



Space Missions

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Dataset Overview



- All the space missions.
- Starting in the beginning of Space Race (**1957**).

Data Description

Index		Year/ Month / Day / Time of Launch						
Unnamed: 0	Unnamed: 0.1	Company Name	Location	Datum	Detail	Status Rocket	Rocket	Status Mission
Location of the Launch			Rocket Name		Cost of the mission: in \$ million			



What is the

next mission status ?

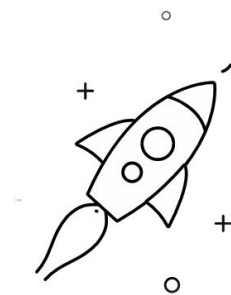
Is it going to succeed or fail?



Data Cleaning

- **Drop** unused indexes columns.
 - Convert to suitable **types**.
 - Remove extra **spaces**.
 - Replace spaces with **underscores**.
 - Use **lower case**.
- **Split** Some columns data:
 - Datum → day, month, year
 - Location → country
 - **Fill Missing** values:
3375 values under Rocket column.
 - Remove **duplicated** values:
1 duplicated row removed.

Tools



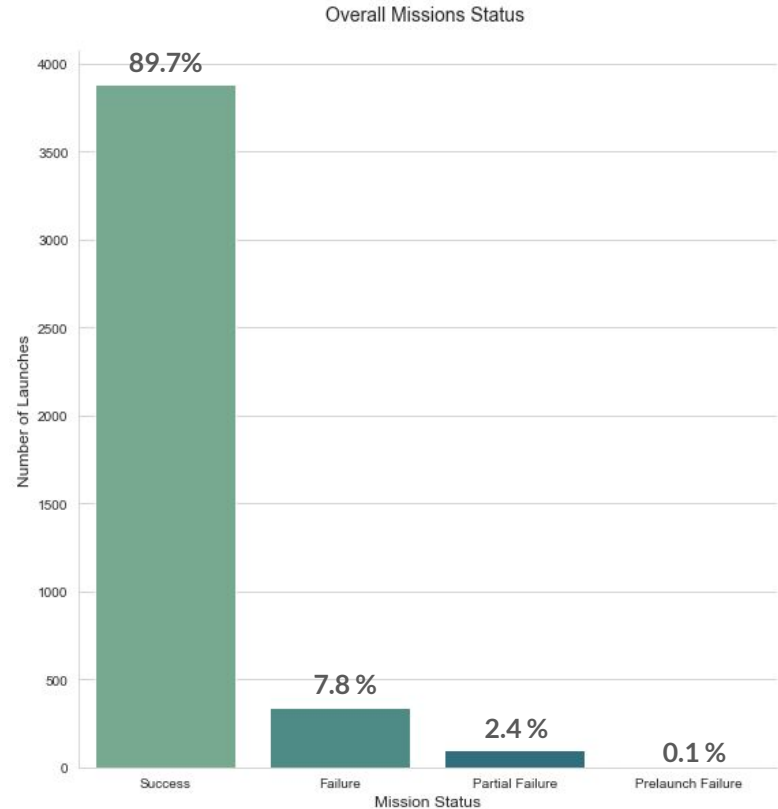
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Facts

Missions Status for ALL Launches



* In general, the majority of launches is
Successful.

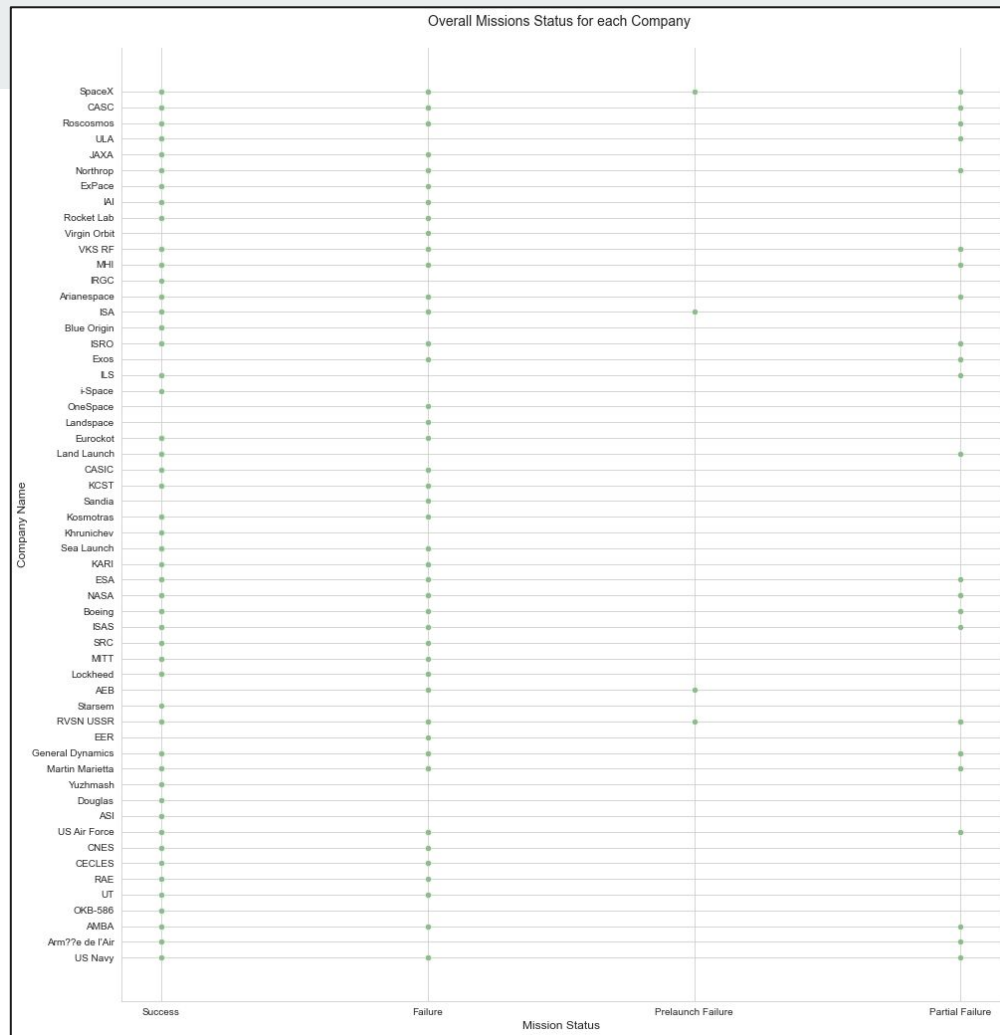


A Closer Look

Most of the companies went through **successful** & **failure** phases.

Some of them faced **partial failure**.

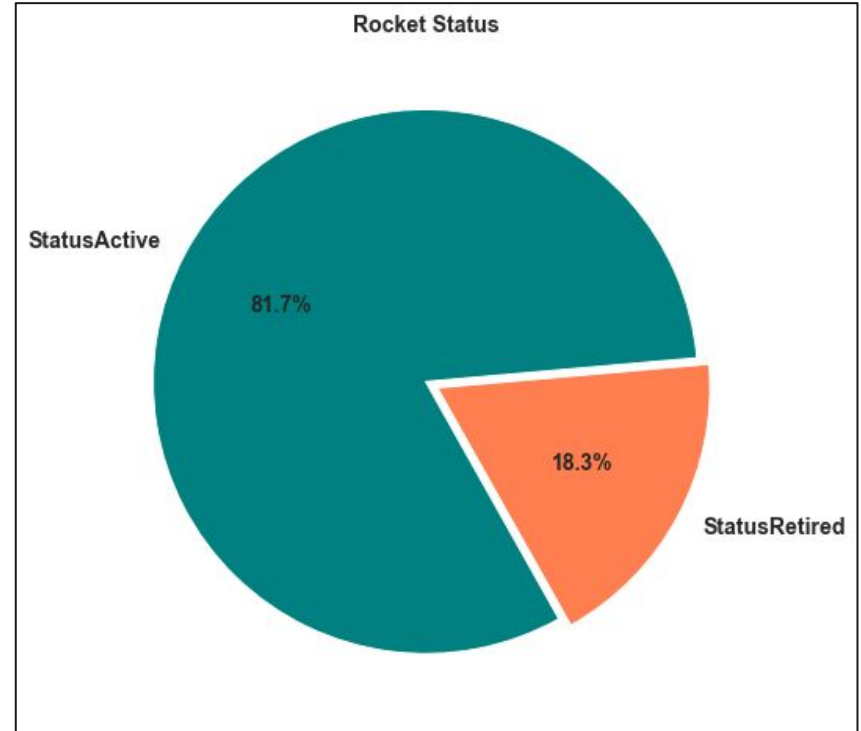
Lowest number have faced **pre launch failure**.



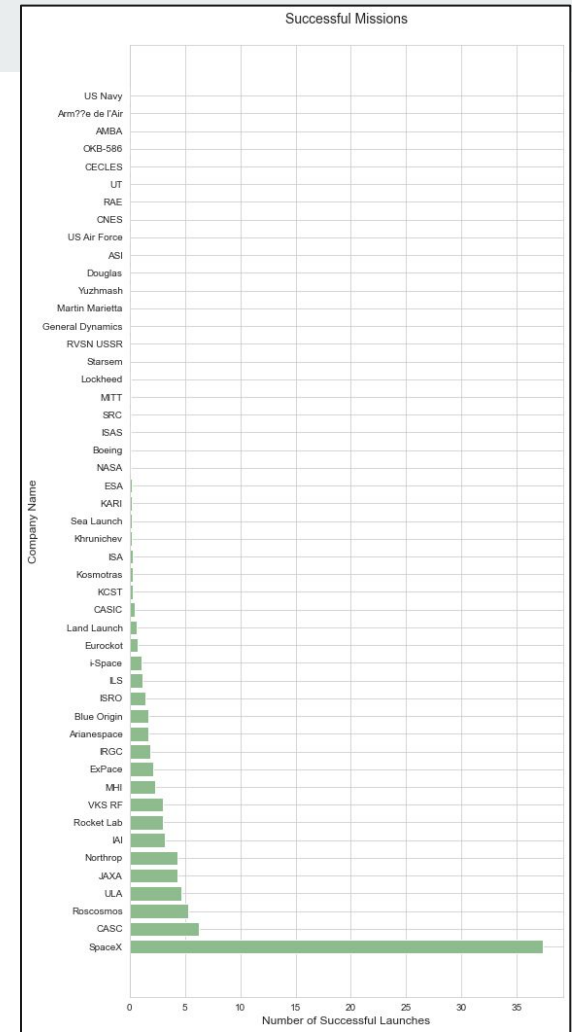
What is each Rocket Status?



Most of the rockets are **Active**.

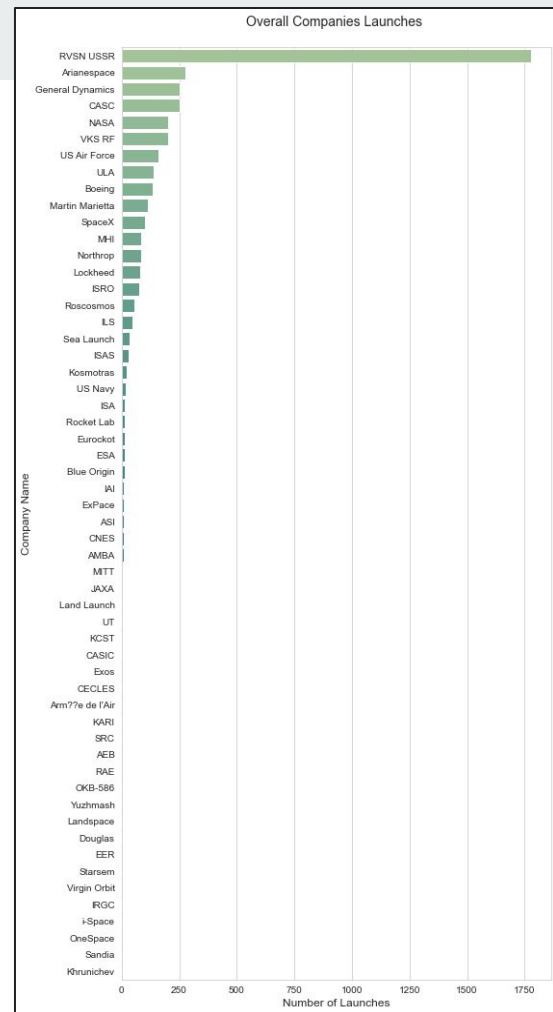


What is the company that success the most?



What is the
company that
Launches the
most?

index	Company Name	Number of Launches
0	RVSN USSR	1777
1	Arianespace	279
2	General Dynamics	251
3	CASC	250
4	NASA	203
5	VKS RF	201
6	US Air Force	161
7	ULA	140
8	Boeing	136
9	Martin Marietta	114
10	SpaceX	100



Models Evaluation



- 1) Logistic regression Score = 92%
- 2) KNN Classifier Score = 91%
- 3) Random Forest Classifier Score = 100%

Classification Reports

1) Logistic regression score:

	Precision	Recall	F1-score	Support
0	0.11	1.00	0.20	14
1	1.00	0.92	0.96	1283
Accuracy			0.92	1297
Macro Avg	0.56	0.96	0.58	1297
Weighted Avg	0.99	0.92	0.95	1297

Classification Reports

2) KNN Classifier:

	Precision	Recall	F1-score	Support
0	0.04	0.83	0.08	6
1	1.00	0.91	0.95	1291
Accuracy			0.91	1297
Macro Avg	0.52	0.87	0.51	1297
Weighted Avg	0.99	0.91	0.95	1297

Classification Reports

3) Random Forest Classifier:

	Precision	Recall	F1-score	Support
0	1.00	1.00	1.00	123
1	1.00	1.00	1.00	1174
Accuracy			1.00	1297
Macro Avg	1.00	1.00	1.00	1297
Weighted Avg	1.00	1.00	1.00	1297

*Thanks for
Listening*