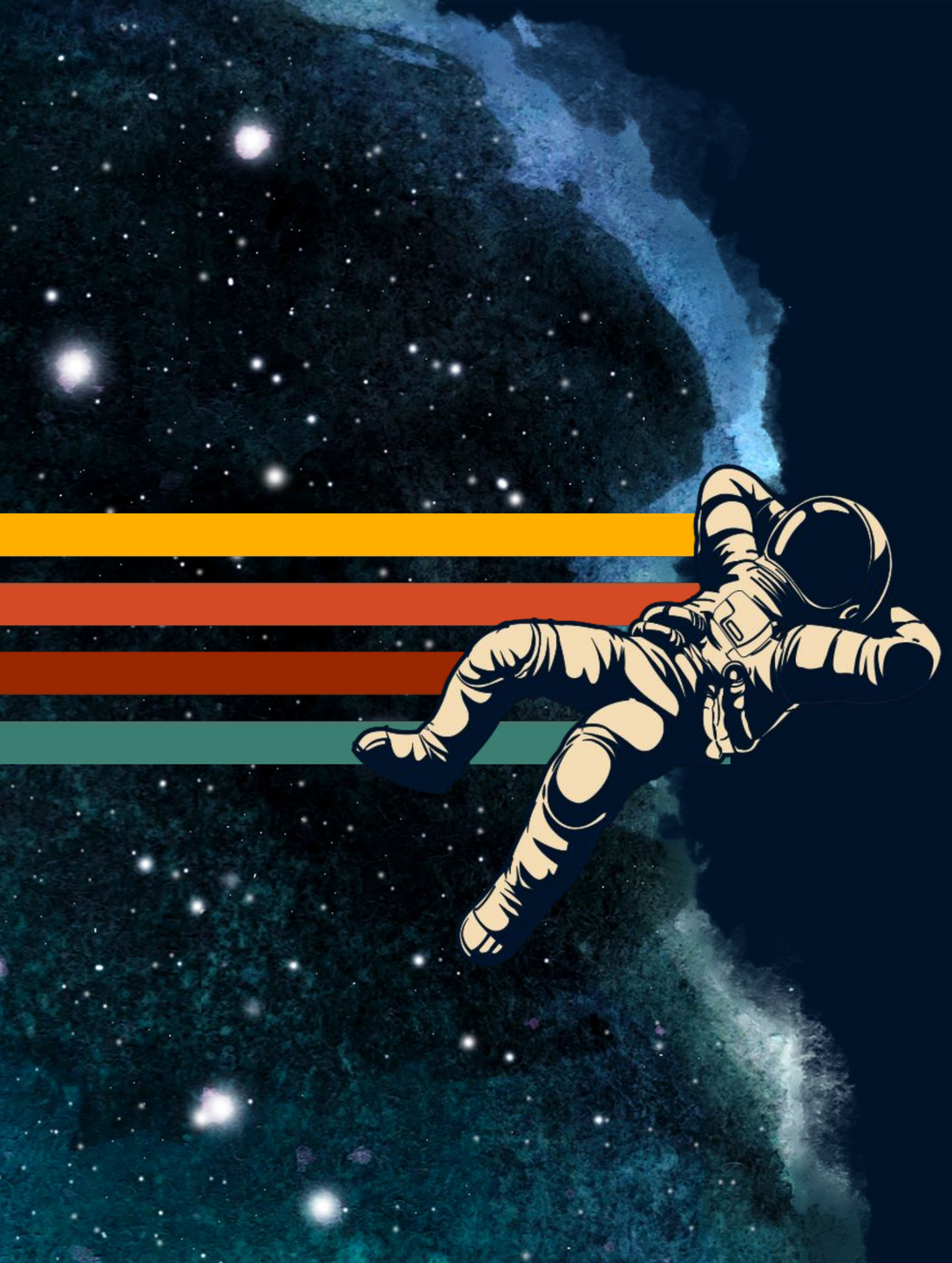

FINAL CFG PROJECT

by Group 5

Meet the Team

Holly

Charlotte

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The Story

SpaceX set out to be ambitious; tasked themselves with advancing space exploration, making humanity multi-planetary and ensuring long term survival

Our Aim

To assess and understand the environmental impacts of SpaceX rocket launches and identify potential strategies for minimising their impact in the future

Our Question

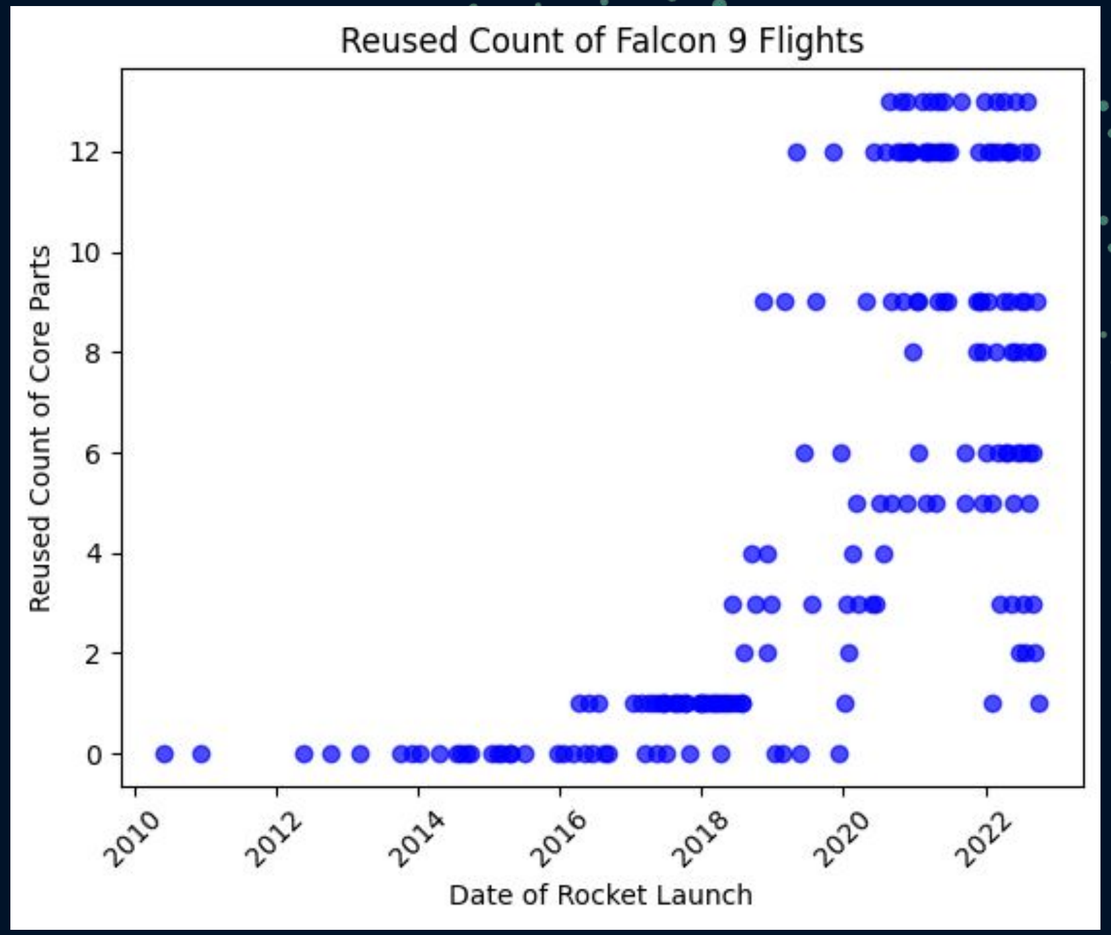
What Have the Environmental Impacts Been From SpaceX Rocket Launches, and How Could SpaceX Minimise Their Impact Moving Forward?

Our Approach

- 3 Subquestions
- Data Sources:
  - SpaceX API
  - UCL - 2019 rocket launches
  - Kaggle - space debris

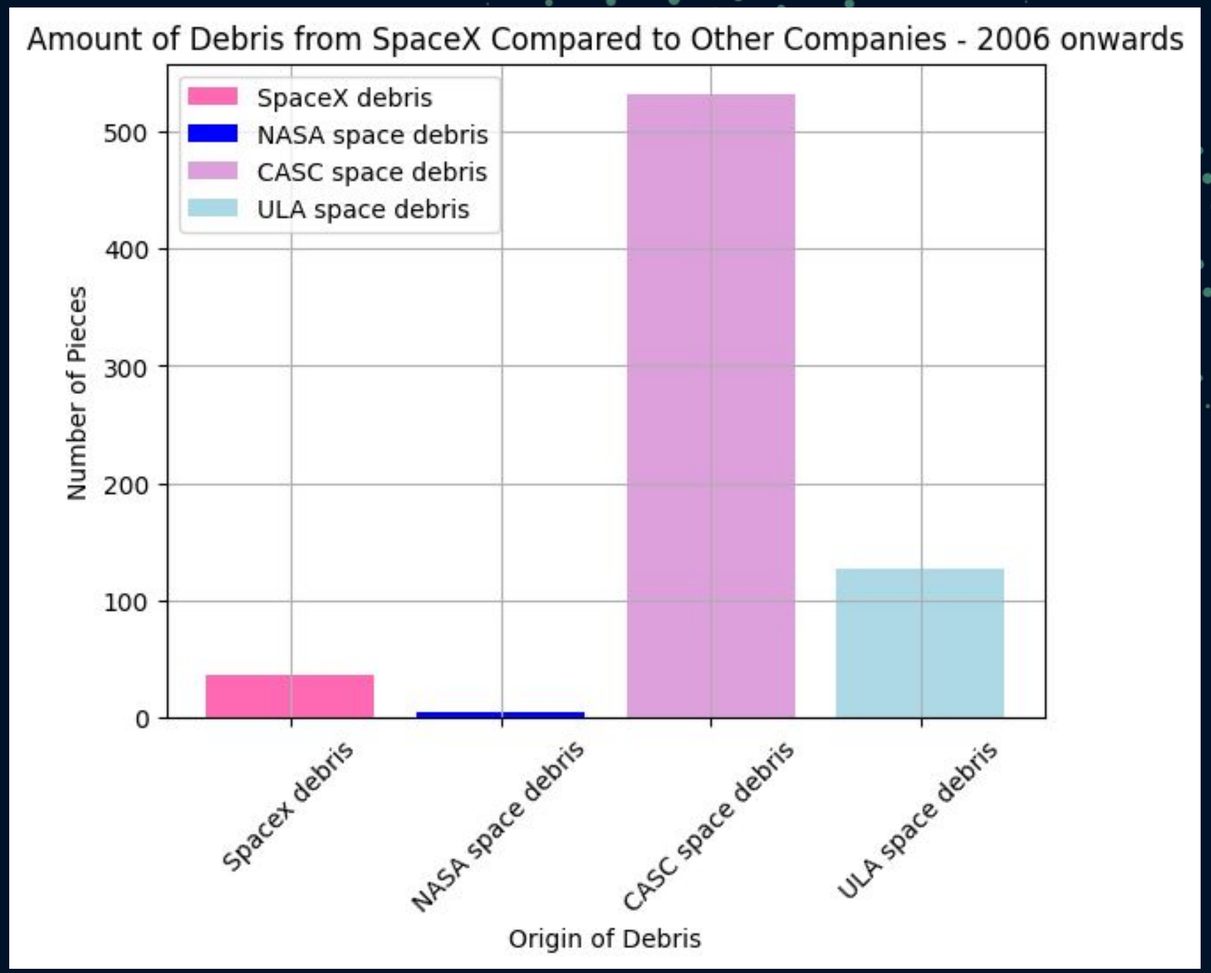
How Do SpaceX Rocket Launches Compare Over Time in Terms of Environmental Impact?

- SpaceX’s ability to reuse core rocket parts on flights has increased over time and with each new rocket version
- Fuel emissions in 2019 remained the same for each rocket launch of the same type

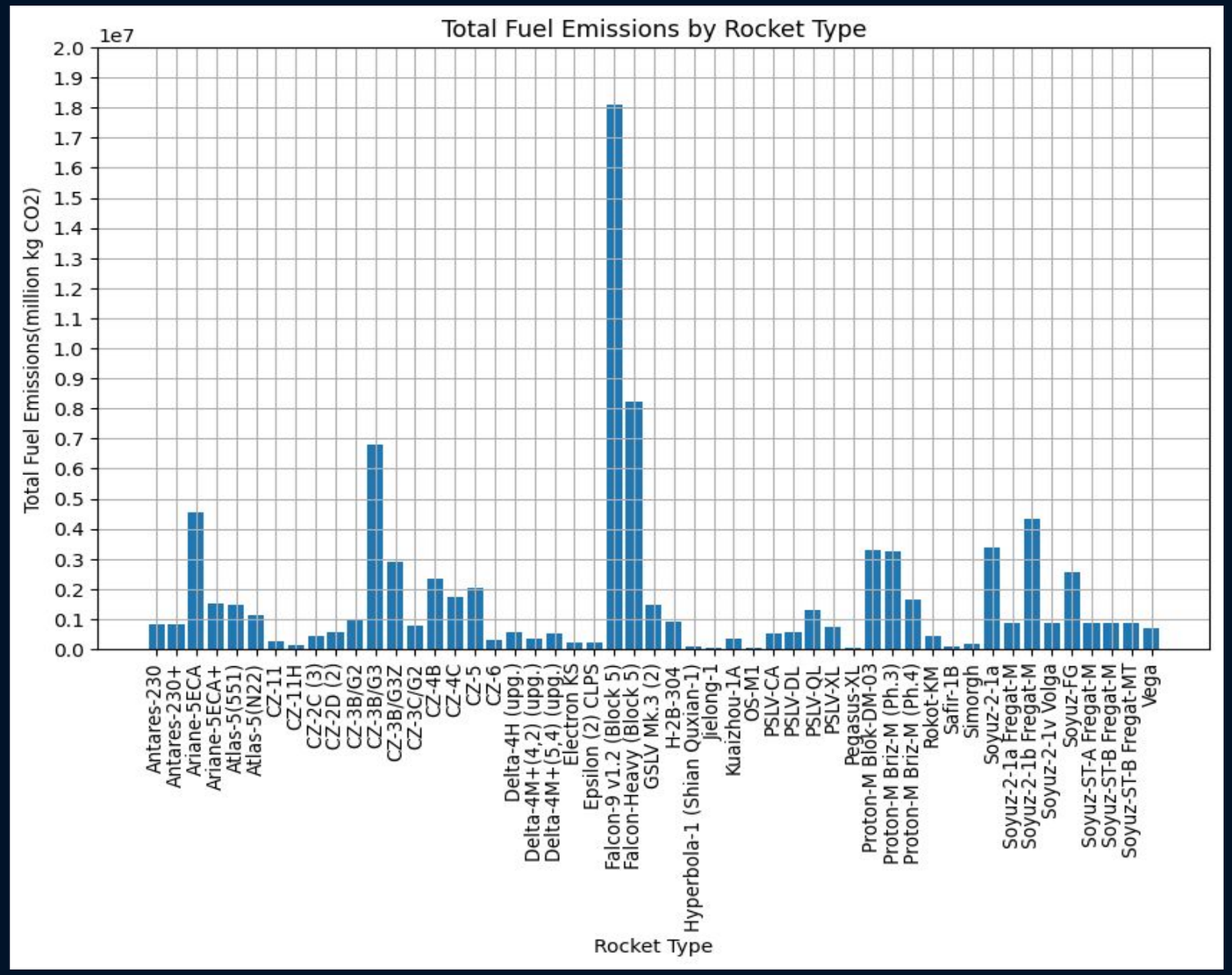


What is SpaceX’s “Space Debris” Impact?

- 600% increase in overall objects in the last 30 years
- SpaceX has made a very minimal contribution since its establishment in 2006 but still more than its American counterpart NASA
- SpaceX has accumulated around 40 pieces of debris compared to CASC's 550 and ULA's 120



How Do SpaceX Launches Compare with Other Countries/Locations and/or Companies in Terms of Environmental Impact?



- Kerosene as a primary fuel source
- SpaceX had the top 2 rockets with the highest total fuel emissions - Falcon 9 & Falcon Heavy
- SpaceX had 13 launches, with a total of over 26 million kg of CO2 emissions
- CASC has had 33 rocket launches with only 20 million kg of CO2 emissions
- SpaceX had double the emissions, half the launches

Recommendations

- Switch to an alternative fuel type - hydrogen
- Continue to innovate in order to reuse core parts to limit space debris impact and reduce their environmental impact