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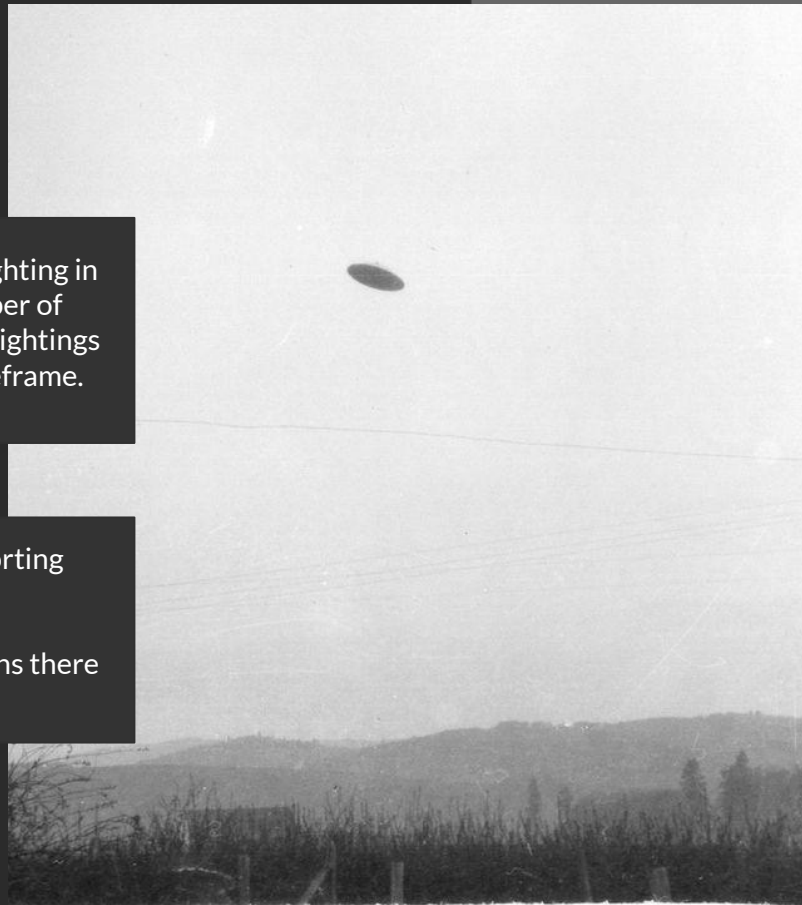
UFO SIGHTINGS IN THE U.S. (1969-2019)

Introduction

In this project, our goal was to find all details for each reported UFO sighting in each state in the United States from 1960-2019 regarding the number of sightings reported, the shape of each UFO, most common locations of sightings reported, and whether sightings increased or decreased over the timeframe.

The main dataset we used was developed by the National UFO Reporting Center (NUFORC), made available to us through Kaggle.

The objective: to explore the data and see what patterns and conclusions there are to be shared.



Questions

1. How often do sightings occur at certain times of day or in the year?
2. Where do most sightings occur? Is it correlated to population size?
3. Are certain shapes sighted more in certain locations?
4. Have sightings increased or decreased over time?



Data Exploration and Cleanup

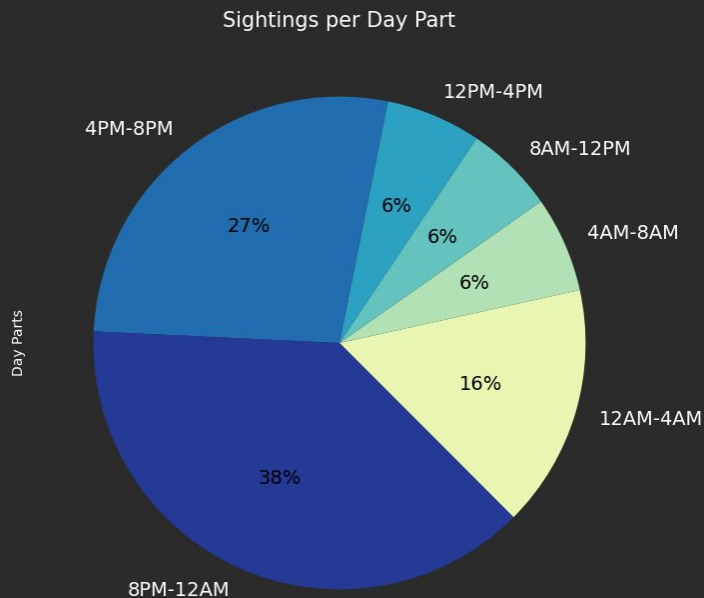
The original dataset, from the NUFORC, was 90,000 entries and after removing extraneous, duplicate and null data, it was trimmed to 71,000 entries.

We also used U.S. Census data for the sightings per state analysis, aligning the appropriate decades population counts with the NUFORC counts from those years.

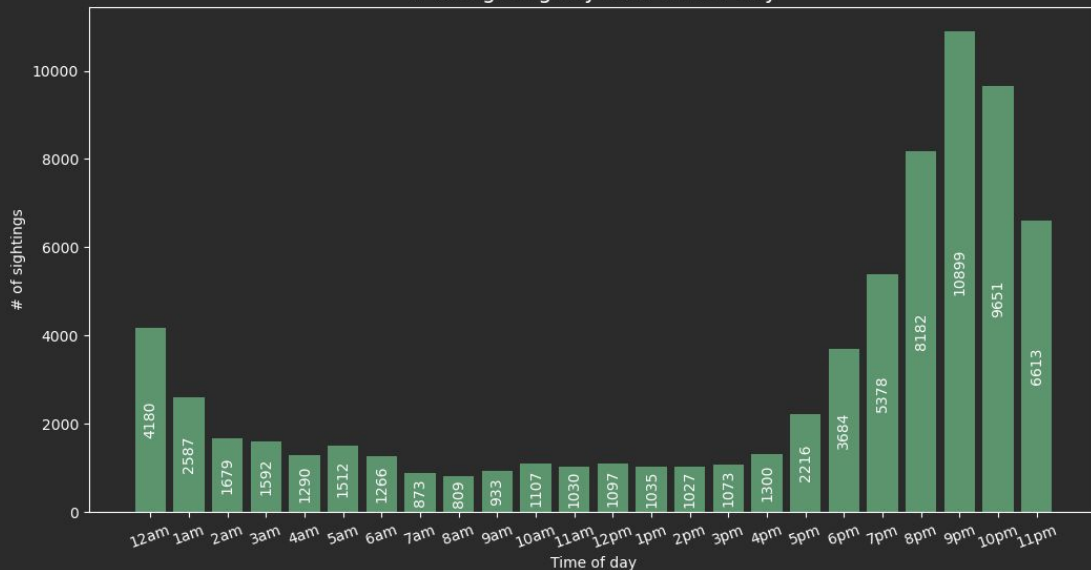


How often do sightings occur at certain times of day?

Sightings increase the closer you get to sunset and into the night. They peak between 9 to 10pm.



of Sightings by Hour of the Day

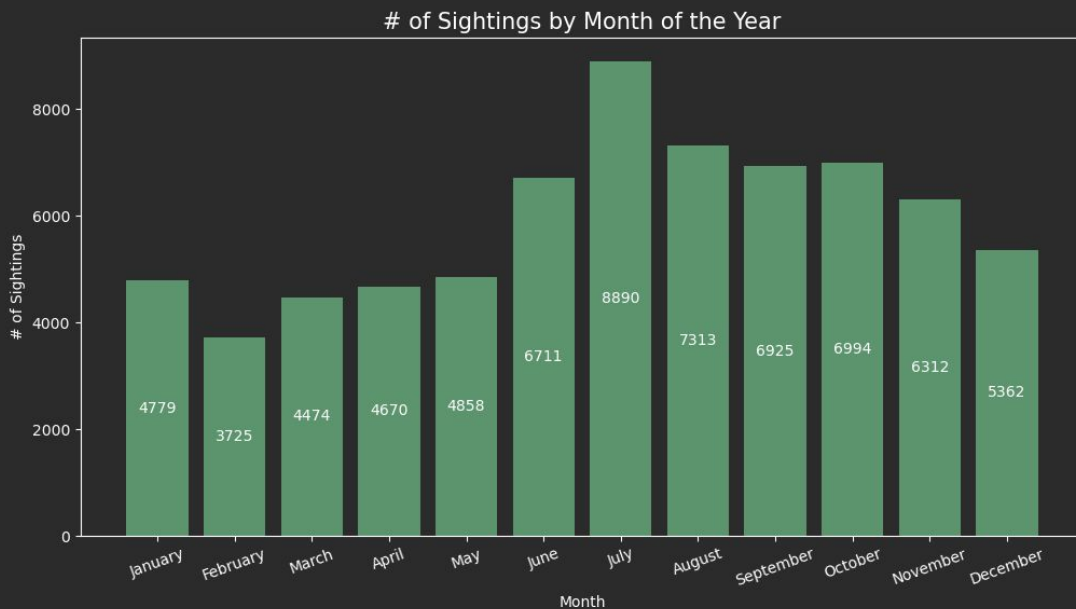


It's easier to see the sky during the night time hours. Many Americans also work during the day and a majority work inside.

How often do sightings occur at certain times in the year?

The majority of sightings occur in July. The second half of the year has a higher average number of sightings (6966 sightings) than the first half of the year (4869.5 sightings).

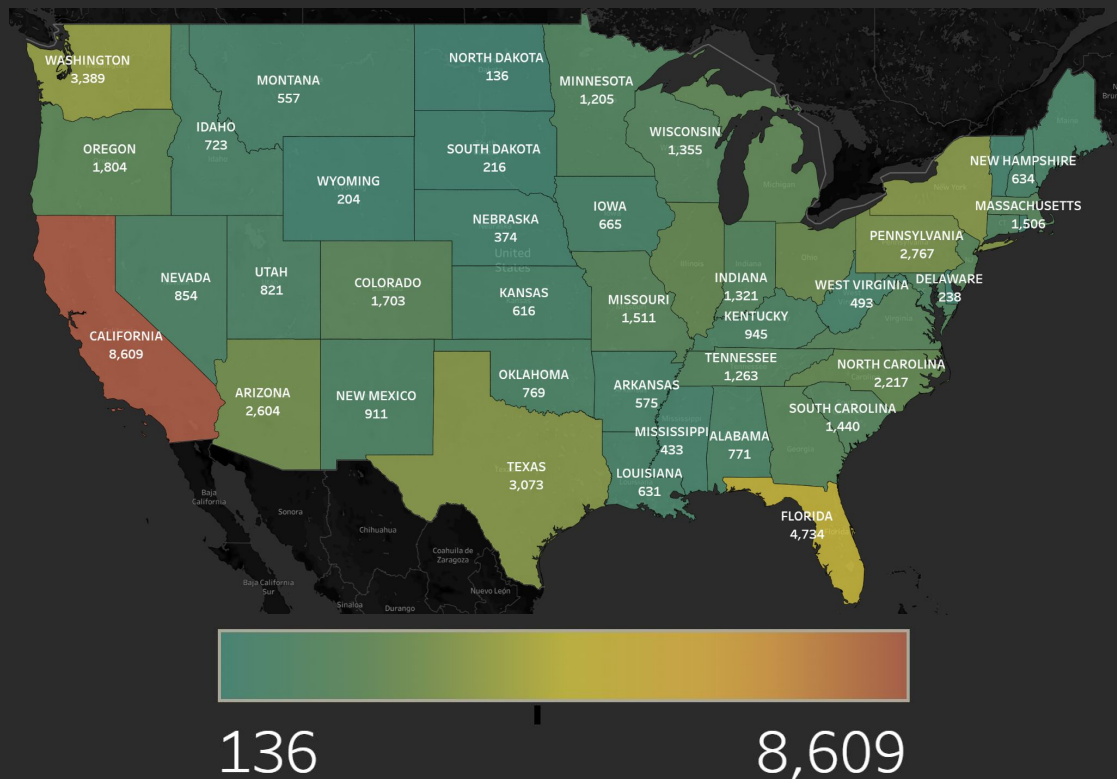
We may be able to contribute the peak in July to it being peak time of year for warmer weather across the US and more people are taking summer vacations, travelling, and generally being outside more.



Where do most sightings occur?

California has the most reported sightings with double that of Florida (4734 sightings), who comes in second for most reported sightings. The top ten states have more reported sightings than all other states combined (37175 sightings). North Dakota has the fewest reported sightings.

Sightings were highest on the West Coast as well as Texas and Florida. Coastal areas tended to see higher sighting counts than the landlocked parts of the country.

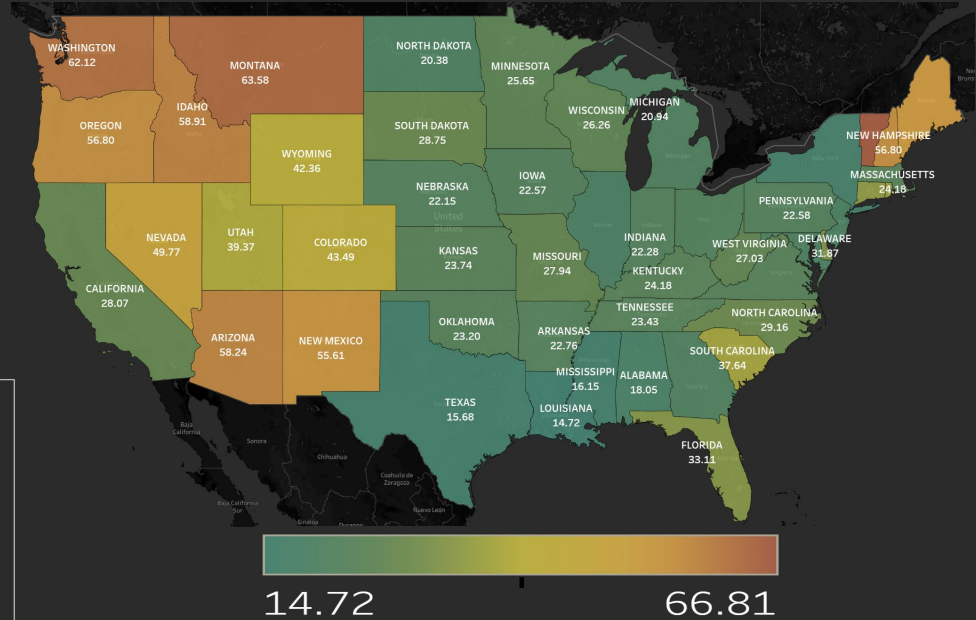
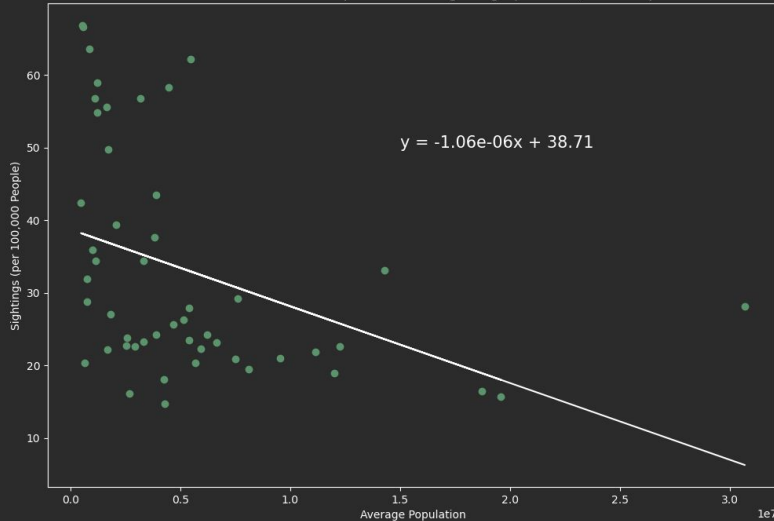


Is it correlated to population size?

States on the west coast, except for California, have the most reportings per 100,000 people.

Although California has the most reported sightings overall, Alaska has the highest number of reports per 100,000 people. The majority high-ranking states here are rural and less populated than the lower-ranking east coast.

Correlation Between Population & Sightings per 100,000 People

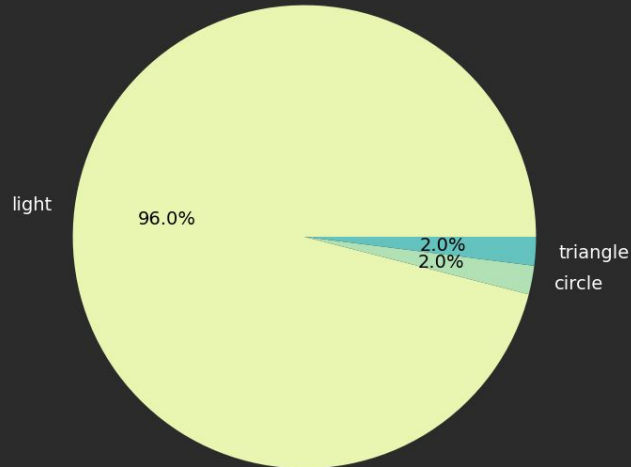


The linear regression of population versus sightings per 100,000 people shows that there is actually a negative correlation between population and sightings, and it's a very very small correlation. The r-value is only 0.15, making it very weak.

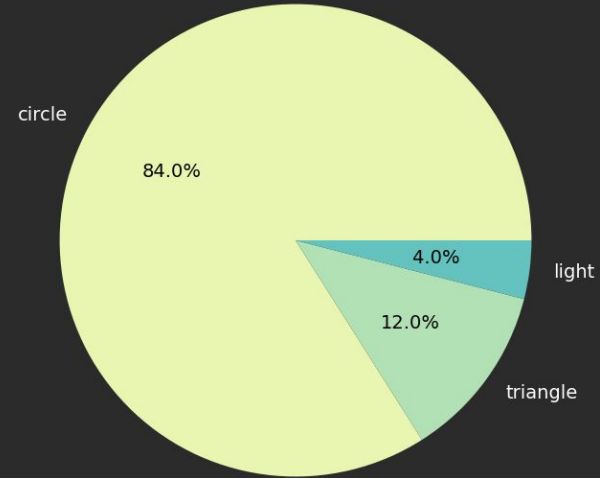
Are certain shapes sighted more in certain locations?

The most common “shape” reported was a form of light. In relation to the time period in which sightings are most common, this makes sense. This type of “shape” would be easier to see at night when something that glows and moves would easily be seen against the backdrop of the night sky.

Most Common Shapes Reported in UFO Sightings



Second Most Common Shapes Reported in UFO Sightings



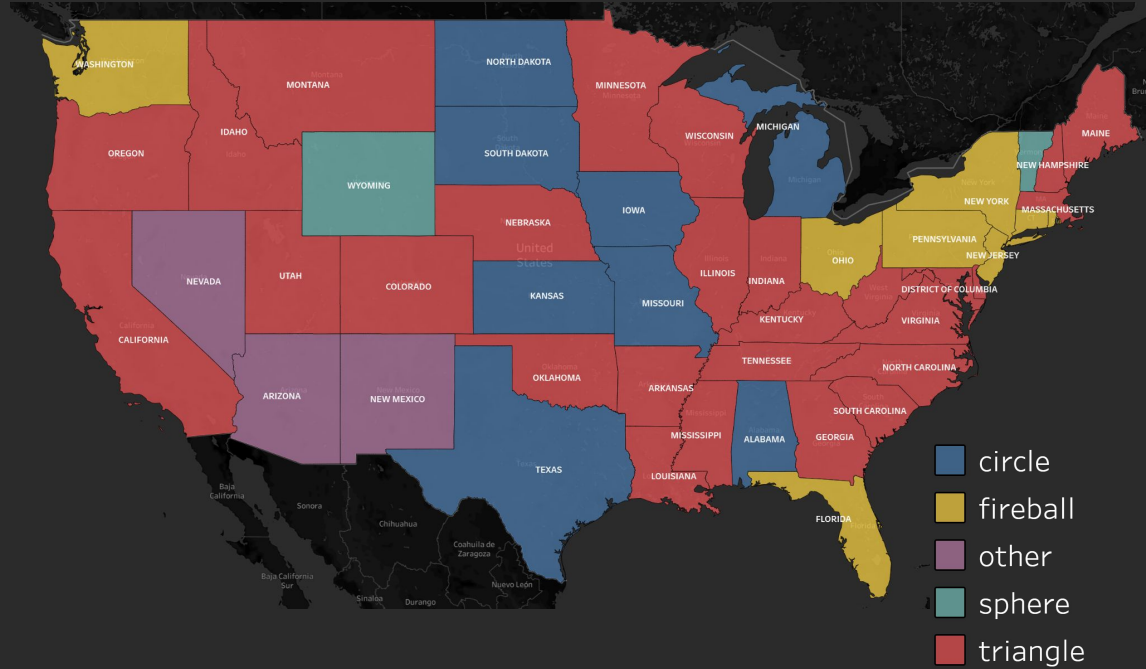
The second most common shape of UFO reported was circle. It does not come as a surprise as the dim lights in the night make objects hard to distinguish, the typical presentations of UFO in major televisions being disc-shaped could also play a part.

Are certain shapes sighted more in certain locations?

The third most common shapes in each state were more evenly spread and regional than the first and second.

We see predominantly triangles as the third most common, but circles, fireballs, and “other” shapes mix in as well.

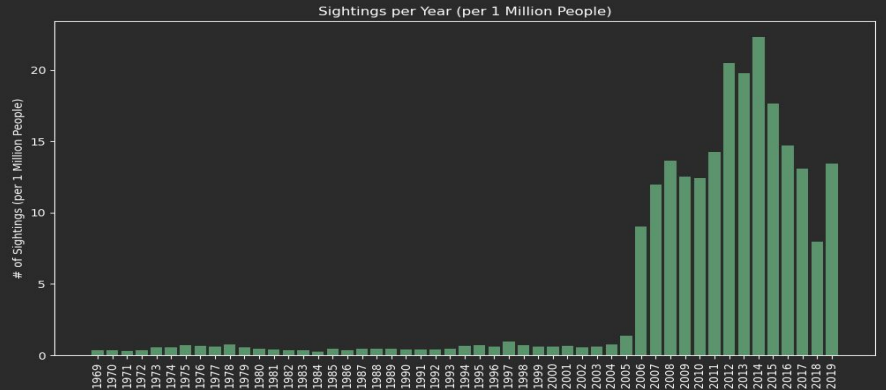
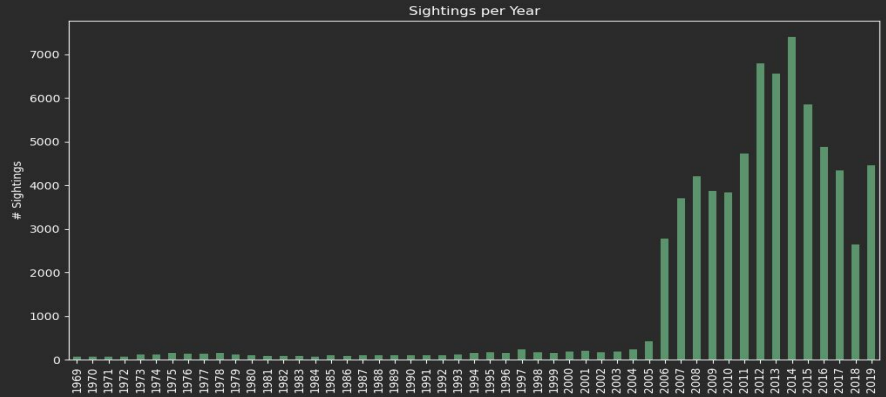
The regional groupings of these shapes are interesting. The Southwest desert areas were the only states with “other” shapes as the third most common. Circles were much more common in the Midwest than on the coasts. Fireballs were more common in the Northeast.



Have sightings increased or decreased over time?

Based on the graphs, UFO sighting reports had a significant increase in 2006. The popularization of computers and the internet (social media) could have played a part, as reports were easier to file and spread.

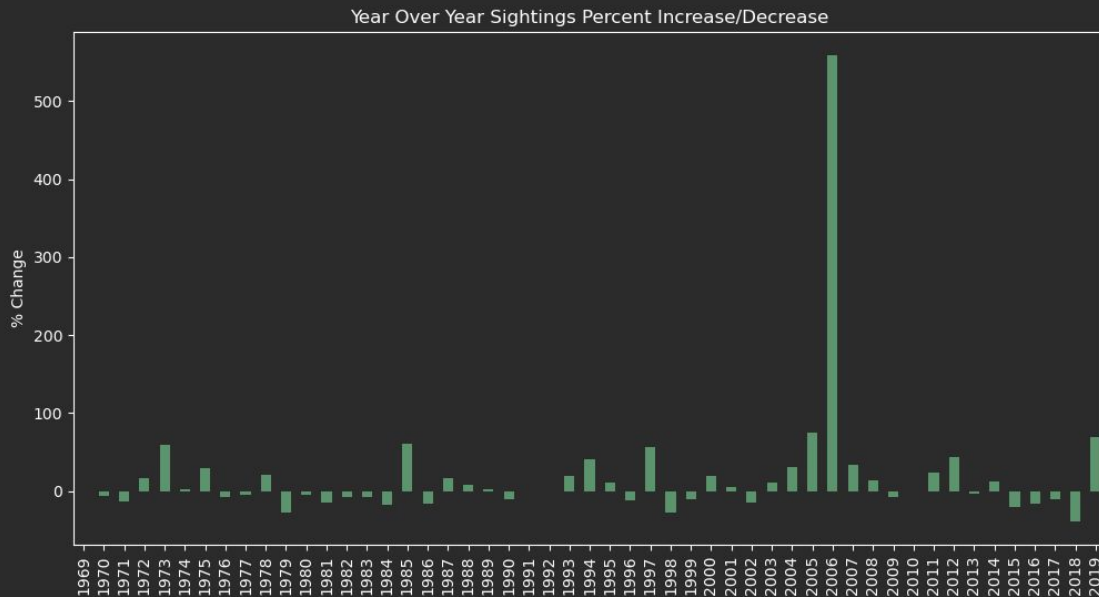
UFO sightings peaked between year 2012-2014. Although there is no real evidence that supports the actual reason, it could be caused by the popularization of internet conspiracy theories, such as the 2012 End of the World and The Illuminati, causing people to be more involved and possibly creating false reports.



Have sightings increased or decreased over time?

Charting increases year over year provides us with an opportunity to watch for outlier increases or decreases in sightings.

There were a number of years that sightings approached 100% increase or decrease over the previous year, but 2006 clearly stands out at nearly 600% increase.



Conclusions

- ❑ Over the last fifty years, sightings increased but the majority came in the 2000's & 2010's
- ❑ Sightings are typically at their highest in late Spring/early Summer
- ❑ Evenings (topping out around 9pm) accounted for the most sightings
- ❑ Across the United States, California had significantly more sightings than other states. Coastal states in general saw more sightings.
- ❑ Factoring in population, however, shifted most sightings to the Rocky Mountain region up to Washington and Montana. The New England area also accounted for an outsized number of population-adjusted sightings.
- ❑ The “light” was by far the most recognized shape, regardless of regionality.

Impact of Findings

- ❑ The dramatic increase in sightings beginning in 2006 but continuing through 2019 can be attributed to:
 - ❑ the “shrinking” of the world via social media (Facebook, Twitter, YouTube)
 - ❑ the invention of the iPhone (2007) and the ease of taking pictures/videos anywhere
 - ❑ 2006 O’Hare Airport sighting blows up in national news
- ❑ Tourism contributes significantly to sightings
 - ❑ Coastal areas, late Spring/early Summer timeframe
 - ❑ People outside later in the evening
 - ❑ Proximity to water and reflections off the water can appear as something unusual