

# Starlink Launch Analytics: A Path to SpaceX

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<https://github.com/Chrizzm/SQL-Portfolio-Project>

# Mission Brief: Who, What, How

- Who?
  - SpaceX
- What Problem?
  - Satellite strategy enhanced with trend analysis.
- How will I solve this problem?
  - SQL, Python, data collection + Analyzation



# Target Role: Business Analyst at SpaceX

Role: analyzing consumer hardware data

Project aligns closely with role expectations

## About the job

SpaceX was founded under the belief that a future where humanity is out exploring the stars is fundamentally more exciting than one where we are not. Today SpaceX is actively developing the technologies to make this possible, with the ultimate goal of enabling human life on Mars.

### BUSINESS ANALYST, CONSUMER HARDWARE (STARLINK)

SpaceX is leveraging its experience in building rockets and spacecraft to deploy Starlink, the world's most advanced broadband internet system. Starlink is the world's largest satellite constellation and is providing fast, reliable internet to 2M+ users worldwide. We design, build, test, and operate all parts of the system – thousands of satellites, consumer receivers that allow users to connect within minutes of unboxing, and the software that brings it all together. We've only begun to scratch the surface of Starlink's potential global impact. As we continue to upgrade and expand the constellation, we're looking for best-in-class humans to join the team

As a Starlink Business Analyst for the consumer hardware team, you'll dive deep into data, uncovering market trends and customer insights to drive strategic decisions for new products. You'll be an integral part of the engineering team's development of next-generation hardware, improving lives all over the world. You'll collaborate with cross-functional teams to optimize product offerings, streamline operations, and guide the overall user experience for Starlink products.

### RESPONSIBILITIES:

- Conduct analyses (SQL queries, other methods) that identify issues and opportunities impacting our customers, including actionable recommendations that quantifiably change outcomes
- Define and develop department-level metrics and associated dashboards that quantify the health of our customer accounts and influence change
- Own data integrity, tool maintenance, and reporting quality
- Train internal users, external technical teams, and leaders on dashboard, API, and tool usage; assist in troubleshooting
- Support new market launches, continuous improvement, and cross-functional strategic initiatives
- Conduct user research to inform the design and development of Starlink products and services
- Plan and execute user research studies, analyze data, and present findings to key stakeholders
- Work closely with cross-functional teams to incorporate user insights into product development
- Provide guidance and training based on user research findings to customer operations and service teams

# N2YO: The API Source

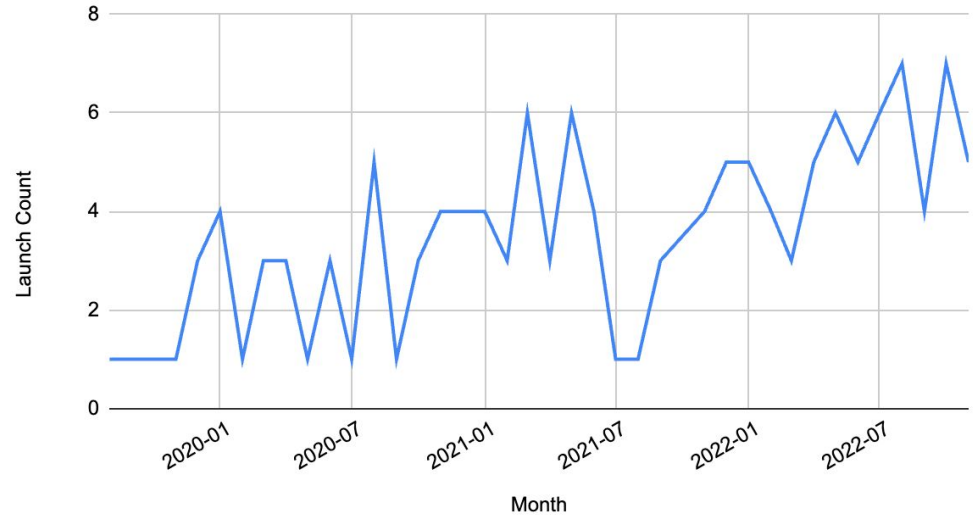


Name	NORAD ID	Int'l Code	Launch date (YYYY-MM-DD)	Status	Action
<a href="#">STARLINK-4517</a>	53390	2022-097C	2022-08-10	IN ORBIT	<a href="#">TRACK IT</a>
<a href="#">STARLINK-31543</a>	59402	2024-064E	2024-04-05	IN ORBIT	<a href="#">TRACK IT</a>
<a href="#">STARLINK-2141</a>	47731	2021-017K	2021-03-04	IN ORBIT	<a href="#">TRACK IT</a>
<a href="#">STARLINK-4651</a>	53729	2022-107AF	2022-09-05	IN ORBIT	<a href="#">TRACK IT</a>
<a href="#">STARLINK-1959</a>	47560	2021-009N	2021-02-04	IN ORBIT	<a href="#">TRACK IT</a>
<a href="#">STARLINK-5203</a>	54104	2022-136BF	2022-10-20	IN ORBIT	<a href="#">TRACK IT</a>
<a href="#">STARLINK-1138</a>	45178	2020-012A	2020-02-17	IN ORBIT	<a href="#">TRACK IT</a>
<a href="#">STARLINK-5293</a>	55295	2023-010AC	2023-01-19	IN ORBIT	<a href="#">TRACK IT</a>
<a href="#">STARLINK-1828</a>	46725	2020-073BH	2020-10-18	IN ORBIT	<a href="#">TRACK IT</a>
<a href="#">STARLINK-5753</a>	55581	2023-020N	2023-02-12	IN ORBIT	<a href="#">TRACK IT</a>
<a href="#">STARLINK-1681</a>	46559	2020-070AD	2020-10-06	IN ORBIT	<a href="#">TRACK IT</a>
<a href="#">STARLINK-5801</a>	56005	2023-042V	2022-03-24	IN ORBIT	<a href="#">TRACK IT</a>
<a href="#">STARLINK-2512</a>	48319	2021-036AV	2021-04-29	IN ORBIT	<a href="#">TRACK IT</a>
<a href="#">STARLINK-6311</a>	56537	2023-065AL	2023-05-14	IN ORBIT	<a href="#">TRACK IT</a>
<a href="#">STARLINK-2617</a>	48689	2021-044BD	2021-05-26	IN ORBIT	<a href="#">TRACK IT</a>
<a href="#">STARLINK-6213</a>	56891	2023-083R	2023-06-12	IN ORBIT	<a href="#">TRACK IT</a>
<a href="#">STARLINK-3269</a>	50194	2021-125AQ	2021-12-18	IN ORBIT	<a href="#">TRACK IT</a>

# Launch Patterns: When We Soar

- Focus: peak launch months
- Found high activity in beginning to mid-year
- Advice: prepare for beginning-year launches
- Future Outlook: expect continued activity

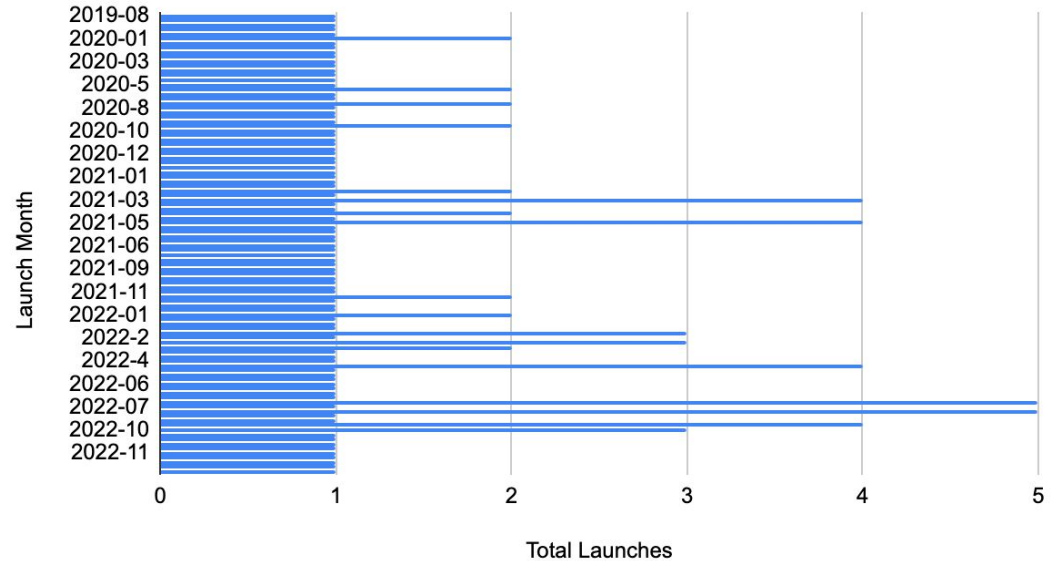
Satellite Launch Count by Month



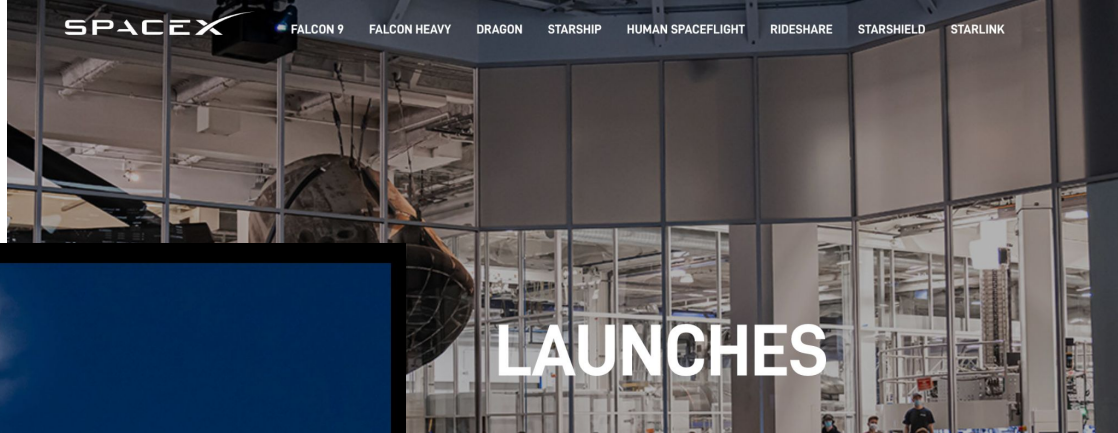
# Unveiling Launch Drivers

- Focus: launch timing
- Likely weather related
- Incorporate advanced modeling
- Future: improved scheduling accuracy

Total Launches per Month



# SpaceX Website: Web Scrape Source



APRIL 23, 2024

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# Eclipse Watch: Satellite Shadows

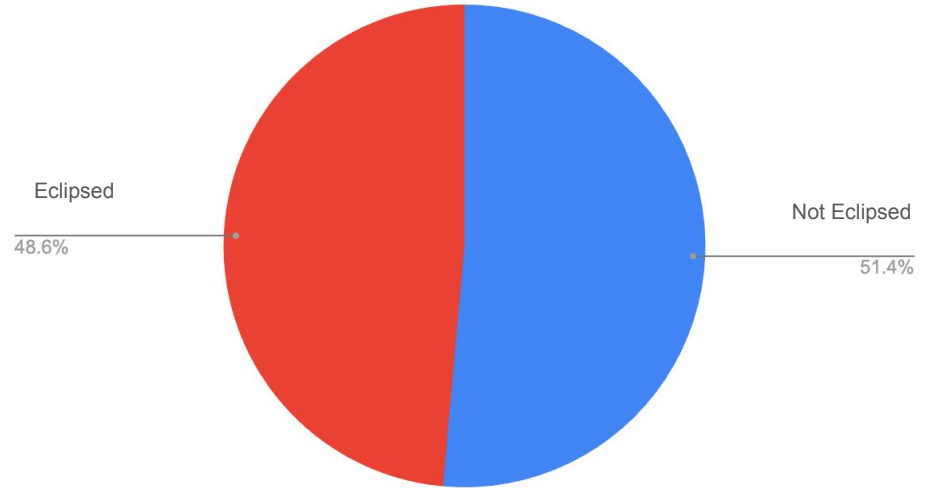
Focus: Satellite Eclipse Percentage

Insight: Eclipsing Impacts half the satellites

Advice: adjust satellite orbits

Future: reduce eclipsing incidents

Satellite Eclipse Status





# Elevation vs. Eclipse: Seeking the High Ground

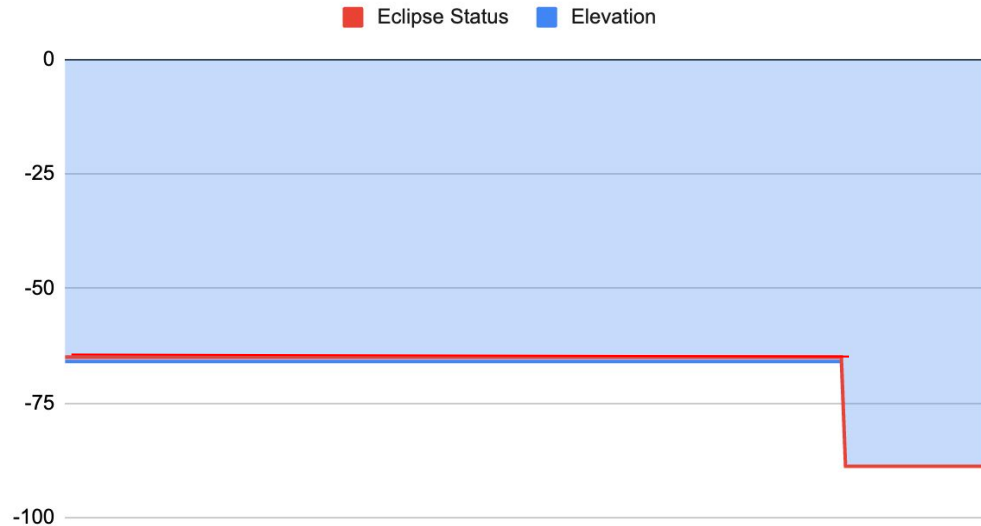
Focus: Elevation vs Eclipsing

Insight: higher elevation increases eclipsing

Advice: Adjust Elevation Protocols

Future: Decrease Communication Disruptors

Elevation and Eclipse Status



# Mission Analysis: Synthesis & Strategic Insights

- Enhancing Starlink's Strategy
  - Insight: Supports Efficient Satellite Management
- Future Direction: Continued Data-Driven Innovation

