

Aviation Accident Risk Analysis

Recommendation for Aircraft purchase

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Business Understanding

Goal: Help the company select the safest aircraft to enter the aviation market

Stakeholder: Head of the new aviation division

Key question: What types of aircraft and conditions are associated with higher accident risks

Dataset overview

Source National Transportation Safety Board
(NTSB)

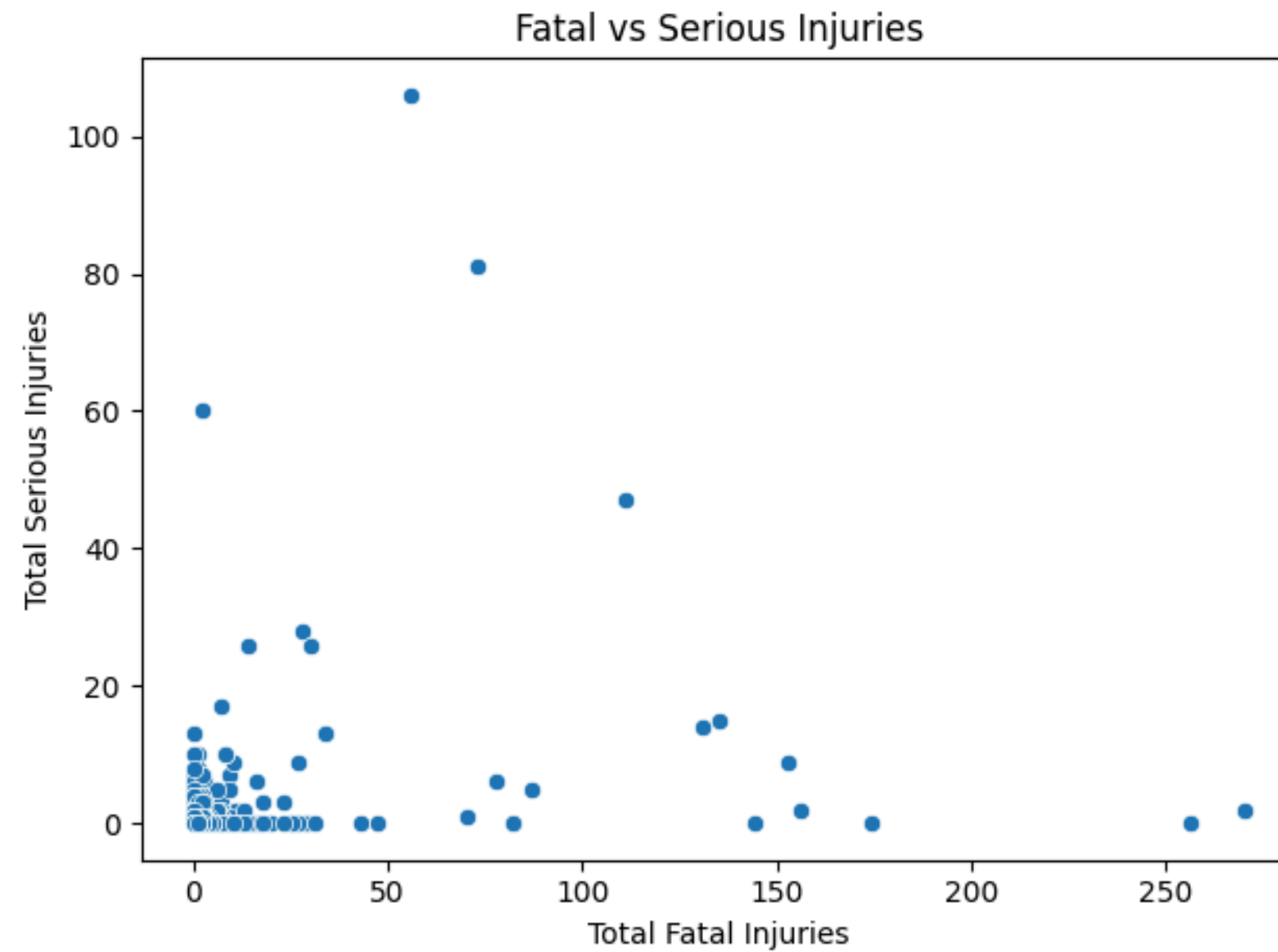
Time span: 1962-2022

Initial record count: The raw data had 5 rows
and 31 columns

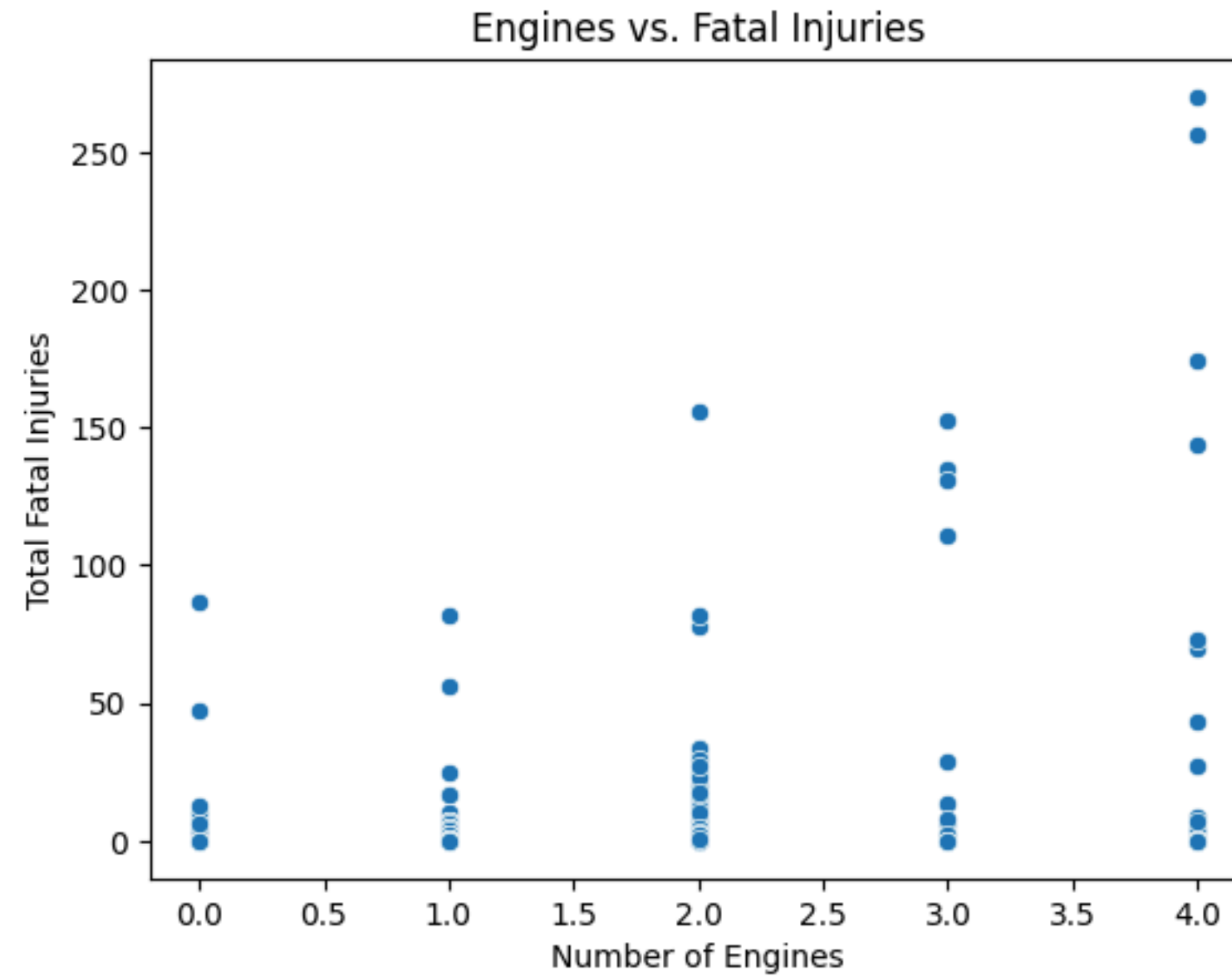
Data Cleaning

- Removed nulls in critical fields (e.g. aircraft damage, phase of flight)
- Created new column: is_fatal
- Filtered out records with unknown weather or missing dates

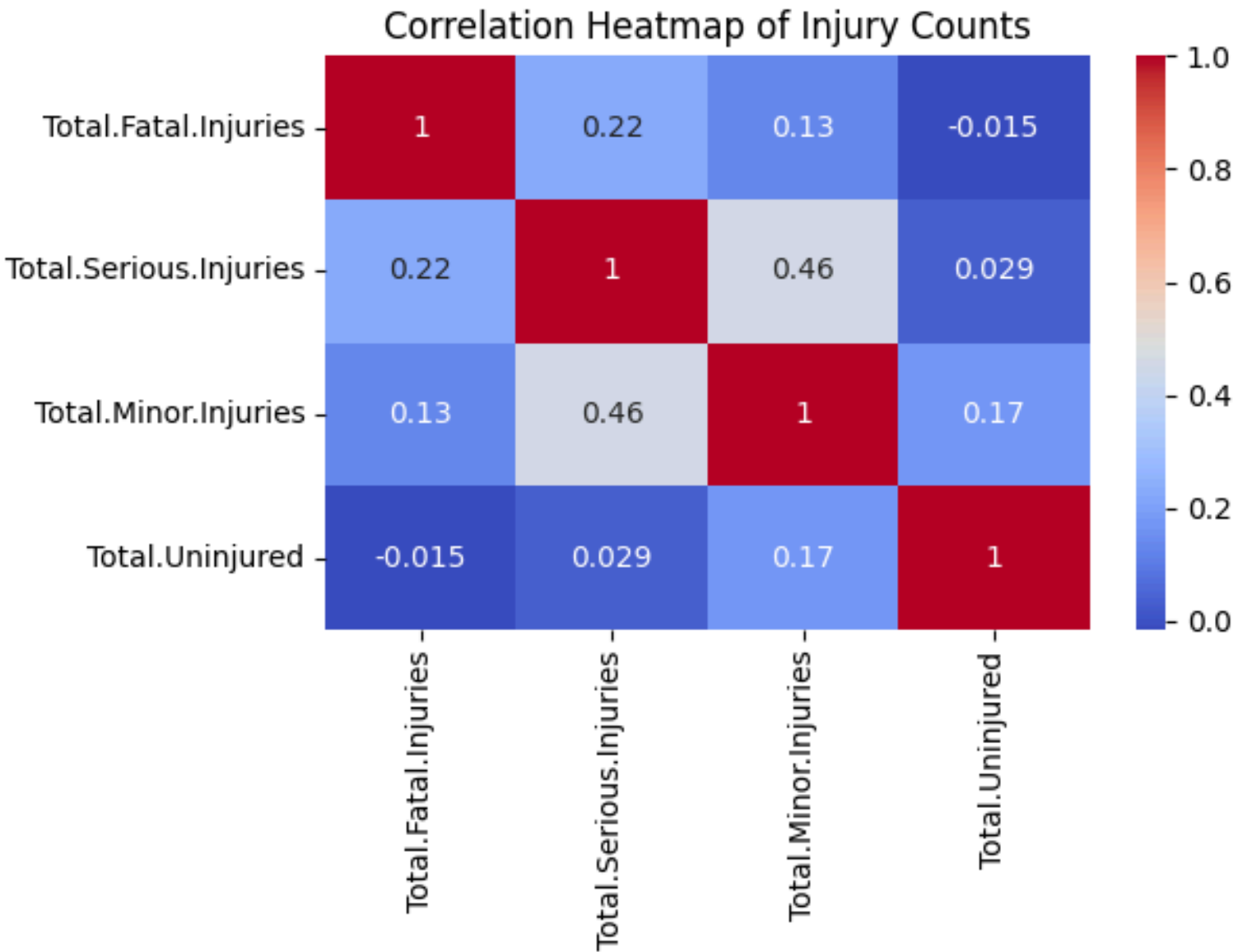
Total fatal injuries vs total serious injuries



Engines vs fatal injuries

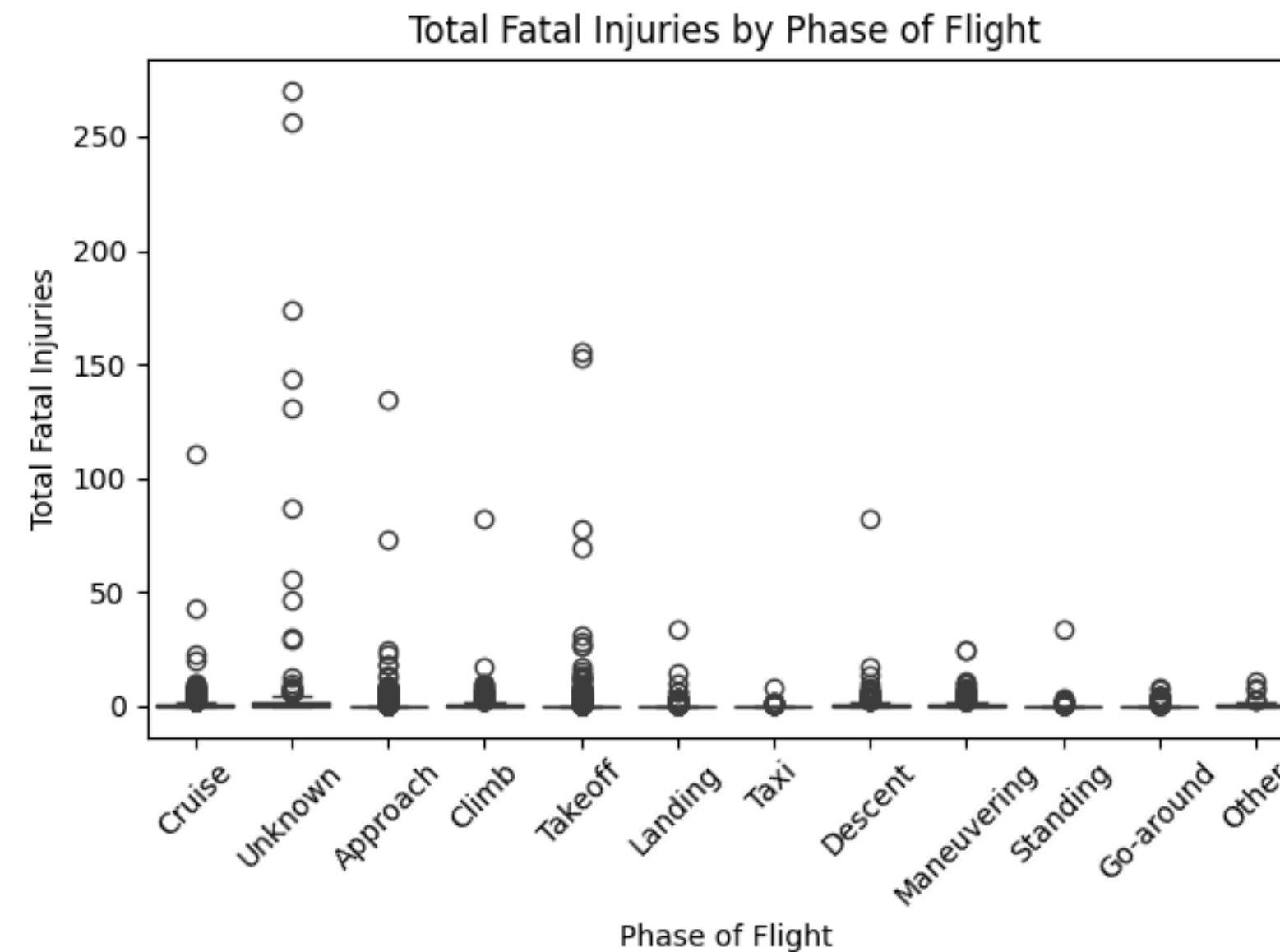


correlation heatmap of injury counts

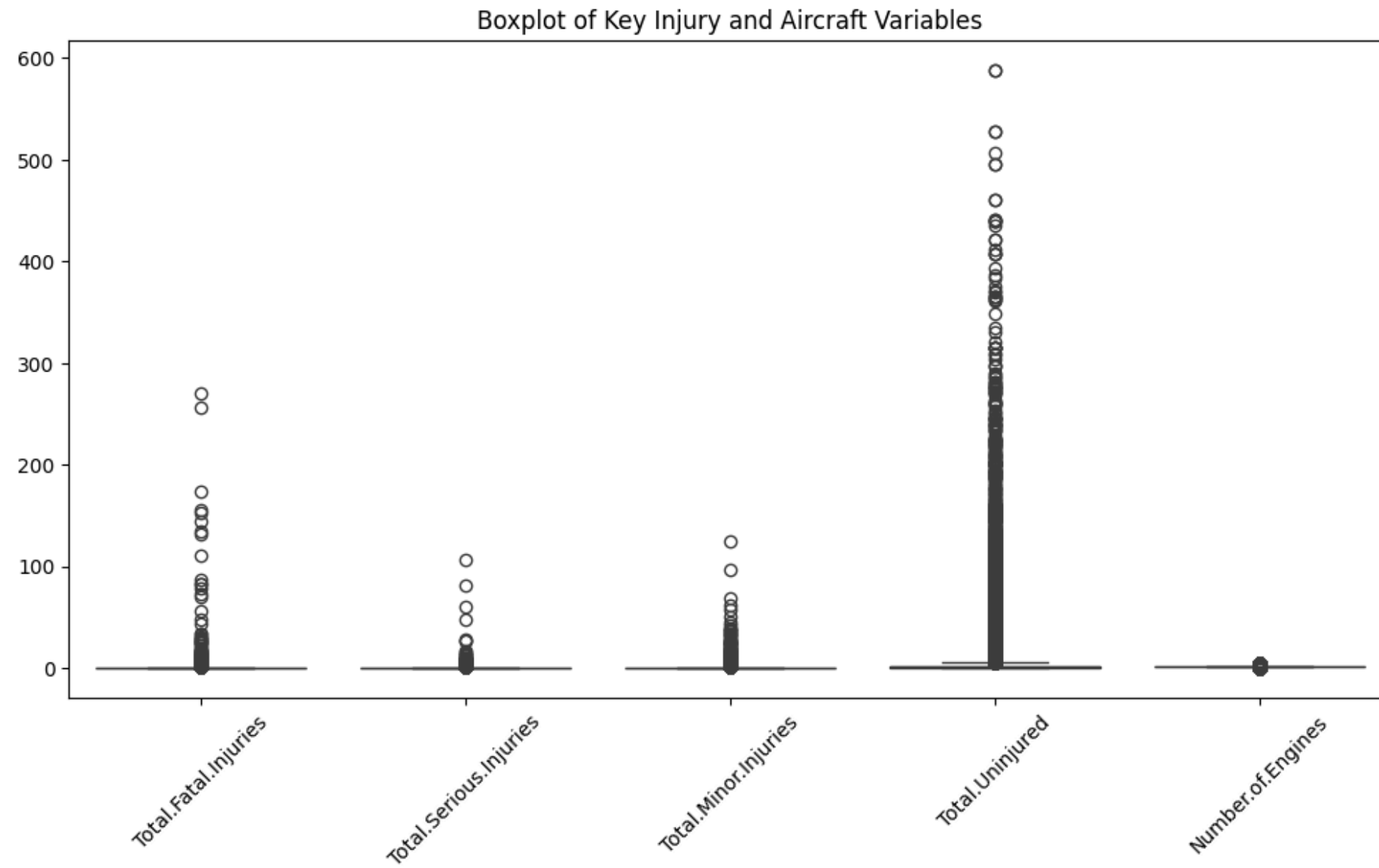


total fatal injuries by phase of flight

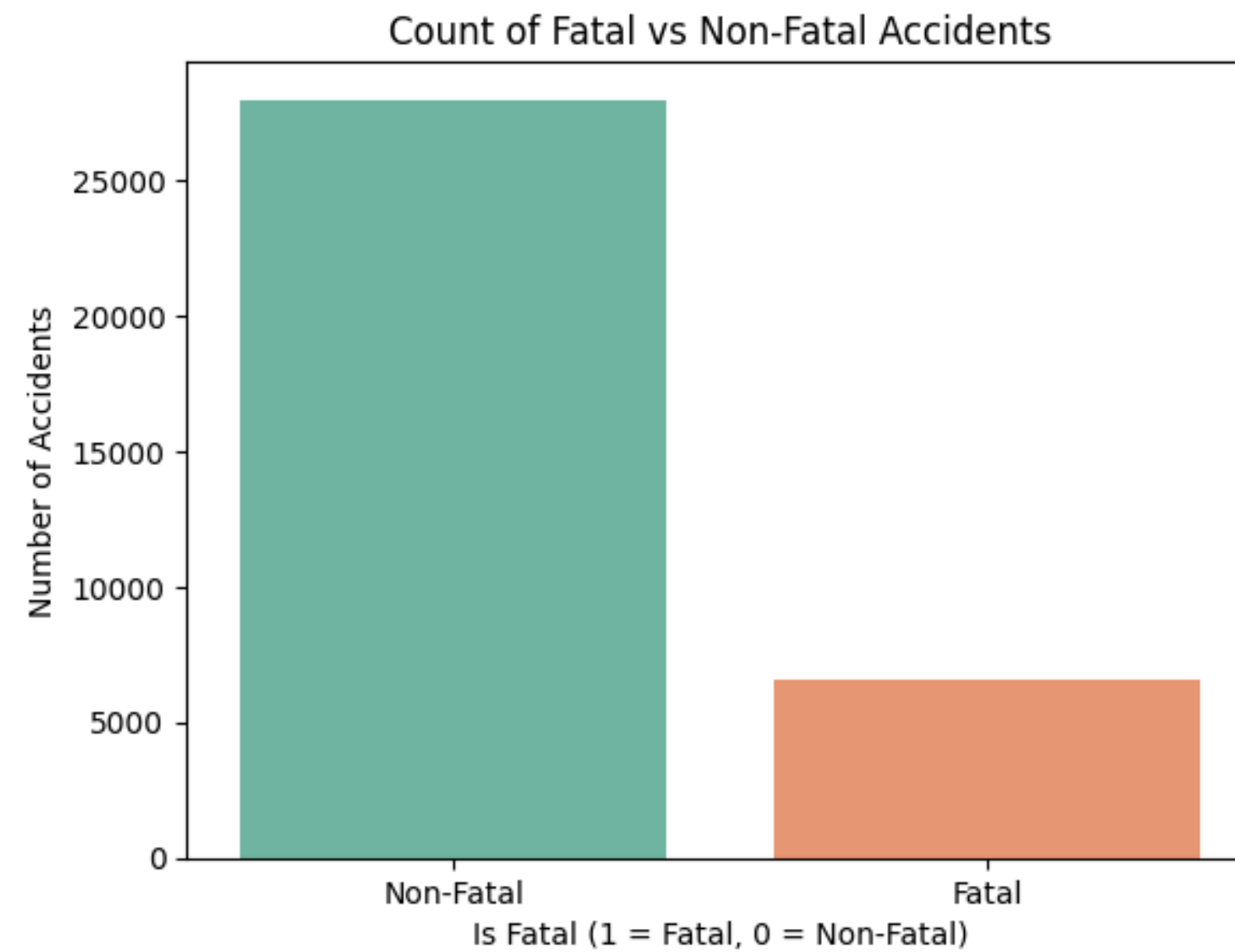
Certain phases like landing or takeoff have higher fatality rates



key injury and aircraft variables

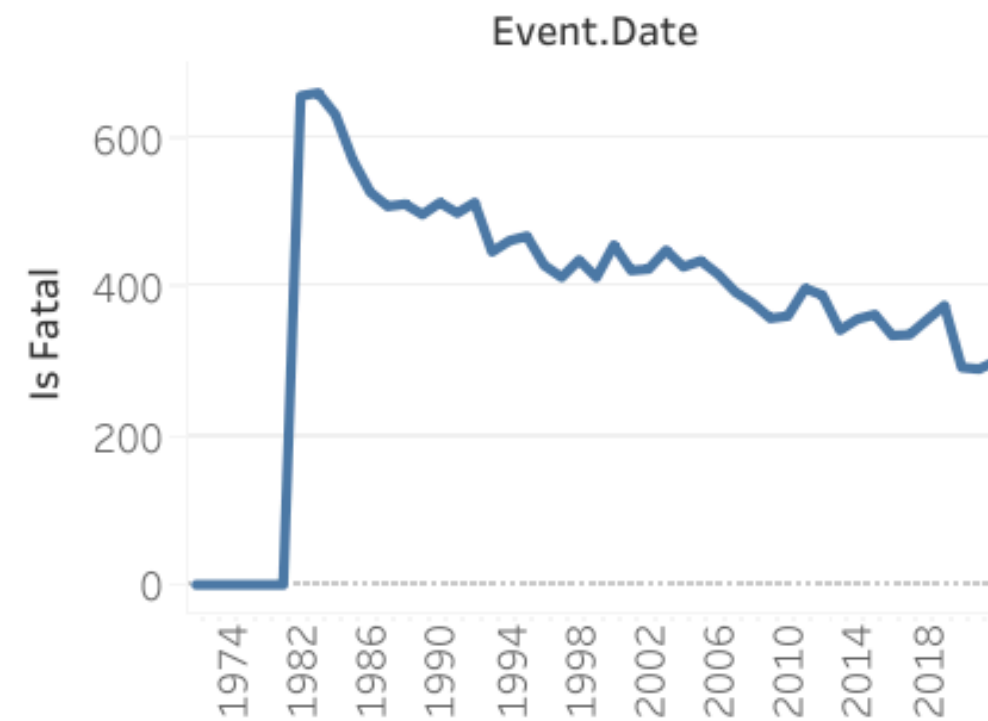


count of fatal vs non fatal accidents

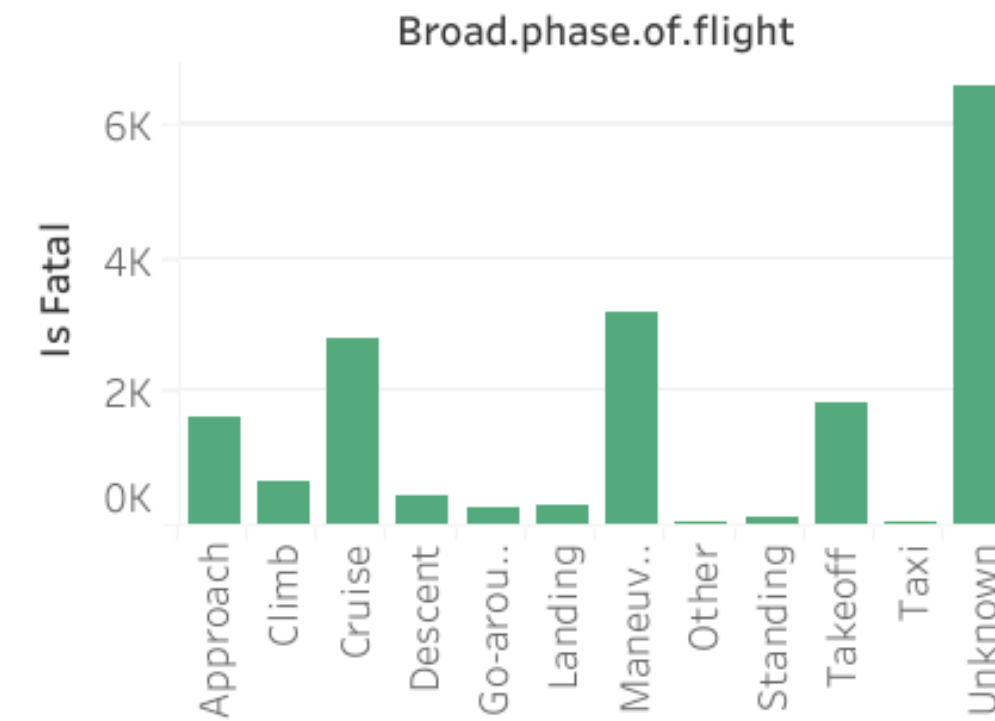


Visualization created in Tableau

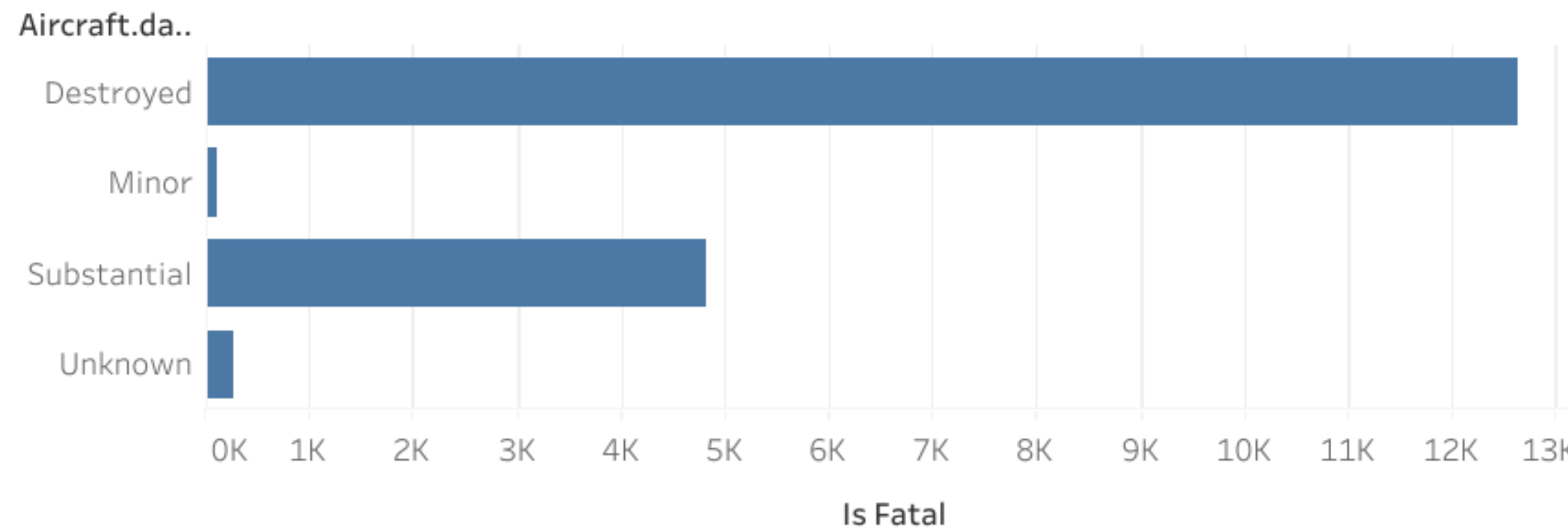
is_fatal vs year



phase of flight vs is_fatal



Aircraft damage vs sum (fatal)



Recommendations

- Avoid investing in aircraft that frequently incur substantial or destroyed damage.
- Prioritize flight phases where pilot control and aircraft condition are most critical.
- Continue monitoring aviation trends over time (fatality rates appear to be decreasing).

Thank you