UFO Sighting Reports 2015-2019

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VANDERBILT UNIVERSITY®

Data Science Institute

What factors are Related to UFO sightings?

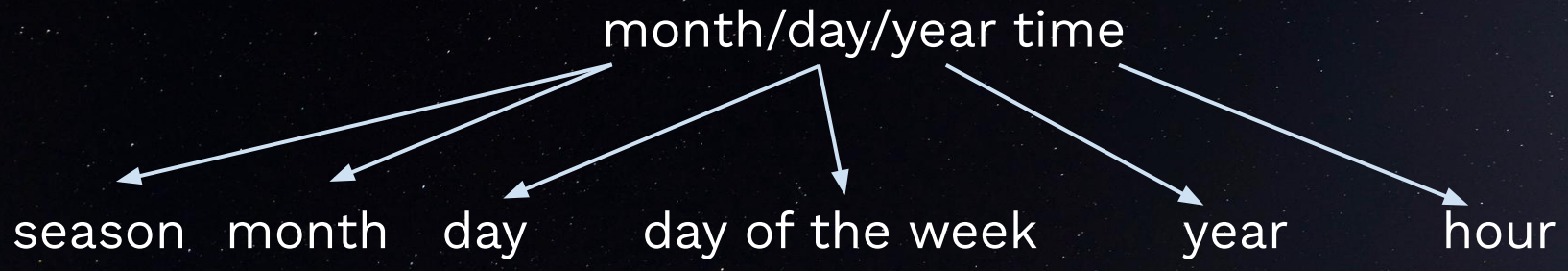
- ➔ What are the most common weather conditions surrounding UFO sightings?
- ➔ Are there any trends in UFO sightings over time? How are they commonly described?
- ➔ Are UFO sightings related to political affiliations? What areas of the country are most likely to have UFO sightings?
- ➔ Do certain cultural phenomena influence UFO sightings?

Data Collection

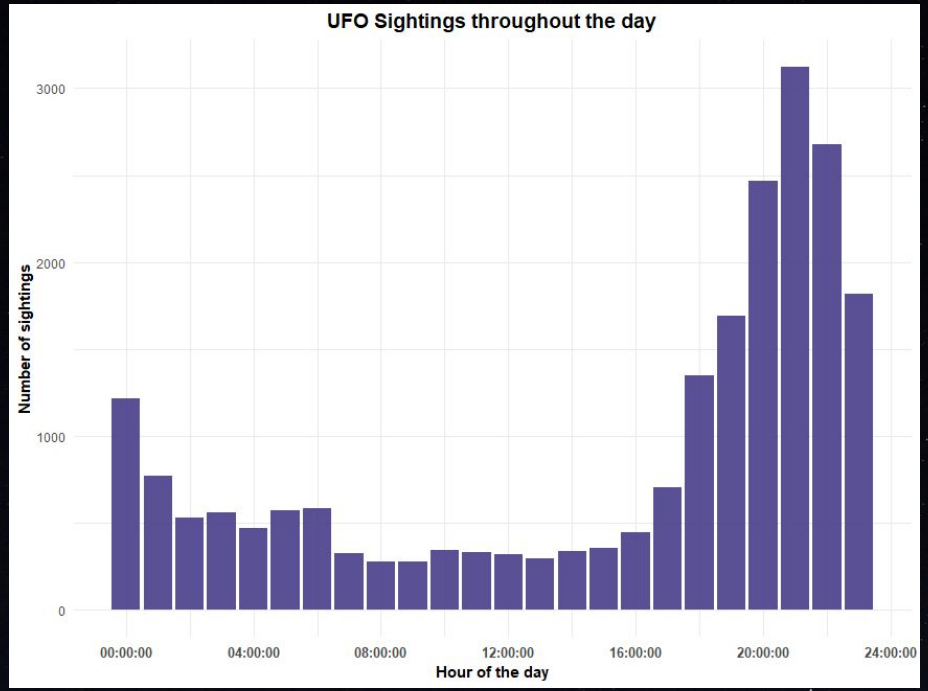
- ➔ UFO Sighting Data: National UFO Reporting Center Database
- ➔ Weather: Meteostat Python API
- ➔ Google Searches for “UFO and Alien”: Google Trends
- ➔ Sci-Fi Movie Releases and Revenue: thenumbers.com
- ➔ Alcohol Consumption by State: National Institute on Alcohol Abuse and Alcoholism
- ➔ High School Graduation Rate by State: US Census Bureau
- ➔ Political Party Affiliation by State: Pew Research Center

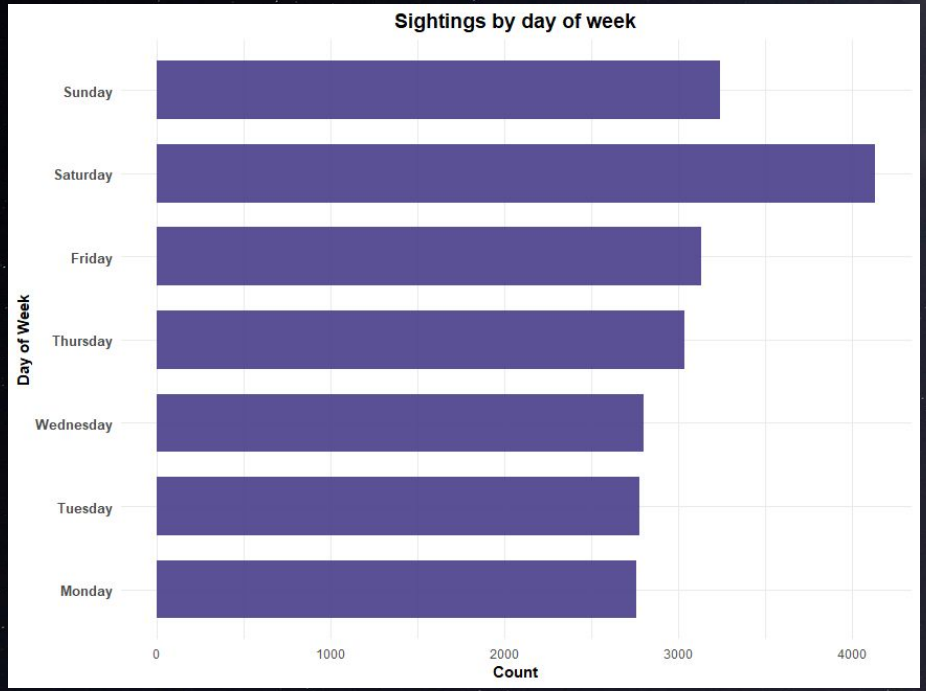
A Variable Transformation:

Datetime → Season, Month, Day, Day of the week, Year, & Hour



Analysis: Frequency





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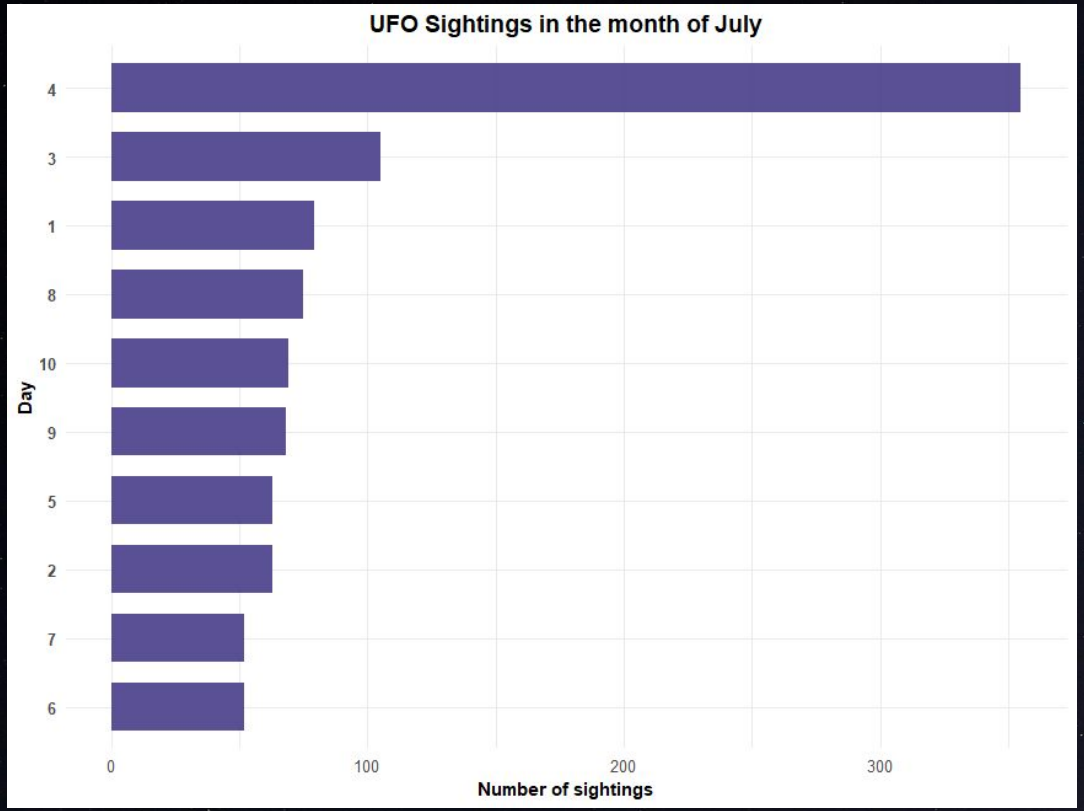
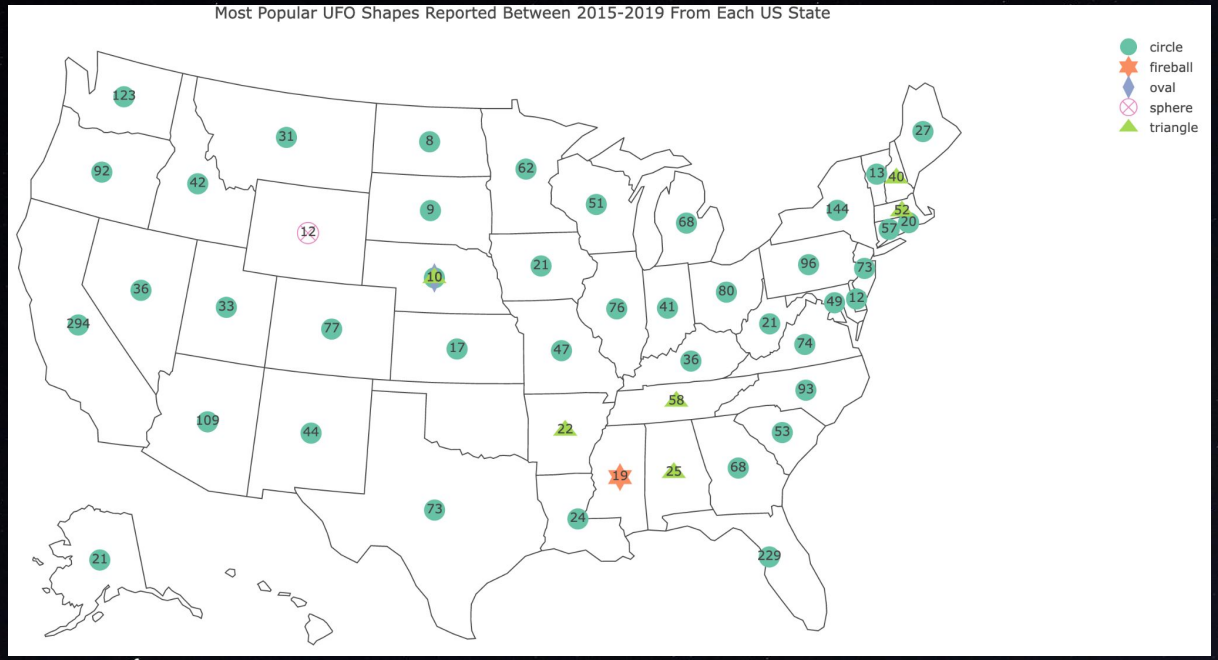


Analysis: Shape

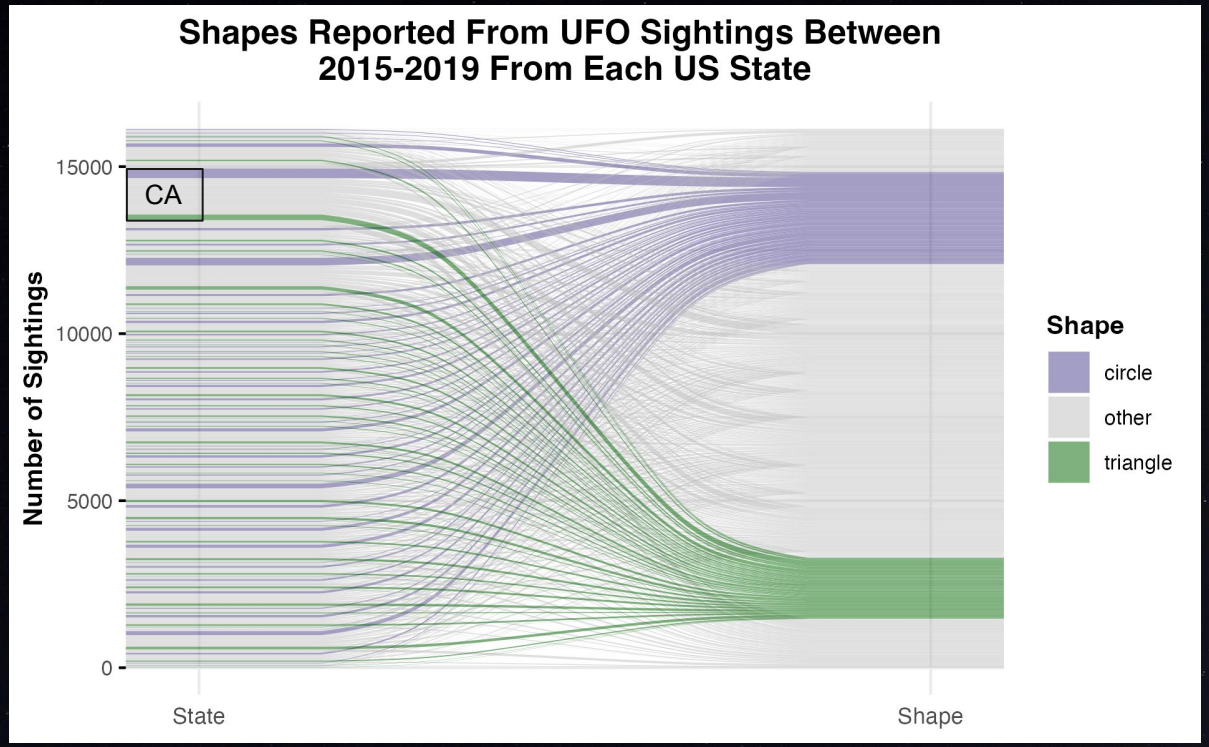


Key takeaways:

1. Circle is the most popular shape across all states.

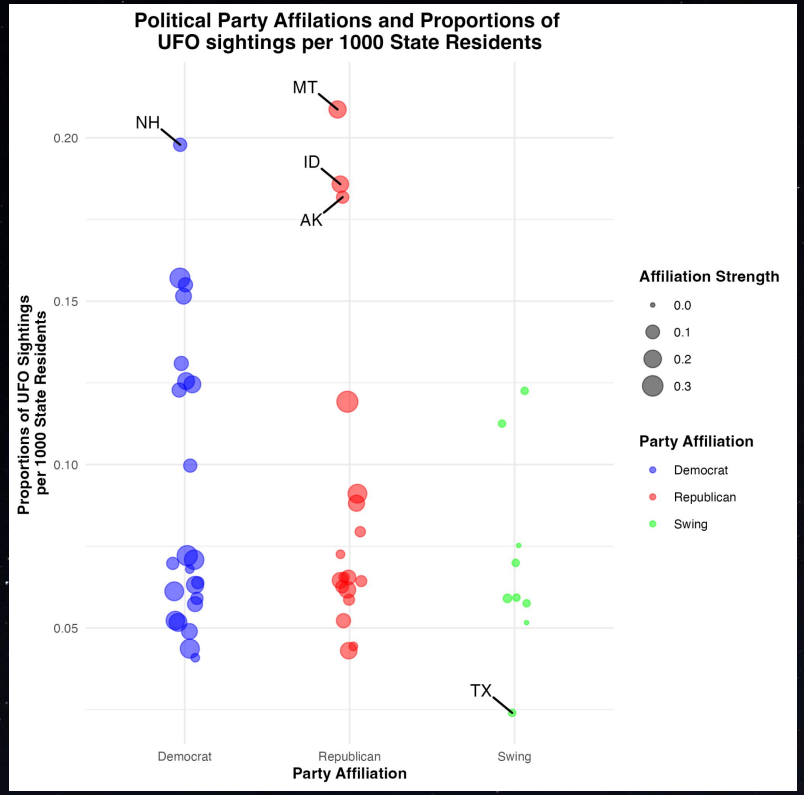
2. No association between states and other shapes.

Analysis: Shape



Key takeaway:
The top 2 most popular shapes are evenly spread out across all states.

Analysis: Political Affiliations



Key takeaways:

1. No association between UFO sighting frequencies and political party affiliations.

2. All high-frequency outliers are northern states.

3. One low-frequency outlier – Texas – is on the south border.

Limitations I: Data Limitations

Sampling Bias

Sampling bias towards people who report sightings

- Most will see UFOs but not report.
- Eg. Most Californians never heard of NUFORC
- **Our data is generated <u>only by UFO sighting REPORTS.</u>**

Falsified Reports

Many reports may be falsified as NUFORC will not be able to verify testimony

- Ulterior motives on the part of the individual - i.e. “clout chasing”
- Sensationalism on the part of the reporter to publish a big story

Perceptual Reliability

Even if not intentionally falsified, human perception is subject to error

- Many ariel objects could be potentially mistaken for UFOs
- Case in point: Most sightings occur at night/weekends, most are just described as “lights”

Limitations II: Analysis Limitations

Multiple Possibilities

Sighting Causality is not easily separable from conditions in which they occur

- E.g. Do more sightings at a given time indicate more UFOs or more people outdoors?
- E.g. Do low temperature sightings really reflect sighting nature? Or just lower overall temps>

Statistical Significance

Relationships found on certain may not be statistically significant/robust

- E.g. Analysis Two: Only 50 states in the dataset to draw conclusions from
- This would require more data to safely justify (e.g. County or City level)

Limited Predictive Power

Results may be limited to only our given geography and our selected time frame

- Case in point: We found major time dependent variations, e.g. 50% decrease from 2015-2016
- Our analysis *likely* would not apply for a country not celebrating July 4th

Key Takeaways & Conclusion

Pattern Identified

- Time of day
- Certain days of year
- Months
- Education
- Alcohol

No Pattern Identified

- Weather & Climate
- Political Affiliation
- Google Search Trends
- Sci-Fi Movie Industry
- Shape

Limitations

- Data generation
- Analysis robustness

Conclusion

Overall, we have successfully identified interesting factors that correlate with UFO sightings. However, there remain a lot of limitations to our data as well as analysis to be vigilant of.

Thank You!

Happy to answer questions!