MARTZ-KOHL
OBSERVATORY

Welcome

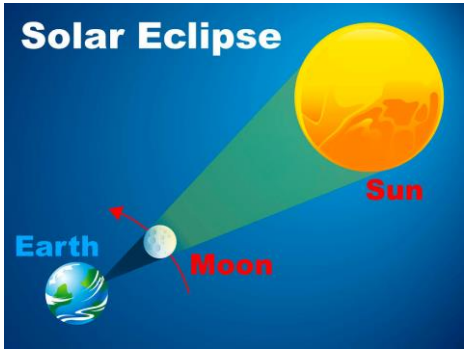
2024 Solar Eclipse

What are two type of Eclipses you have heard of?

Images from: Nasa

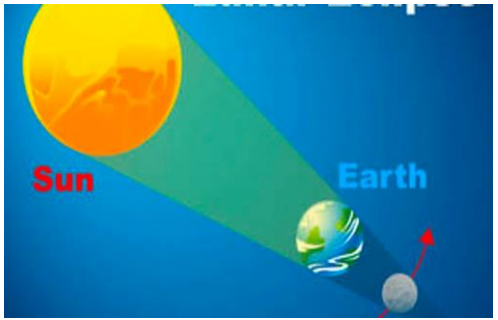
Solar

- When you cannot see the sun because the moon is in the way.
- Do not occur very frequently.



Lunar

- When you cannot see the moon because the earth is in the way.
- Happen much more frequently.



Why are solar eclipses so rare?

- Earth travels around the sun (1 time per year)
- The moon travels around the earth (13 times per year)
    - But the moon's path is not a simple circle

Image from Naval Observatory

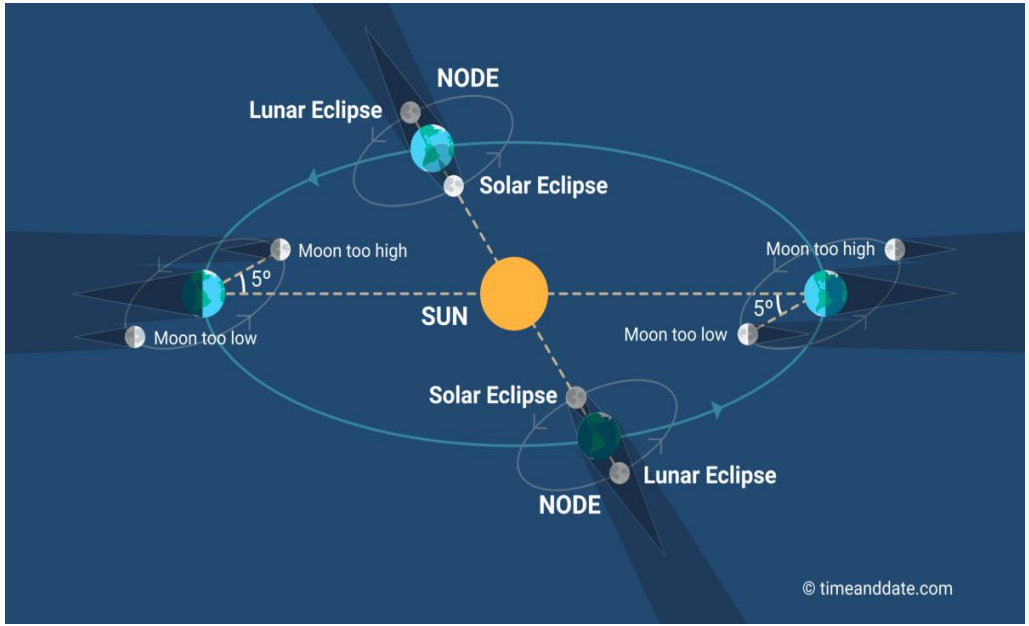
Image from [NASA SpacePlace]

Those special alignments are needed.

To have a solar eclipse:

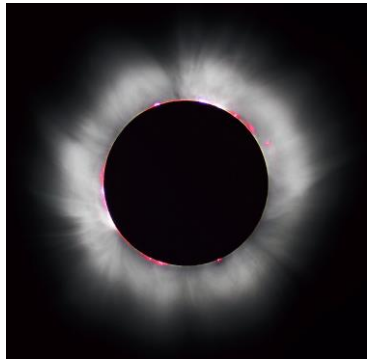
- Earth must be at a “node”

- Where moon’s orbit crosses line from sun to earth



Types of Solar Eclipses

- Partial Eclipses



- Total Eclipse

- Annular Eclipse

Frequency

There is a total eclipse somewhere on earth approximately every 18 months.

- But you would have to travel to that place.

In fact, each separate location should only expect to have a total eclipse once every **350-400** years.

Each eclipse only covers a tiny portion of the earth.

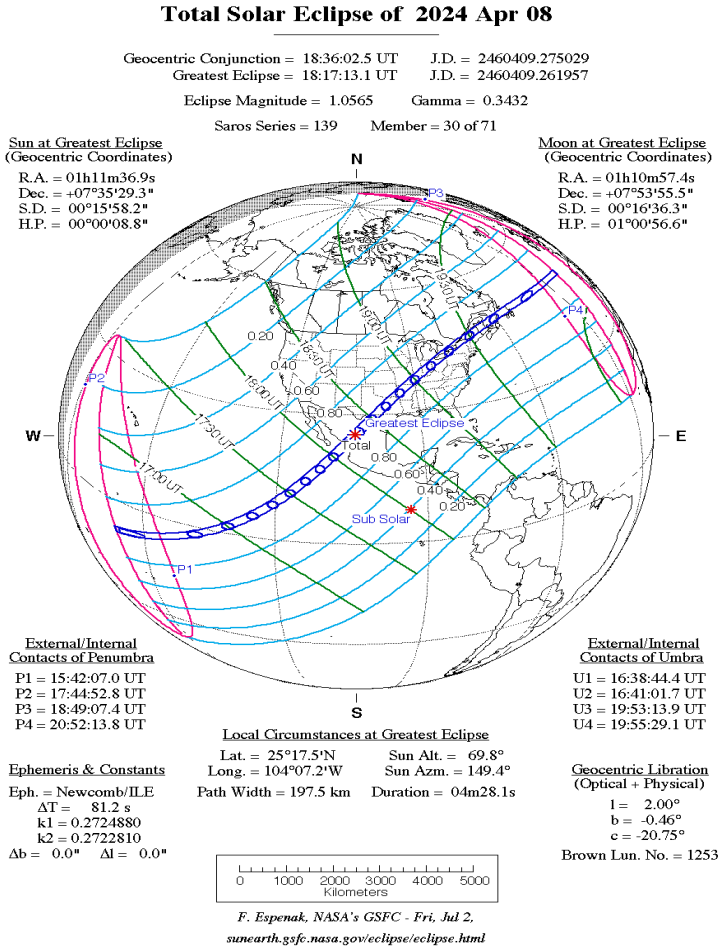
- And lasts only for a few minutes at each location.

We are so lucky

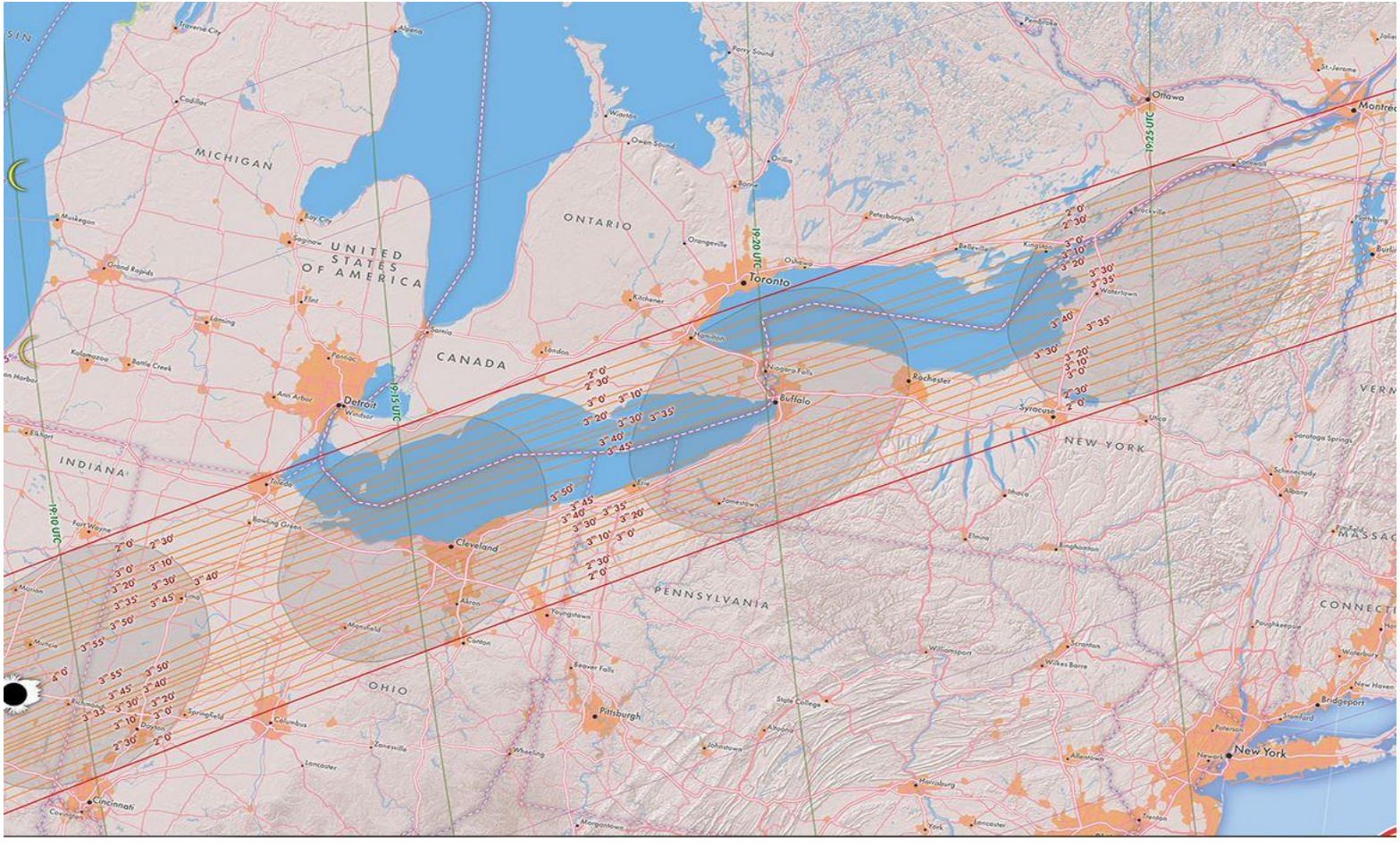
Only 34 of 1761 Eclipses in 4500 years have occurred in this area.
16 Total 17 Annular 1 Hybrid.

Last Total Eclipses for area 6-16-1806 and/ Or 1-24-1925.
Next 4-8-2024 and 10-26-2144.
Last Annular Eclipse 9-18-1838 and/ or 5-10-1994.
Next 7-23-2093.
Only Hybrid Eclipse 1-19-1868 lasted 10 Seconds.

From: NASA

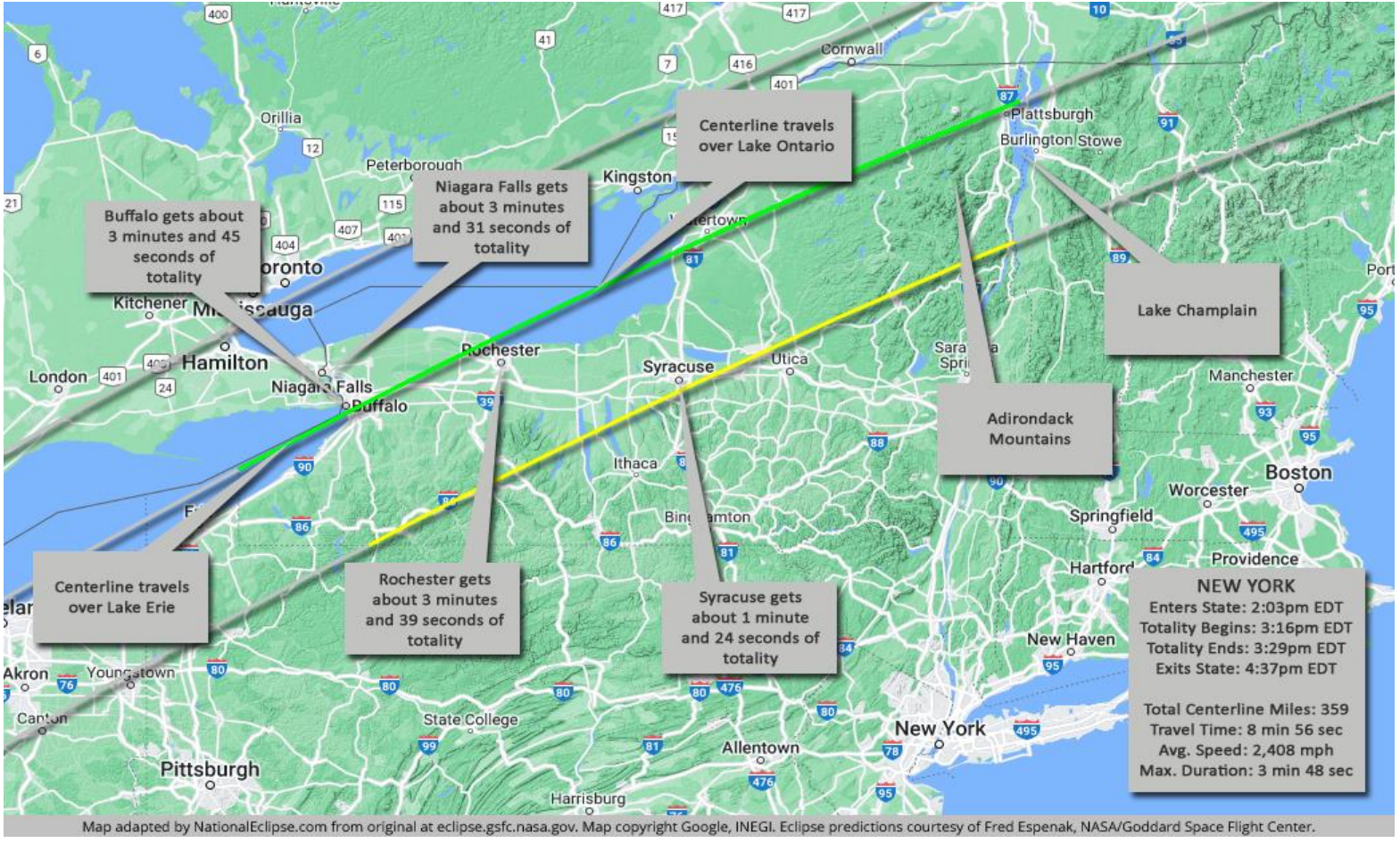


What about for our area of the country



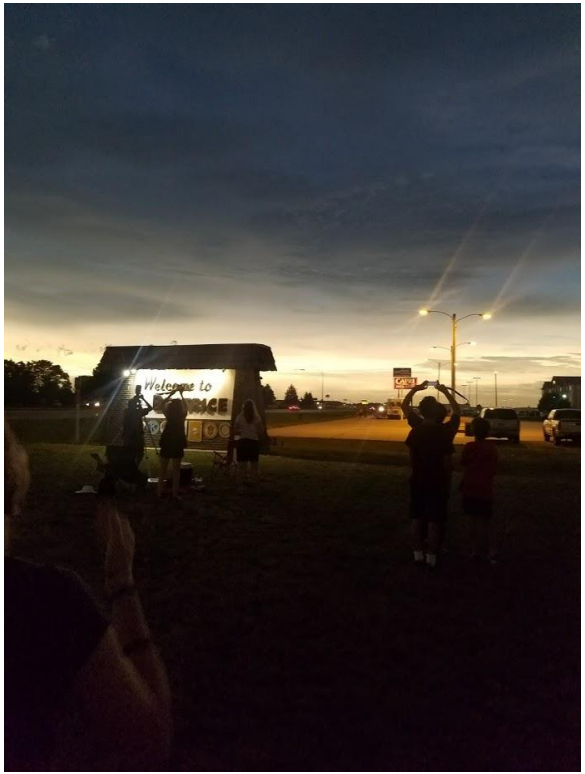
What about for New York?

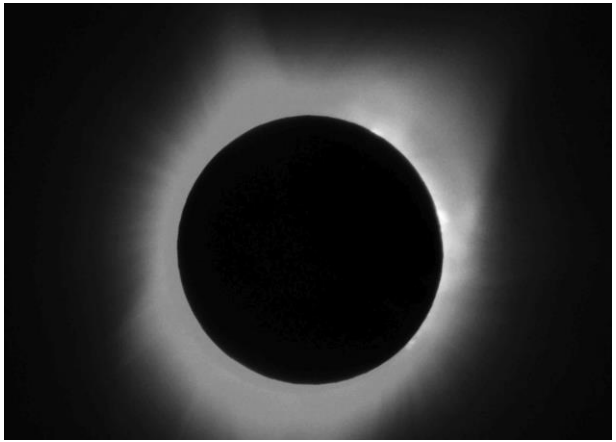
From: nationaleclipse.com



What does it look like?

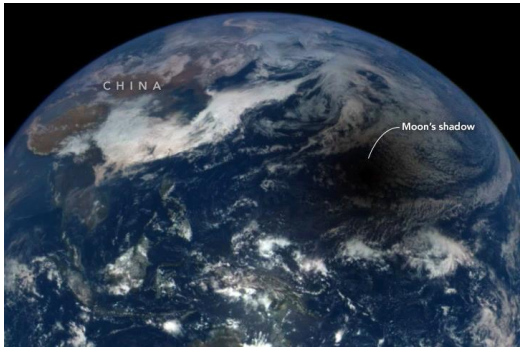
Total Eclipse from Earth





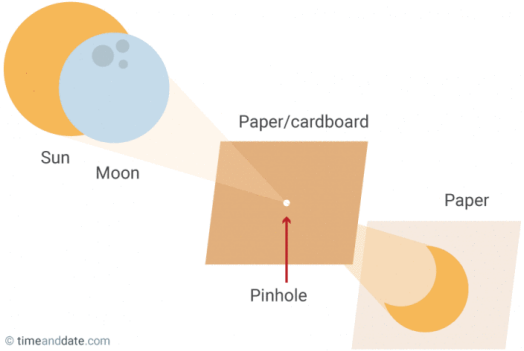
From space

From: Nasa



Annular Eclipse from Earth

WARNING!! Do NOT stare at the Sun without proper protection!



Weather Prospects

- 10 Year average cloudyness
- 68% sky coverage : 6 days < 40% sky coverage

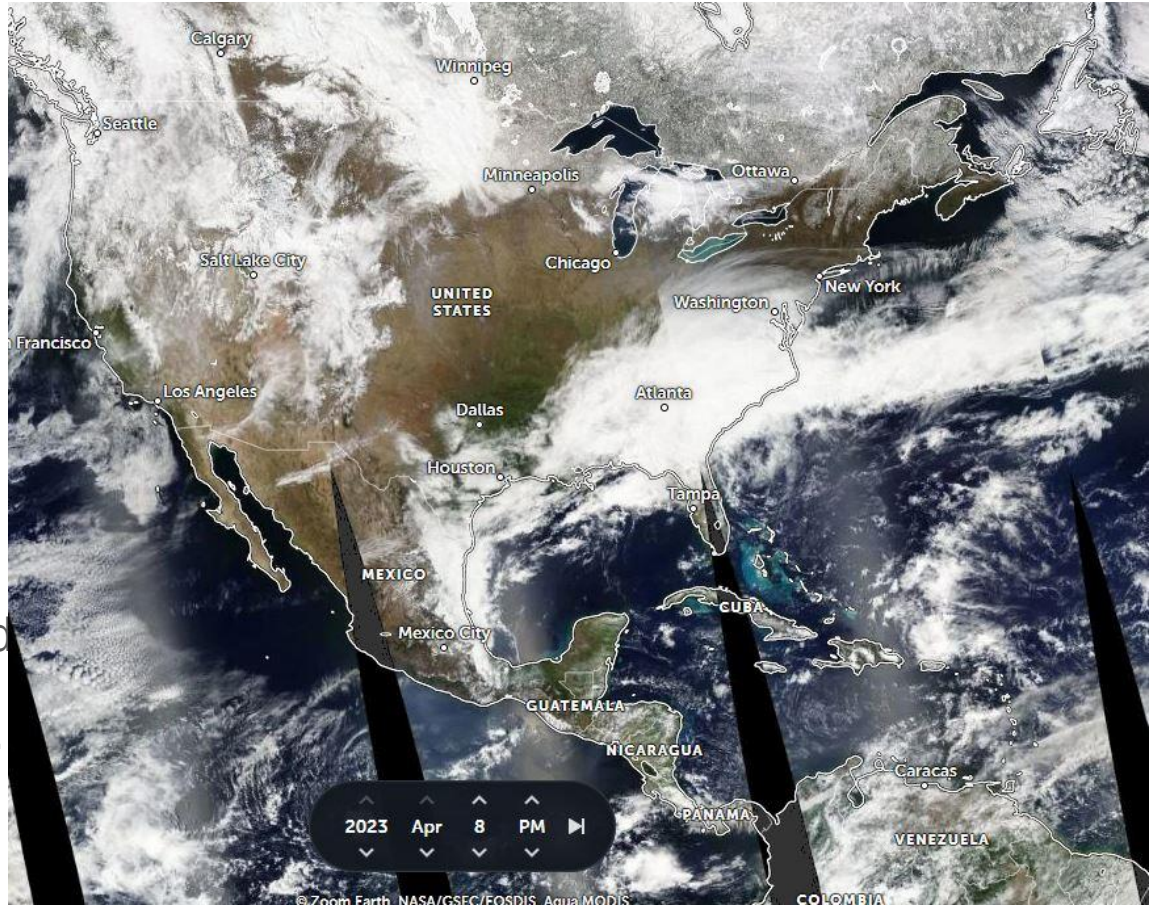
Total Eclipse

- Annular Eclipse

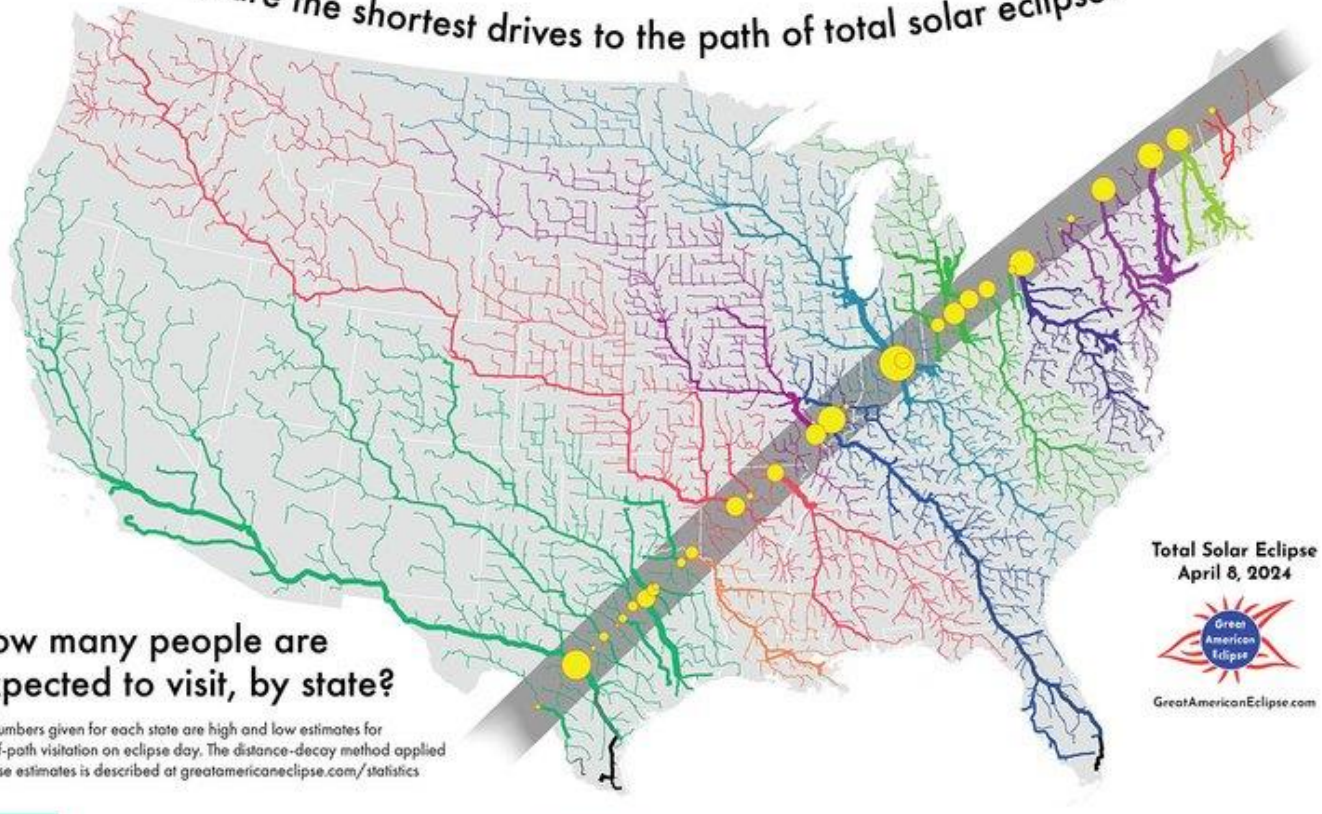
Weather Prospects

- 25 year average is 61%
- of sky cloud coverage.

- Last 10 Years
- 6 Days with < 40% cloud
- coverage at eclipse time.



What are the shortest drives to the path of total solar eclipse?



Total Solar Eclipse
April 8, 2024

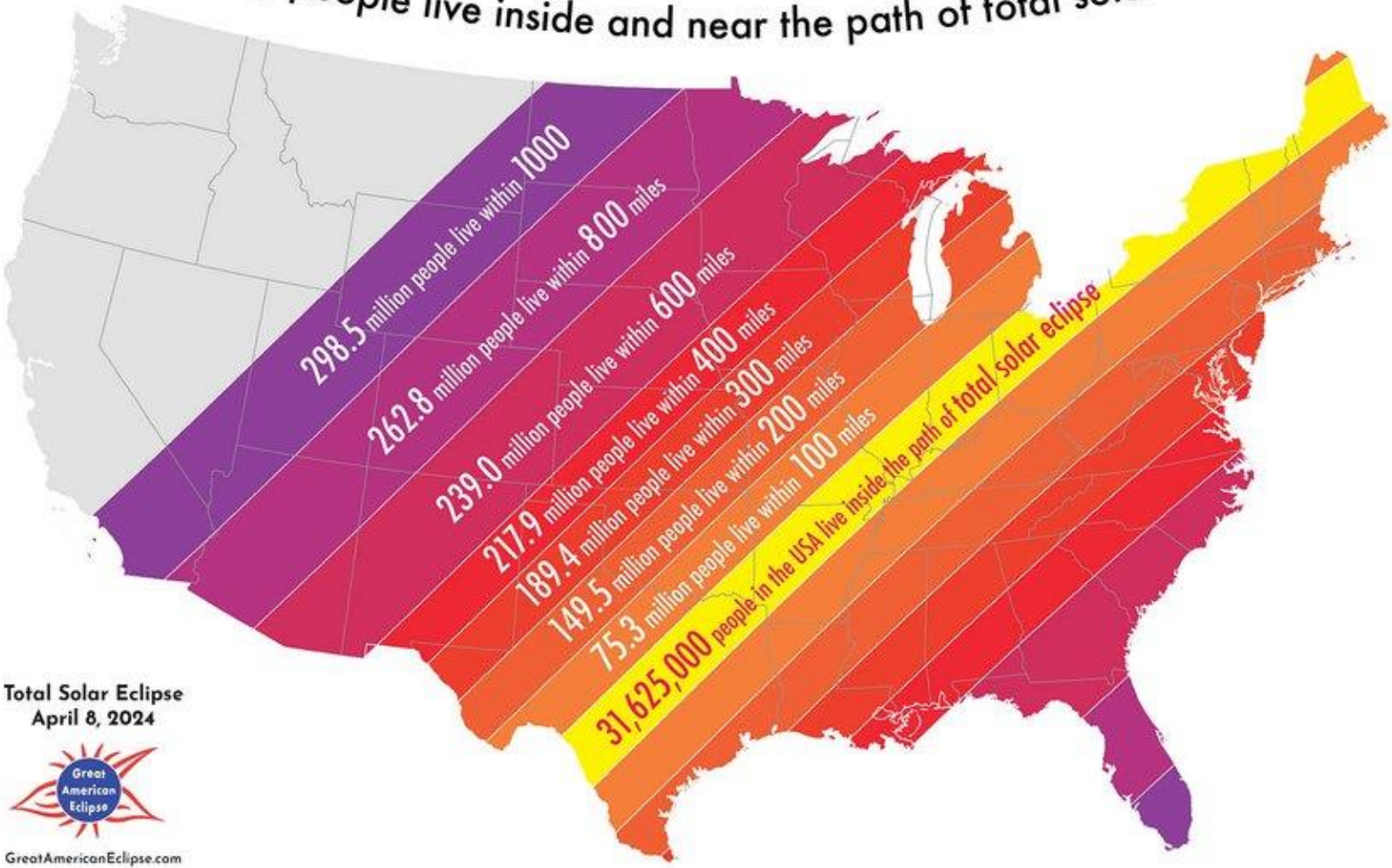
GreatAmericanEclipse.com

How many people are expected to visit, by state?

The numbers given for each state are high and low estimates for out-of-path visitation on eclipse day. The distance-decay method applied in these estimates is described at greatamericaneclipse.com/statistics

Texas	Arkansas	Oklahoma	Missouri	Illinois	Indiana	Ohio	Pennsylvania	New York	Vermont	New Hampshire	Maine
Low: 180,000 High: 720,000	Low: 70,000 High: 281,000	Low: 17,000 High: 66,000	Low: 43,000 High: 173,000	Low: 76,000 High: 304,000	Low: 145,000 High: 581,000	Low: 139,000 High: 556,000	Low: 65,000 High: 259,000	Low: 129,000 High: 515,000	Low: 52,000 High: 208,000	Low: 600 High: 2,500	Low: 7,000 High: 27,000

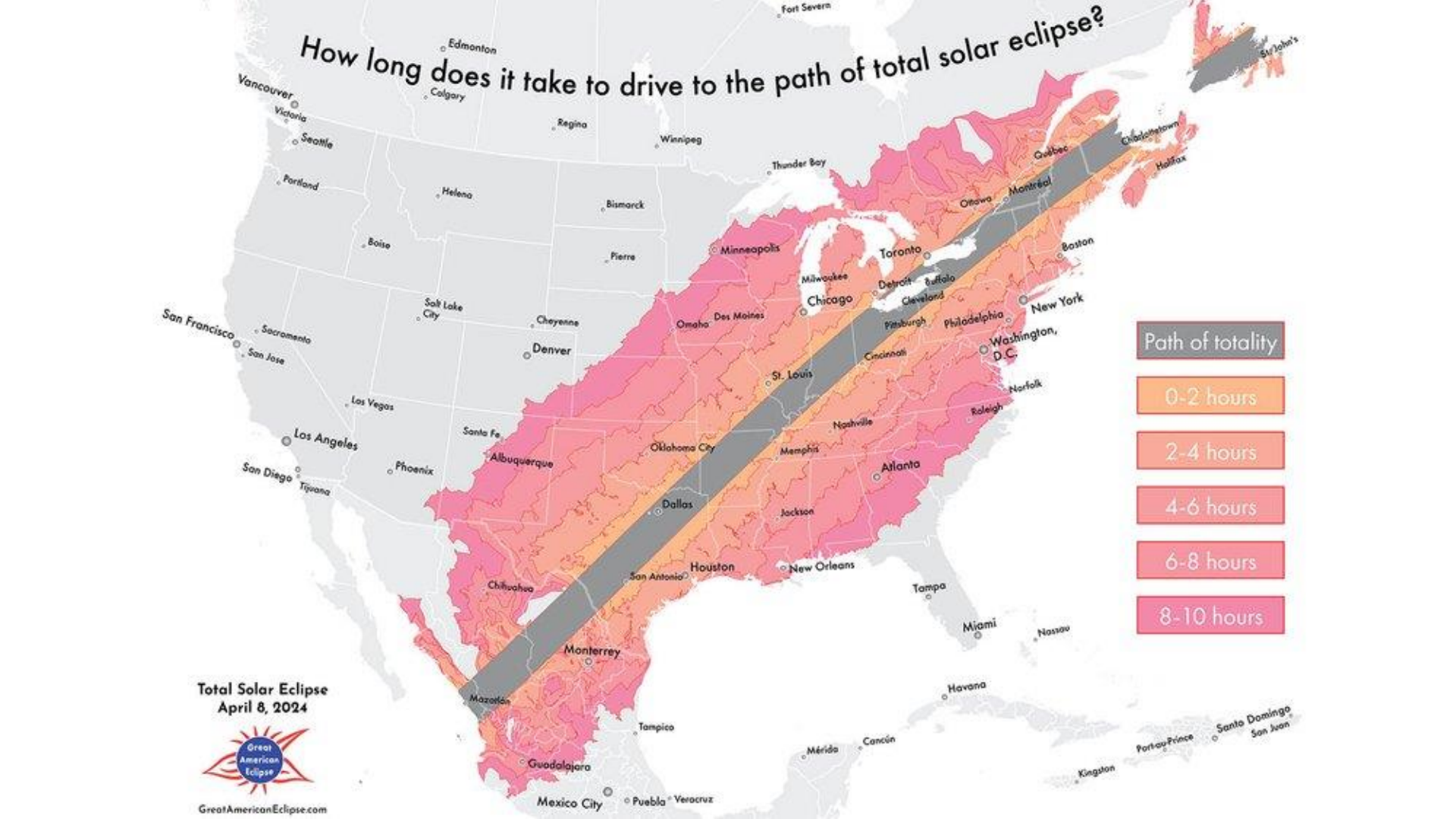
How many people live inside and near the path of total solar eclipse?



Total Solar Eclipse
April 8, 2024

Great American Eclipse

GreatAmericanEclipse.com


How long does it take to drive to the path of total solar eclipse?
Path of totality
0-2 hours
2-4 hours
4-6 hours
6-8 hours
8-10 hours
Total Solar Eclipse
April 8, 2024
Great American Eclipse
GreatAmericanEclipse.com
Fort Severn
Edmonton
Vancouver
Victoria
Calgary
Regina
Winnipeg
Thunder Bay
Seattle
Portland
Helena
Bismarck
Boise
Pierre
Minneapolis
Toronto
Milwaukee
Detroit
Buffalo
Chicago
Cleveland
Omaha
Des Moines
Pittsburgh
Philadelphia
New York
Washington, D.C.
Cincinnati
St. Louis
Norfolk
Raleigh
Nashville
Oklahoma City
Memphis
Atlanta
Dallas
Jackson
Houston
New Orleans
San Antonio
Tampa
Miami
Nassau
Monterrey
Havana
Tampico
Mérida
Cancún
Guadalajara
Mexico City
Puebla
Veracruz
Kingston
Port-au-Prince
Santo Domingo
San Juan
Ottawa
Montréal
Québec
Charlottetown
Halifax
St. John's
Boston
Salt Lake City
Cheyenne
Denver
San Francisco
Sacramento
San Jose
Las Vegas
Los Angeles
Santa Fe
Albuquerque
Phoenix
San Diego
Tijuana
Chihuahua
Mazatlán