

SPACE X REPORT

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CONTENT



**EXECUTIVE
SUMMARY**



INTRODUCTION



METHODOLOGY



RESULTS



CONCLUSION



APPENDIX

EXECUTIVE SUMMARY

Methodologies:

-Data collection
(API)

- Data collection
(Web Scraping)

- Data Wrangling

- Exploratory
Data Analysis
(SQL)

- Exploratory
Data Analysis
(Data
visualization)

- Visual Analytics
with Folium

- Machine
learning
Prediction

INTRODUCTION



SpaceX advertises Falcon 9 rocket launches on its website with a cost of 62 million dollars; other providers cost upward of 165 million dollars each, much of the savings is because SpaceX can reuse the first stage. Therefore if we can determine if the first stage will land, we can determine the cost of a launch. This information can be used if an alternate company wants to bid against SpaceX for a rocket launch.



We wanted to solve what factors have the impact for the rocket to land successfully, and how they affect each other

METHODOLOGY



Data was collected with SpaceX API and web scraping from Wikipedia

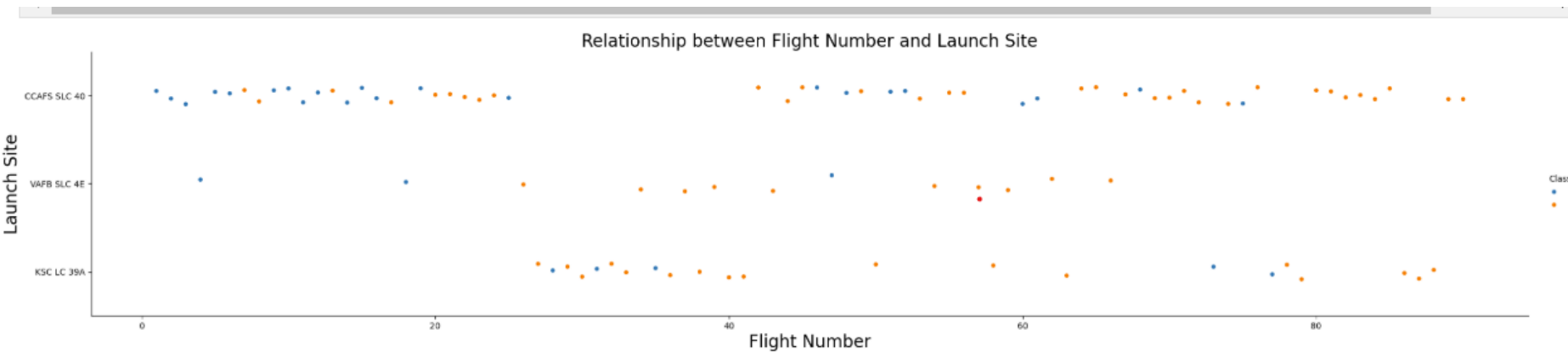


One-hot encoding applied to categorical features



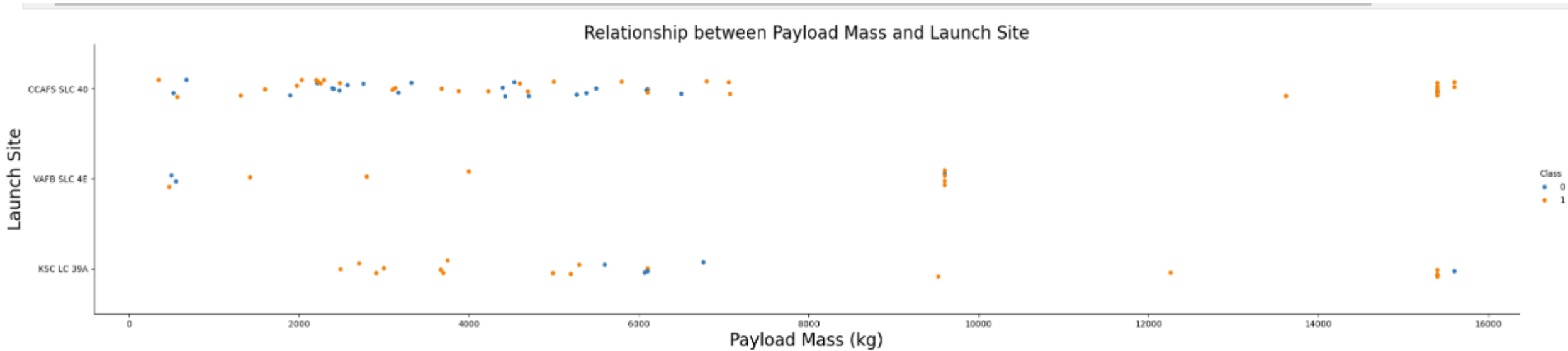
EDA with visualization and SQL

FLIGHT NUMBER / LAUNCH SITE



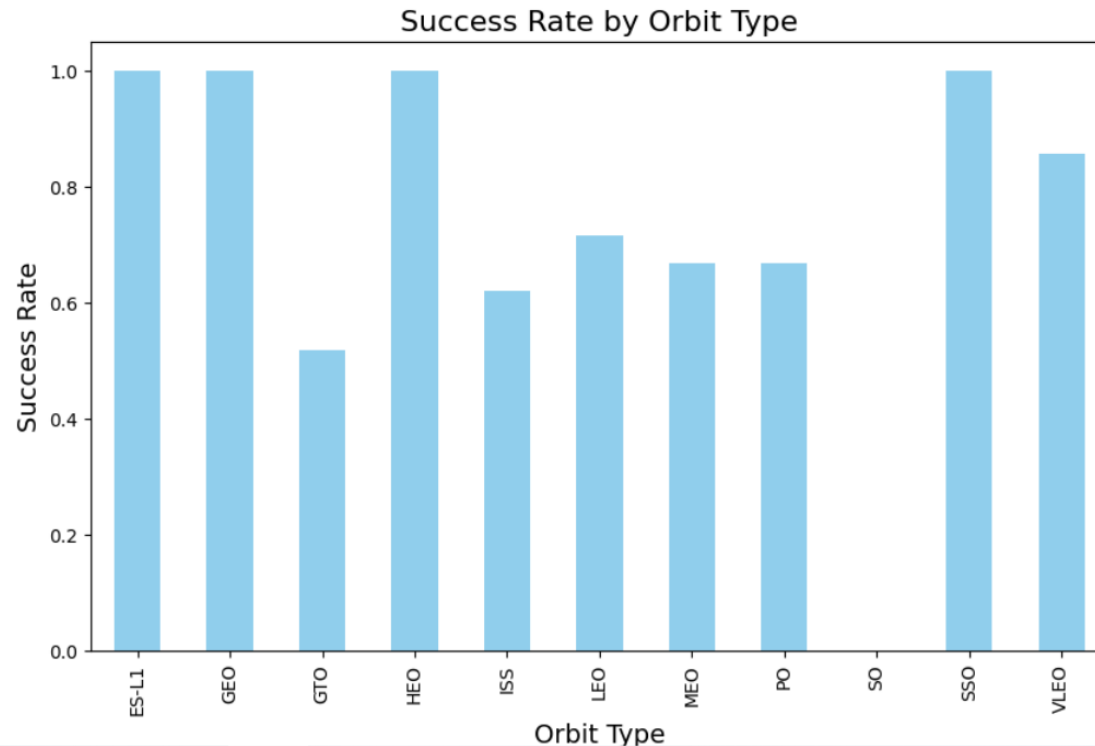
Notice the pattern between the Flight Number vs. Launch Site scatter point plots: the larger the flight amount at certain site, the greater the success.

PAYLOAD / LAUNCH SITE



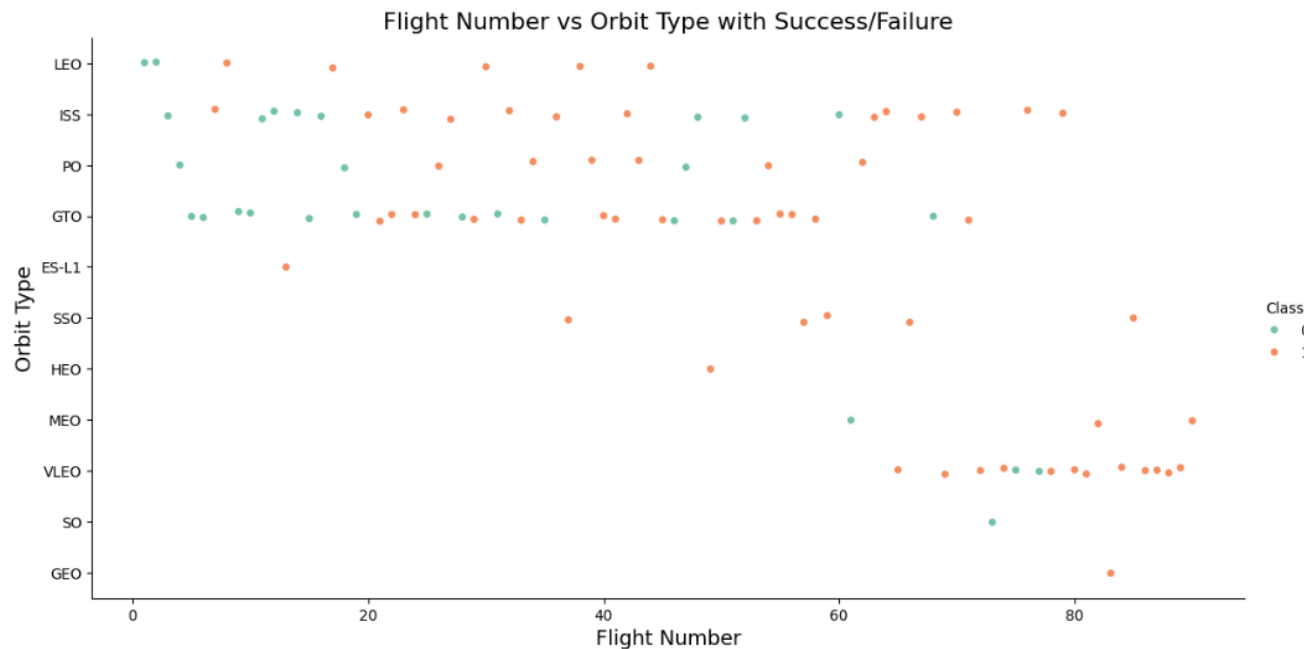
Notice the pattern between Payload mass and Launch site: greater the payload mass for site CCAFS SLC40 the higher the success rate.

ORBIT TYPE



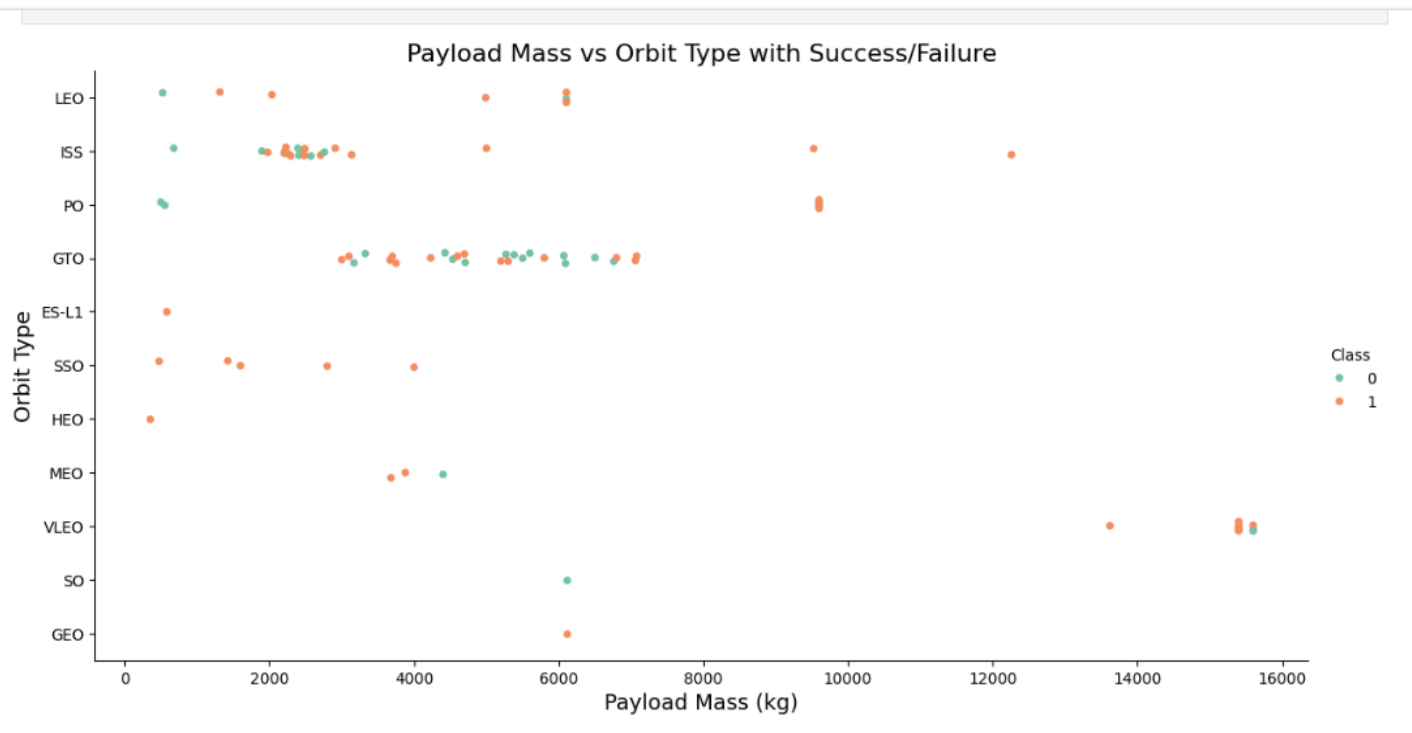
Notice from bar chart that ES-L1, GEO, HEO and SSO orbits have the highest success rates.

FLIGHT NUMBER / ORBIT TYPE



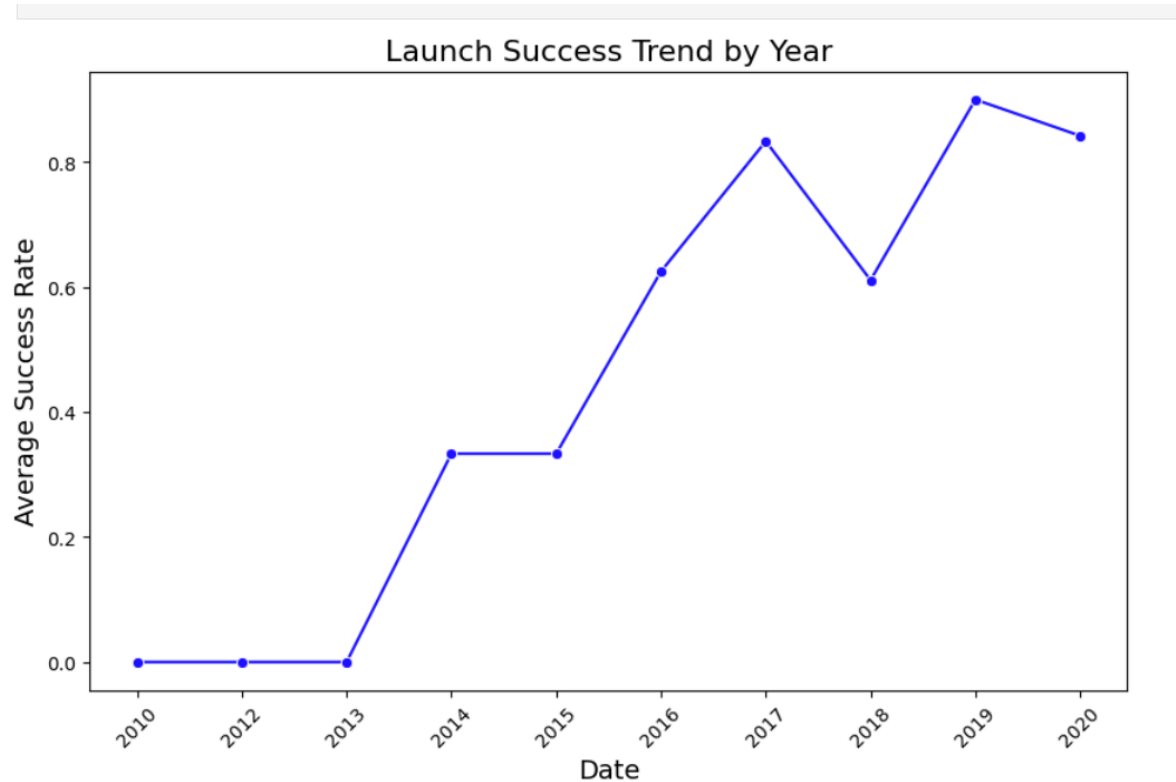
You can observe that in the LEO orbit, success seems to be related to the number of flights. Conversely, in the GTO orbit, there appears to be no relationship between flight number and success.

PAYLOAD / ORBIT TYPE



With heavy payloads the successful landing or positive landing rate are more for Polar, LEO and ISS. However, for GTO, it's difficult to distinguish between successful and unsuccessful landings as both outcomes are present.

YEARLY TREND OF LAUNCH SUCCESS



The success rate since 2013 kept increasing till 2020