DEPARTMENT OF INTERNATIONAL AND EUROPEAN ECONOMIC STUDIES

ATHENS UNIVERSITY OF ECONOMICS AND BUSINESS

The Influence of Disaster Experience on Citizen Perceptions and Public Spending Priorities

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Working Paper Series

25-34

May 2025

The Influence of Disaster Experience on Citizen Perceptions and Public Spending Priorities

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Abstract— **This study examines the dynamics of citizens' policy attitudes for the allocation of public resources for natural disaster prevention and response, with a focus on the role of experience with extreme environmental events and perceived probability of future events. Through a nationally representative survey currently underway in three US states (California, New York, and Texas), we investigate the influence of geographic and emotional proximity to extreme events in shaping relevant preferences. The results presented are from the first wave of the study (Wave 1), with subsequent waves already planned to be incorporated into the final version of the study. The preliminary analysis suggests that individuals prioritise resource allocation towards recently experienced shocks, and that this prioritization is not driven by subjective risk assessment alone. The final phase of the research, through the collection of data from subsequent waves, will allow us to investigate the temporal duration and dynamics of the impact of external shocks on citizens' political attitudes.**

I. Introduction

Recent advances in behavioural and experimental economics challenge the notion of stable citizen preferences, particularly in the context of extreme events such as natural disasters and accidents. A growing body of evidence suggests that individual beliefs and policy priorities can shift substantially in the aftermath of such events, revealing the dynamic interplay between risk perception and public demand for government intervention. Yet, the extent to which these effects are persistent, conditional on local experience, or generalizable across domains remains an open empirical question.

This study contributes to this emerging literature by analyzing data from a novel, multi-wave survey conducted in three U.S. states: California, New York, and Texas. These states were selected to capture variation in exposure to natural disasters, particularly wildfires, and to investigate how such contextual factors interact with subjective risk perceptions to shape preferences for public spending. The number of burned acres over time in each state, clearly showing that California experiences large-scale wildfires with notable peaks in recent years, Texas sees smaller and more regular fire activity, and New York reports virtually no wildfire activity throughout the period.

The first wave of the survey has already been implemented and provides rich data on socio-demographic characteristics, beliefs about disaster likelihood, and preferred allocation of government resources across a range of policy domains. Additional waves are currently underway and will be incorporated into future versions of this article, enabling a dynamic analysis of how preferences evolve over time and in response to both real and primed shocks. Methodologically, the study aligns with prior work conducted in Greece [1], where natural experiments were used to evaluate the effect of disasters on public sentiment and allocation behavior. By combining cross-sectional variation with longitudinal follow-up, the present study aims to uncover both the immediate and lasting impacts of risk salience on democratic demand for protective public goods.

A. Literature Review

Recent research in behavioral economics increasingly recognizes that individual preferences and decisions, particularly regarding risk and cooperation, are not fixed but dynamically influenced by external events and psychological factors. Personal experiences with economic shocks and disasters can significantly alter an individual's risk preferences, economic anxieties, and behaviors [2]; [3]. [2] demonstrate that experiences of low stock market returns throughout life decrease willingness to take financial risks, indicating how historical economic conditions shape financial behaviors.

Salient shocks, such as economic downturns or health crises, intensify emotional responses that profoundly impact decision-making [4]. Furthermore, retirement, as a significant life transition, also illustrates how major changes can reshape prosocial behaviour and economic preferences. [6] found retirement positively influences prosocial behaviours like volunteering, suggesting changes in intrinsic preferences rather than mere shifts in available time or financial resources. Immediate emotions, unlike anticipated future emotions (e.g., regret, disappointment), can dominate rational decision-making, especially under conditions of uncertainty or threat. Empirical studies, such as that by [5], document significant changes in economic behaviors, like consumption patterns, during the COVID-19 pandemic, reflecting heightened anxieties and changes in perceived risk.

* Research dunded by ERC project.

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II. METHODOLOGY

A. Design

This study employs a longitudinal survey design, organized in multiple waves, with the first wave implemented in February 2025. Subjective risk perception was measured using direct probability questions (0–100%) for wildfire, flood, and rail accident scenarios within the respondent's area over the next 12 months. Public spending preferences were elicited through a budget allocation exercise across categories such as health, education, and emergency services. Finally, respondents were asked to anticipate whether their preferences were likely to change in the future, enabling measurement of perceived preference stability over time.

The survey targets representative samples of adult residents in three U.S. states, California, New York, and Texas, selected for their distinct climatic, geographic, and socio-political profiles. The timing and selection of these states align with the study's aim to explore how varying exposure to environmental and climatic conditions, such as wildfires in California or snowstorms in New York and Texas, influences citizens' perceptions and preferences regarding government spending on public protection and disaster prevention.

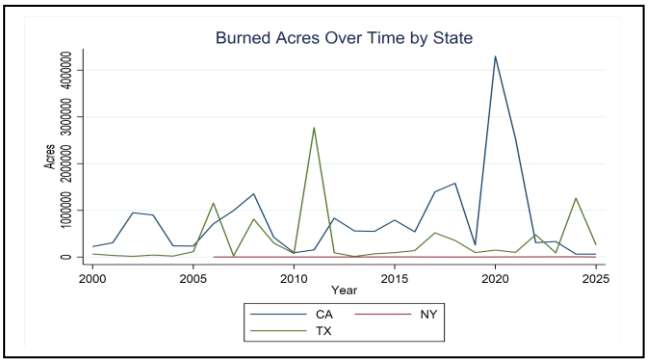

Figure 1. Wildfires: Burned Acres Over Time

Figure 1 illustrates the historical pattern of wildfire exposure across the three focal states. As shown, California has experienced repeated and extreme wildfire events, with pronounced spikes in burned acreage over recent years. In contrast, Texas shows smaller, more regular wildfire activity, while New York records virtually no wildfire impact throughout the observed period. This geographic variance justifies the state-level selection and serves as an empirical anchor for interpreting the differential salience of disaster-related risk across populations.

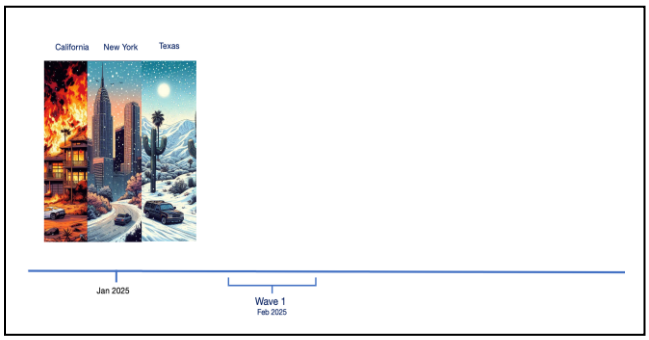

Figure 2. Timeline of Regional Events and Survey Implementation

Wave 1 was conducted shortly after a period marked by regionally salient events: a series of destructive wildfires in California, extreme cold conditions and snowfall in New York, and unexpected winter storms in Texas. These events were not used as direct experimental treatments, but rather as contextual backdrops expected to shape local salience and subjective risk perception. All respondents answered a standardized battery of questions on perceived probabilities of disaster, government spending priorities, and expectations of change in personal preferences over time. The same structure will be retained in subsequent waves, allowing for within- and between-subject comparisons over time. Future waves, already planned, will serve both to test the temporal persistence of initial patterns and to assess dynamic preference formation in response to new events or information.

B. Hypothesis

This study is grounded in the theoretical premise that individual preferences for public spending, particularly in domains related to risk prevention and disaster response, are not static but evolve in response to salient events and changes in perceived threat. Building on existing literature in behavioural public economics and risk communication, we posit that recent or anticipated environmental events shape both the intensity and direction of public demand for protective government action.

Our first hypothesis (H1) states that individuals residing in regions more directly affected by salient disasters—such as wildfires in California—will report a higher preference for allocating government resources to relevant prevention measures, compared to residents in unaffected or less affected states. This aligns with prior findings suggesting that physical or psychological proximity to disaster increases both perceived risk and willingness to invest in mitigation.

The second hypothesis (H2) posits that perceived probabilities of future disasters will positively predict support for related public spending, but that this effect will be moderated by contextual salience. Specifically, we expect this relationship to be significantly stronger in the affected state (California) relative to the control states (New York and Texas). In other words, beliefs about future risk are expected to translate into spending preferences only when those beliefs are anchored in lived or vividly imagined experience.

The third hypothesis (H3) concerns preference stability. Despite observed variability in salience and risk perception, we hypothesize that most individuals will anticipate little to no change in their stated preferences over time. This expectation of stability, even in the presence of external shocks, provides a critical benchmark for evaluating the temporal persistence of revealed preferences in future survey waves.

Together, these hypotheses allow us to disentangle the role of exposure, perception, and psychological anchoring in shaping public demand for government-led disaster preparedness, offering insights into the dynamics of democratic responsiveness in an era of increasing environmental volatility.

III. RESULTS

A. Sample Characteristics-Data

Table 1 presents descriptive statistics from the survey conducted for the United States. The first column includes data from Wave 1 of the survey, while the remaining columns are based on data from the 2020 U.S. Census for the states of New York, California, and Texas. Regarding gender, in Wave 1 the distribution appears relatively balanced, with a slight predominance of women (56.17% in the overall sample).

As for the mean age, in the overall Wave 1 sample it is 47 years (SD = 16.91), while compared to the general population, California (45.41) and Texas (44.36) show a slightly younger population, with standard deviations indicating significant dispersion of ages, particularly within the overall sample. It is noted that there are no underage respondents, and the age distribution was based on estimated mean ages for each age group, utilizing responses from the age groups "18-24," "25-34," "35-44," "45-54," "55-64," and "65+." Integer values are observed, as the method of using the mean age for each group was applied (e.g., 21 years for the 18-24 group, 29.5 years for the 25-34 group, etc.).

The age distribution in Wave 1 shows that the largest proportion belongs to the 65+ group (22.24%), while younger age groups (18-34 years) also account for a significant share of the respondents. Additionally, the 25-44 age groups record high participation rates, indicating that the sample adequately covers all productive age ranges.

Regarding income in Wave 1, the average monthly income is $5720.63. This figure is reasonable for a representative sample of the U.S. population, considering the broad dispersion of incomes. The standard deviation is very high (5689.29), which is expected for income variables due to the significant income inequality. This suggests that the sample includes both low- and high-income individuals. The median monthly income for Wave 1 also reflects this wide dispersion, indicating a significant variety in the participants' economic profiles.

Regarding the distribution of the survey sample, it is observed that the overall sample is almost evenly divided among three major states: California (33.83%), New York (32.14%), and Texas (34.03%). In contrast, in the general U.S. population, the corresponding shares for these states are significantly smaller (e.g., California 11.93%), showing that the Wave 1 sample was specifically structured and does not fully reflect the proportional representation of the overall population. Finally, the total number of observations presented in the results is 1960 individuals.

TABLE I. DESCRIPTIVE STATISTICS - WAVE 1 (US COMPARISON)

	Sample Characteristics				
	Wave 1	***USA***	***NY***	***CA***	***TX***
Gender					
Males	43.83%	48.51%	47.65%	48.96%	48.85%
Females	56.17%	51.49%	52.35%	51.04%	51.15%
Mean Age	47	46.47	46.44	45.41	44.36
	(16.91)	(20.16)	(20.19)	(19.85)	(19.55)
Age Groups					
18-24	11.99%	11.92%	11.83%	12.29%	13.31%
25-34	17.6%	17.36%	18.37%	18.90%	18.85%
35-44	15.97%	16.33%	15.94%	17.28%	18.02%
45-54	17.45%	15.82%	15.66%	16.15%	16.38%
55-64	14.74%	16.81%	16.80%	15.80%	15.48%
65+	22.24%	21.60%	21.19%	19.52%	17.93%
Median Monthly Income	3333.33	6476.58	6841.25	7960.08	6315.00
Mean Monthly Income	5720.63	9096.67	10185.58	11207.58	8879.08
	(5689.29)	(16.58)	(74.50)	(63.00)	(60.42)
State Distribution					
California	33.83%	11.93%			
New York	32.14%	6.23%			
Texas	34.03%	8.46%			
Observations	1960	1960			

a. Standard error in parenthesis

Figure 3 shows the average distributions of preferences of citizens from the states of California, New York and Texas regarding the allocation of state resources to various public expenditures. Each category is depicted as a percentage of total available resources, reflecting citizens' relative priorities in different areas of government intervention.

A notable finding is the increased preference attributed to the Fire Department category by California residents, which is statistically significantly different from the corresponding estimates of New York and Texas residents. This difference is consistent with the hypothesis that the experience of a serious event, such as wildfires, increases the importance citizens place on preventing and responding to related risks. However, this finding does not indicate a universally increased government spending in California relative to other states but is limited to a more pronounced targeting specifically on preventing and responding to risks associated with natural disasters.

In other categories, such as education, health care, national defense, and transportation, the differences across states are small or negligible, indicating generally converging patterns of policy preference in key state functions. In contrast, categories related to environmental and social risks, such as flood protection and low-income support, show larger variations,

which may reflect differences in local experience or in the policy narratives prevailing in each state.

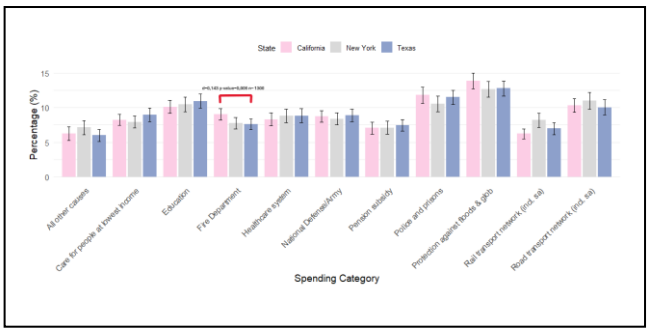

Figure 3. Preferences for government spending

Figure 4 perceived probability' shows people's average estimates of the likelihood of three different types of disasters - fire, flood and rail accident - happening in their area within the next 12 months. Participants were drawn from the states of California, New York and Texas, with the estimate assigned on a percentage scale from 0% (definitely won't happen) to 100% (definitely will happen).

The analysis shows that California residents report significantly higher subjective probabilities of a major wildfire event compared to residents of New York and Texas states. This difference is statistically significant ($p < .001$) and is classified as moderate (effect size $d = 0.407$, sample size $n = 1250$). This finding supports the theoretical expectation that recent experience of a natural disaster, such as wildfires in California, shapes subjective risk perception in a targeted manner, increasing the estimated probability of recurrence of the same event.

In contrast, the remaining two categories - flooding and railroad accidents - do not show notable differences between the three states. The average values for the probability of flooding are around 30%, with no statistically significant differences. Similarly, the estimates for a rail accident remain the lowest and almost identical among the states.

Overall, the results support the view that direct disaster experience increases the perceived probability of recurrence but does not extend horizontally to other forms of risk. This effect appears to be disaster type-specific rather than generalized, which has critical implications for how citizens redefine their priorities for prevention and preparedness against future threats.

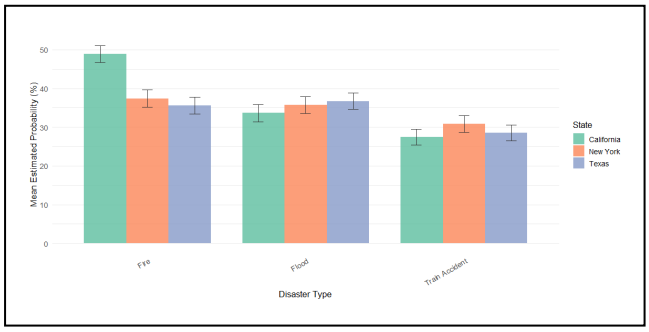

Figure 4. Experiencing disaster (affects) perceived probability

Figure 5 presents the effect of experiencing disasters of different intensity (low, medium, high) on the perceived probability of future events in three states: California, New York and Texas. The analysis covers three types of disasters - fires, floods and rail accidents - and depicts the average citizens' estimates as percentages of the probability of the respective events occurring within the next 12 months.

The key observation is that Californians consistently show the highest probability estimates, particularly for wildfires, regardless of the intensity of past experience. The difference is most pronounced in cases of low-intensity events, where the perceived probability of a fire in California clearly exceeds that of other states. This effect is statistically highly significant ($p < 0.001$), and the effect size is characterized as moderate to large (e.g., $d = 0.559$ for fire after a low-intensity experience).

As the intensity of the event increases (from low to medium and high impact), the difference between states gradually decreases, with the estimates of the probability of flooding and railroad accidents converging. However, California still shows elevated values in wildfires, confirming the consistency of perceived threat when there is relevant experience.

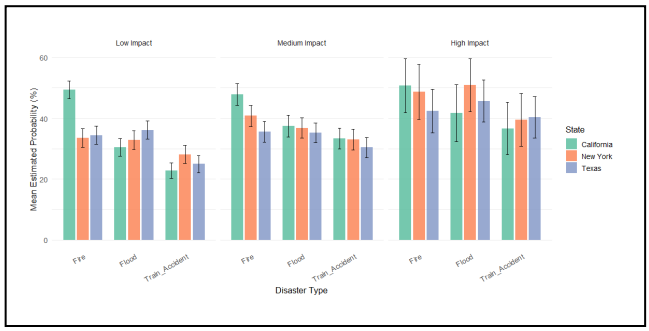

Figure 5. (Effect) holds particularly for smaller scale events

Figure 6 illustrates citizens' expectations as to whether and to what extent they think their own preferences for the allocation of public resources are likely to change in the future. Responses are categorized into five distinct options: significant decrease, small decrease, no change, small increase, and significant increase. The striking finding is that the majority of respondents, regardless of state, expect their preferences to remain stable. Percentages near or above 50% are recorded for the 'Remain same' option in all states, suggesting a high degree of self-perceived political judgment stability and preference consistency.

This finding is particularly important for interpreting the results of the first wave of the survey, as it suggests that citizens, even in states that have experienced severe natural events (such as California), do not expect their priorities to change substantially in the future. This finding may indicate either real stability in political attitudes or an underestimation of the potential nature of external events (such as new disasters or crises). Re-measurement in the second wave of the survey (Wave 2) will provide an opportunity to verify the validity of these self-reports and to assess the extent to which subjective expectations are aligned with actual attitude change.

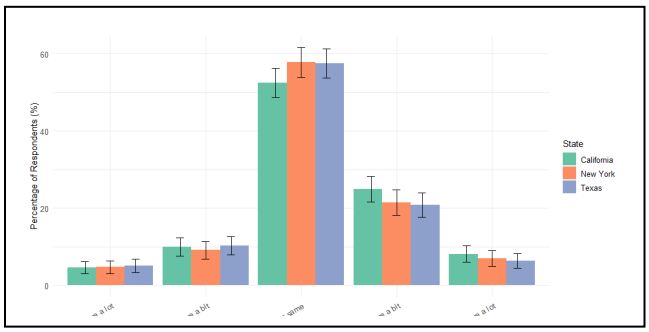

Figure 6. Do people expect their preferences for government spending to change

B. *Regression analysis*

The table presents a series of linear regressions examining the relationship between subjective beliefs about the likelihood of fire and preferences for the allocation of public resources in favor of the Fire Department, while focusing on variation across states. The dependent variable in all models is the percentage of the budget that respondents propose to allocate to the Fire Department, while independent variables include demographic characteristics, risk perception, and geographic locations (California, Texas, New York as the reference group).

In the first two models (columns 1 and 2), the variable indicating California residence has a positive and statistically significant effect on the dependent variable. Specifically, California residents on average report an increased allocation of resources to the Fire Department by 1,308 and 1,466 percentage points, respectively, relative to New York City residents, a difference that is statistically significant at the 5% level. The variable representing Texas residents shows no statistically significant difference from the reference group, suggesting that the behavior is primarily found in California.

The introduction of the variable capturing the subjective probability of fire (column 2 onwards) shows no significant effect on the outcome variable, suggesting that risk perception, in isolation, is not sufficient to alter public spending preferences. However, the interaction of fire probability with housing in California (columns 3 to 6) is positive and gains statistical significance in all models, with a coefficient value ranging from 0.0327 to 0.0434 and a significance level ranging from 10% to 1%. This interaction suggests that only among California residents is increased risk perception accompanied by greater intent to aid the Fire Department, while there is no corresponding effect among Texas residents, where the interaction is non-significant in all models.

The effect of economic and social status is explored through variables such as financial literacy level, educational qualifications and homeownership. These variables do not have a statistically significant effect on the output variable, except for the estimate of the percentage of grey hair (as an indicator of age), which in column 6 shows a negative and marginally significant effect. This finding possibly reflects a decreasing willingness to invest in natural disaster prevention with increasing age or perception of maturity. Similarly, age as a continuous variable is not statistically significant, indicating that the effect may be more complex or mediated by other factors.

Finally, the amount of explained variance is relatively limited in all models, with R^2 ranging from 0.004 to 0.012. This is to be expected in social sciences, given the multivariate nature of political preferences, and does not diminish the substantive significance of the findings. The set of results supports the thesis that policy preferences are not only determined by abstract risk assessments but require an experiential connection to risk to gain political weight. Particularly in the case of California, experience with natural disasters reinforces the effect of subjective valuation on support for relevant public spending, thus providing strong empirical support for the theory that beliefs are programmatically activated only when they acquire emotional or spatial meaning.

TABLE II. REGRESSION ANALYSIS

	(1)	***(2)***	***(3)***	***(4)***	***(5)***	***(6)***
California (Ref: New York)	1.308**	1.466**	0.0571	0.0656	-0.00564	-0.359
	(0.597)	(0.604)	(0.998)	(1.000)	(0.998)	(1.066)
Texas	-0.152	-0.0416	-0.709	-0.812	-0.812	-0.748
	(0.567)	(0.567)	(0.875)	(0.875)	(0.875)	(0.949)
Probability of Fire		-0.00498	-0.0220	-0.0228	-0.0231	-0.0272
		(0.0077)	(0.0159)	(0.0162)	(0.0160)	(0.0172)
California × Probability of Fire			0.0327*	0.0333*	0.0347*	0.0434**
			(0.0198)	(0.0200)	(0.0199)	(0.0214)
Texas × Probability of Fire			0.0178	0.0203	0.0196	0.0206
			(0.0202)	(0.0202)	(0.0202)	(0.0219)
Financial Literacy Total				0.0785	0.225	0.341
				(0.491)	(0.504)	(0.561)
Educational Qualification					-0.165	-0.283
					(0.239)	(0.252)
Grey Hair Estimation					-0.0164	-0.0275*
					(0.0167)	(0.0167)
Age						-0.107
						(0.159)
Buying with						0.346

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Mortgage (Ref: Renting)						
(Standard Error)						(0.688)
						(0.688)
Owning Outright						-0.535
						(0.559)
Gender (Ref: Male)						-0.0645
						(0.498)
Household Income						-0.0967
						(0.145)
Constant	7.763***	7.827***	8.467***	8.433***	9.562***	11.44***
	(0.423)	(0.505)	(0.716)	(0.825)	(1.510)	(1.924)
Observations	1919	1906	1906	1900	1897	1656
R^2	0.004	0.004	0.006	0.006	0.007	0.012

a. Standard error in parentheses *p>0.1, **p<0.05, ***p<0,01

IV. Conclusion

This paper confirms the basic hypothesis that citizens' policy preferences for the allocation of public resources are not fixed, but are shaped by external shocks, in particular, the experience or perception of natural disasters. Focusing on the states of California, New York, and Texas, empirical findings from the first wave of the survey (Wave 1) reveal that only residents of areas with direct experience of relevant events, such as the California wildfires, translate subjective risk assessment into increased support for targeted government interventions. The interaction between geographic exposure and risk perception turns out to be critical for understanding the dynamics of preferences.

The results suggest that citizens expect stability in their preferences over time, which probably reflects either real consistency in their attitudes or underestimation of the effect of future shocks. The final version of the survey will include data from subsequent waves (Wave 2 and beyond), which will allow the temporal robustness of the findings to be assessed and enrich the debate on the relationship between experience, perception and political behaviour in an environment of increasing climate and social challenges.

Acknowledgment

The authors gratefully acknowledge funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme (Grant Agreement No. 951424 – WATER FUTURES: Designing the Next Generation of Urban Drinking Water Systems).

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