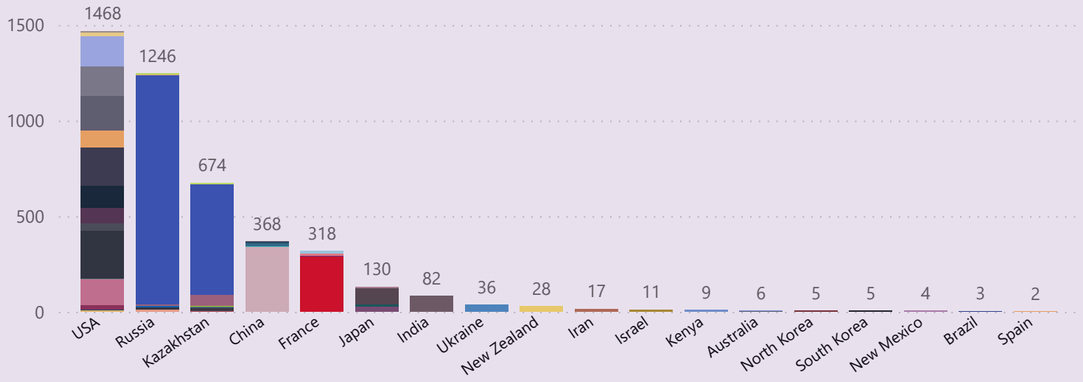
MAVEN SPACE CHALLENGE

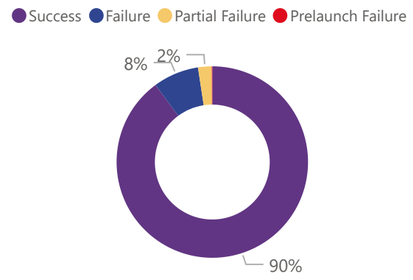
4630 Rocket launches
370 Rockets
157 Locations
62 Companies
18 Countries

Rocket launches Per Country

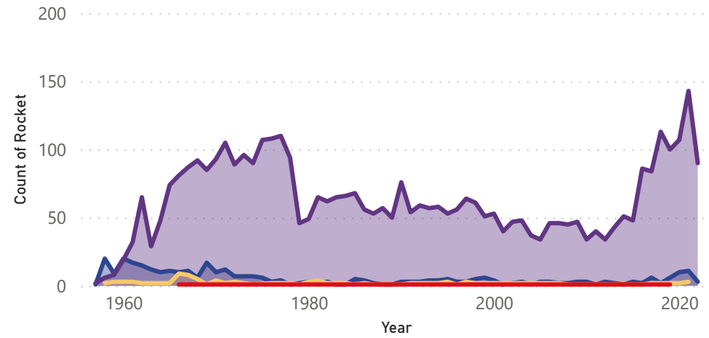


18 out of 195 countries in the world have their own space exploration. The **USA** is leading with about **32%** of the total number of rocket launches and not far behind is **Russia** with **27%**. Of the 62 companies, **20 are from the US**, **11 are from Kazakhstan** and **10 are from Russia**. However, **RVSN USSR**, which took up much of Russia's space exploration, was considered the top company, having **26% of the world's total rocket launches**.

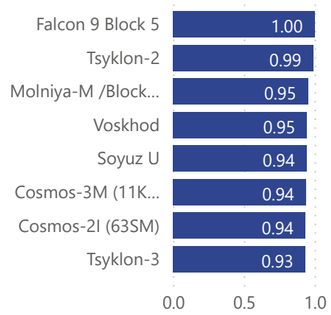
Mission Status



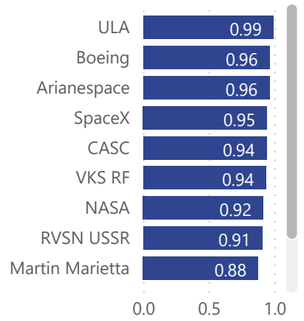
Mission status over the years



Success rate % by Rocket

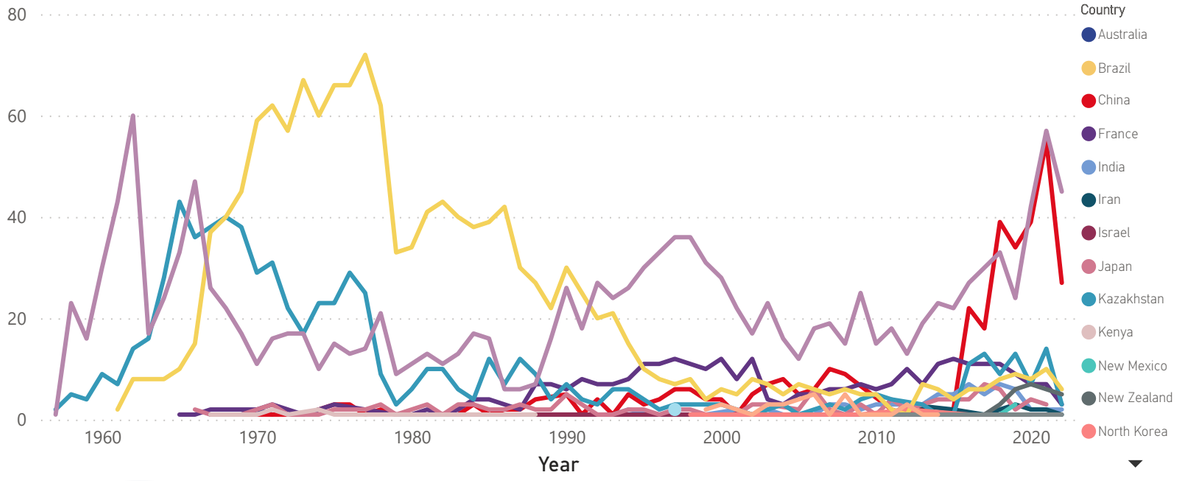


Success rate % by Company



- As seen above, the early period has a high failure rate-partial and prelaunch failure being considered as failure.
- **Falcon 9 Block 5** of SpaceX has perfected all its 111 launches, making it the leading rocket in terms of success rate.
- **ULA**, an American company, has the highest success rate for companies, having successfully launched 99% of its 151 launches.

Top Countries Exploration Over the Years

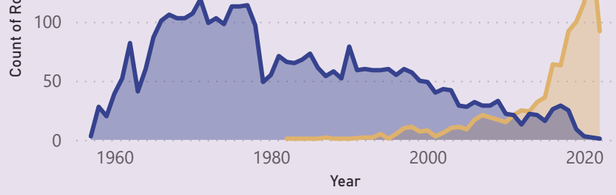


10/4/1957
First ever space exploration
Sputnik 8K71PS of Kazakhstan launched the first satellite in Space

There are 5 distinguishable lines which means **5 countries** have dominated the race in space starting from 1957 until today. **Russia** dominated the early period between 1960 and 1990, but then reduced its exploration. This pattern is the same with **Kazakhstan's** exploration, with high exploration in the first half and low exploration in the second. However, **USA** remained active throughout the years and dominated the second half. On the other hand, starting 2016, **China** had a significant increase in its exploration and has been continuously competing with USA in recent years.

Rocket Status

Rocket status over the years

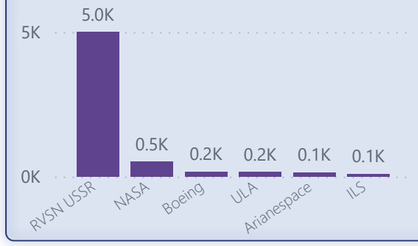


The best rockets in terms of yearly rate of launches

Rocket	Rocket status	Rocket launches	Duration	Yearly launch rate
Falcon 9 Block 5	Active	111	4	28
Voskhod	Retired	299	13	23
Thor DM-21 Agena-B	Retired	38	2	19

- At **44 years old, Soyuz U** is the oldest retired rocket, and has a total of **125** successful rocket launches.
- At **40 years old, Long March 2C** is the oldest active rocket, and has a total of **43** successful rocket launches.
- The **average useful life** of rockets based on retired rockets data is **5.5** years.
- **35 out of 110 active rockets** are from **CSC of China**, the company that has the most active rockets today.

Companies that have expensive missions



RVN USSR have the most expensive missions with Buran and Polyus space station both priced at 5,000 (amount in millions of $)

KEY INSIGHTS

- Only 10% of the world's countries have joined the space race, leaving plenty of room for other countries to join. Currently, there are only 13 countries that have active rockets.
- US and China will continuously compete in the next years with their number of active companies, 26 and 36 respectively and active rockets 23 and 35 respectively.
- The success rate of rocket launches still needs to increase in order to boost the trust and confidence of the public for rocket commercialization.
- Space explorations continuously to increase, this might imply that missions yield lots of results and paving the way for more discovery in space.
- The mission pricing was not completely provided, with only 27 missions providing their cost per mission. This could mean that space explorations did not reveal much as the cost issue is still a big thing.

Country	Distinct Location	Count of rocket launches	Count Is succes
USA	66	1468	1
France	8	318	
Kazakhstan	20	719	
China	18	368	
Japan	5	130	
Russia	20	1419	1
India	3	82	
New Zealand	3	28	
Spain	1	2	
Australia	1	6	
Brazil	1	3	
Iran	2	17	
Israel	1	11	
Total	**157**	**4630**	**4**

Mission	Price
Buran	5,000.00
Polyus Space Station	5,000.00
Apollo 10	1,160.00
Apollo 11	1,160.00
Apollo 12	1,160.00
Apollo 13	1,160.00
Apollo 14	1,160.00
Apollo 15	1,160.00
Apollo 16	1,160.00
Apollo 17	1,160.00
Apollo 4	1,160.00
Total	**162,304.45**

Company	Success rate %	Count of rocket launches	Average Price
RVSN USSR	0.91	1777	5,000.00
CASC	0.94	338	39.13
Arianespace	0.96	293	140.88
General Dynamics	0.81	251	NaN
VKS RF	0.94	216	36.57
NASA	0.92	203	511.95
SpaceX	0.95	182	63.53
US Air Force	0.80	161	59.65
ULA	0.99	151	153.26
Boeing	0.96	136	177.29
Martin Marietta	0.88	114	80.16
Northrop	0.90	89	48.88
MHI	0.95	87	95.19
ISRO	0.83	82	32.49
Lockheed	0.94	79	35.00
Roscosmos	0.93	69	29.58
ILS	0.98	46	101.54
Sea Launch	0.92	36	NaN
Total	**0.90**	**4630**	**128.30**

Rocket	Count of rocket launches	First RocketStatus	Max of Duration retired	Max of Duration active
Soyuz U	125	Retired	44	49
Cosmos-3M (11K65M)	446	Retired	43	55
Long March 2C	43	Active	40	40
Molniya-M /Block 2BL	87	Retired	38	50
Tsyklon-2	106	Retired	37	53
Tsyklon-3	122	Retired	32	45
Molniya-M /Block ML	128	Retired	31	48
Long March 2D	44	Active	30	30
Pegasus XL	30	Active	27	28
Space Shuttle Discovery	39	Retired	27	38
Vostok-2M	93	Retired	27	58
Space Shuttle Atlantis	33	Retired	26	37
Long March 3A	17	Active	24	28
Total	**4630**	**Active**	**44**	**65**

Company	Total Price	Count With Price	Average Price
NASA	76280	149	511.95
Arianespace	18173	129	140.88
ULA	16552	108	153.26
SpaceX	11181	176	63.53
RVSN USSR	10000	2	5,000.00
CASC	9352	239	39.13
Northrop	4350	89	48.88
MHI	3713	39	95.19
ISRO	2307	71	32.49
VKS RF	1902	52	36.57
Total	**162304**	**1265**	**128.30**