POWERBI DASHBOARD ON SPACE MISSION DATA

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INTRODUCTION

- Aim was to create a dashboard on space mission data where it enables everyone to gain insights by just visualizing the dashboard.
- After data mugging , cleaning and data modelling was done also I used various DAX functions for analysis.
- next was data visualisation part were powerbi was more easier to handle than any other visualisation software's
- majorly I had done 4 analysis on the data
- add filters and slicers to make the dashboard more user friendly

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DATASET

dataset link: https://www.mavenanalytics.io/data-playground?page=3&pageSize=5

All space missions from 1957 to August 2022, including details on the location, date, and result of the launch, the company responsible, and the name, price, and status of the rocket used for the mission.

Feature Details:

- Company: Company responsible for the space mission
- Location: Location of the launch
- Date: Date of the launch
- Time: Time of the launch (UTC)
- Rocket: Name of the rocket used for the mission
- Mission: Name of the space mission (or missions)
- RocketStatus: Status of the rocket as of August 2022 (Active or Inactive)
- Price: Cost of the rocket in millions of US dollars
- MissionStatus: Status of the mission (Success, Failure, Partial Failure, Prelaunch Failure)

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ANALYSIS

- Has mission success rate increased?
- Which countries have had the most successful space missions? Has it always been that way?
- Which rocket has been used for the most space missions? Is it still active?
- Are there any patterns you can notice with the locations?

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Process

1. **Importing data**
   Downloaded the dataset which was on csv format to powerbi and transformed

2. **Data Cleaning**
   Cleaned the data by removing all null values and error

3. **Data Modelling**
   For representation of Star Schema Data is normalised

4. **Dashboard Creation**
   Different Charts where created for visualising the analysis and arranged on a dashboard.

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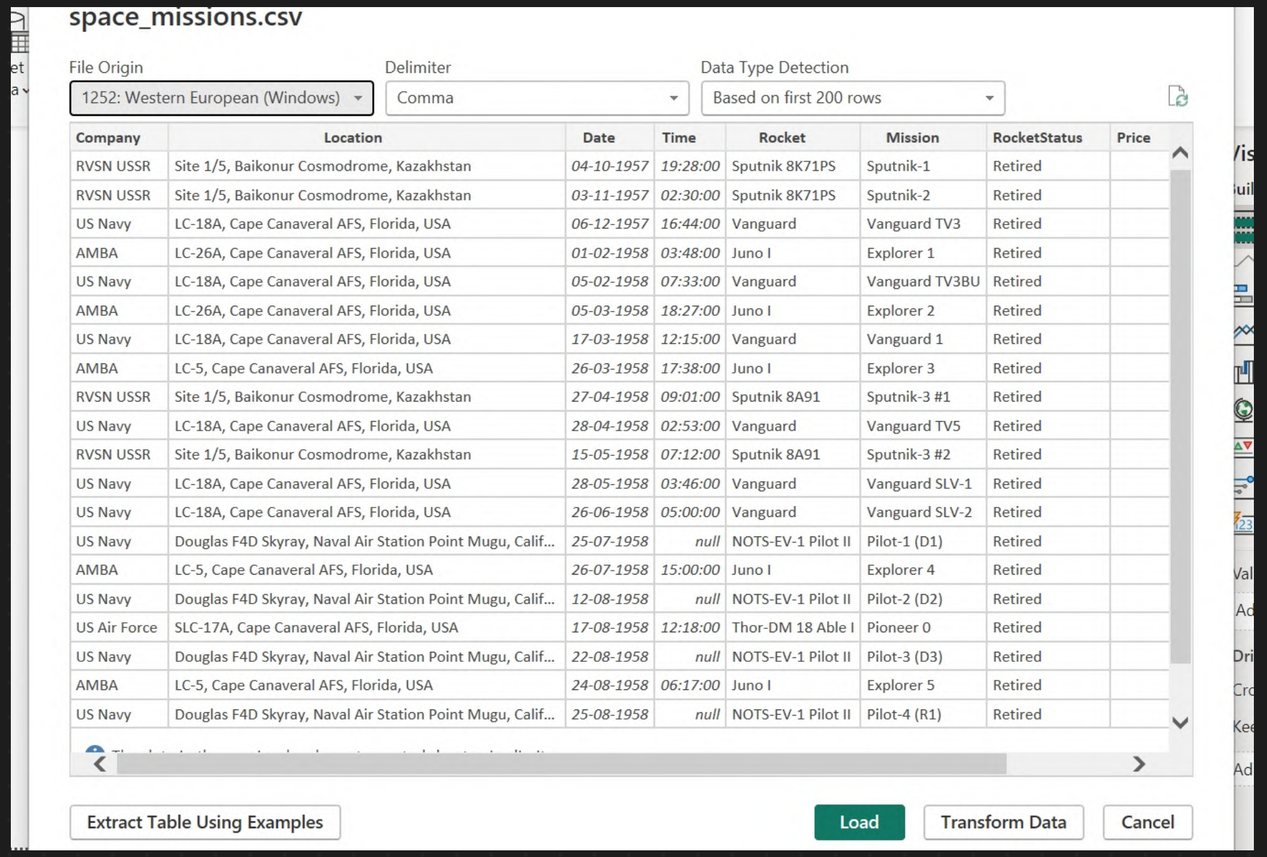
Importing Data

- Space Missions data was in Csv format
- so imported text/csv file in powerbi
- after importing transformed the data for further process



Company	Location	Date	Time	Rocket	Mission	RocketStatus	Price
RVSN USSR	Site 1/5, Baikonur Cosmodrome, Kazakhstan	04-10-1957	19:28:00	Sputnik 8K71PS	Sputnik-1	Retired	
RVSN USSR	Site 1/5, Baikonur Cosmodrome, Kazakhstan	03-11-1957	02:30:00	Sputnik 8K71PS	Sputnik-2	Retired	
US Navy	LC-18A, Cape Canaveral AFS, Florida, USA	06-12-1957	16:44:00	Vanguard	Vanguard TV3	Retired	
AMBA	LC-26A, Cape Canaveral AFS, Florida, USA	01-02-1958	03:48:00	Juno I	Explorer 1	Retired	
US Navy	LC-18A, Cape Canaveral AFS, Florida, USA	05-02-1958	07:33:00	Vanguard	Vanguard TV3BU	Retired	
AMBA	LC-26A, Cape Canaveral AFS, Florida, USA	05-03-1958	18:27:00	Juno I	Explorer 2	Retired	
US Navy	LC-18A, Cape Canaveral AFS, Florida, USA	17-03-1958	12:15:00	Vanguard	Vanguard 1	Retired	
AMBA	LC-5, Cape Canaveral AFS, Florida, USA	26-03-1958	17:38:00	Juno I	Explorer 3	Retired	
RVSN USSR	Site 1/5, Baikonur Cosmodrome, Kazakhstan	27-04-1958	09:01:00	Sputnik 8A91	Sputnik-3 #1	Retired	
US Navy	LC-18A, Cape Canaveral AFS, Florida, USA	28-04-1958	02:53:00	Vanguard	Vanguard TV5	Retired	
RVSN USSR	Site 1/5, Baikonur Cosmodrome, Kazakhstan	15-05-1958	07:12:00	Sputnik 8A91	Sputnik-3 #2	Retired	
US Navy	LC-18A, Cape Canaveral AFS, Florida, USA	28-05-1958	03:46:00	Vanguard	Vanguard SLV-1	Retired	
US Navy	LC-18A, Cape Canaveral AFS, Florida, USA	26-06-1958	05:00:00	Vanguard	Vanguard SLV-2	Retired	
US Navy	Douglas F4D Skyray, Naval Air Station Point Mugu, Calif...	25-07-1958	null	NOTS-EV-1 Pilot II	Pilot-1 (D1)	Retired	
AMBA	LC-5, Cape Canaveral AFS, Florida, USA	26-07-1958	15:00:00	Juno I	Explorer 4	Retired	
US Navy	Douglas F4D Skyray, Naval Air Station Point Mugu, Calif...	12-08-1958	null	NOTS-EV-1 Pilot II	Pilot-2 (D2)	Retired	
US Air Force	SLC-17A, Cape Canaveral AFS, Florida, USA	17-08-1958	12:18:00	Thor-DM 18 Able I	Pioneer 0	Retired	
US Navy	Douglas F4D Skyray, Naval Air Station Point Mugu, Calif...	22-08-1958	null	NOTS-EV-1 Pilot II	Pilot-3 (D3)	Retired	
AMBA	LC-5, Cape Canaveral AFS, Florida, USA	24-08-1958	06:17:00	Juno I	Explorer 5	Retired	
US Navy	Douglas F4D Skyray, Naval Air Station Point Mugu, Calif...	25-08-1958	null	NOTS-EV-1 Pilot II	Pilot-4 (R1)	Retired	

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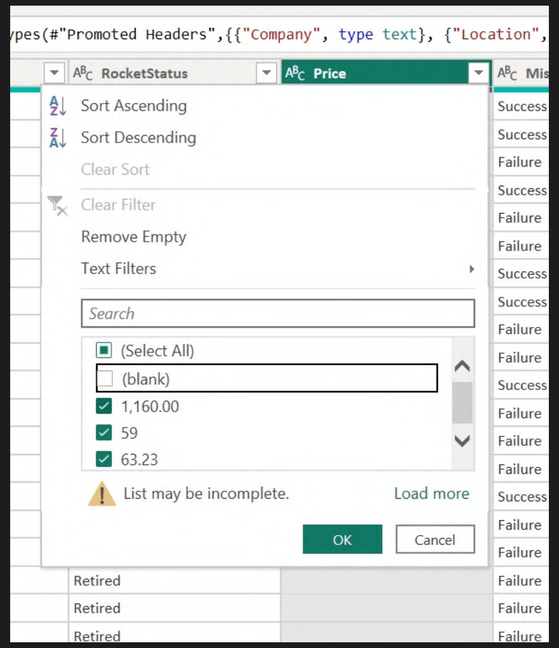
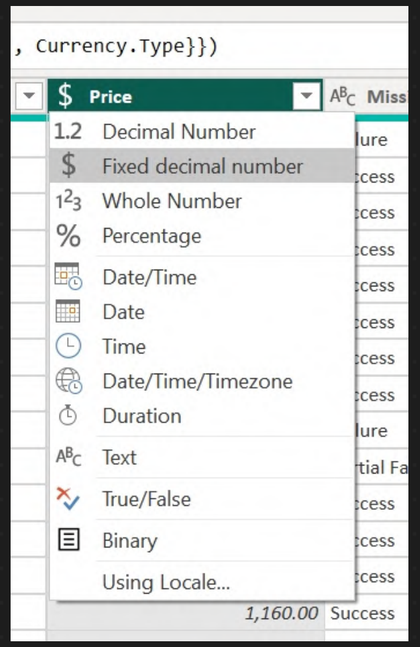
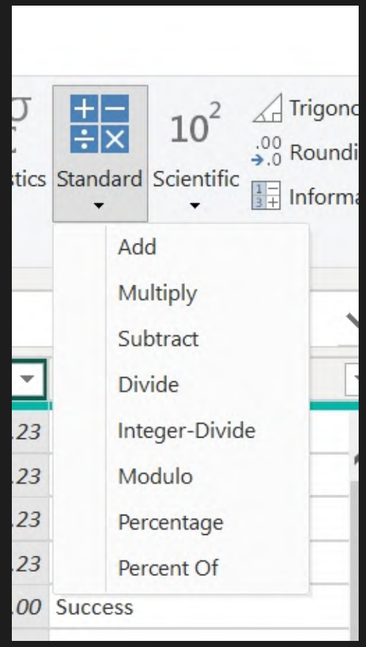
Data Cleaning

- Removed all Null Values
- Changed the data type
- performed basic math operations







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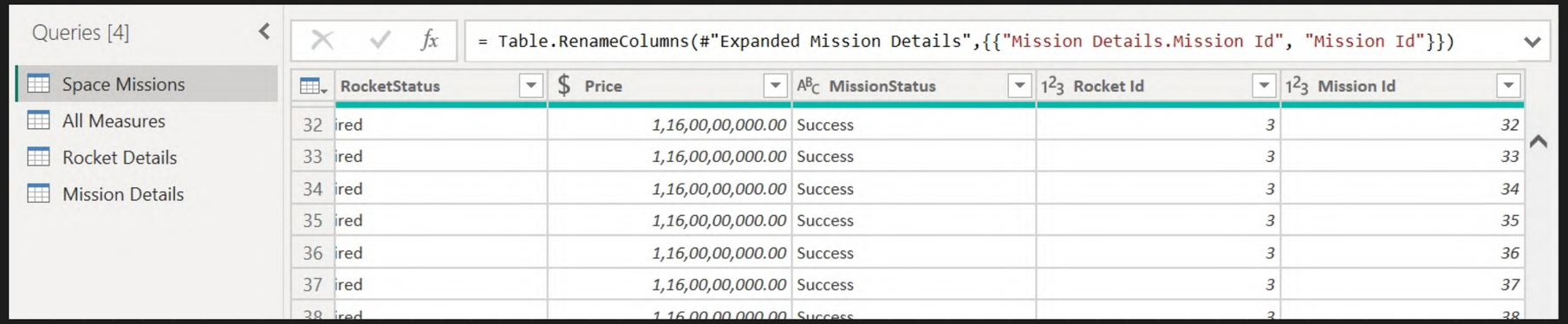
Data Modelling

- Created duplicate Table
- Renamed,and removed unwanted columns,added indexing
- merged the Tables to the main Table to get a connection by respective ID's
- Created a Star Schema Representation of that
- Another one table was created by DAX



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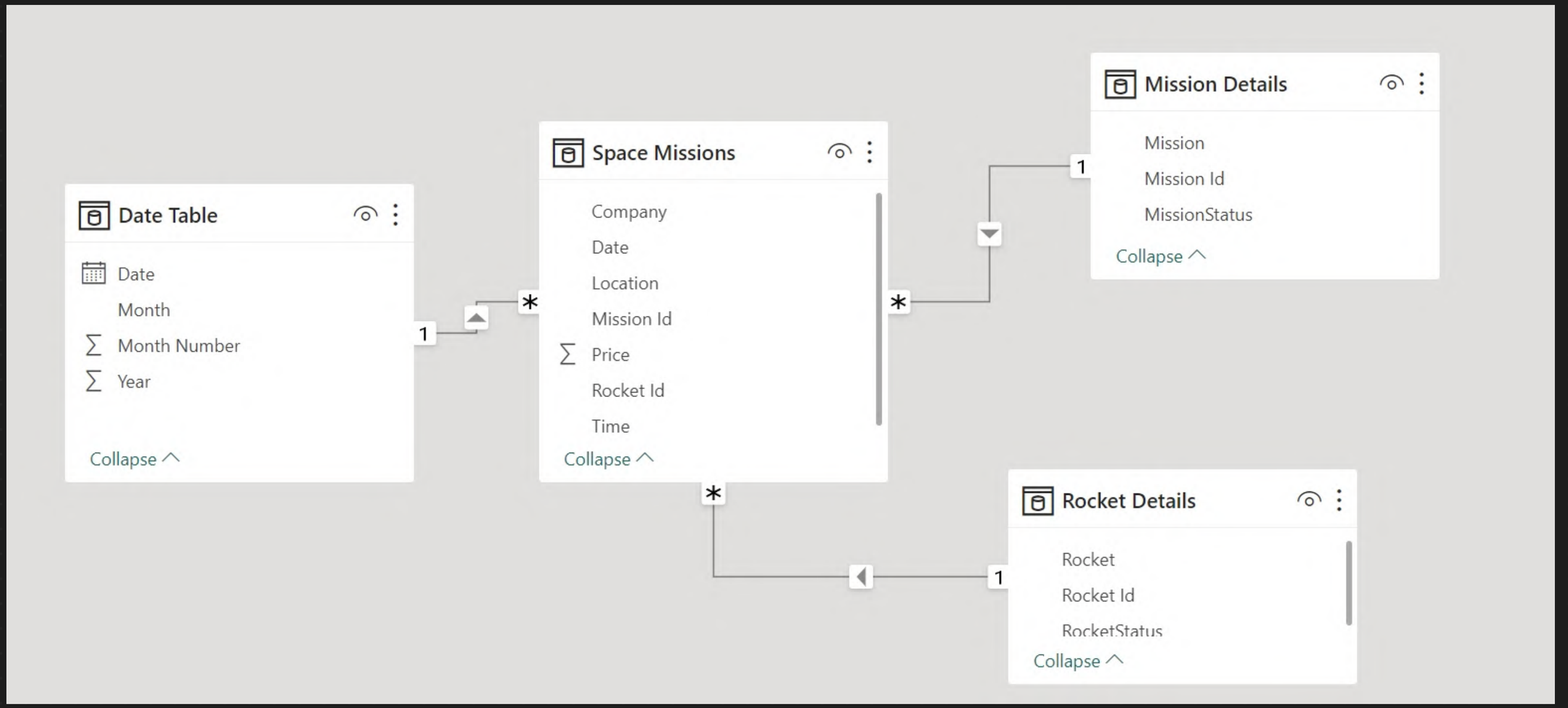
Date Table
Date
Month
Month Number
Year
Collapse
1
*
Space Missions
Company
Date
Location
Mission Id
Price
Rocket Id
Time
Collapse
*
1
Mission Details
Mission
Mission Id
MissionStatus
Collapse
*
1
Rocket Details
Rocket
Rocket Id
RocketStatus
Collapse

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DAX FUNCTION

DATE TABLE

Date Table = ADDCOLUMNS(CALENDAR(MIN('Space Missions'[Date]),MAX('Space Missions'[Date])),"Year" , YEAR([Date]),"Month", FORMAT([Date],"mmm"),"Month Number",MONTH([Date]))

Total Price

Total Price = SUM('Space Missions'[Price])

Total Missions

Total Missions = COUNT('Space Missions'[Mission])

Successful Mission

Sucessful Mission = CALCULATE(COUNT('Space Missions'[Mission]),'Space Missions'[MissionStatus] ="Success")

Sucess Rate

Sucess Rate = DIVIDE([Sucessful Mission],[Total Missions])

Prelaunch Failure Mission

Prelaunch Failure = CALCULATE(COUNT('Space Missions'[MissionStatus]), 'Space Missions'[MissionStatus]="Prelaunch Failure")

Partial Failure Mission

Partial Failure = CALCULATE(COUNT('Space Missions'[Mission]), 'Space Missions'[MissionStatus] = "Partial Failure")

Failure Mission

Failed Mission = CALCULATE(COUNT('Space Missions'[Mission]), 'Space Missions'[MissionStatus]="Failure")

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CHARTS

Line Chart

Gives the details of Mission status of total missions over years

Clustered Bar Chart

Represents total missions by company

Cards

Key Performance Indicators on Mission statuses and prices

Clustered Bar Chart

Provide an idea about the total missions based on the rockets

Donut Chart

Total missions based on Mission status is represented

Scattered Plot

Chart was plotted based on Total Price and Total Mission added location in Values ,Mission Status and Successful Mission in legend and size respectively.

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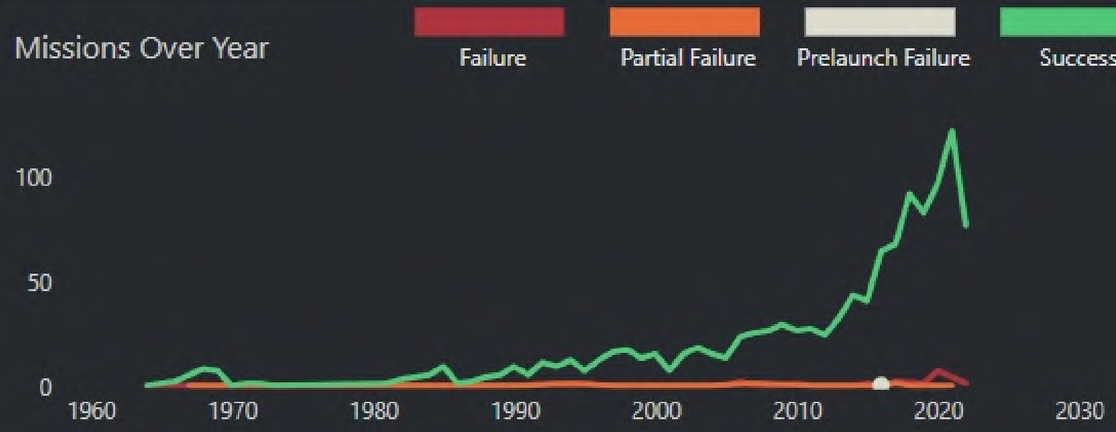
SPACE MISSIONS DASHBOARD

Total Missions	Total Price	Sucess Rate	Sucessful Mission	Prelaunch Failure	Partial Failure	Failed Mission
1K	$162.30bn	94.62%	1K	1	19	48

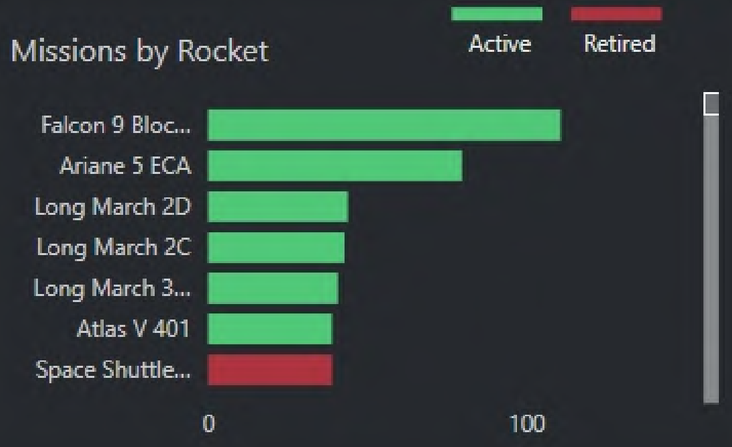
Missions Over Year



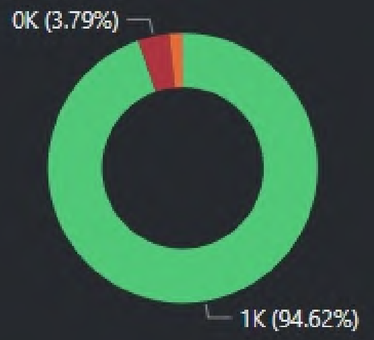
Mission by Location

Most Successful Missions by Company

Missions by Rocket



Missions by Status



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CONCLUSION

- Success rate is being fluctuating by years and the overall rate is 94.62%, in the year 2022 it was 97.47%.
- It can be observed that LC-394, Kennedy Space Centre, Florida, USA has the most successful space missions happened, even though it went through many downfalls.
- Falcon 9 Block 5 has been used for most of the space missions and it is still active.
- Based on location we can observe that most of the successful, failure, partial failure, prelaunch failure was happened in USA in different space centers.

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