



# TEXAS TRENDS

## 2024

Climate  
Perceptions and  
Community Coping  
Strategies



Hobby School of Public Affairs  
UNIVERSITY OF HOUSTON



TEXAS SOUTHERN UNIVERSITY  
Barbara Jordan – Mickey Leland  
School of Public Affairs

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# Climate Perceptions and Community Coping Strategies

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## Introduction

Over ten years from now, the average annual surface temperature in Texas is expected to be 3.0° F higher than the average for 1950-1999, and 1.8° F higher than the average temperature for the period 1991–2020.<sup>1</sup> As the days with temperatures over 100° F become more frequent, Texas will experience rising sea level and retreating shorelines. Texas will also face more extreme weather events such as coastal storms, rainstorms and tornadoes. The changing weather patterns increase the severity of events such as wild fires, air quality, and threaten homes, infrastructure, water resources, landscape, agriculture, and human health.<sup>2</sup> As communities experience these events, their perceptions over climate change and the measures taken to adapt to extreme weather are likely to change.

In this report we gauge the perception of Texans over changing temperatures, their use of relief or cooling centers as strategy to cope with rising temperatures, and changes in the ways community adapt to extreme weather events. The report starts by comparing how respondents perceive temperature during the summers 2024 and the previous year, and whether those responses vary by demographic factors as well as by prior experiences. Lastly, the report analyses how respondents have perceived changes in community attitudes towards climate change in recent years.

This report is part the fourth wave of the **Texas Trends** series, a five-year survey project in collaboration with the Executive Master of Public Administration Program in the Barbara Jordan – Mickey Leland School of Public Affairs at Texas Southern University that was initially launched in 2021. This survey was fielded between June 20 and July 1, 2024 by YouGov in English and Spanish, yielding 2,257 responses from Texans 18 years of age and older. The sample also included an oversample of Black Texans, resulting in confidence intervals of +/- 2.1% (overall survey population). This representative sample of the Texas adult population was matched based on demographics including: gender, age, race/ethnicity, and education.<sup>3</sup>

## Perceptions about Summer Temperatures

Recent research suggests that local temperature perceptions have an impact on attitudes towards climate change, especially when temperatures are colder or warmer than usual.<sup>4</sup> As perception about climate change increases individuals are more likely to take measures to mitigate and prevent its effects.

The **Texas Trends** survey from 2023 and the one from 2024 asked respondents how they would describe the temperature of the most recent summer compared to the prior year (Figure 1). Results from 2023 show that 75.8% of respondents believed the summer of 2023 was hotter

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<sup>1</sup>Texas 2036 - [https://texas2036.org/wp-content/uploads/2023/06/2024\\_ClimateReport.pdf](https://texas2036.org/wp-content/uploads/2023/06/2024_ClimateReport.pdf)

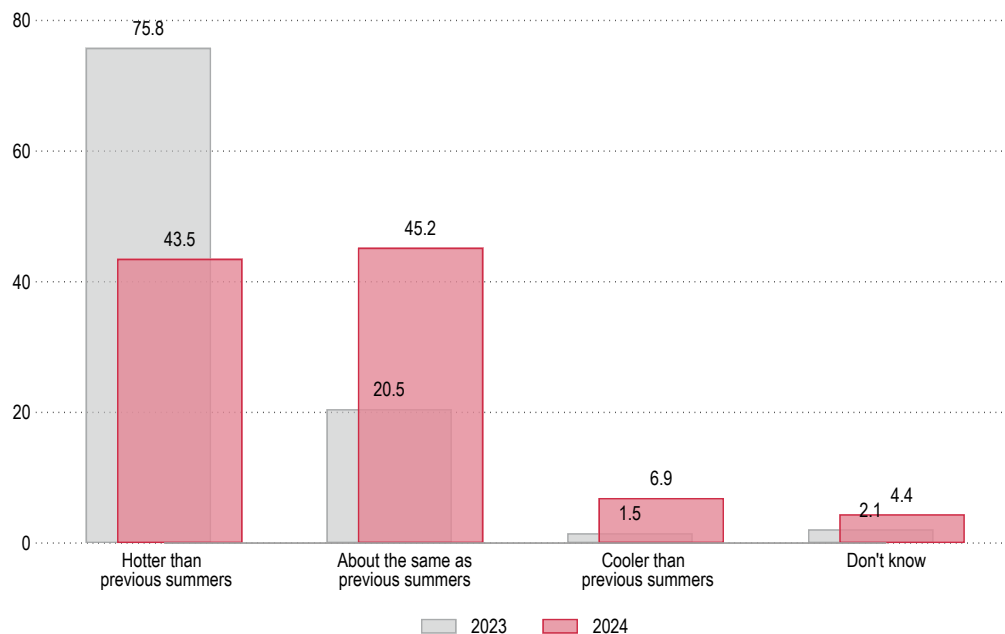
<sup>2</sup><https://www.epa.gov/sites/default/files/2016-09/documents/climate-change-tx.pdf>

<sup>3</sup>See the Technical Appendix for respondent demographic information.

<sup>4</sup>See Mumenthaler, C., Renaud, O., Gava, R., & Brosch, T. (2021). The impact of local temperature volatility on attention to climate change: Evidence from Spanish tweets. *Global Environmental Change*, 69, 102286.

than the previous summer while only 1.5% said it was cooler.<sup>5</sup> This result is not surprising as in 2023 Texas experienced the warmest year ever recorded according to data from NOAA.<sup>6</sup>

**Figure 1:** How would you describe the temperature of this most recent summer in Texas compared to previous ones?



When respondents were asked the same questions in 2024, we find that 43.5% of them say the summer of 2024 is even hotter than the summer of 2023 and 45.2% state it was about the same. On the other hand, 6.9% say it is cooler than previous summers. While the temperatures in summer 2024 have been higher than average, they have not been as high as those recorded in 2023. This might explain why most respondents (52.1%) feel that it is around the same or even cooler than previous summers.

As the temperature increases, so does electricity use. In 2023 for example, the Electric Reliability Council of Texas (ERCOT) reported record high electricity usage which often threatens the reliability of the electric grid.<sup>7</sup> The survey also reveals a relationship between experiences with blackouts and temperature perception (Figure 2). We asked respondents whether or not they have experienced blackouts in eight specific recent extreme weather events: May 2024 - Tornado, Central and Southern Extreme Weather Central and Eastern Tornadoes and Hail Storms (May 2023), Winter Storm Uri (February 2021), Tropical Storm Imelda (September 2019) Hurricane Harvey (September 2017), Winter Storm Goliath (December 2015), and the Groundhog Day

<sup>5</sup>The 2023 report can be found at: [Texas Trends 2023, Climate Change: Beliefs and Actions](#)

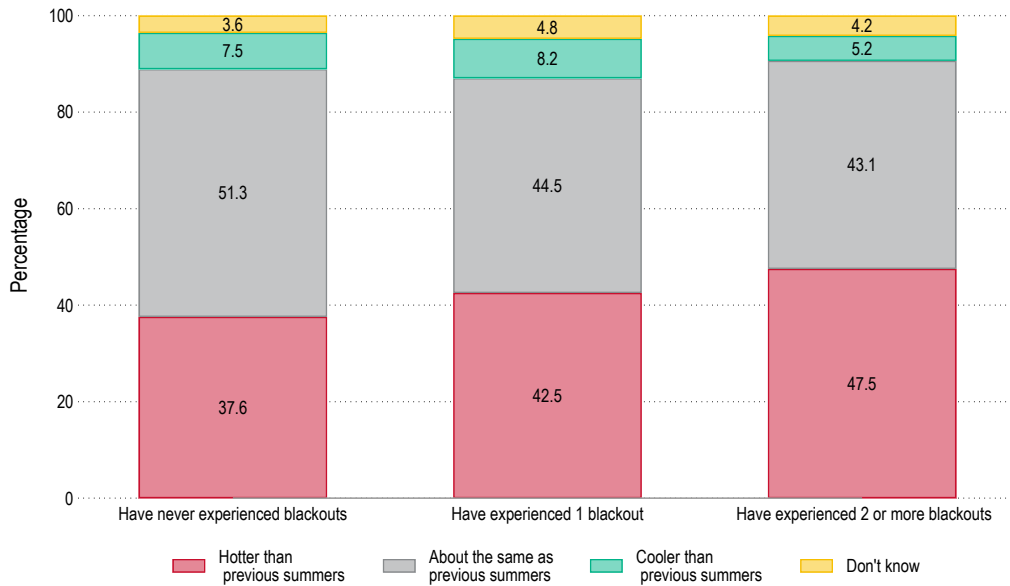
<sup>6</sup>Data from the National Oceanic and Atmospheric Administration (NOAA). See: <https://www.climate.gov/news-features/blogs/beyond-data/2023-historic-year-us-billion-dollar-weather-and-climate-disasters>

<sup>7</sup>ERCOT, News Release Jan 14, 2024. "ERCOT Expects Tight Grid Conditions, Requests Conservation Monday, January 15, from 6 a.m. to 10 a.m. CT". Available at: <https://www.ercot.com/news/release/2024-01-14-ercot-expects-tight>

Blizzard (February 2011).<sup>8</sup>

The more blackouts respondents have experienced, the more they seem to perceive summer of 2024 hotter than previous ones. For those that have experienced this summer as hotter than previous there is a nearly 10 percent points difference between those that have experienced blackouts (37.6%) and those who have not (47.5%).

**Figure 2:** Have you experienced blackouts in mayor recent extreme weather events?

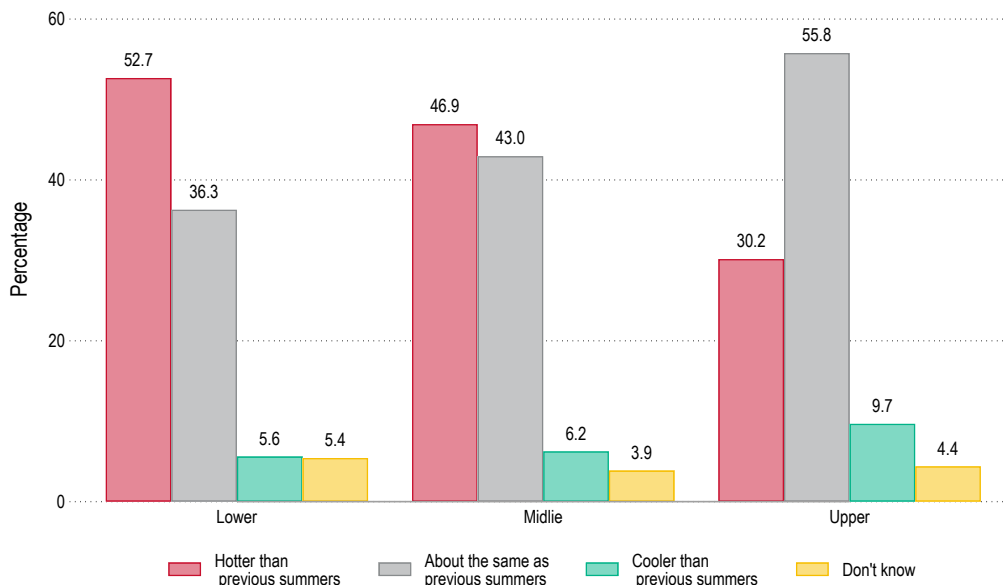


When temperature perception is analyzed by income in Figure 3, 52.7% from those in the lower income bracket experience a hotter than usual summer, while 45.9% in the middle income bracket and 30.2% in the higher income bracket responded that was hotter than previous summers.<sup>9</sup> Similarly, the higher the income, the more respondents said they felt the temperature was either the same (55.8%) or even cooler (9.7%) than previous summers, compared to those with middle and lower incomes.

<sup>8</sup>To read more about blackouts during these extreme weather events and extreme weather in Texas see: [Special Report on Outage Experiences and Preparedness in the Shadow of Hurricane Beryl](#) by The Hobby School of Public Affairs

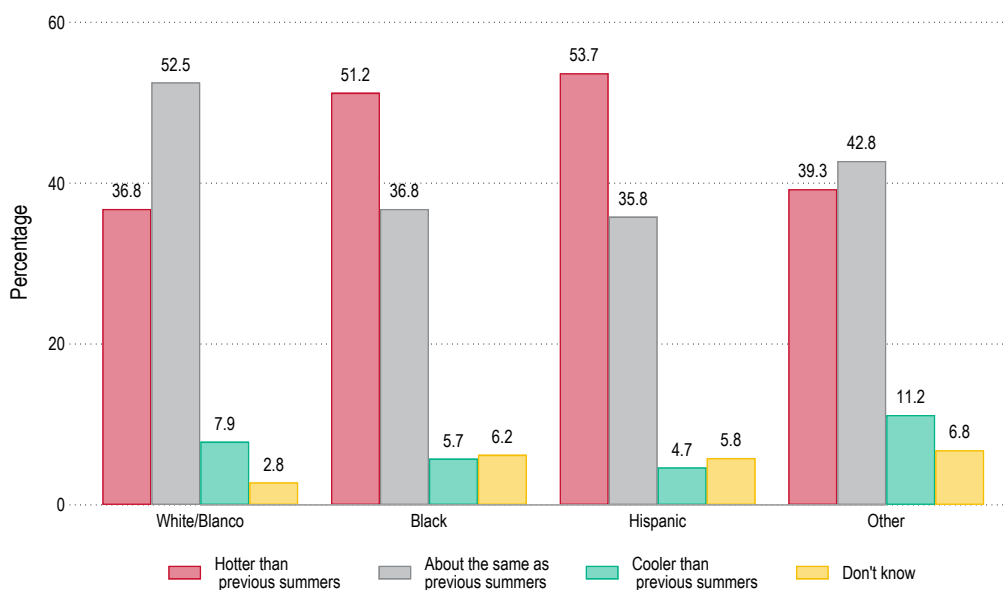
<sup>9</sup>The **lower income** bracket includes respondents with households incomes under \$30,000 dollars; the **middle income** bracket includes respondents with household incomes between \$31,000 and \$100,000; and the **higher income** bracket includes households with incomes above \$100,000 dollars

**Figure 3:** How would you describe the temperature of this most recent summer in Texas compared to previous ones? ( by income)



We also observed differences across race and ethnicity as reported on Figure 4. Among Hispanic respondents, 53.7% reported experiencing hotter temperatures compared to 51.2% Black and 36.8% White. Similarly, higher percentages of white respondents have experienced summer of 2024 as hot (52.5%) or even cooler than previous years (7.9%) compared to Hispanic, Black, or other race or ethnicity.

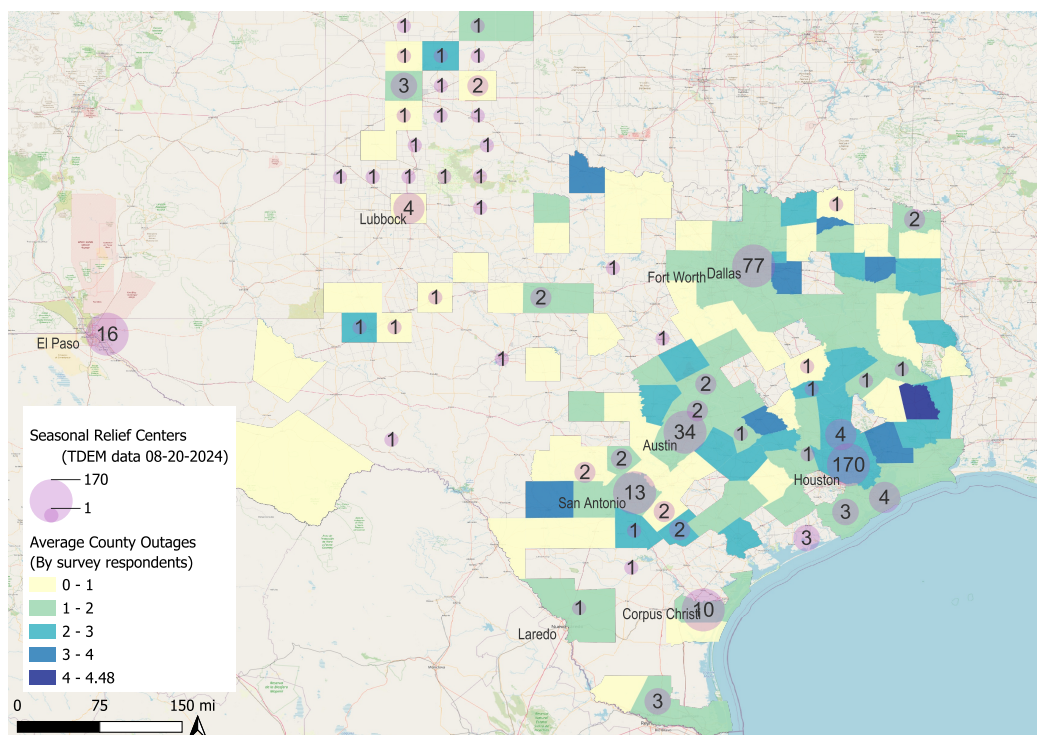
**Figure 4:** How would you describe the temperature of this most recent summer in Texas compared to previous ones? by race



## Coping with Climate Change

With increasing and record breaking temperatures, cities across Texas have opened seasonal relief centers to protect residents from dehydration, heat related illness, and other consequences of extreme weather. According to the Texas Division of Energy Management (TDEM) [Local Shelter & Seasonal Relief Centers interactive Map](#) there are around 415 seasonal relief centers in Texas, nearly 42% are in the Houston metro area and nearly 19% in the Dallas metro area (Figure 5).<sup>10</sup> These relief centers are specially planned to be used by Texans during extreme weather events. When the relief centers are mapped with the average outages reported by county, it can be seen that the largest cities in Texas have more shelters (Houston, Fort Worth/Dallas, Austin, San Antonio, and El Paso). This suggests a focus on densely populated areas, likely explained by the higher population density and increased demand for resources during extreme weather events. It is also evident that some counties in the northeastern part of Texas show high outage frequencies but have only a couple of relief centers.

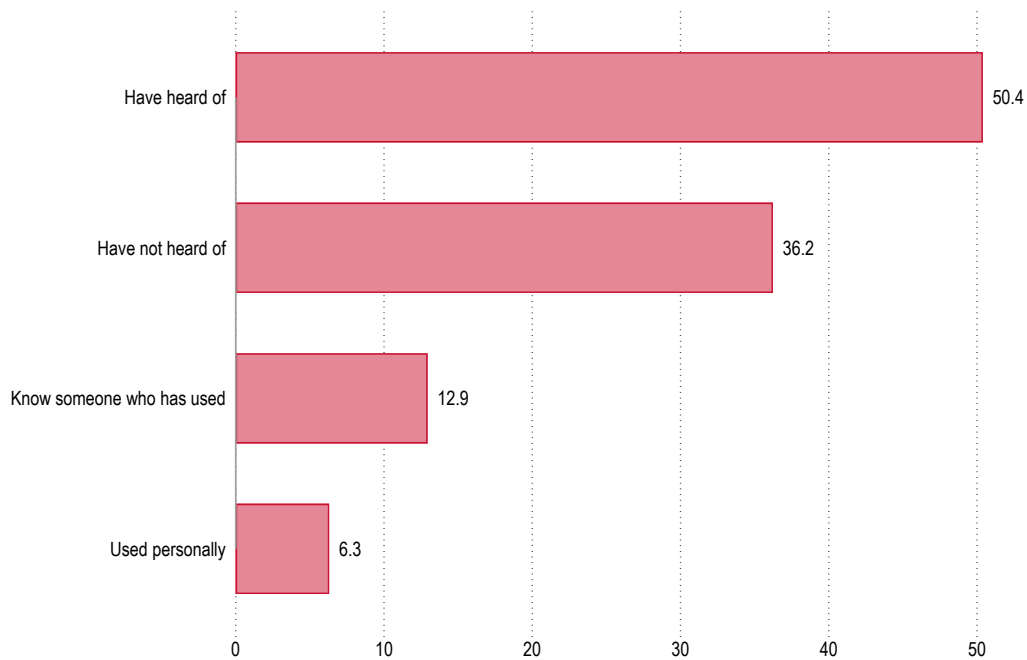
**Figure 5:** Seasonal Cooling/Relief centers in Texas and average outages experience by respondents in each Texas county



The survey asked Texans about their knowledge and experiences with the seasonal relief centers (Figure 6). Findings show that 50.4% of respondents have heard of relief/cooling centers before, 36.2% have not heard of them, 12.9% know someone who has used them before, and only 6.3% have personally used them before (Figure 8). The few respondents who have used relief centers are 165 persons who are mostly from the Dallas (36.9%) and the Houston (30.8%) metro areas.

<sup>10</sup>The map uses the 'Accessibility Spreadsheet of open Local Shelter & Seasonal Relief Centers' provided at [TDEM interactive map](#). This data is updated hourly.

**Figure 6:** During or after a natural disaster, have you ever used, or known someone who has used, or heard about a cooling/relief center?

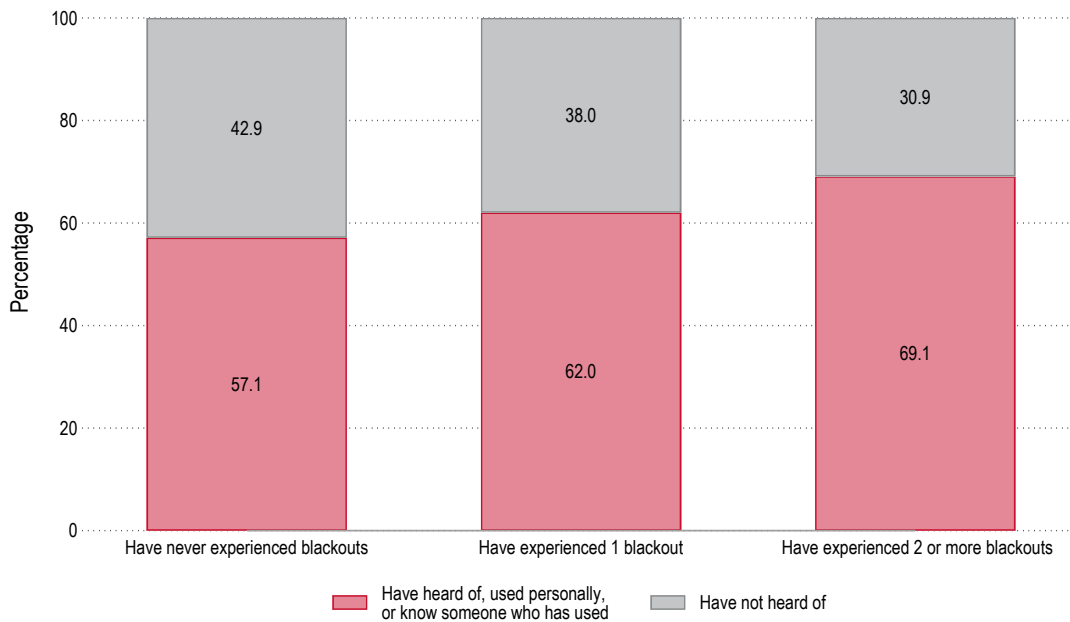


To analyze general knowledge on relief centers depending on previous experience with blackouts, Figure 7 groups those respondents who have heard of or personally used relief centers (in red) and those who have not heard of them (in gray). The more blackouts experienced by respondents the higher the percentage of respondents who have some knowledge or experience with relief centers. Among those that have never experienced blackouts, 57.1% have heard of or personally used relief centers. For those that have experience 1 blackout this number changes to 62% and to 69.1% for those who have experienced two or more outages in previous recent extreme weather events.

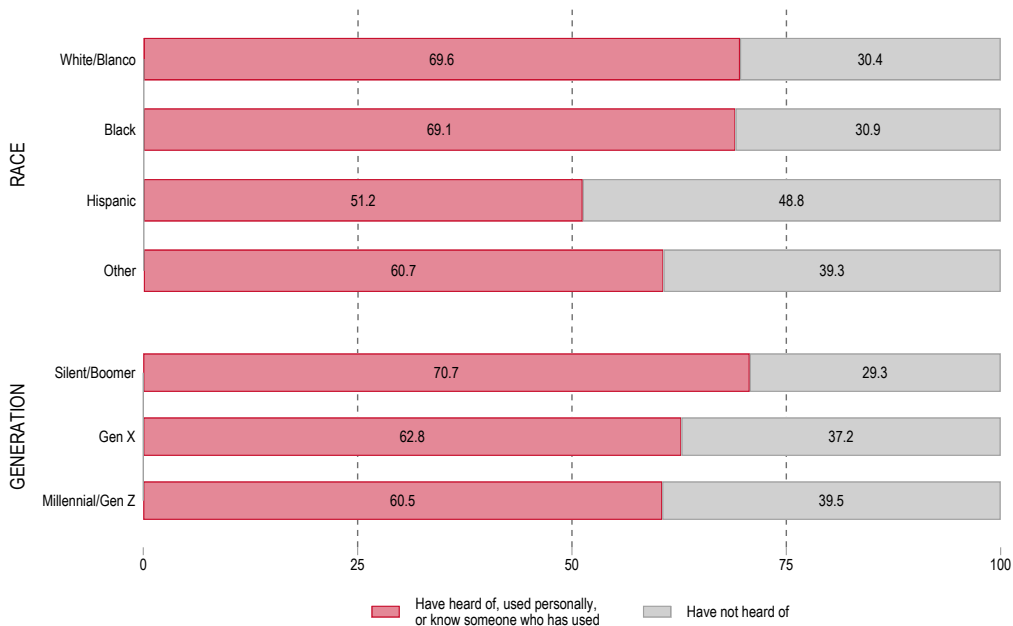
When responses are broken down by demographics in Figure 8, race/ethnicity and generation show interesting patterns. Hispanics appear to be the least informed or exposed to relief centers (51.2%) compared to white (69.5%), Black (69.1%), and other race/ethnicity (60.7%). Similarly when responses are analyzed by generation, 70.7% of the Silent/Boomers, 62.8% of Gen X, and 60.5% of Millennial/Gen Z respondents report having heard about relief centers, used them or know someone who does. This means younger generation are more likely to have not even heard about relief centers.



**Figure 7:** During or after a natural disaster, have you ever used, known someone who has used, or heard about a cooling/relief center?



**Figure 8:** During or after a natural disaster, have you ever used, or known someone who has used, or heard about a cooling/relief center?

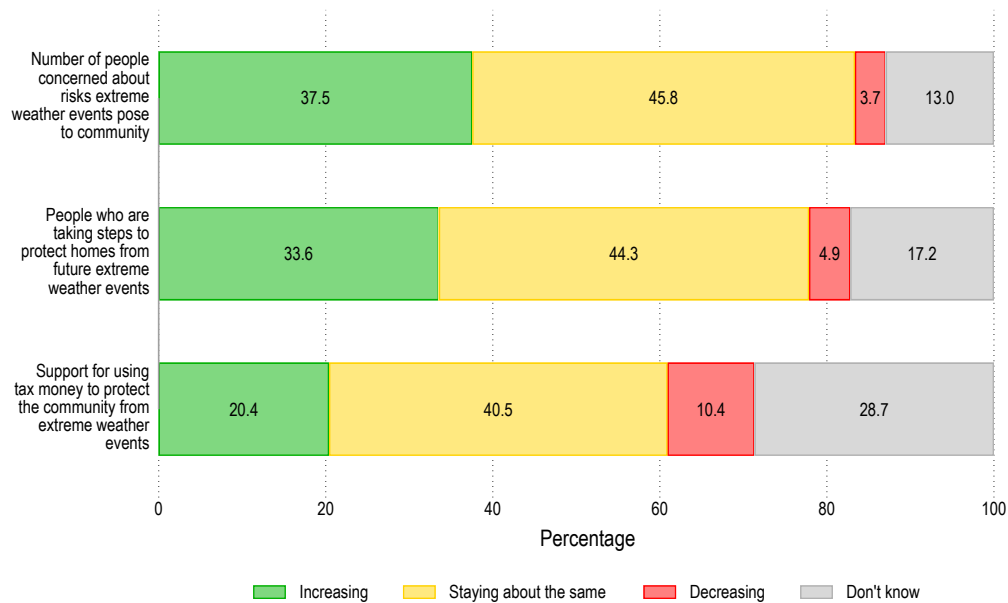


## Changes in Community Attitudes

Figure 9 show responses on community perceptions and actions related to extreme weather events and protective measures. The Figure is divided into three different categories: 1) Concern about risks that extreme weather events pose to the community, 2) Steps taken to protect homes from extreme weather events, and 3) Support for using tax money to protect the community from extreme weather events.

A total of 37.5% of Texans believe that the 1) *number of people concerned about the risks of extreme weather events is increasing*, while 45.8% feel it is staying about the same. Only 3.7% think it is decreasing, and 13.0% are uncertain (don't know). In terms of 2) *actions taken to protect homes*, 33.6% of people believe that the number of people who are taking steps to protect their homes from extreme weather is increasing, 44.3% feel it is staying about the same, 4.9% think it is decreasing, and 17.2% are uncertain (don't know). For 3) *support for using tax money to protect the community*, results show that 20.4% of people believe that support for using tax money to protect the community from extreme weather is increasing, 40.5% feel it is staying about the same, 10.4% think it is decreasing, and 28.7% are uncertain (don't know).

**Figure 9:** In your opinion, how would you say the following are changing in your community?



In general, across all three categories in Figure 9, there is a significant portion of Texas respondents that believe that concerns, actions, and support are either increasing or staying the same, with "staying about the same" being the most common response in each case. This could be explained by the fact that many Texans are taking individual steps to mitigate the effects of climate change (e.g. measures to protect homes from future weather events), rather than as a community (e.g. support the use of tax money to protect the community from extreme weather).

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## Conclusion

As temperatures rise, survey respondents in Texas increasingly perceive hotter summers and become more aware of climate change. The increase of extreme temperatures in Texas represents a threat to the well being and health of the population, but it also presents an opportunity to educate communities on how to mitigate its effects effectively and how to access resources offered by the communities (e.g., relief centers).

The data from the most recent **Texas Trends** survey indicates that lower-income respondents, as well as those that are Black and Hispanic, are disproportionately more affected by perceiving hotter summers. Additionally, those who experience more frequent blackouts also report feeling the impact of hotter temperatures more acutely. This relationship suggests that as the frequency of outages increases with extreme temperatures, there is a greater need for strategies to mitigate extreme weather effects. Initiatives such as seasonal relief centers could be an alternative, however the survey did not find significant evidence of knowledge on the existence of these. People with more experience dealing with blackouts tend to have more knowledge about these centers, emphasizing the importance of ensuring that those most affected have easy access to them.

Improving communication channels about the availability and location of relief centers is crucial. This is particularly important for targeting Hispanics and younger generations, who appear to be less familiar with these resources. Effective outreach to these groups can help bridge the gap in knowledge and ensure that those who need help the most can find it.

Lastly, in terms of community changes and perceptions on extreme weather, things are mostly staying the same; however, concerns and individual measures, such as home improvement protect against future extreme weather events, are increasing faster than support for using tax money to collectively support the community. This trend suggests a potential need for reinforcing the importance of collective action in addressing the challenges posed by increasing temperatures and associated risks.

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## Technical Appendix

The Texas Trends Survey is a five-year survey project to study Texas’s changing population launched in 2021 by the Hobby School of Public Affairs at the University of Houston and the Executive Master of Public Administration Program in the Barbara Jordan – Mickey Leland School of Public Affairs at Texas Southern University.

This is fourth survey in the series and fielded between June 20 and July 1, 2024. The survey was conducted in English and Spanish, with 2,257 YouGov respondents 18 years of age and older (including an oversample of Black Texans), resulting in a confidence interval of +/-2.1 for the overall survey population.

Survey respondents were matched to a sampling frame on gender, age, race/ethnicity, and education and are representative of the Texas adult population. The results of this 2024 statewide survey will be presented in five separate reports: the November 2024 election, school vouchers, housing, immigration, and climate challenges. This special report examines respondents’ experiences with natural disasters and extreme weather events and preparedness for the 2024 hurricane season.

*Note: Tables below are weighted and rounded to the nearest tenth.*<sup>11</sup>

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<sup>11</sup>There are two weights for this project - a Texas General population weight and a Texas registered voter weight. Accurately weighting the data to both samples required YouGov to match and weight the sample two different times, resulting in two different populations depending on weight. There are 173 people who do not have a general population weight, but do have a registered voter weight. Additionally, there are 310 people who have a registered voter weight, but not a general population weight.

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# Tables

## Demographics

**Table A1: Gender**

	No.	%
Female	1,072	51.5
Male	1,012	48.5
<b>Total</b>	<b>2,084</b>	<b>100.0</b>

**Table A2: Age**

	No.	%
18-29	190	9.1
30-44	79	3.8
45-64	48	2.3
65+	1,759	84.7
<b>Total</b>	<b>2,076</b>	<b>100.0</b>

**Table A3: Race and Ethnicity**

	No.	%
White/Blanco	1,096	52.6
Black	259	12.4
Hispanic	580	27.8
Other	148	7.1
<b>Total</b>	<b>2,084</b>	<b>100.0</b>

**Table A4: Educational Attainment**

	No.	%
No high school diploma/GED equivalent	158	7.6
High school graduate/GED equivalent	662	31.7
Some college, no degree	407	19.5
Associate's Degree	194	9.3
Bachelor's Degree	438	21.0
Post-graduate degree	225	10.8
<b>Total</b>	<b>2,084</b>	<b>100.0</b>

**Table A5: Family Income**

	No.	%
Less than \$10,000	188	9.0
\$10,000 - \$19,999	149	7.2
\$20,000 - \$29,999	224	10.7
\$30,000 - \$39,999	180	8.6
\$40,000 - \$49,999	161	7.7
\$50,000 - \$59,999	155	7.4
\$60,000 - \$69,999	129	6.2
\$70,000 - \$79,999	143	6.9
\$80,000 - \$99,999	161	7.7
\$100,000 - \$119,999	118	5.6
\$120,000 - \$149,999	128	6.1
\$150,000 - \$199,999	74	3.6
\$200,000 - \$249,999	37	1.8
\$250,000 - \$349,999	18	0.9
\$350,000 - \$499,999	10	0.5
\$500,000 or more	19	0.9
Prefer not to say	190	9.1
<b>Total</b>	<b>2,084</b>	<b>100.0</b>

**Table A6: Income Category**

	No.	%
Lower	560	29.2
Middle	766	39.9
Upper	592	30.9
<b>Total</b>	<b>1,918</b>	<b>100.0</b>

## Climate Change Survey Questions

**Table A7:** Do the following expenditures represent a major, a minor, or no source of financial strain for you today?: *Homeowners: Utility Bills (Electricity, Natural Gas, Water/Sewage)*

	No.	%
Major	338	68.4
Minor	137	27.7
Not a source	19	3.9
<b>Total</b>	<b>494</b>	<b>100.0</b>

**Table A8:** Do the following expenditures represent a major, a minor, or no source of financial strain for you today?: *Renters*: **Utility Bills (Electricity, Natural Gas, Water/Sewage)**

	No.	%
Major	379	60.5
Minor	206	33.0
Not a source	40	6.5
<b>Total</b>	<b>626</b>	<b>100.0</b>

**Table A9:** Have you experienced blackouts due to any of the following natural events in Texas in the last 10 years? (Select all that apply): **Groundhog Day Blizzard (February 2011)**

	No.	%
Selected	208	10.0
Not selected	1,876	90.0
<b>Total</b>	<b>2,084</b>	<b>100.0</b>

**Table A10:** Have you experienced blackouts due to any of the following natural events in Texas in the last 10 years? (Select all that apply): **Winter Storm Goliath (December 2015)**

	No.	%
Selected	259	12.4
Not selected	1,825	87.6
<b>Total</b>	<b>2,084</b>	<b>100.0</b>

**Table A11:** Have you experienced blackouts due to any of the following natural events in Texas in the last 10 years? (Select all that apply): **Hurricane Harvey (August 2017)**

	No.	%
Selected	437	21.0
Not selected	1,647	79.0
<b>Total</b>	<b>2,084</b>	<b>100.0</b>

**Table A12:** Have you experienced blackouts due to any of the following natural events in Texas in the last 10 years? (Select all that apply): **Tropical Storm Imelda (September 2019)**

	No.	%
Selected	205	9.8
Not selected	1,879	90.2
<b>Total</b>	<b>2,084</b>	<b>100.0</b>

**Table A13:** Have you experienced blackouts due to any of the following natural events in Texas in the last 10 years? (Select all that apply): **Winter Storm Uri (February 2021)**

	No.	%
Selected	1,002	48.1
Not selected	1,082	51.9
<b>Total</b>	<b>2,084</b>	<b>100.0</b>

**Table A14:** Have you experienced blackouts due to any of the following natural events in Texas in the last 10 years? (Select all that apply): **Central and Southern Severe Weather (April 2023)**

	No.	%
selected	379	18.2
not selected	1,705	81.8
<b>Total</b>	<b>2,084</b>	<b>100.0</b>

**Table A15:** Have you experienced blackouts due to any of the following natural events in Texas in the last 10 years? (Select all that apply): **Central and Eastern Tornadoes and Hail Storms (May 2023)**

	No.	%
Selected	288	13.8
Not selected	1,796	86.2
<b>Total</b>	<b>2,084</b>	<b>100.0</b>

**Table A16:** Have you experienced blackouts due to any of the following natural events in Texas in the last 10 years? (Select all that apply): **May 2024 Tornado (May 2024)**

	No.	%
Selected	435	20.9
Not selected	1,649	79.1
<b>Total</b>	<b>2,084</b>	<b>100.0</b>



**Table A17:** During or after a natural disaster, have you ever used, or known someone who has used, or heard about a cooling/relief center? (Please select all that apply): **I have used a cooling/relief center.**

	No.	%
Selected	131	6.3
Not selected	1,953	93.7
<b>Total</b>	<b>2,084</b>	<b>100.0</b>

**Table A18:** During or after a natural disaster, have you ever used, or known someone who has used, or heard about a cooling/relief center? (Please select all that apply): **I know someone who has used a cooling/relief center.**

	No.	%
Selected	270	12.9
Not selected	1,814	87.1
<b>Total</b>	<b>2,084</b>	<b>100.0</b>

**Table A19:** During or after a natural disaster, have you ever used, or known someone who has used, or heard about a cooling/relief center? (Please select all that apply): **I have heard about cooling/relief centers but don't know anyone who has used one.**

	No.	%
Selected	1,050	50.4
Not selected	1,034	49.6
<b>Total</b>	<b>2,084</b>	<b>100.0</b>

**Table A20:** During or after a natural disaster, have you ever used, or known someone who has used, or heard about a cooling/relief center? (Please select all that apply): **I have not heard about cooling/relief centers.**

	No.	%
Selected	755	36.2
Not selected	1,329	63.8
<b>Total</b>	<b>2,084</b>	<b>100.0</b>

**Table A21:** How would you describe the temperature of this most recent summer in Texas compared to previous ones?

	No.	%
Hotter than in previous summers	906	43.5
About the same as in previous summers	943	45.2
Cooler than in previous summers	145	6.9
Don't know	91	4.4
<b>Total</b>	2,084	100.0

**Table A22:** In your opinion, how would you say the following are changing in your community?  
**Number of people concerned about risks extreme weather events pose to the community**

	No.	%
Increasing	782	37.5
Staying About the Same	955	45.8
Decreasing	77	3.7
Don't know	270	13.0
<b>Total</b>	2,084	100.0

**Table A23:** In your opinion, how would you say the following are changing in your community?  
**People who are taking steps to protect homes from future extreme weather events**

	No.	%
Increasing	699	33.6
Staying About the Same	924	44.3
Decreasing	103	4.9
Don't know	358	17.2
<b>Total</b>	2,084	100.0

**Table A24:** In your opinion, how would you say the following are changing in your community?  
**Support for using tax money to protect the community from extreme weather events**

	No.	%
Increasing	425	20.4
Staying About the Same	844	40.5
Decreasing	217	10.4
Don't know	597	28.7
<b>Total</b>	2,083	100.0