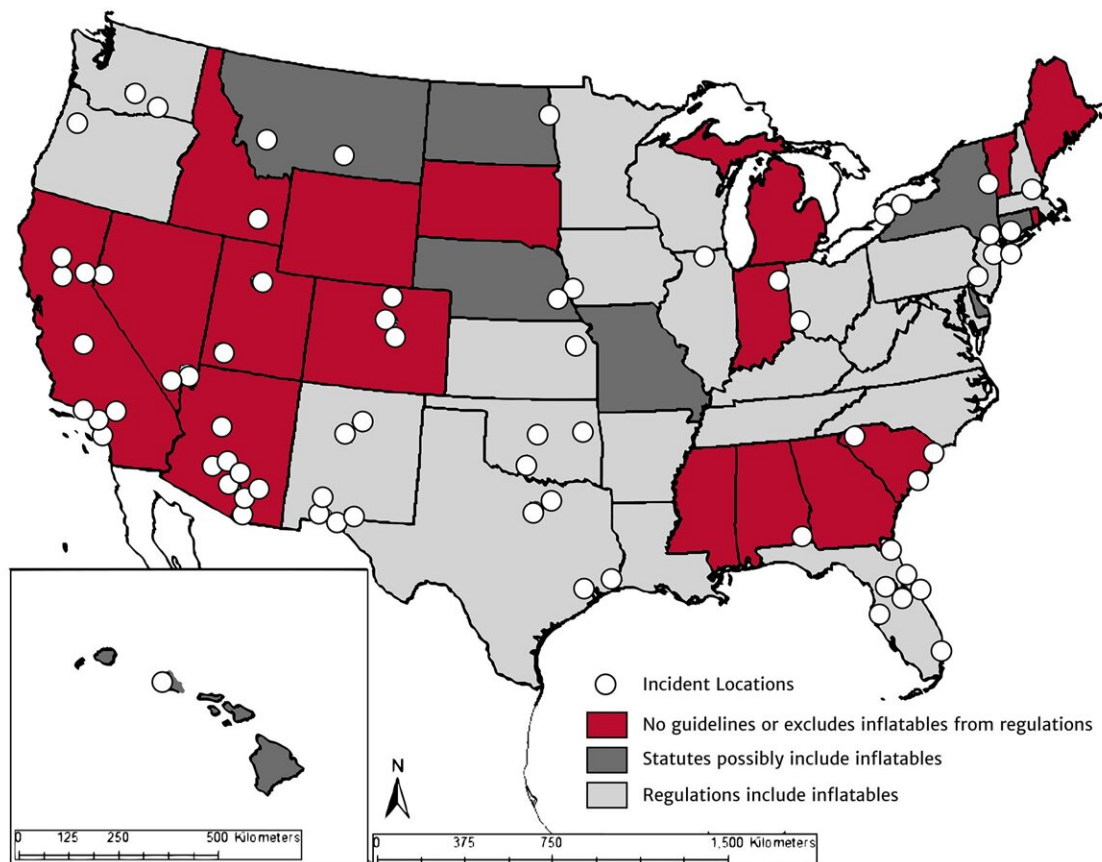


# Wind has caused 479 injuries, 28 deaths in bounce houses since 2000

August 9 2022, by Leigh Beeson



Many, but not all, of the bounce house accidents the researchers logged occurred in states where there are no regulations governing bounce house use (shown here in red). Credit: Lindsay Robinson

It's all fun and games until someone gets hurt ... or dies. And a lack of regulations and oversight surrounding a popular, easily rentable party feature could be putting tens of thousands of children at risk, according to new research from the University of Georgia.

The study found at least 479 people were injured and 28 died worldwide in more than 130 bounce house accidents due to [weather](#) events since 2000. But the researchers caution that these estimates are likely an undercount.

These injuries are on top of an estimated 10,000 ER visits in the U.S. each year because of bounce house-related accidents that regularly result in broken bones, muscle sprains and concussions.

"These bounce houses aren't something to set up and then forget to stake them into the ground," said John Knox, lead author of the study and a geography professor in the Franklin College of Arts and Sciences. "What could go wrong? The answer is that it could blow away in winds that are not anywhere near severe levels. Some of these cases were in purely clear skies."

Many of the [wind](#)-related accidents happened on what seemed to be good weather days, according to the research: a cool and sunny day after a cold front with clear skies, a hot but calm day that triggers a dust devil or a nice summer day with a thunderstorm somewhere off in the distance. More than 80 of the 132 events identified by the study were caused by cold fronts or post-cold front conditions, dust devils and overhead or distant thunderstorms.

## **Even minor wind speeds pose risk to playhouse safety**

Also known as bouncy houses, magic castles, jumping balloons or bounce castles, the portable playhouses are common fixtures at birthday

parties, carnivals and even wedding receptions. They cost less than \$100 to rent on average in the U.S. and are an easy and fun way to keep kids (and some adults) entertained for hours.

But the study found it didn't take high wind speeds to tip the inflatable playhouses over, loft them into the air or send them bouncing along the ground for yards, often while people were still inside.

"There was a case in Southern California where one of the bounce houses got picked up by the wind and dropped in the middle of a highway with a boy still inside the playhouse," said Thomas Gill, second author on the paper and a professor of environmental science at the University of Texas at El Paso. "When the winds get to be too much, these bounce houses need not only to be evacuated but also deflated. There have been cases where a bounce house was empty, but it blew away and struck a bystander."

Basic precautions such as securely staking bounce houses into the ground, attaching sandbags to weigh the structure down and monitoring windspeeds and other dangerous weather conditions likely could've prevented many, if not all, of the accidents, the researchers said.

But fewer than half of the states in the U.S. have explicit statutes and regulations for safe bounce house usage, the study found. Seventeen states have no guidelines at all or specifically exclude inflatables like bounce houses from regulation.

Of the ones that do have regulations, most do not explicitly state weather and [wind conditions](#) required for safe use.

"The regulatory landscape is all over the place from one state to another," Knox said. "From our perspective, this isn't good enough. Bounce houses need to be attended by someone who is weather-wise and

can recognize when winds are at an unsafe level."

Only 19 states' regulations cite the American Society for Testing and Materials (ASTM) standards, which set a maximum wind gust speed of 25 miles per hour unless the bounce house has been secured by a professional engineer. The standards also require a meteorologically savvy attendant on site for commercial bounce house use.

Of the 132 bounce house incidents, though, more than one out of every five actually occurred with wind speeds lower than those deemed unsafe by the ASTM standards. Over a third of the accidents occurred with observed wind speeds between 0 and 20 miles per hour, and more than half occurred at or below the 25 mile per hour mark.

"Ahead of a strong wind event, we encourage people to secure outdoor items and remove loose tree limbs to avoid damage or injury once the wind starts picking up," said Danielle Nagele, a public program coordinator at the National Weather Service who was not involved in the study. "New information and research, such as this study, can help improve public awareness of wind-related risks."

## **Monitor weather, secure bounce house and monitor play to keep children safe**

The present publication is the first academic study to examine wind-related bounce house accidents.

The researchers spent a decade searching for wind-related incidents, resulting in tens of thousands of Google searches and alerts to plot the locations, date and weather conditions of each of the 132 documented cases found globally. Multiple authors conducted independent analyses using a variety of sources including National Weather Service

observations and satellite imagery to classify the [weather conditions](#). The researchers also performed independent analyses and classifications of state regulations for inflatable devices.

The researchers used this information to create a website to document their findings and provide safety tips for consumers.

The most important things people can do to safely enjoy bounce houses are to keep an eye on the weather, set up bounce houses correctly with stakes and/or sandbags and always have an adult monitoring the behavior of bounce house users.

"Make taking wind measurements part of the fun of the event," Gill said. "Wind-related incidents and accidents are just a small part of the overall safety hazard of bounce houses. While they're a lot of fun, there are dangers with them, and people need to take those seriously."

The study was recently published online in the *Bulletin of the American Meteorological Society*.

**More information:** John A. Knox et al, Wind-Related Bounce House Incidents in Meteorological, Regulatory, and Outreach Contexts, *Bulletin of the American Meteorological Society* (2022). [DOI: 10.1175/BAMS-D-21-0160.1](https://doi.org/10.1175/BAMS-D-21-0160.1)

Provided by University of Georgia

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