FORBES > INNOVATION > SCIENCE

Total Solar Eclipse 2024: Where Were You?

Jamie Carter Senior Contributor
I'm an award-winning journalist writing about the night sky & eclipses

Follow

0

Jul 23, 2024, 06:00am EDT

RANGELEY, ME - APRIL 8: People watch the total solar elipse from Rangeley Town Cove Park in ...
[+] PORTLAND PRESS HERALD VIA GETTY IMAGES

Fifty million people may have witnessed the "Great North American Eclipse" on April 8, 2024, but where they did so was not as predicted. Texas was expected to host a million visitors and a $1.4 billion injection, but had mostly empty highways and perhaps as few as 270,000 visitors. In contrast, New Hampshire, where as few as 450 eclipse-chasers were expected, saw almost 170,00 extra vehicles descend.

Inaccurate Predictions

One reason why predictions proved inaccurate was the weather. On April 8, many places where historical data suggested clear skies were cloudy, and vice versa. The cloud map on April 8 was hugely unexpected. "You could not—if you were Satan himself—design this any better," said Gordon Emslie, Professor at Western Kentucky University's Physics and Astronomy department and lead for the SunSketcher to measure the shape of the solar limb using photos taken via an app.

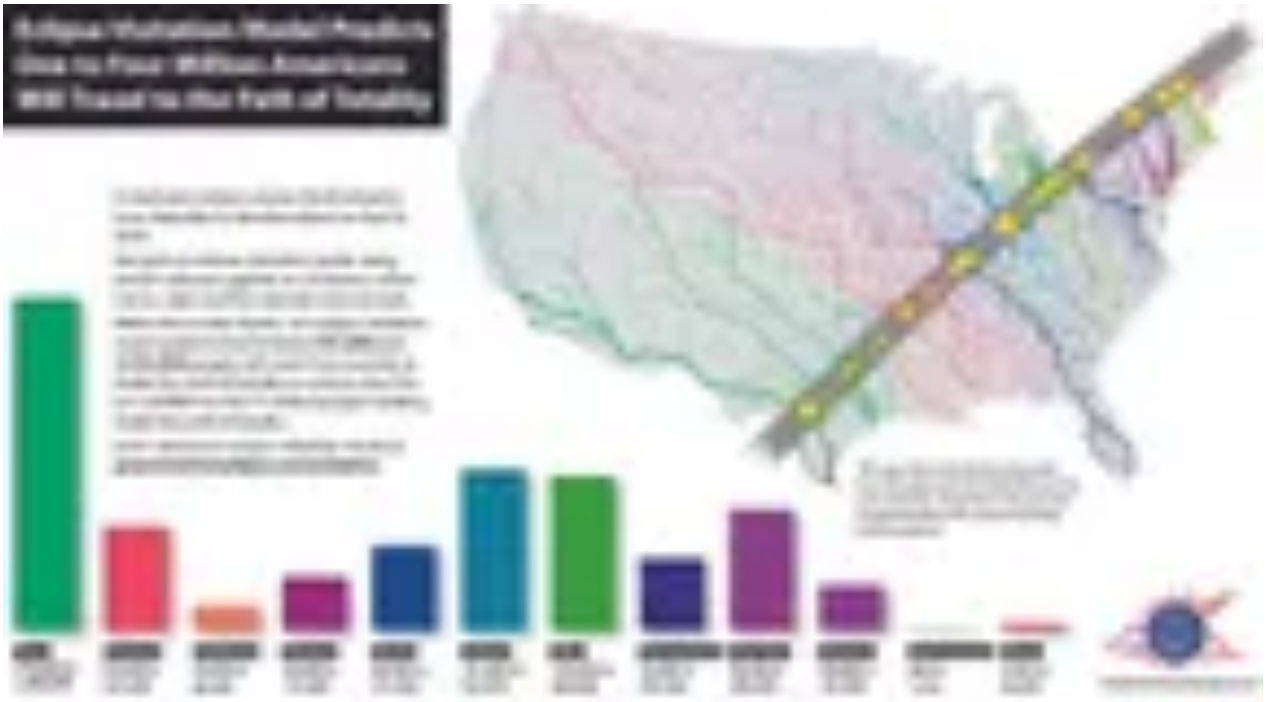
Many had initially opted for Texas. "The visitation in Texas was muted because everyone knew a week in advance that the weather forecast was challenging," said Michael Zeiler, a Santa Fe-based eclipse cartographer at GreatAmericanEclipse.com, whose eclipse visitation estimates were the basis for many predictions. "But that resulted in massive visitation that far exceeded my predictions in Upstate New York, Vermont, New Hampshire and Maine."

Shortest Paths

Zeiler's model calculated the shortest drive paths from over 3,000 U.S. counties to destinations in the path of totality, using ArcGIS software, U.S. Census data and a detailed digital road network for the U.S. It assumed

that people who lived close to the path of totality were more likely to visit than distant people. It also assumed that people will travel the shortest drive distance to the path of totality. Zeiler estimated that Texas would be the most popular destination, with around a million visitors, followed by Indiana and Ohio, with half a million each.

Texas had the highest chance of clear skies. On the day, it mostly had clouds. "The lesson that I take for eclipse visitation is that the weather is a huge driving factor," said Zeiler. Predictions for Indiana and Ohio—where it was clear—held up. Indiana reported 3.5 million visitors—way above expectations—as did New York, where nearly one million people visited New York State Parks and half a million unexpectedly drove to the Adirondacks.



Michael Zeiler's eclipse visitation model predicted that up to four million people would travel into ... [+] MICHAEL ZEILER/GREATAMERICANECLIPSE.COM

MORE FOR YOU

Trump: 'Crazy' That Secret Service Didn't Have More Manpower At Rally

Today's NYT Mini Crossword Clues And Answers For Tuesday, July 23

Harris Campaign's First Full Day: Record-Breaking Fundraising, Trump Attacks And Veepstakes Kick Off

Unrealistic Expectations

Many regions made wild predictions of millions of visitors only to be wildly off the mark. This always happens during total solar eclipses, which occur roughly once every 18 months somewhere in the world. The poster child in 2024 was Arkansas, which predicted a whopping 1.5 million visitors. The Natural State was left disappointed, reporting little traffic on the roads. "I talked to a reporter in Arkansas about that, and I told him that it wasn't realistic," said Zeiler.

He had estimated Arkansas would see between 84,000 and 337,000 eclipse-chasers. That was despite Arkansas having clear weather on the day, so plenty of eclipse-chasers relocating from Texas. "The biggest factor

for major visitation is if major metropolitan areas are nearby, and in Arkansas, there aren't many," said Zeiler, stressing that huge cities like St. Louis and Chicago drove a lot of people into the path.

Exceeding Expectations

Despite the unpredictable geographical variations, more people than predicted likely traveled to be inside the path. On April 8, a path of totality 115 miles wide (185 kilometers) crossed North America from northern Mexico to south-eastern Canada via parts of 15 U.S. states. While about 12 million live within the path in Mexico and Canada, in the U.S., there were over 32 million people. That's 44 million people living in the path. Zeiler predicted that between 931,000 and 3.7 million additional people would travel from outside the path of totality on eclipse day within the U.S.

Anecdotal evidence suggests it was higher than that—perhaps as high as 50 million in total. "It's pretty clear to me that, on the whole, when you consider the entire path, more people came to travel to see the eclipse than the high end of my predictions of about four million," said Zeiler. "I'm pretty confident it was more than four million, but the data is incomplete." Estimates from several U.S. states have been based on traffic counts using a multiplier of 2.8 people per car.

A matrix road sign displays a message for drivers about the solar eclipse on April 8, 2024 in ...
[+] GETTY IMAGES

Live Streaming

The total figure may have been higher if it wasn't for the explosion in livestreams over 5G cell networks, something technically not as easy during the "Great American Eclipse" of 2017, when 3G and 4G networks ruled. AT&T reported that over 1.1 billion MMS messages that included pictures and videos were sent on April 8. Personal live streams via 5G smartphones aside, NASA's livestream on YouTube on April 8 had almost 12 million views, albeit worldwide.

"I think that affected this eclipse a little bit because there were so many people live streaming it from different places along the path," said Polly White at GreatAmerican Eclipse.com. "Some of them were always going to

have a clearer view—you can't guarantee anything." White had previously likened the event to like having 50 Super Bowls happening at the same time all across the country.

Lessons For The 2040s

The next total solar eclipses in the U.S. are in 2044 and 2045. Are there any lessons from 2024 that the next generation can learn? Perhaps not. Assuming that people will make logical decisions when traveling into the path of totality is fiction. "A lot of people coming from out of state don't know the roads and they may make bad decisions," said Laurie Radow, retired transportation specialist from the Federal Highway Administration, about traffic challenges. That won't change, but what will is technology. "The driver today doesn't know how much transportation has changed in the past 15 or 20 years," she said, referencing variable message lines and sensors in the road. "But I can't tell you what's happening in the next 20 years ... I wouldn't even venture to tell you what the technology's going to be in three years."

There's also a question over whether people will even want to make a trip to experience totality. If virtual reality headsets like the Apple Vision Pro are almost as good as the real thing by then—or perceived to be—then visitation may be dampened further. "You won't need to go!" said White. "With VR, people will say they don't need to travel just for a few minutes of totality." Whether VR takes off or not, the nature of interacting with content will likely be different. "The very notion of the internet might be very different by then," said Zeiler. "It'll be very different—an immersive spatial experience."

Pick up my books Stargazing in 2024, A Stargazing Program For

Beginners and *When Is The Next Eclipse?*

Wishing you clear skies and wide eyes.

Follow me on Twitter or LinkedIn. Check out my website or some of my other work here.

Jamie Carter

Follow

I'm an award-winning journalist writing about the night sky and eclipses. The recipient of the 2023 Popular Media Award from the American Astronomical Society's Solar... **Read More**