate change and extreme weather risk perceptions were some of the strongest drivers of adaptation support. Respondents who perceived harm to themselves and their communities, those who were worried about extreme weather, and those who were worried about global warming were more likely to support adaptation policy. Our results may also provide support for predictions based on construal level theory, in which respondents who perceive climate change risks as spatially proximate would indicate greater support for adaptation policy aimed at reducing the threat. We also emphasize that extreme weather experiences alone are not likely to drive support for adaptation policy. Policy and decision makers should explicitly connect extreme weather with global climate change in messaging campaigns to enhance public support for adaptation policy. In addition, we offer the first evidence that awareness about climate change adaptation is associated with public support of local adaptation policy. Perceived efficacy also plays an important role in driving public support for adaptation policy. Respondents who were confident in their own ability to prepare for extreme weather were less likely to support adaptation policy, in contrast to those who indicated confidence in their local government. Finally, our results highlight the effect of political polarization in the U.S. on climate adaptation policy support. In alignment with existing research, we found that Democrats were significantly more likely to support local adaptation policy compared to Republicans, as were younger people and women.

More active collaborations between the public and the government may be one effective remedy for increasing public support of adaptation policy. In these efforts, decision and policymakers should aim to (1) present locally appropriate information and solutions, (2) leverage post-disaster experiences by emphasizing their connection to broader, global climate change impacts, (3) discuss climate adaptation more frequently to increase public awareness, and (4) implement efforts to increase public confidence in government efficacy.

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adults over the age of 18 were included in our sample. All survey responses were provided anonymously to ensure participant privacy.

Data availability statement

The data that support the findings of this study will be openly available following an embargo at the following URL/DOI: <https://doi.org/https://osf.io/j7b9t/>. Data will be available from 1 January 2024.

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