The great cosmic coincidence: The April 8 total solar eclipse

"Oh, that's cool as hell," I breathed, stealing a glance through my glasses as I scurried past the library, trying to make it to campus in time. As I met my friend Hope, she too gazed through the blocky sunglasses as she peered at the sky.

"It looks like a banana," she said.

We—and, it seemed, the whole world—had turned out for the total solar eclipse that passed through the United States on Monday, April 8, 2024. Here in Pittsburgh, the Moon began passing over the sun just after 2:00 PM, a journey which took until 4:30 PM to complete. The peak coverage of the Moon over the Sun was at 3:17 PM.

Solar eclipses occur when the Moon passes between Earth and the Sun. Eclipses don't happen all the time because the Earth orbits the Sun at a slightly different plane from which the Moon orbits the Earth, and these planes have to line up in order for the blocking to occur. Our experience of eclipses here on Earth is a "cosmic coincidence," says Diane Turnshek, a lecturer in the Department of Physics at Carnegie Mellon University and the Department of Physics and Astronomy at the University of Pittsburgh. The Sun is 400 times larger than the Moon, and the coincidence is that it is 400 times farther from Earth than the Moon. Therefore, the Sun and Moon are the same size in the Earth's sky, giving us an event like nowhere else in the universe.

Here in Pittsburgh, we were lucky to have the clouds move away just before the peak of the eclipse. The atmosphere took on a strange visual tone, as if we were in a photograph and someone had turned on an editing filter. I was surprised to see how bright it stayed outside, despite seeing only a small sliver of light in my eclipse-viewing glasses. "It doesn't get dark enough to see the corona [the bright "crown" surrounding the Moon during totality]. It doesn't

get dark enough to see stars" at anything less than 100% coverage, says Turnshek. I only experienced 97%.

Luckily, I have friends who experienced totality. Ezra, in Rochester, NY, endured a cloudy day, but it was obvious when the Sun had disappeared: "I was worried the clouds would make the totality effect less dramatic, but it still got super dark!" they say. "We noticed it getting kind of dark during the partial phase, but it was a similar level to when it's stormy—as soon as we entered the totality window, it was like nighttime." In Maine, Nate noticed the temperature drop, and was even able to see Jupiter when it got dark enough. He says, "[B]eing able to look right at the moon in front of the sun was BEAUTIFUL, and totally unlike anything I've seen before…The ring of light around the moon was very pronounced still, but the moon was completely dark, so it almost looked more like a depiction of a black hole than anything I've ever seen on Earth." Meanwhile, another friend watched from Dallas: "[S]eeing the sky darken during totality and downtown Dallas lighting up in response was incredible. It really nailed home that it was truly dark in the middle of day. During full totality, the crowd audibly cheered. Awe-inspiring is the word for this moment."

Our next chance to experience a total solar eclipse in the United States will not happen until 2044.