IBM Developer
SKILLS NETWORK

Winning Space Race with Data Science

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Outline

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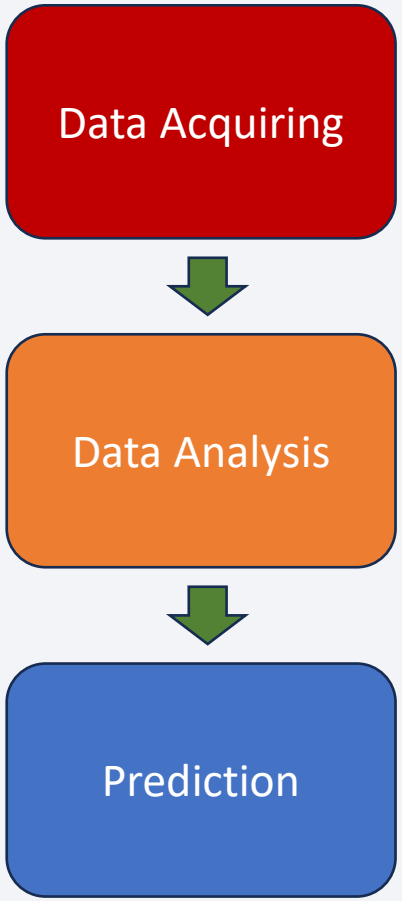
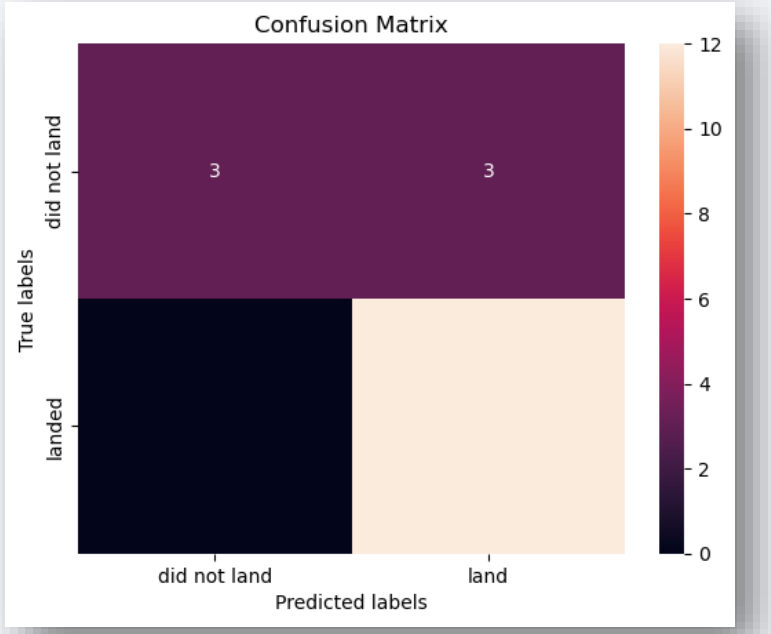
Executive Summary

Project Description





Highly likely it will take more than this amount of effort and data to predict on this crucial project

Key Findings:

- SpaceX primary goal is to produce General transportable spacecraft
- Management improvement of simultaneously all facilities can improve success rate

Introduction

CONTEXT

- Finding out the motive of SpaceX
- Data Discovery

PROBLEM

- Prediction on a project before launching to minimize cost.
- Scope of improvement.

Why?

- Reductio of cost
- Reduction of energy and labor usage
- Consistent Improvement

Section 1

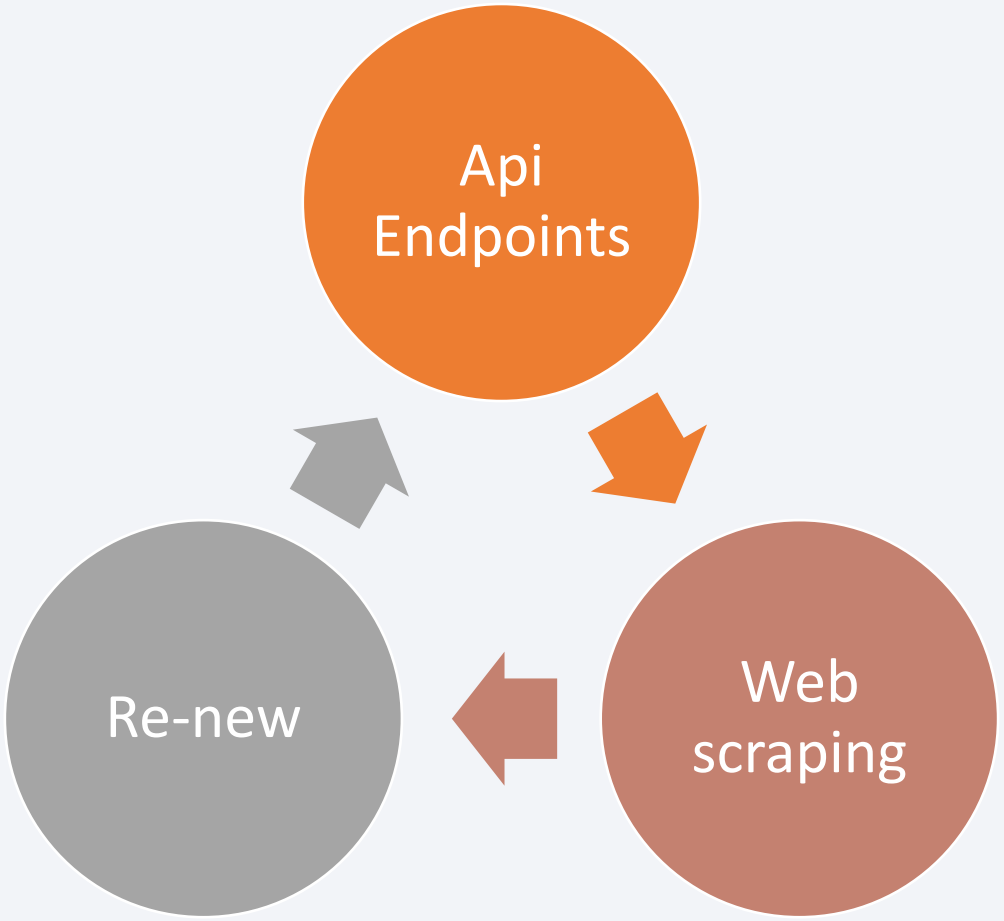
Methodology

Methodology

Executive Summary

- Data collection methodology:
  - Data was gathered through multiple API endpoint & web scraping
- Perform data wrangling
  - Processing includes dealing with NAN value(not a number),converting categorical features to numeric features.
- Perform exploratory data analysis (EDA) using visualization and SQL
- Perform interactive visual analytics using Folium and Plotly Dash
- Perform predictive analysis using classification models
  - Model is build on Cross-Validation and 80%,20% training testing split
  - Logistic regression , Support Vector Machine ,Decision Tree , K Nearest Neighbors algorithms are tested .

Data Collection



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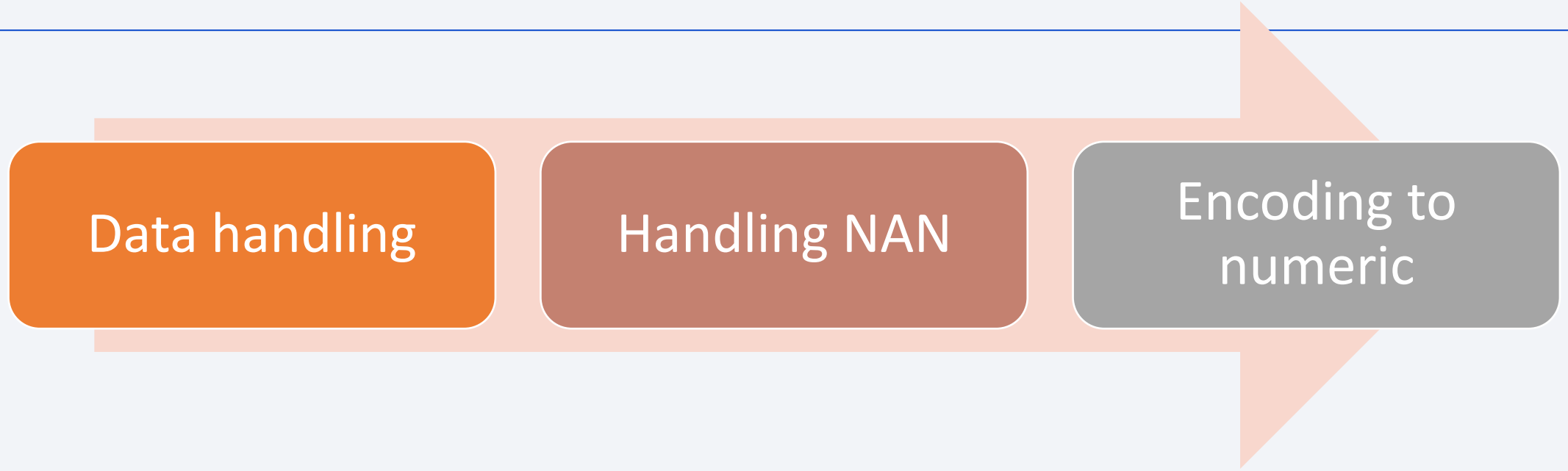
Data Wrangling



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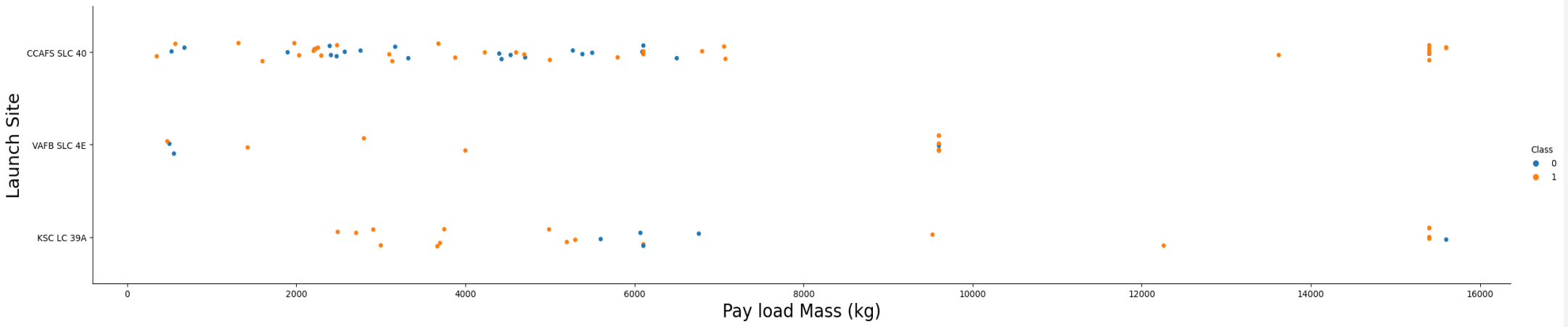
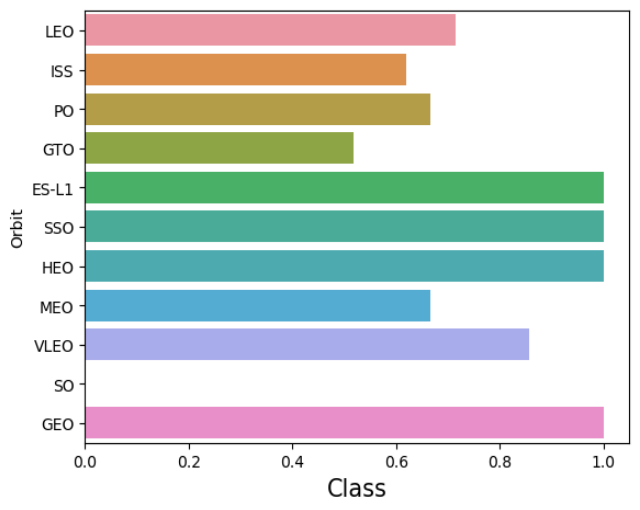
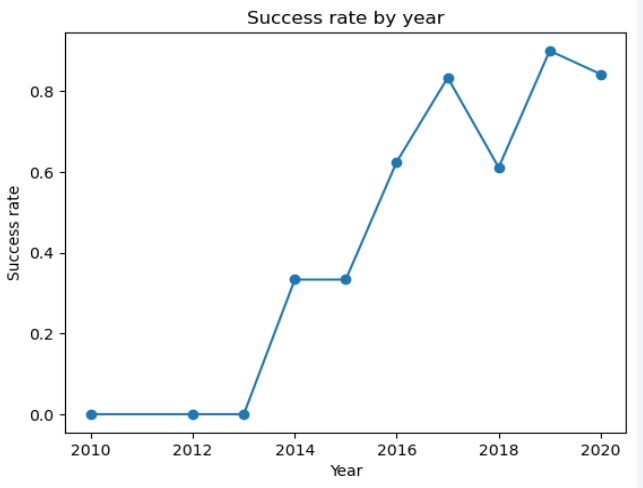
EDA with Data Visualization







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EDA with SQL

- Compensative possible SQL integration can be possible
- Creates possibility of we-application

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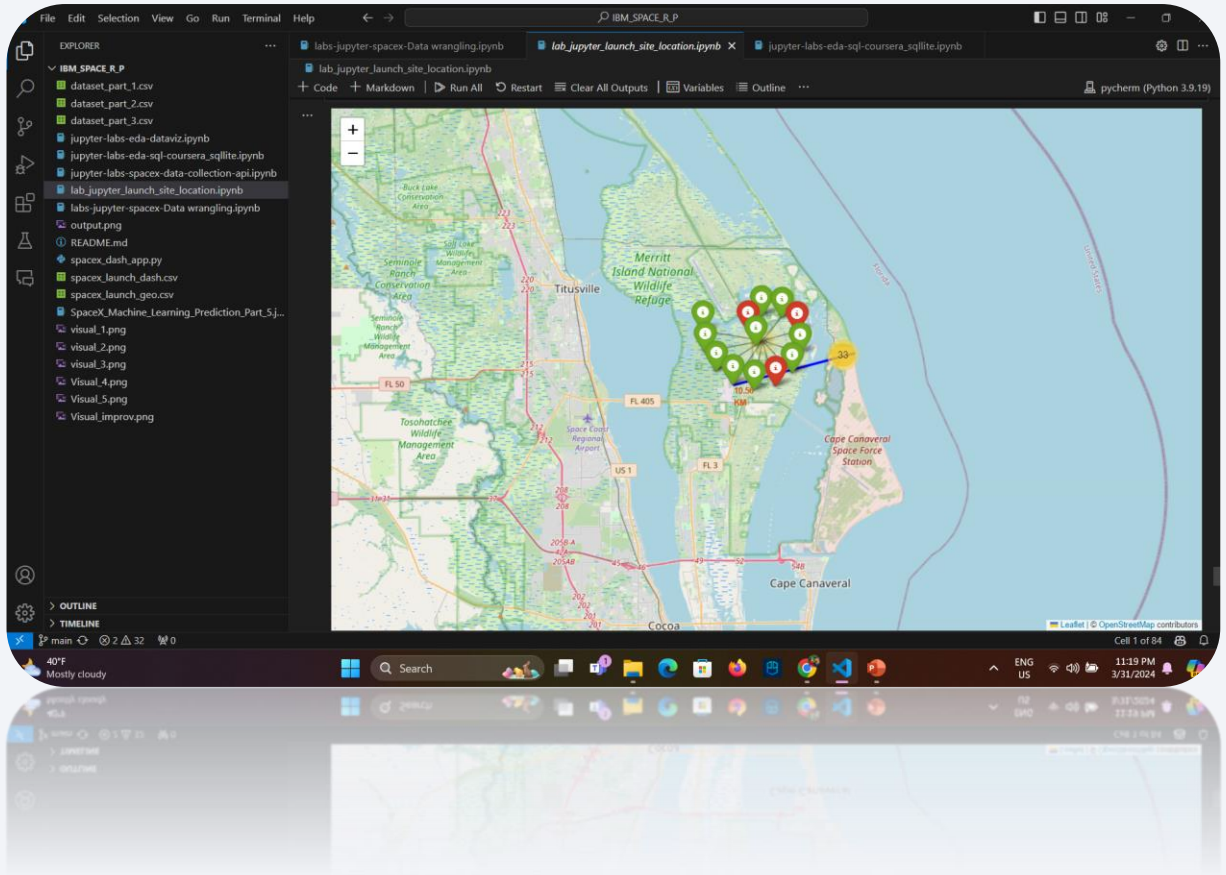
Build an Interactive Map with Folium

- Integration of folium and Jupiter-lab based application is used for better visualization of geo-data.



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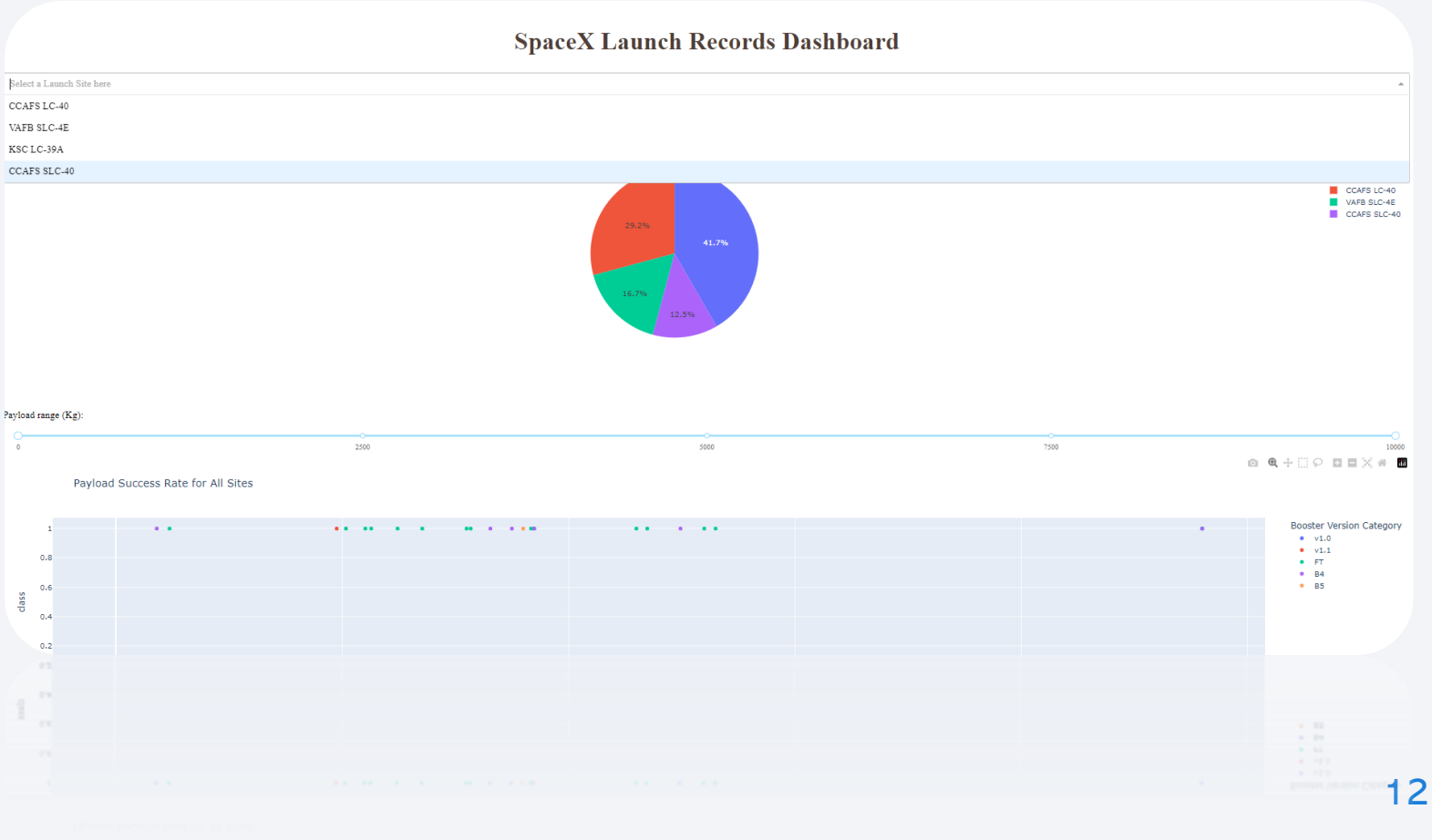
Build a Dashboard with Plotly Dash

- For better visualization for Business and stake holders interactive studio uas created.



GET PYTHON

Predictive Analysis (Classification)

- Multiple Algorithms used to predict on Success or failure
  - Model is build on Cross-Validation and 80%,20% training testing split
  - Logistic regression , Support Vector Machine ,Decision Tree , K Nearest Neighbors algorithms are tested .

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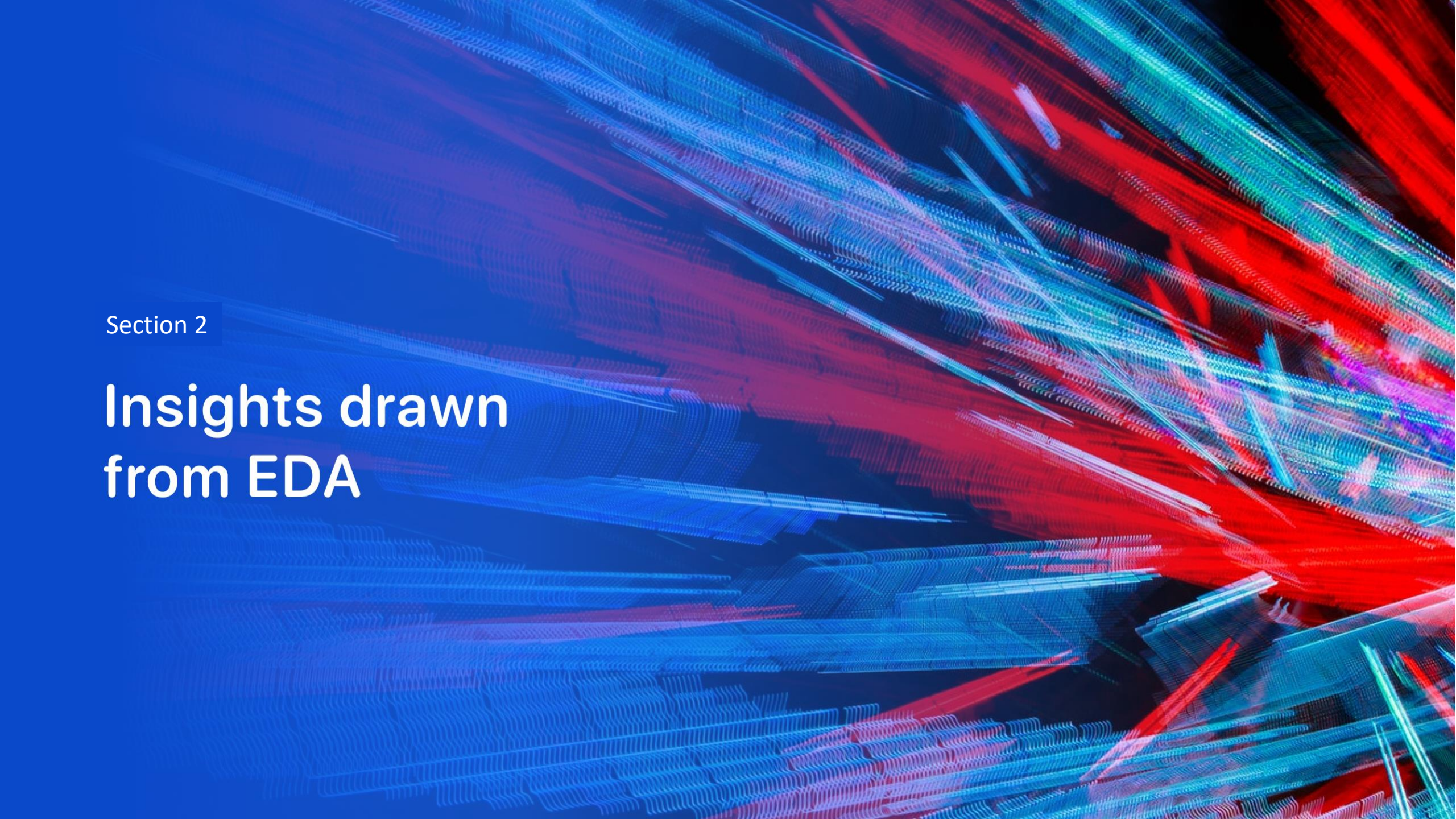
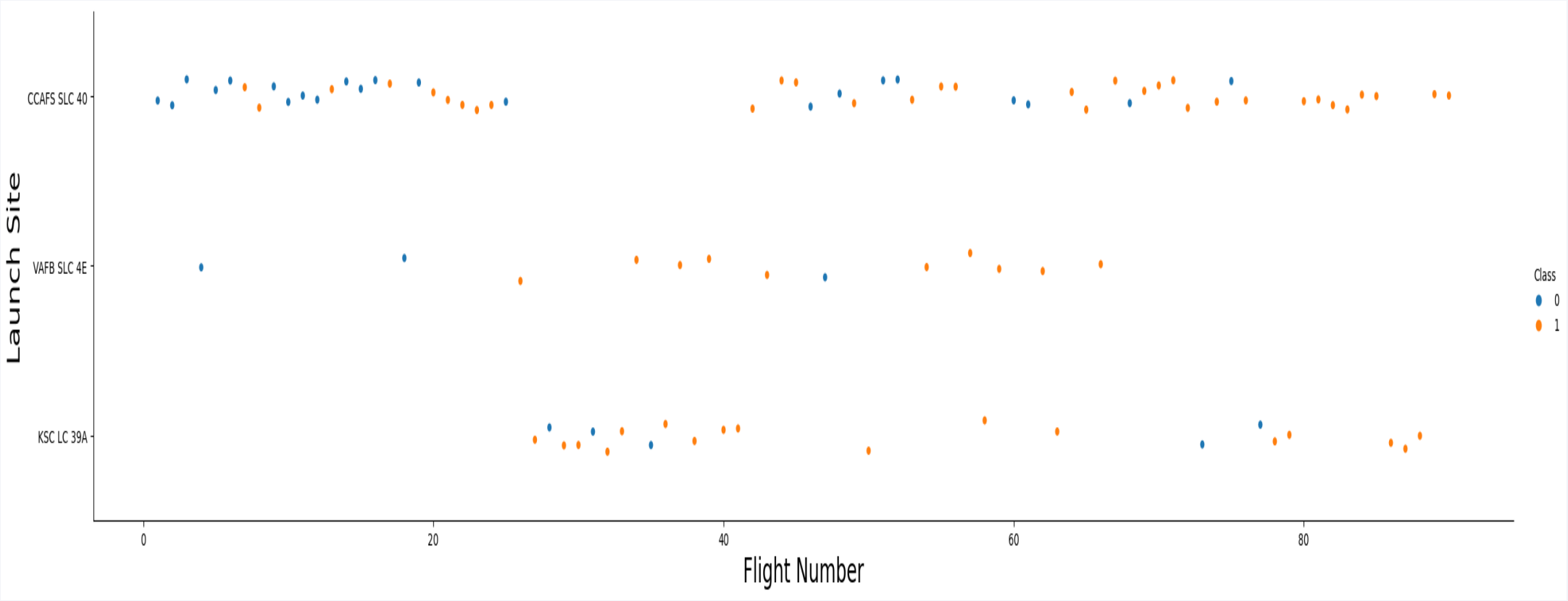
Results

- Though The predictive answer scope is narrow but descriptive answer can be found.


Section 2
Insights drawn from EDA

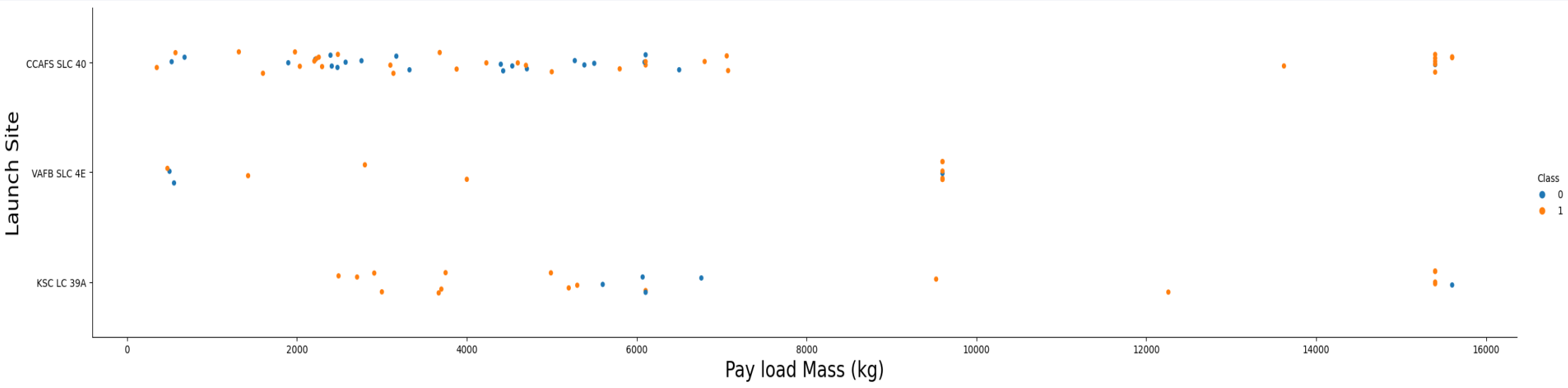
Flight Number vs. Launch Site

- SpaceX uses their one station too much frequently for every purpose



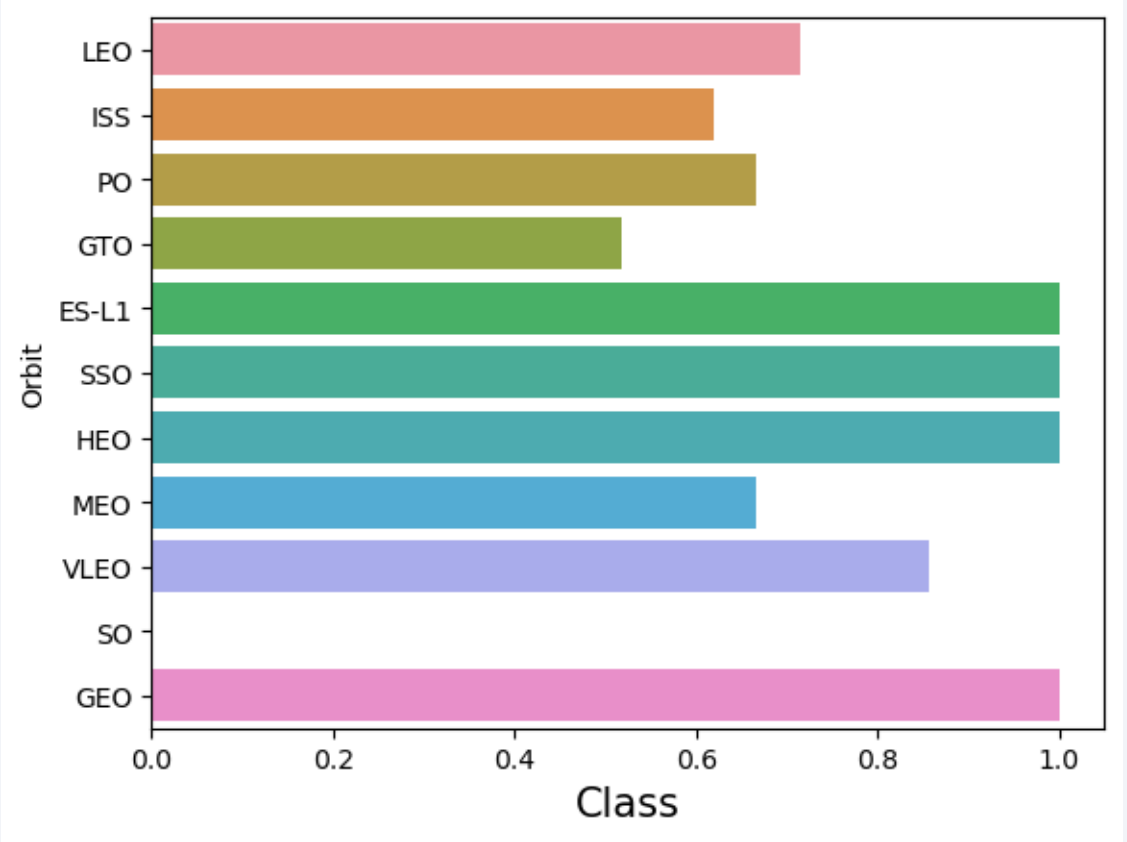
Payload vs. Launch Site

- WAFB SLC 4E is not used for higher payload



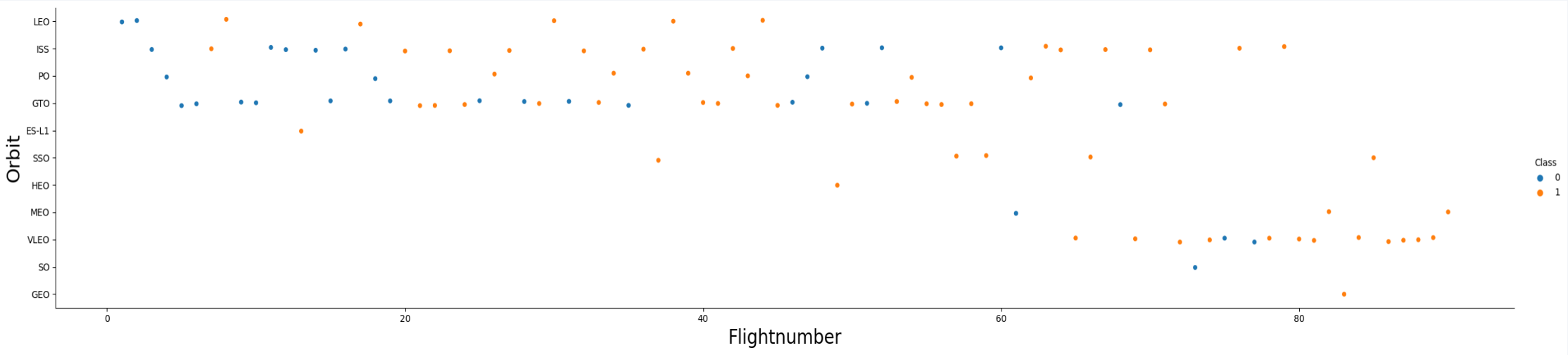
Success Rate vs. Orbit Type

- Willingly trying to only focus on long term



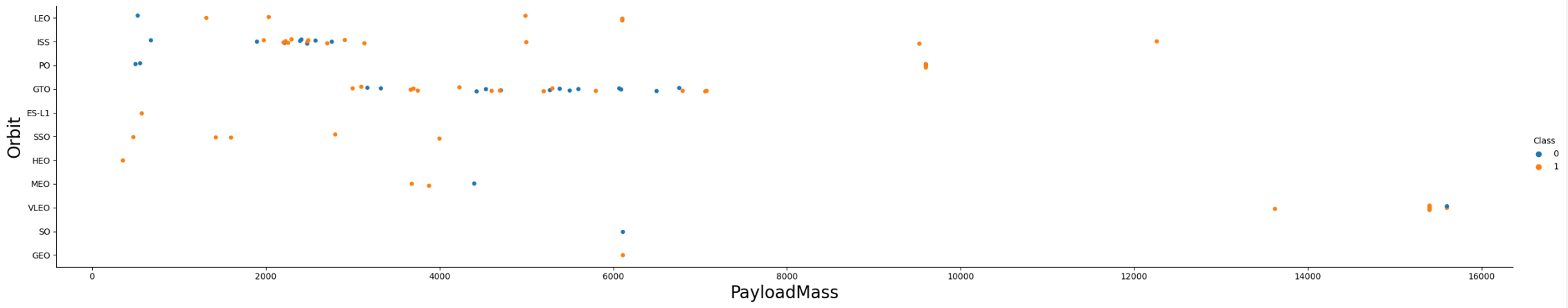
Flight Number vs. Orbit Type

- The grouping looks some relation comprehensive understanding required



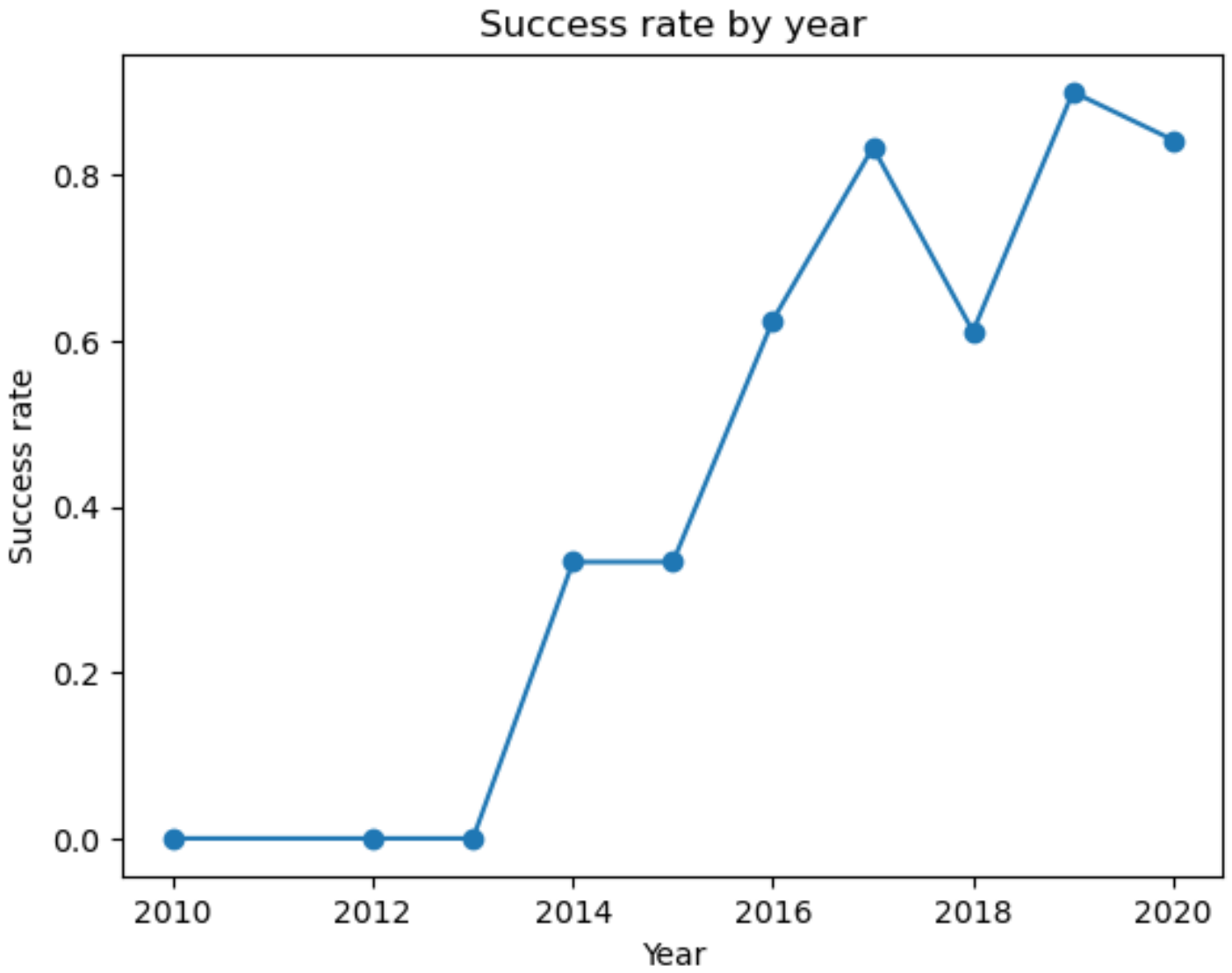
Payload vs. Orbit Type

- This graph also proofs SpaceX is more concerned about space traveling



Launch Success Yearly Trend

From 2013



Thank you!