

# SPACE MISSION ANALYSIS



Trends, Insights & Future of Global Launches

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# WHY ARE WE EXPLORING SPACE LAUNCH DATA?

- So many launches happen , but which ones are truly successful?
- Which countries or organizations are leading and how?
- Can we trust reused rockets like SpaceX does?
- Are expensive missions worth it, or are we just burning money?
- Are we making progress in space exploration, or stuck in a loop?

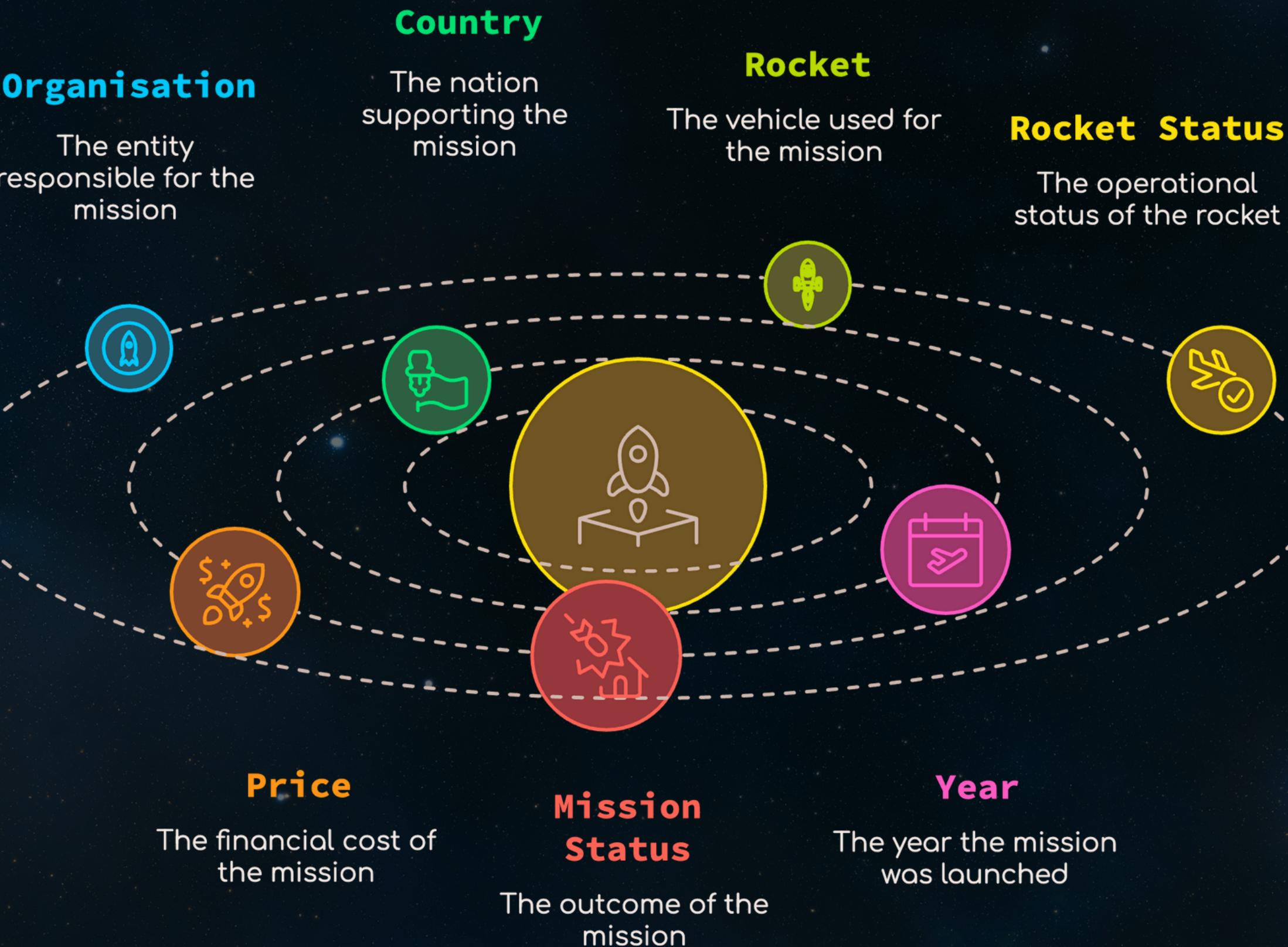


# **GOAL – HOW WE PLAN TO SOLVE IT**

- Investigate who's launching what, and how often
- Track which missions succeed and why
- Examine the performance of reused vs new rockets
- Correlate mission cost with outcomes — does it pay off?
- Use trends to forecast what the future of space launches looks like

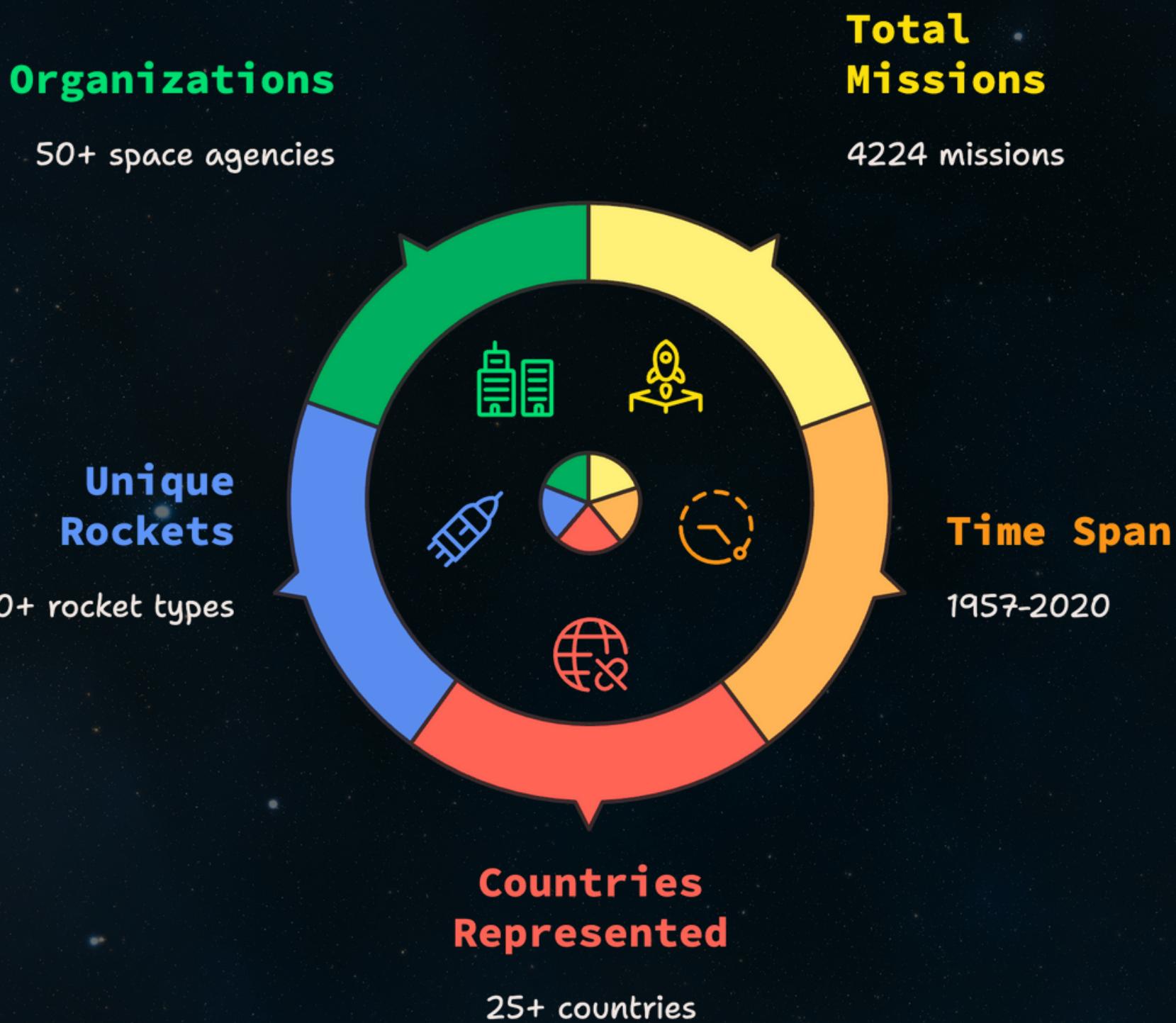
# WHAT DATA ARE WE LAUNCHING WITH?

## DATASET



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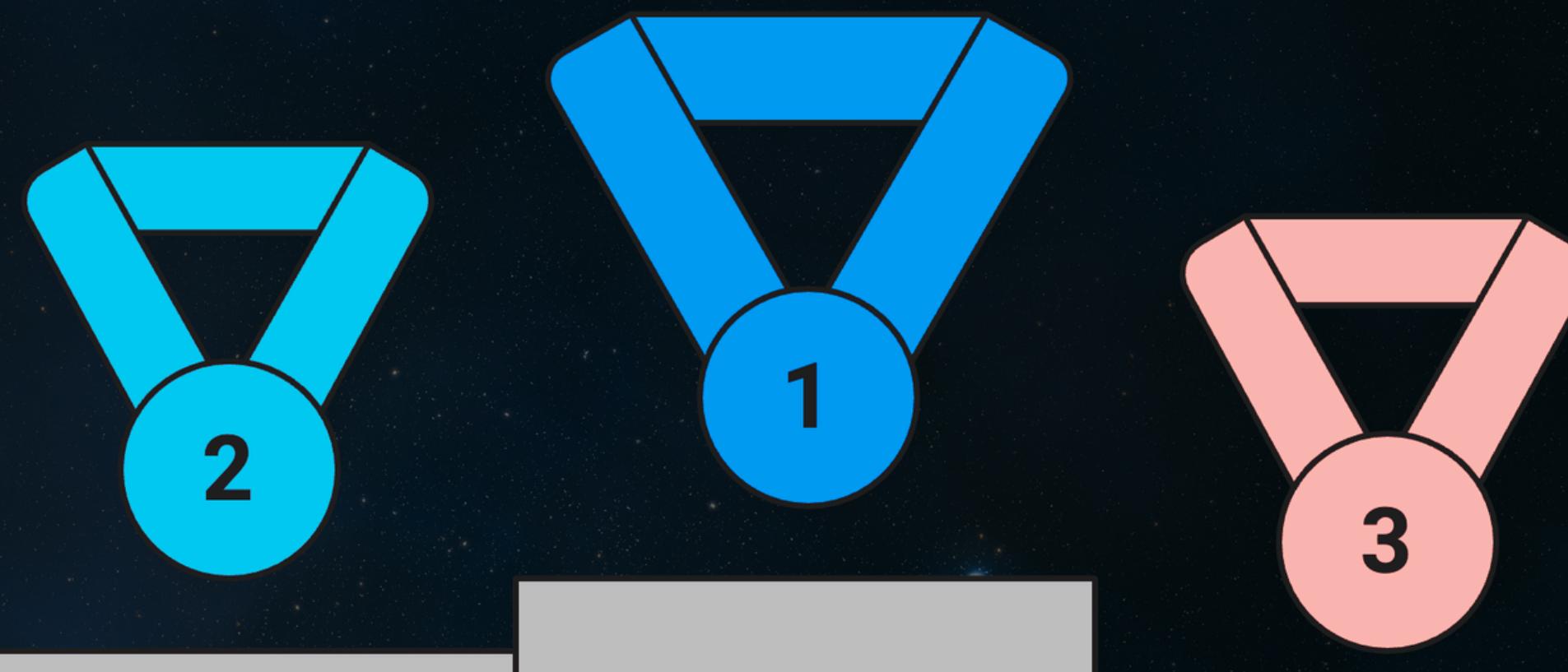
## QUICK STATS





# WHAT THE DATA REVEALS: KEY INSIGHTS

# TOP PERFORMERS IN SPACE MISSIONS-BY COUNTRIES



*Russia*

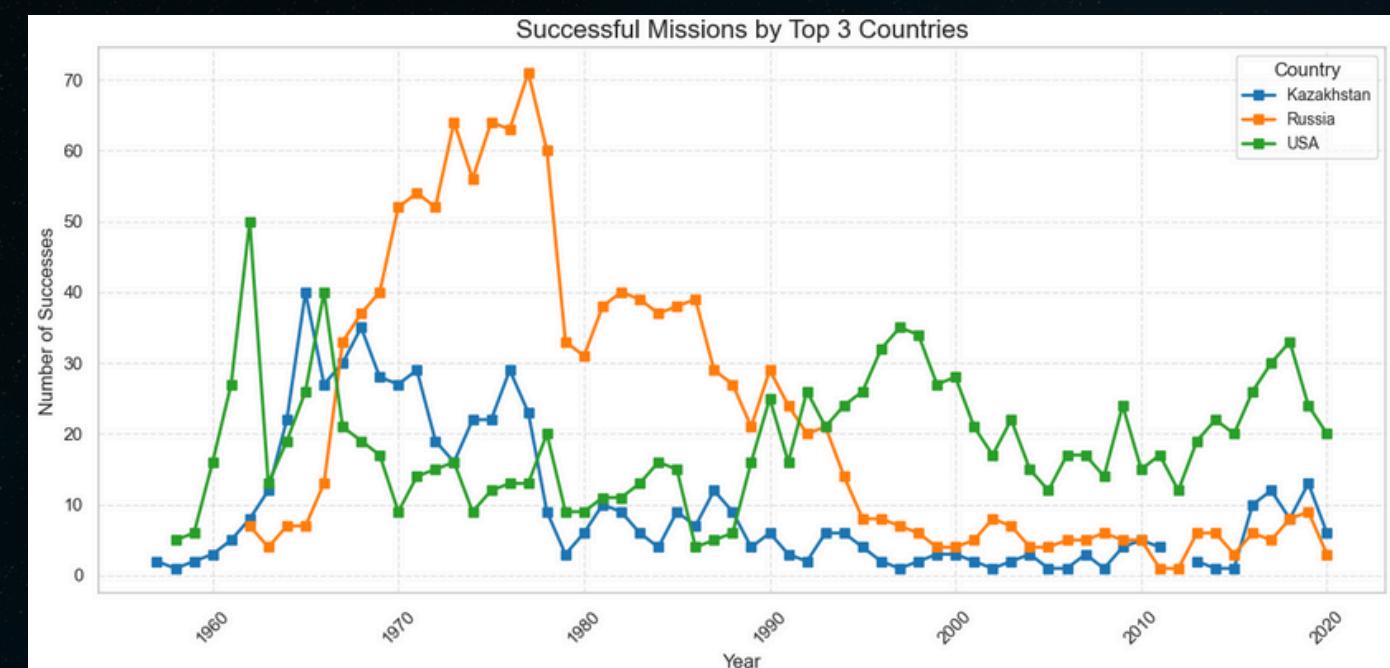
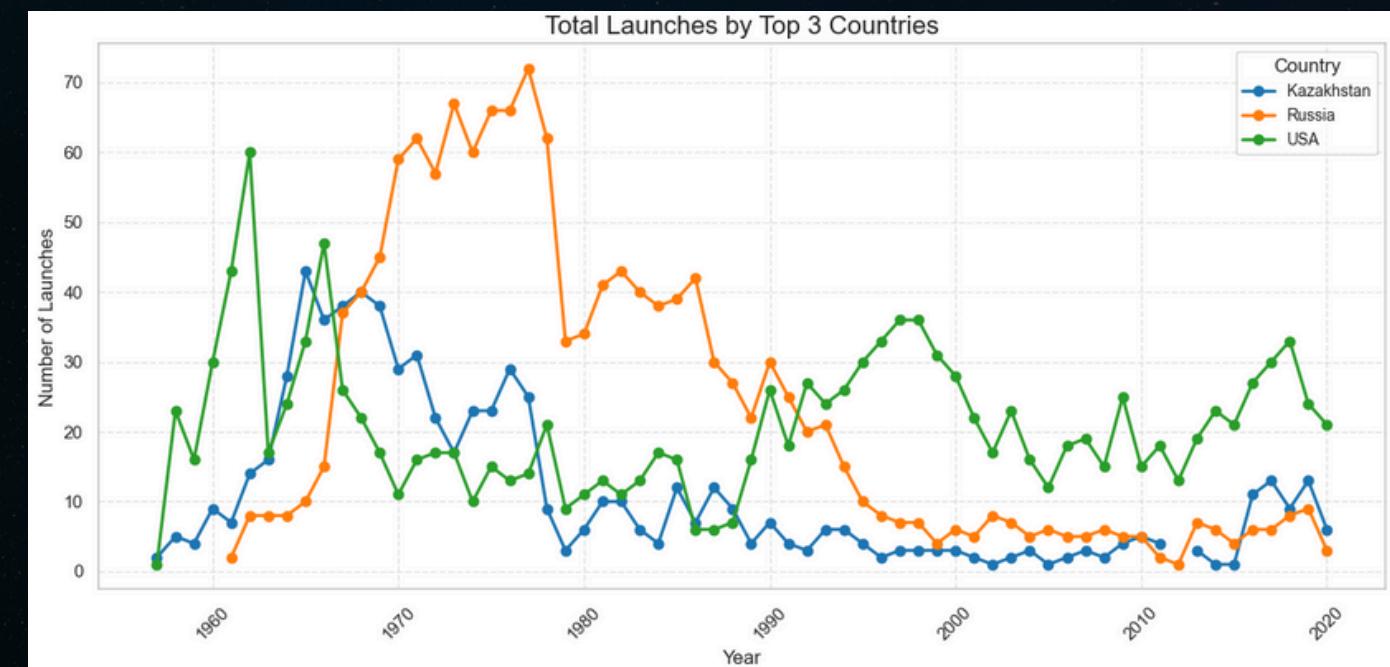
Russia follows with a 96.88% success rate in space launches.

*USA*

USA leads with a 98.52% success rate in space launches.

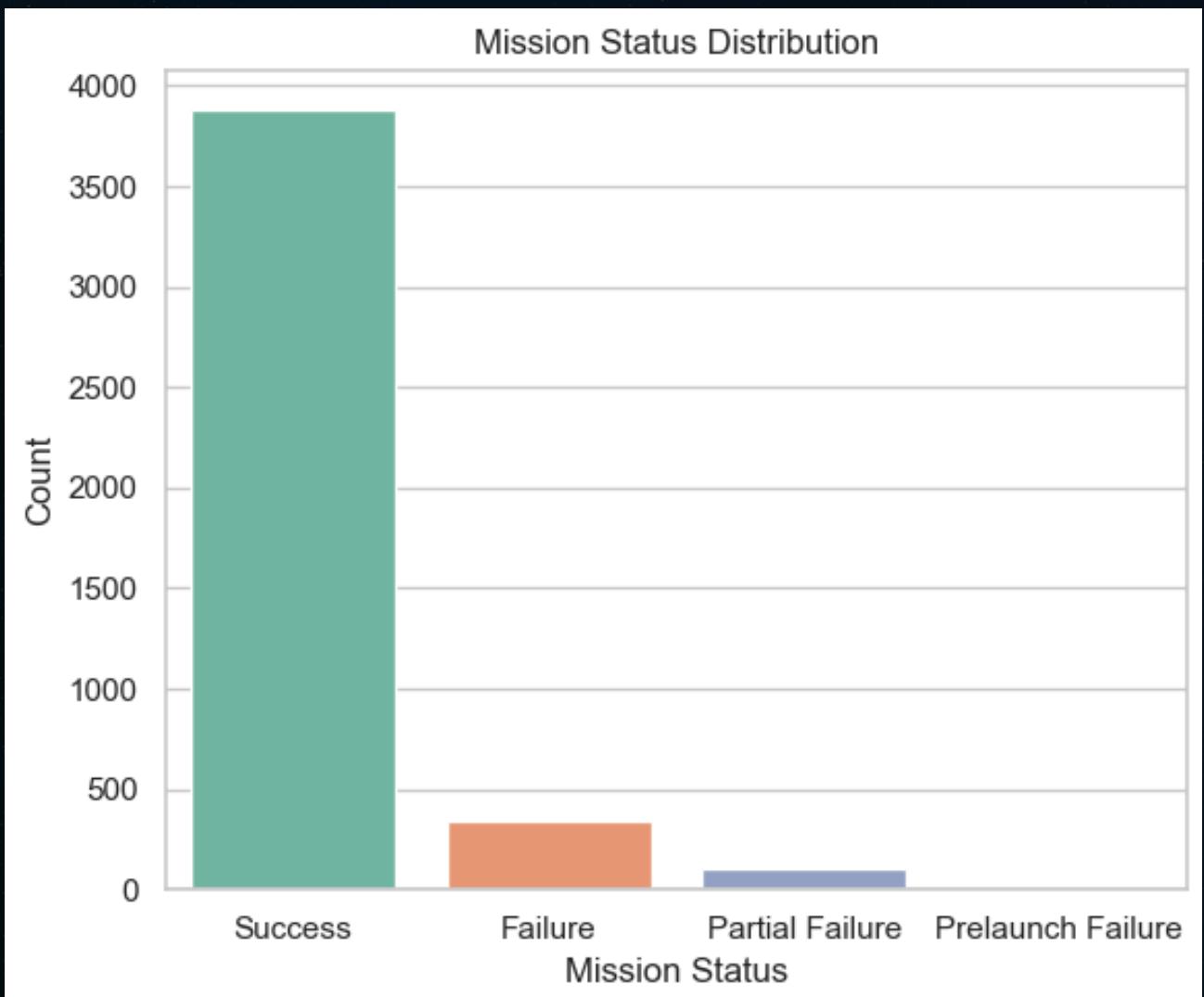
*Kazakhstan*

Kazakhstan achieves a 94.23% success rate in space launches.

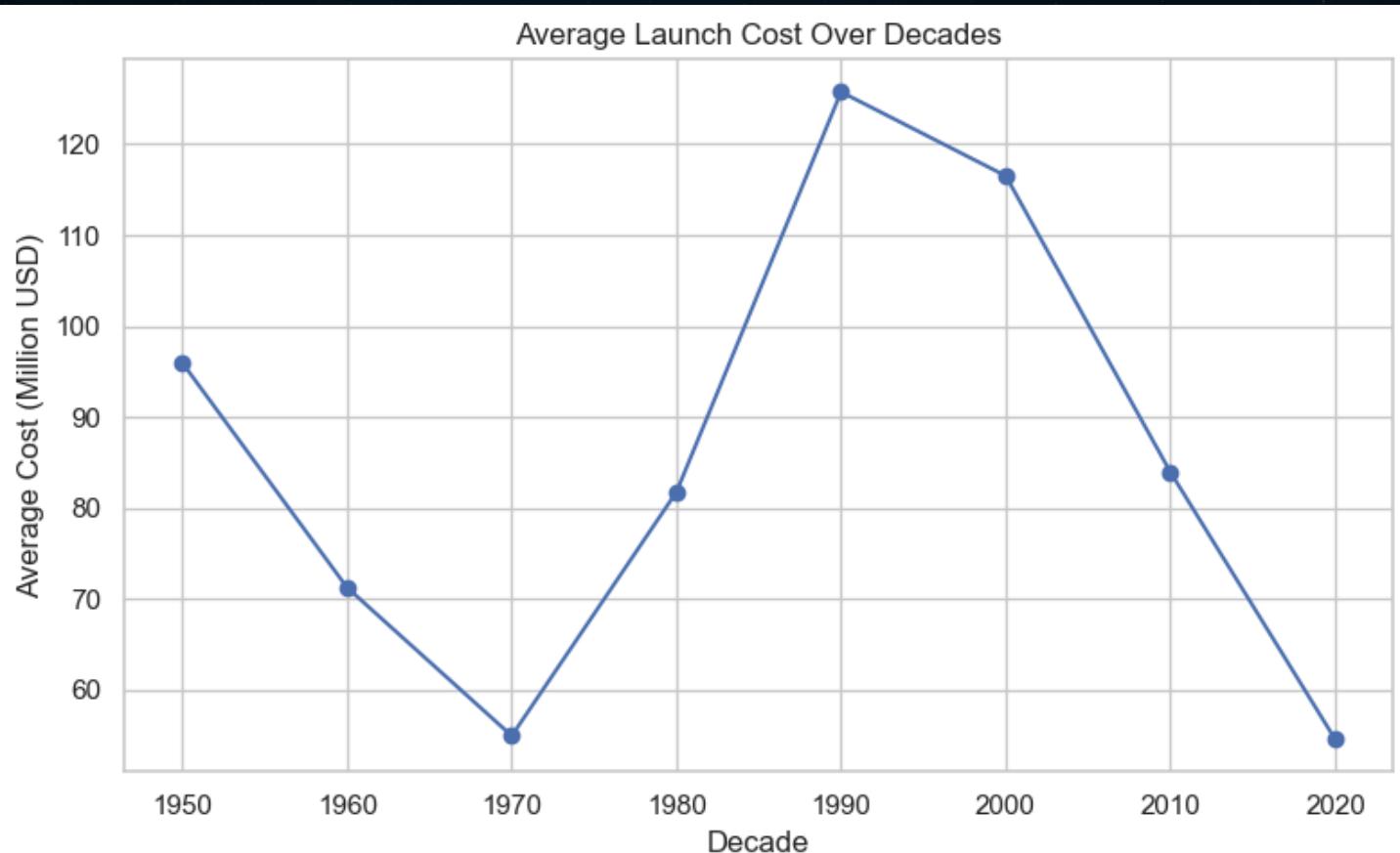
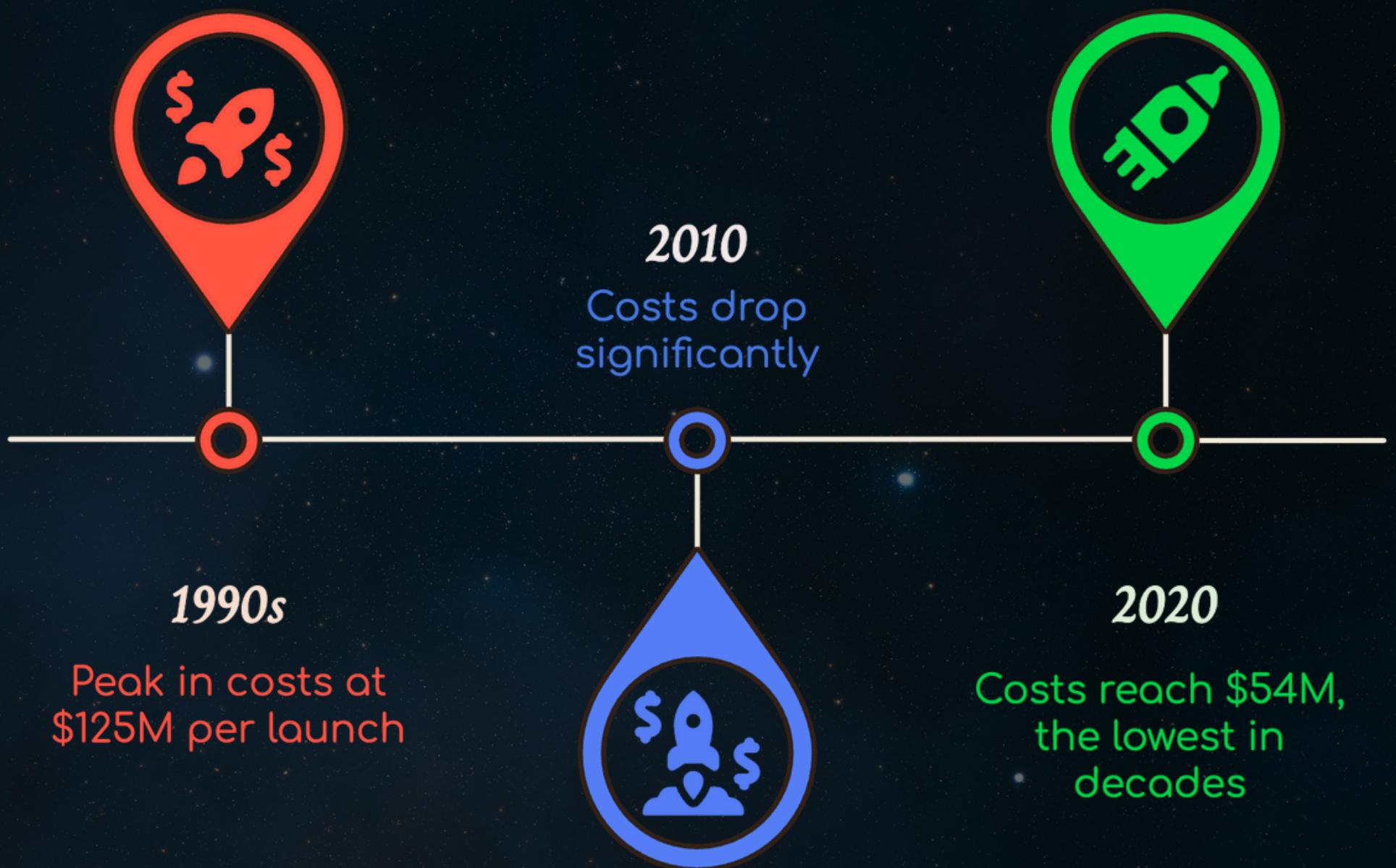


# HOW OFTEN DO WE GET IT RIGHT?

Outcome	Description
Success~ 3900	Over 85% success rate
Failure~300	Failures are infrequent
Partial/Prelaunch Failure~120	Minimal failures



# HOW SPACE GOT CHEAPER: THE CURIOUS CASE OF COST CURVES



# LAUNCH FEVER: HOW SPACE RACED, RESTED, AND ROSE AGAIN

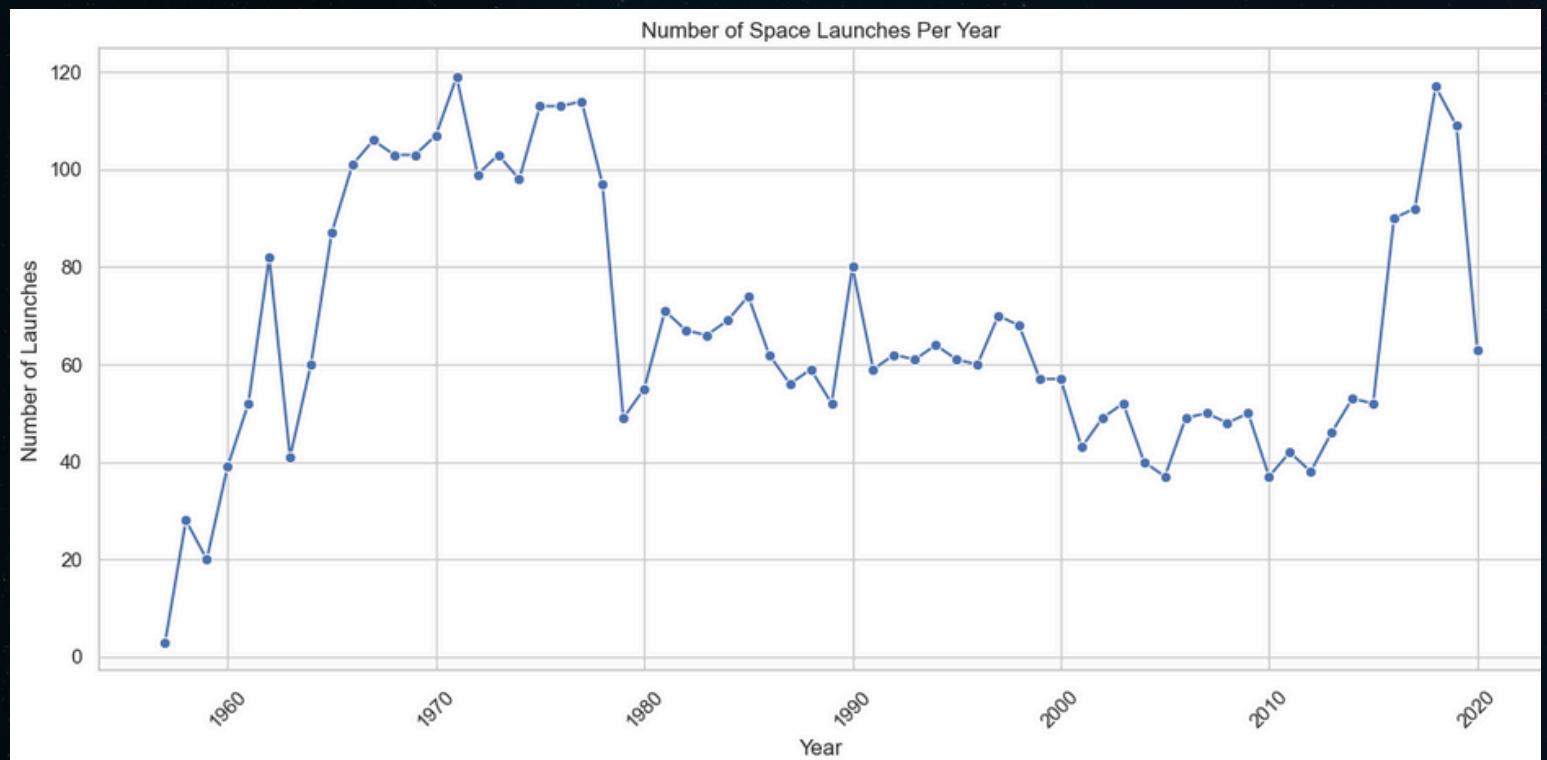
1957–1975  
Steady increase in space activities

1980–2000  
Fluctuating decline due to budget cuts

2000–2015  
Stagnation with limited private involvement

2016–2019  
Sharp rise driven by private companies

2020  
Drop due to COVID-19 pandemic

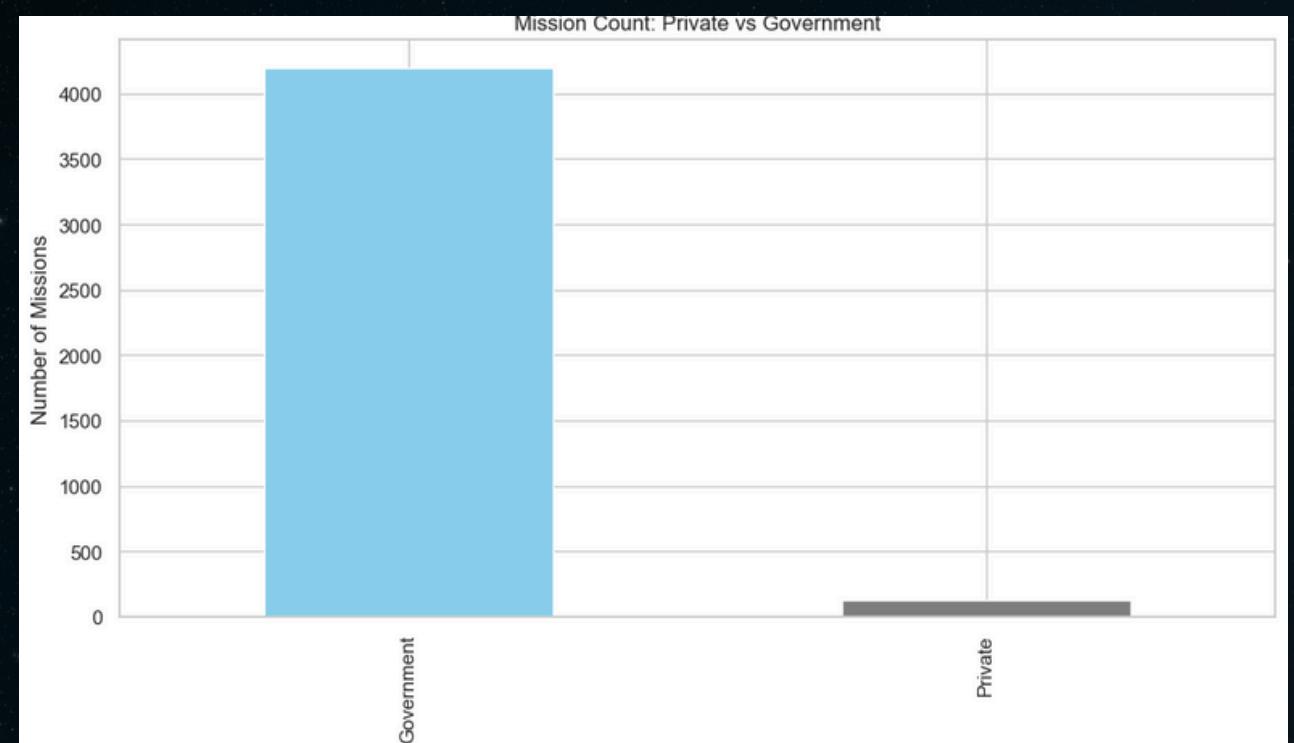
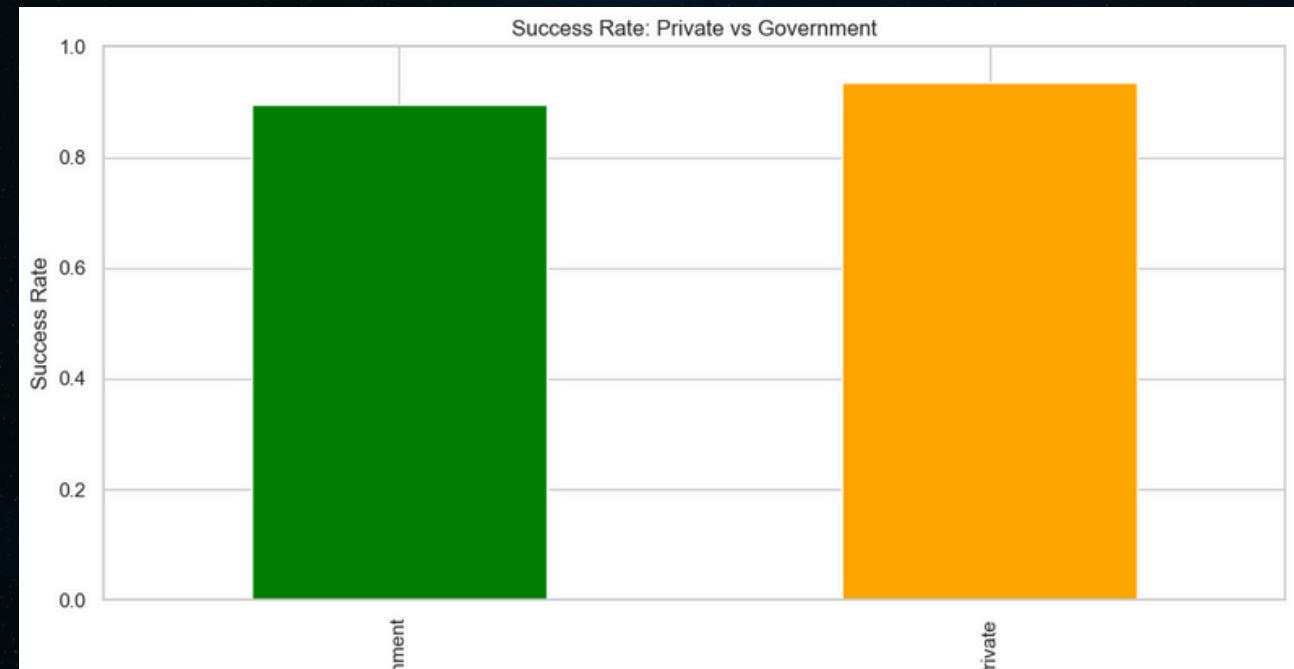


# WHO'S LAUNCHING BETTER – GOVERNMENT AGENCIES OR PRIVATE FIRMS?

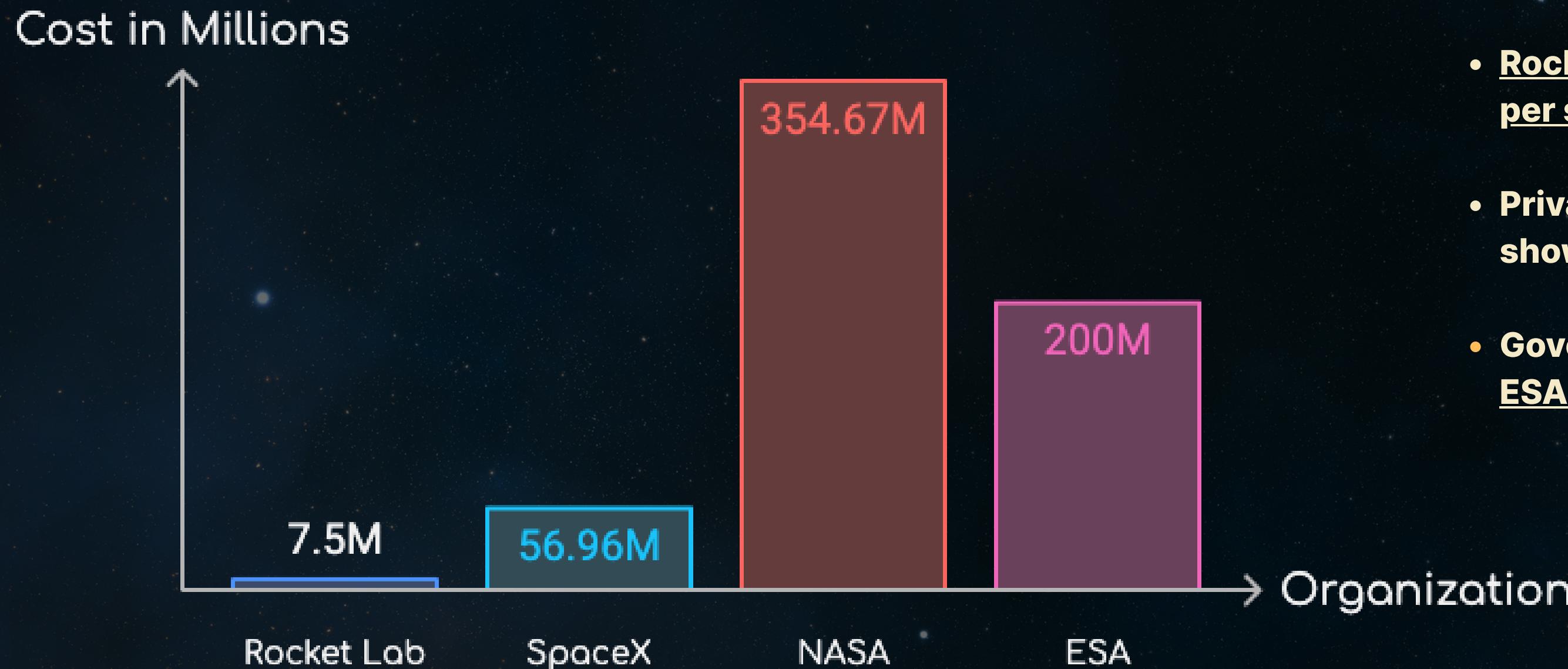
Characteristic	Government	Private
Success rate	\~91%	\~95%

**Private missions ramped up post-2010 with companies like SpaceX leading the way**

**However, despite higher success rates, private launches are still fewer in number compared to government-led missions.**



# PRIVATE SPACE: LAUNCH COSTS COMPARED



- Rocket Lab leads with the lowest cost per success at \$7.5M.
- Private firms like SpaceX and iSpace show strong cost-efficiency.
- Government agencies like NASA and ESA are among the most expensive.

# KEY TAKEAWAYS

- **USA, Russia** remain launch leaders, but private firms like **SpaceX** are reshaping the industry.
- Over **70% of missions are successful**, with **reused rockets** demonstrating high reliability.
- **Costs are declining** thanks to reusability, but high-investment missions still need strategic evaluation.
- Global launches **dipped post-2010** but saw a massive resurgence post-2015, led by commercial innovation.

# KEEP LOOKING UP!

