Flatiron Data Science Phase 1 Project Aircraft Safety

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Agenda

- Overview
- Data Analysis
- Recommendations
- Questions

Overview

The goal of this project is to assess the accident risk of small aircraft for business/private use. We will:

- Minimize risk
- Focus on common aircraft
- Focus on newer planes
- Identify the safest aircraft for further analysis

Data Analysis (Where do these recommendations come from?)

Accident data

The data.csv file contains:

- Unique entry for each accident or incident recorded
- Number of fatalities
- Number of injuries
- Notes with further detail for some entries

Registration data

The FAA registration files contain:

- Unique entry for each aircraft registered in the United States
- Make and model of aircraft
- Serial number
- Name, address, etc. of owner
- Misc. info

Data Analysis, continued

Step 1

Merge data:

- Prepare and organize data for analysis
- Combine the FAA and accident data

Step 2

Crunch numbers:

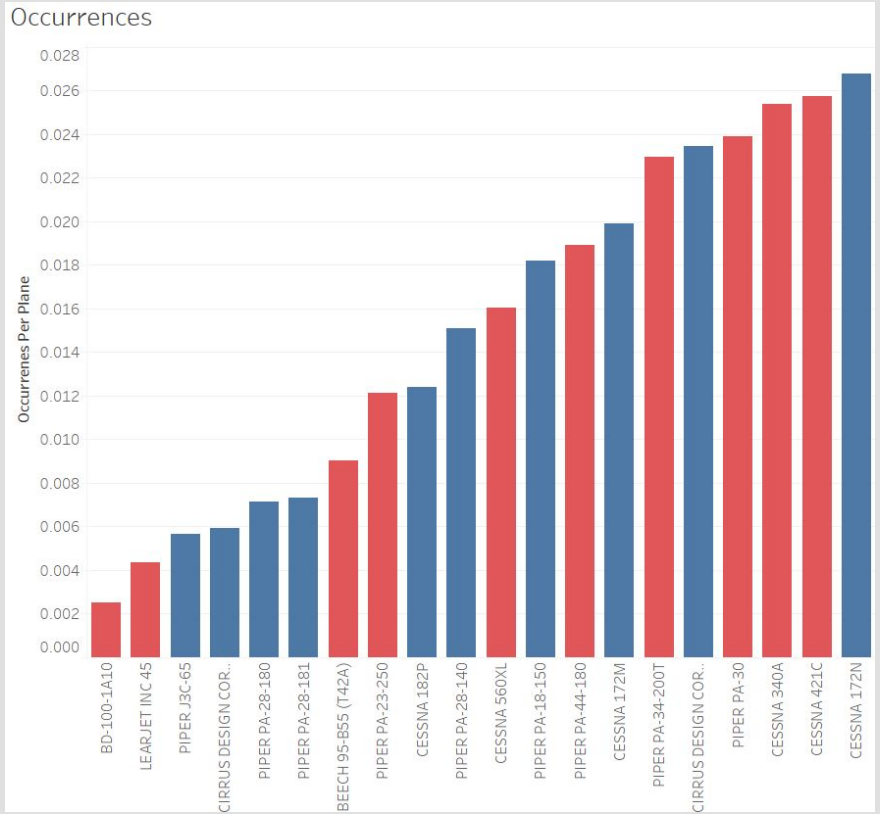
- Count registered aircraft
- Count incidents and accidents
- Normalize all data

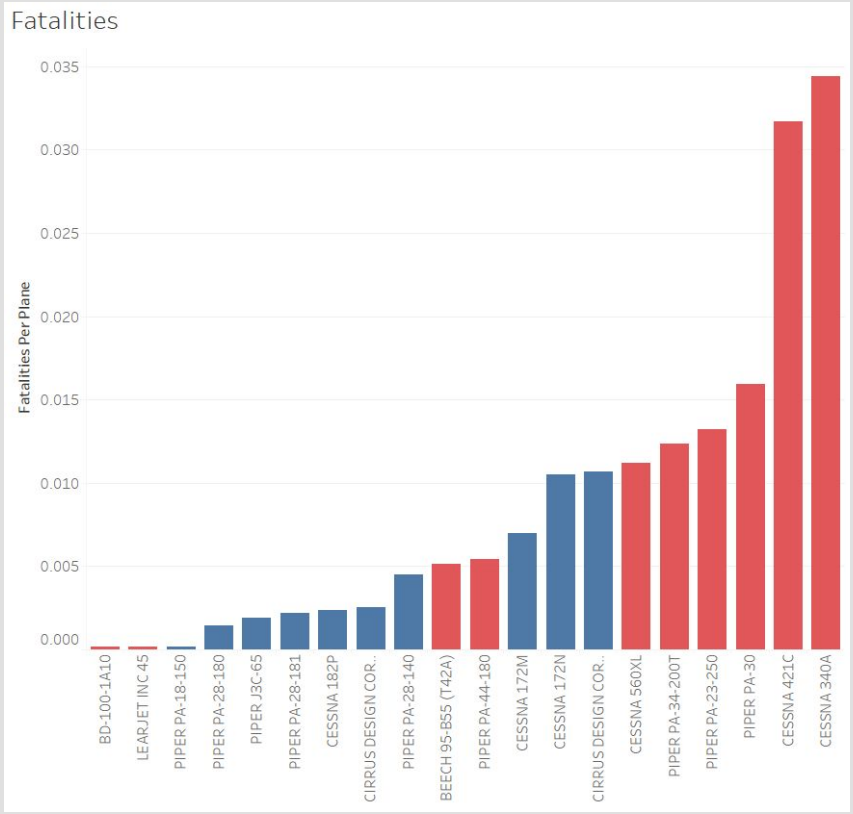
Step 3

Plot/decide:

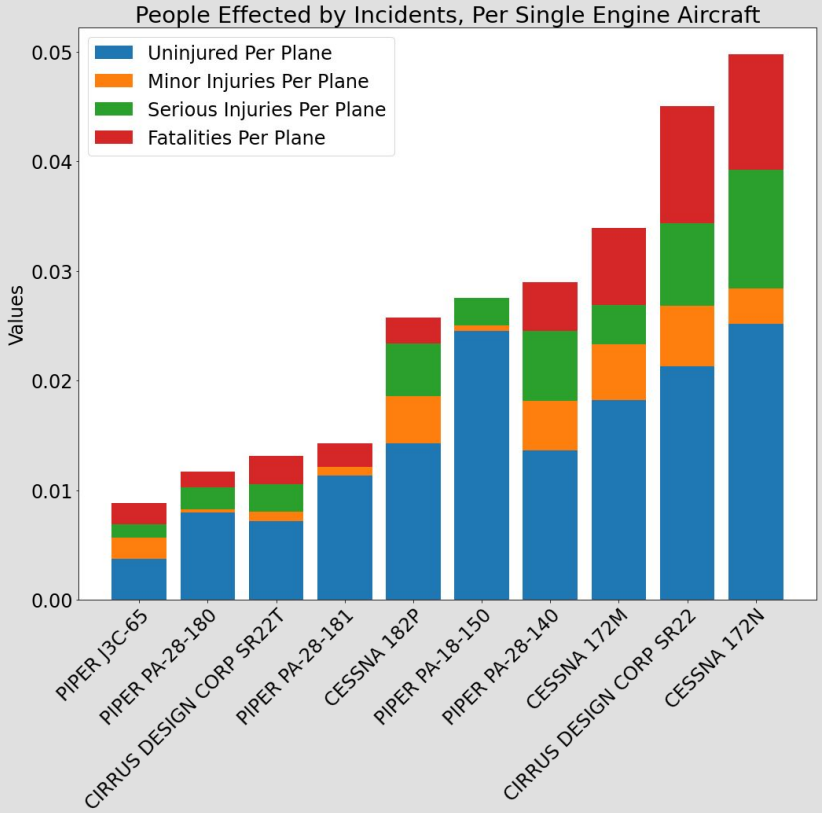
- Create relevant plots
- Identify key insights
- Make recommendations

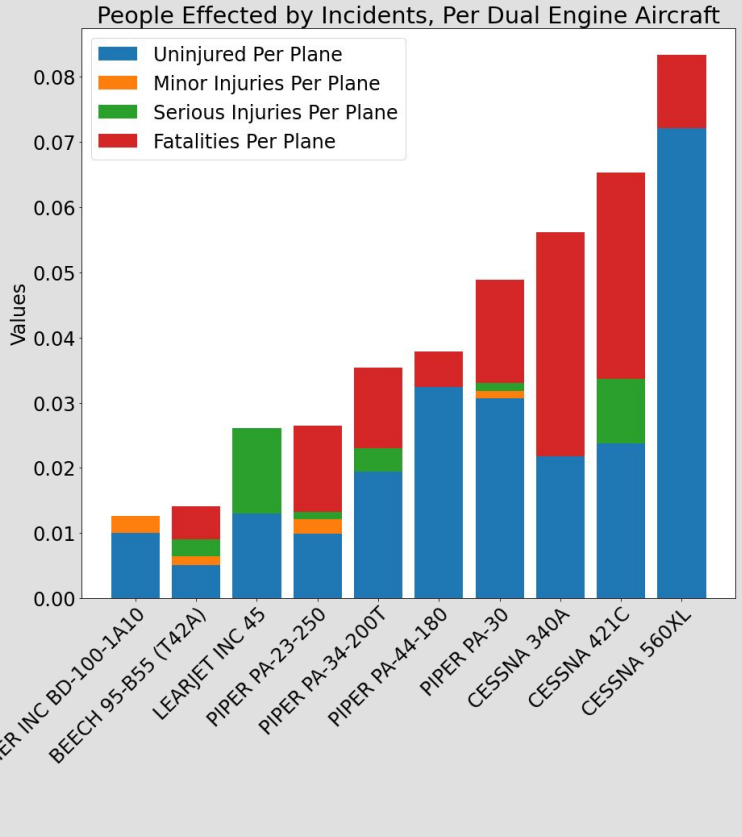
Rates of documented incidents and fatalities per registered aircraft





Affected individuals, normalized by number of registered aircraft





Rates of Fatalities, Incident Occurrences, and People Affected, per 1000 Aircraft

Make / Model	Fatalities	Occurrences	People Effected
PIPER J3C-65	1.89	5.68	8.84
CIRRUS DESIGN SR22T	2.54	5.93	13.12
PIPER PA-28-180	1.43	7.16	11.74
PIPER PA-28-181	2.20	7.34	14.31
CESSNA 182P	2.38	12.40	25.75
PIPER PA-28-140	4.48	15.08	28.99
PIPER PA-18-150	0.00	18.18	27.52
CESSNA 172M	7.01	19.92	33.95
CIRRUS DESIGN SR22	10.67	23.43	45.04
CESSNA 172N	10.52	26.79	49.74

Single Engine Aircraft

Make / Model	Fatalities	Occurrences	People Effected
BD-100-1A10	0.00	2.52	12.59
LEARJET INC 45	0.00	4.35	26.09
BEECH 95-B55 (T42A)	5.15	9.01	14.16
PIPER PA-23-250	13.22	12.11	26.43
CESSNA 560XL	11.22	16.03	83.33
PIPER PA-44-180	5.41	18.92	37.84
PIPER PA-34-200T	12.37	22.97	35.34
PIPER PA-30	15.93	23.89	48.92
CESSNA 340A	34.42	25.36	56.16
CESSNA 421C	31.68	25.74	65.35

Dual Engine Aircraft

Recommended models

Single engine aircraft

The top four:

- The Piper J3C-65 only has two seats, so it is not practical for passenger service.
- The other three models have solid safety records and are recommended as potential options for single engine aircraft.

Make / Model	Seats	Fatalities	Occurrences	People Effected
PIPER J3C-65	2	1.89	5.68	8.84
CIRRUS DESIGN SR22T	5	2.54	5.93	13.12
PIPER PA-28-180	4	1.43	7.16	11.74
PIPER PA-28-181	4	2.20	7.34	14.31

Dual engine aircraft

The top four:

- The BD-100-1A10 and Learjet 45 stand out for their stellar safety records.
- The Beech 95-B55 and Cessna 182P are secondary recommendations due to higher fatality and occurrence rates.

Make / Model	Seats	Fatalities	Occurrences	People Effected
BD-100-1A10	9	0.00	2.52	12.59
LEARJET INC 45	9	0.00	4.35	26.09
BEECH 95-B55 (T42A)	6	5.15	9.01	14.16
PIPER PA-23-250	6	13.22	12.11	26.43

Next steps

The recommended aircraft should be further analyzed for other factors, including:

- Acquisition cost
- Maintenance cost
- Fuel cost
- Staffing requirements
- Lifetime of aircraft / performance over time
- Availability of pilots and crew
- Seating capacity

Thanks for listening!

Any questions?

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