

Tornado Sheltering Perceptions During the COVID-19 Pandemic in 2020

Kevin Ash¹ (kash78@ufl.edu)

Mike Egnoto²

Christopher Williams¹

Kim Klockow-McClain³

Weather-Ready Nation Ambassador Roundtable

27 April 2021

¹ Dept. of Geography, Univ. of Florida, Gainesville, FL

² Research Consultant, Colorado Springs, CO

³ CIMMS, Univ. of Oklahoma/NSSL, Norman, OK



Research Context & Goals

- COVID-19 created potential conflicts for protective behaviors for tornadoes & other types of extreme weather
- Goals
 - Understand how beliefs about tornadoes & COVID-19 might influence sheltering behavior
 - Determine how tornado-COVID-19 risk perceptions varied geographically & demographically

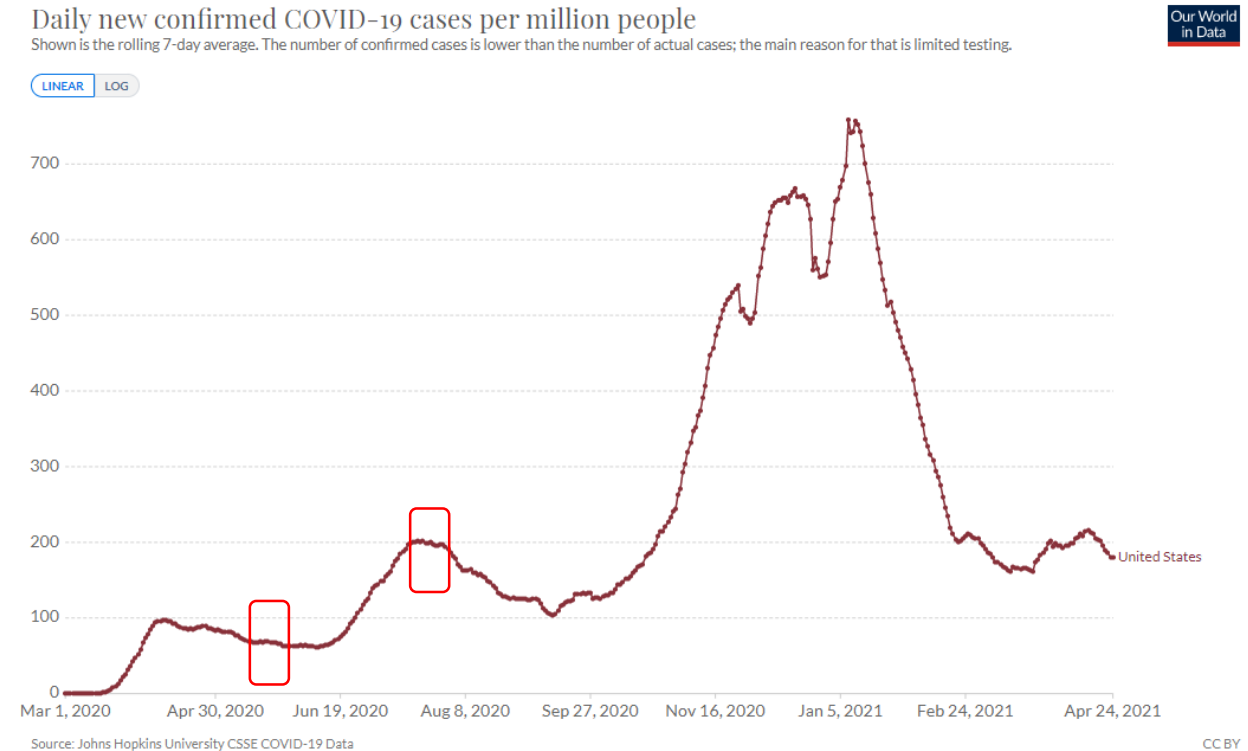
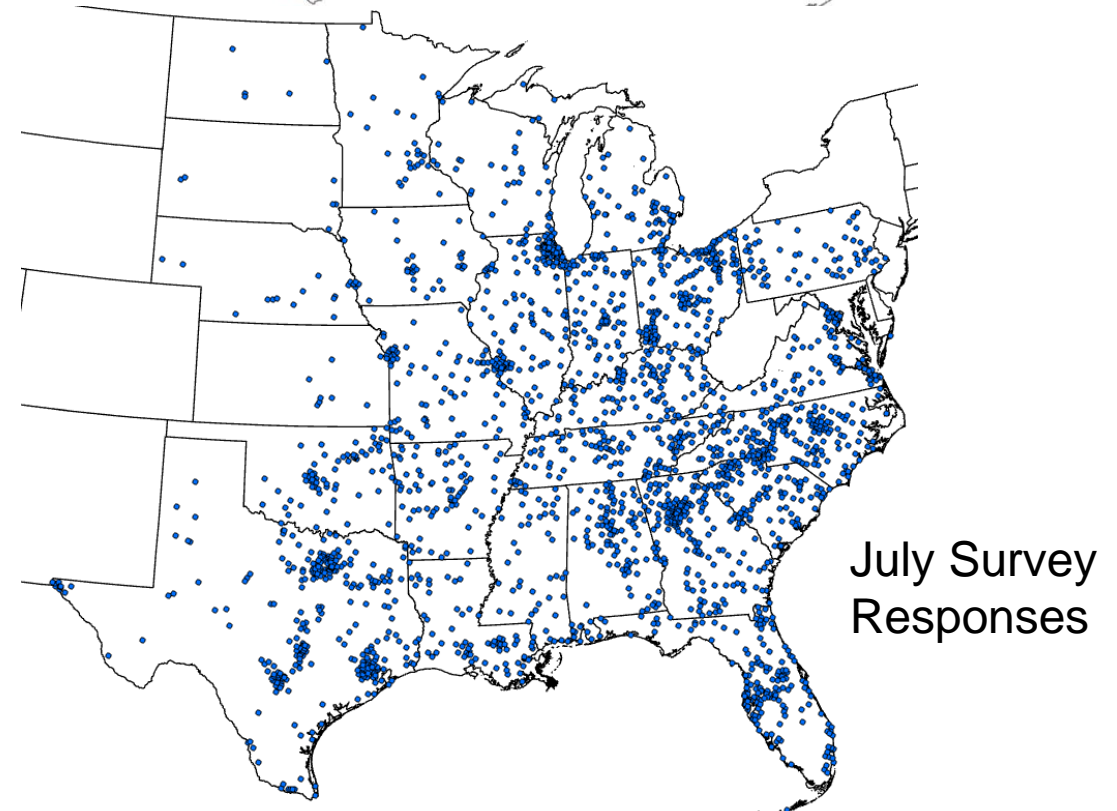
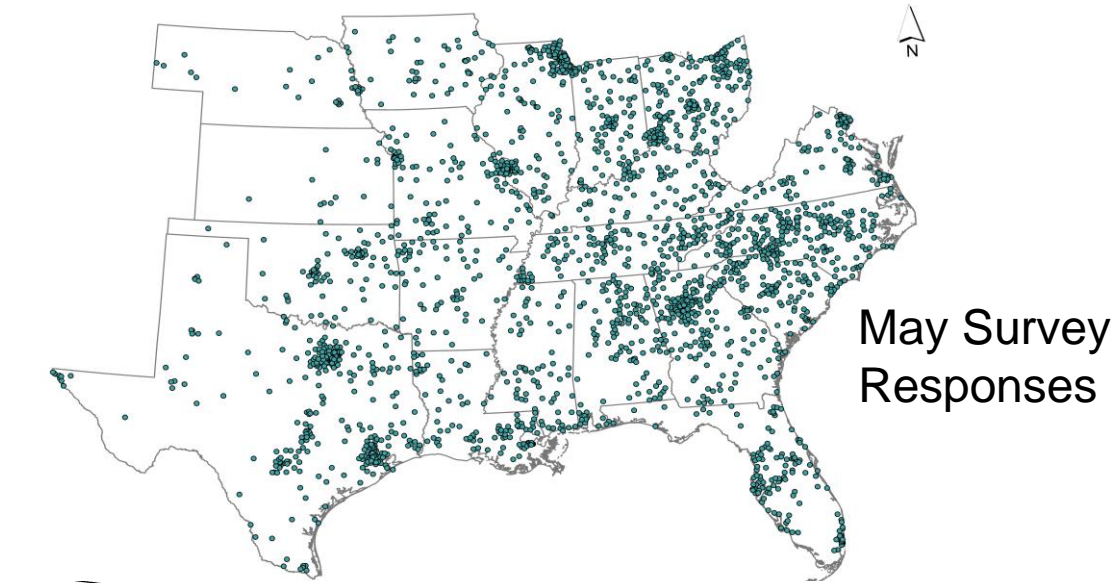


Image source: <https://ourworldindata.org/covid-cases>

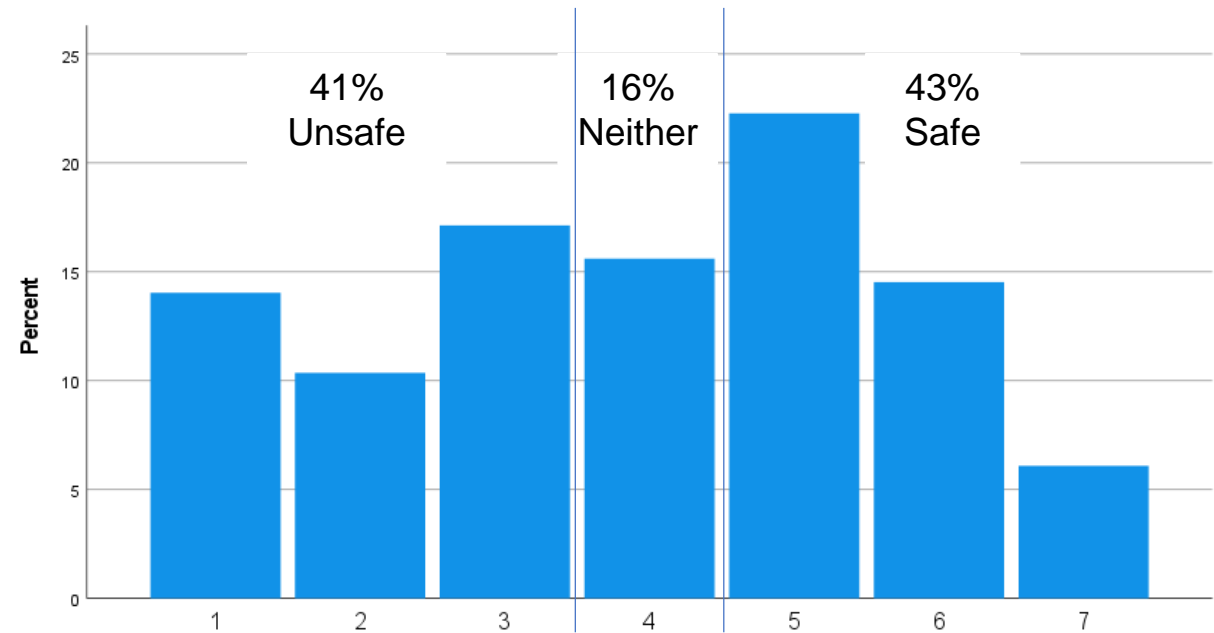
Data Collection

- Two Surveys Fielded via Qualtrics
 - Late May 2020
 - 3071 usable responses
 - 20 states
 - Late July-Early August 2020
 - 3063 usable responses
 - 26 states
- Oversampled manufactured & mobile homes (50% of responses)



Tornado Sheltering

- Similar percentages of people feel unsafe & safe sheltering inside their home
- About 30-35% reported leaving home to shelter elsewhere at least once since 2018
- 23% went to public shelter at least once since 2018

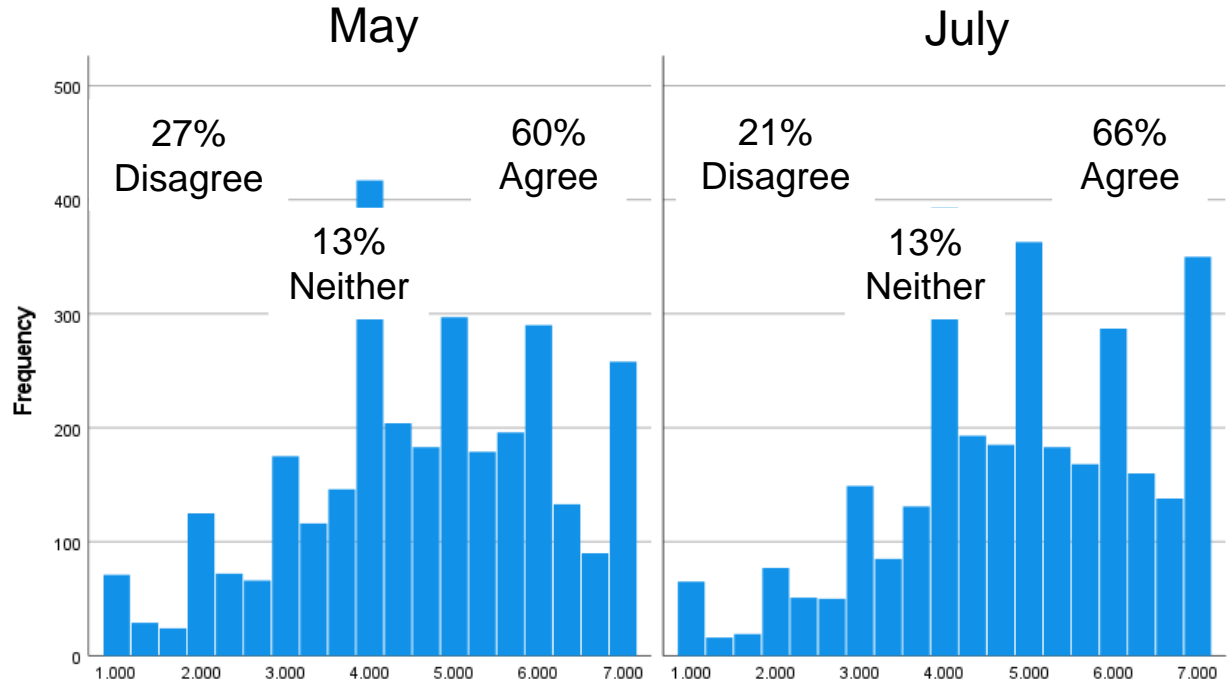


How safe do you feel sheltering inside your home during a tornado warning?

Single Family Homes: 59% Safe
Multi-Family Homes: 54% Safe
Manufactured Homes: 40% Safe
Mobile Homes: 23% Safe

Risk Perception & Fear/Worry

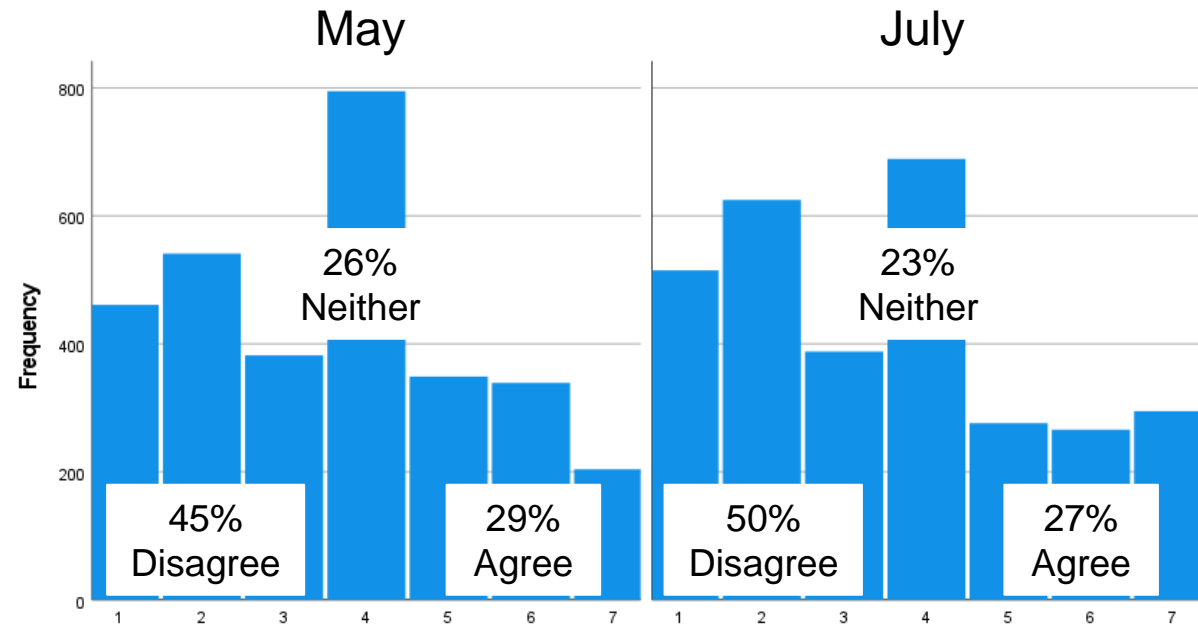
- People indicated they felt more fear or worry about tornadoes than COVID
- By July, perception of risks from COVID-19 increased & surpassed tornadoes



COVID-19 is likely to occur in my county & cause widespread severe impacts.

Tornadoes v. COVID-19 Concern

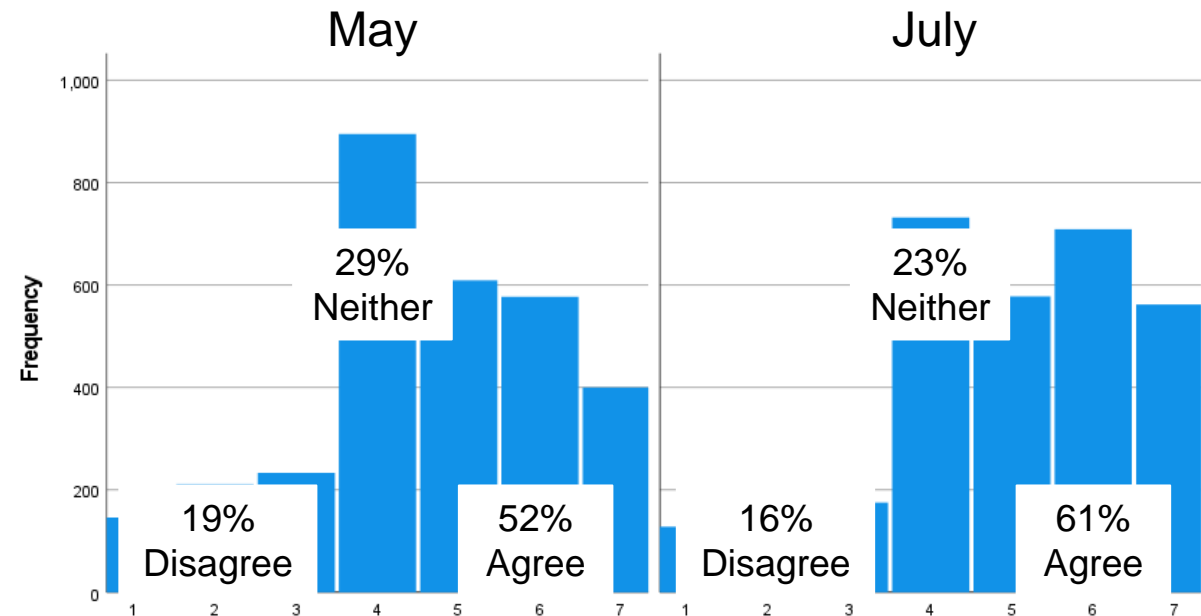
- In May, many people were not sure which hazard was of greater concern; shift to COVID in July
- Strongest concern about COVID-19 when asked about vulnerable people



More concerned about protecting household from tornadoes than from COVID-19

Tornadoes v. COVID-19 Concern

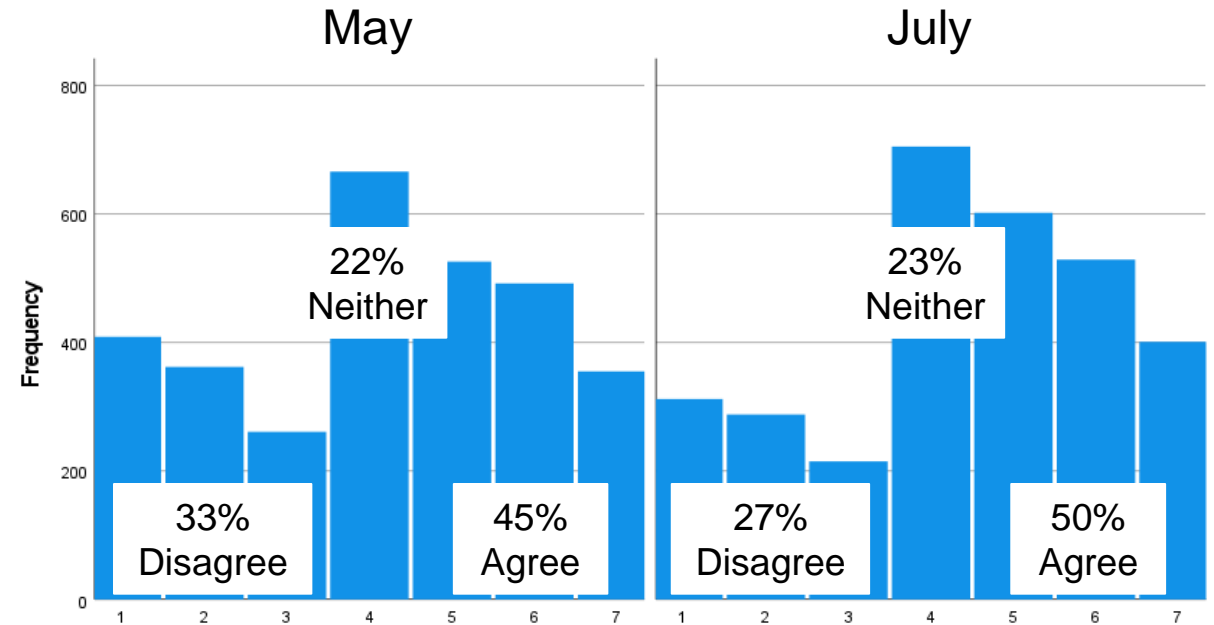
- In May, many people were not sure which hazard was of greater concern; shift to COVID in July
- Strongest concern about COVID-19 when asked about vulnerable people
- Influential variables for HH context
 - Local tornado risk perception (+)
 - Perceived disease resistance (+)
 - Mobile & manufactured homes (+)
 - Republican affiliation (+)
 - Rural zip codes (+)
 - COVID risk perception & fear (-)
 - Elderly in home (-)
 - NWS Eastern Region (-)



More concerned about protecting vulnerable people from COVID-19 than from tornadoes

Tornado Sheltering & COVID-19

- Preference to Use Public shelters
 - People who used public shelters before often more likely to use again
 - MMH residents more likely, HHs with elderly & disabled less likely
 - No change from May (31% agree) to July (32% agree)
- Less preference to use shelters at private residences in July (42% → 37% agree)
- Greater preference in July to shelter in sturdier home of friend or family



Prefer to seek shelter at sturdier home of friend or family member

Mitigation of COVID-19 Spread in Shelters

- In May, people were more willing to go to public shelters if:
 - 6 feet social distancing practiced
 - Masks required
- By July, both measures were less influential on likelihood to use public shelters
- EM Interviews: Saw people sit in cars outside public shelters, waiting to go in only if necessary

| | May | | | July | | |
|--------------------------|----------|---------|------------|------------|---------|------------|
| | Disagree | Neither | Agree | Disagree | Neither | Agree |
| Masks required | 32% | 23% | 45% | 40% | 21% | 39% |
| 6 feet social distancing | 31% | 25% | 44% | 45% | 24% | 31% |
| Limit 50% capacity | 33% | 29% | 38% | 38% | 19% | 43% |

Concluding Thoughts

- COVID-19 risk perception was secondary to tornadoes in May, but COVID-19 became a bigger concern for most people by July-Aug
- Likelihood of using public tornado shelters decreased by July
- People who used public shelters before were likely to do so again despite COVID-19 (includes mobile/manufactured home residents)
- Other vulnerabilities associated with older age & disabilities lowered likelihood to shelter in public or confined spaces
- By July, about 60% said communication not clear enough about safety protocols for protection from tornadoes while also for COVID-19

Acknowledgements

- Research funded by NOAA
- Alan Gerard (NSSL) for support of research
- Doug Hilderbrand & Weather Ready Nation
- Emergency managers who participated in research

Questions?

