

PRESENTATION

Aviation data

Safest Aircraft Models for Commercial and Private Enterprises

By:

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- DSC FULLTIME REMOTE

BUSINESS PROBLEM

Expanding into the aviation industry

Objective:

Determine the safest aircraft models for commercial and private use

Data Overview

- Dataset: Aviation_Data.csv from NTSA
- 90,348 entries, 31 columns
- Key Columns:
 - Event ID, Investigation Type, Accident Number, etc.
- Data Cleaning:
 - Dropped duplicates, handled missing values
 - Separated key focus I.e Airplane and Helicopter

AirCraft categories

AIRCRAFT CATEGORIES

Airplane 21977

Helicopter 2826

Glider 417

Weight-Shift 160

Gyrocraft 153

Balloon 113

Powered Parachute 88

Ultralight 23

WSFT 9

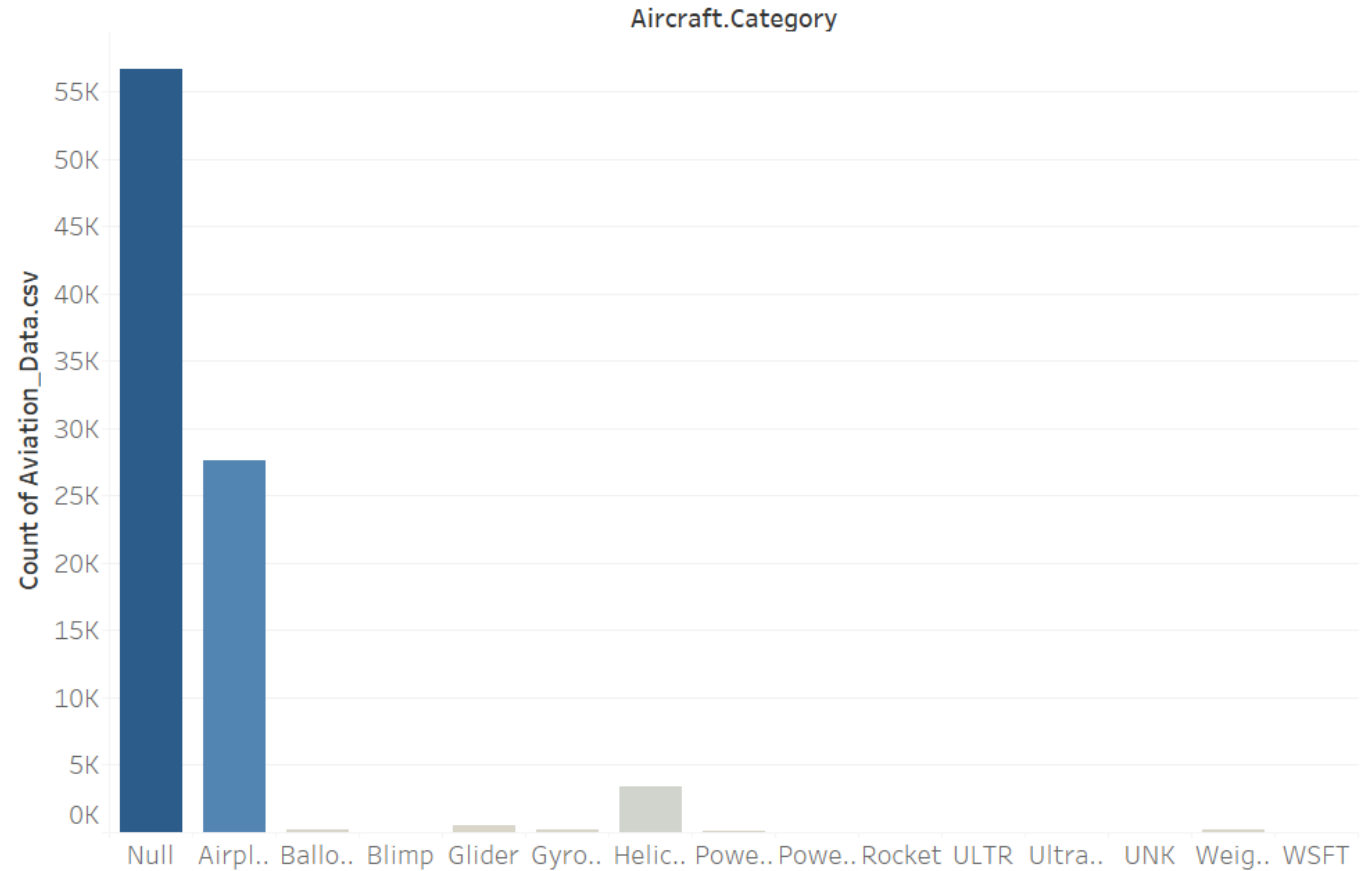
Rocket 1

Powered-Lift 1

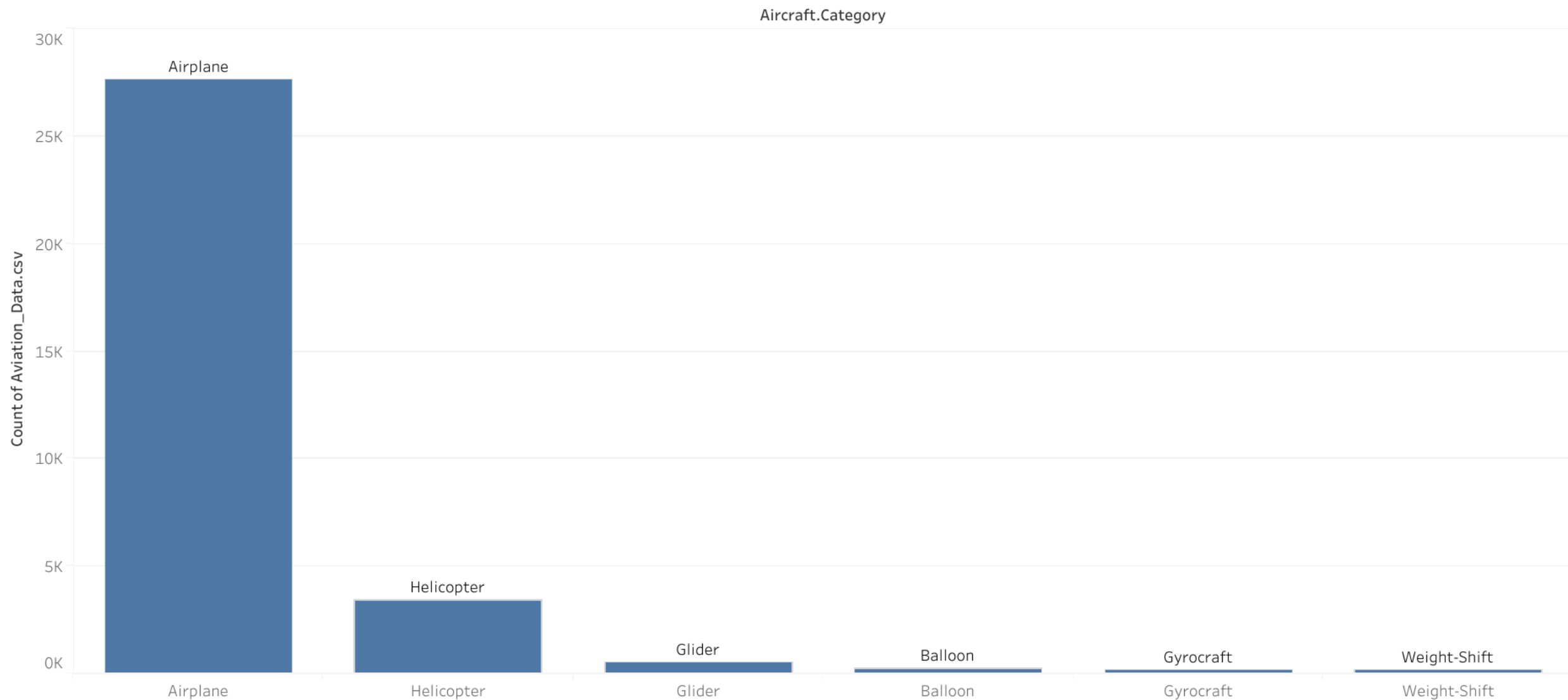
ULTR 1

Blimp 1

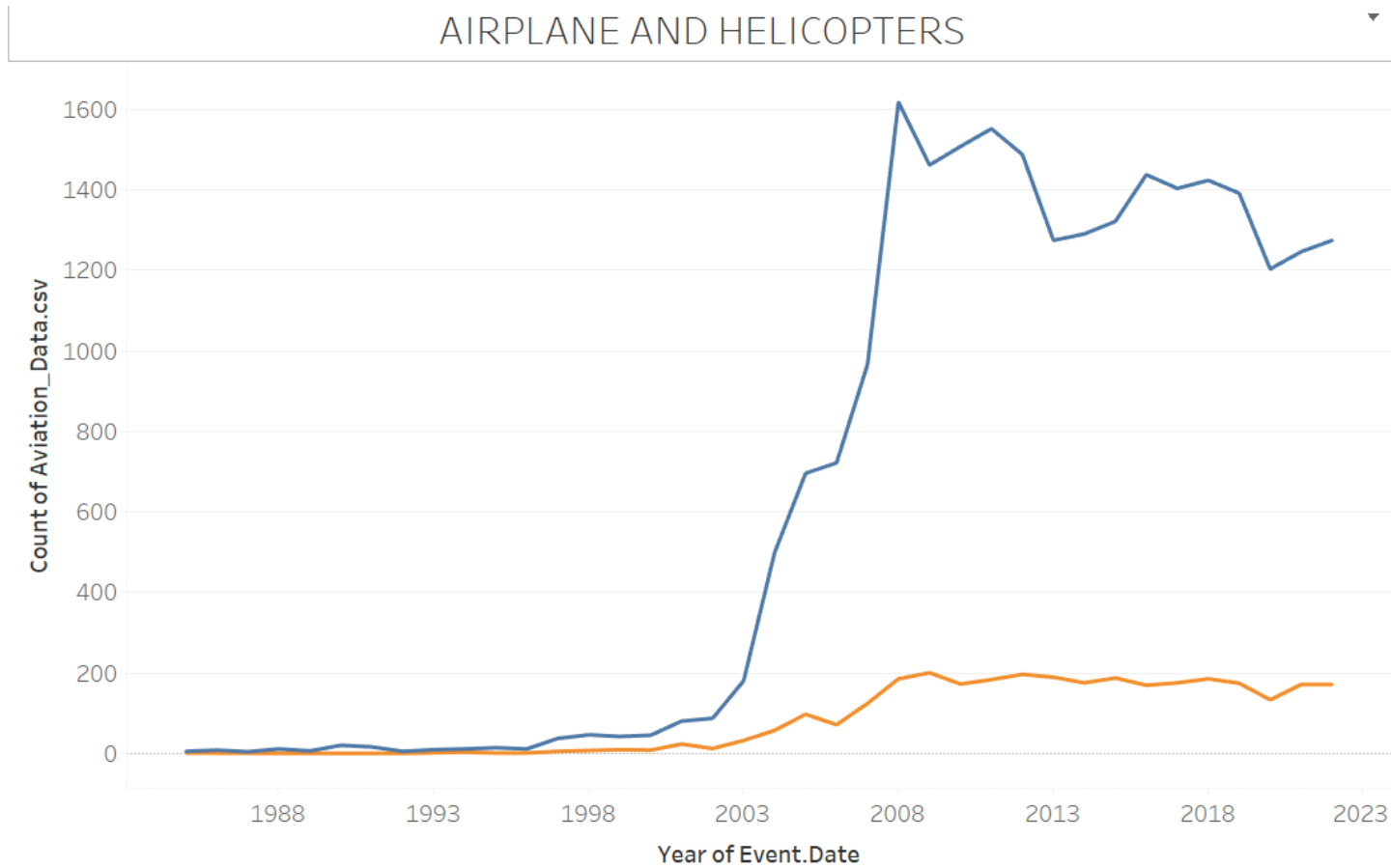
AIRPLANE AND HELICOPTERS



Aircraft category

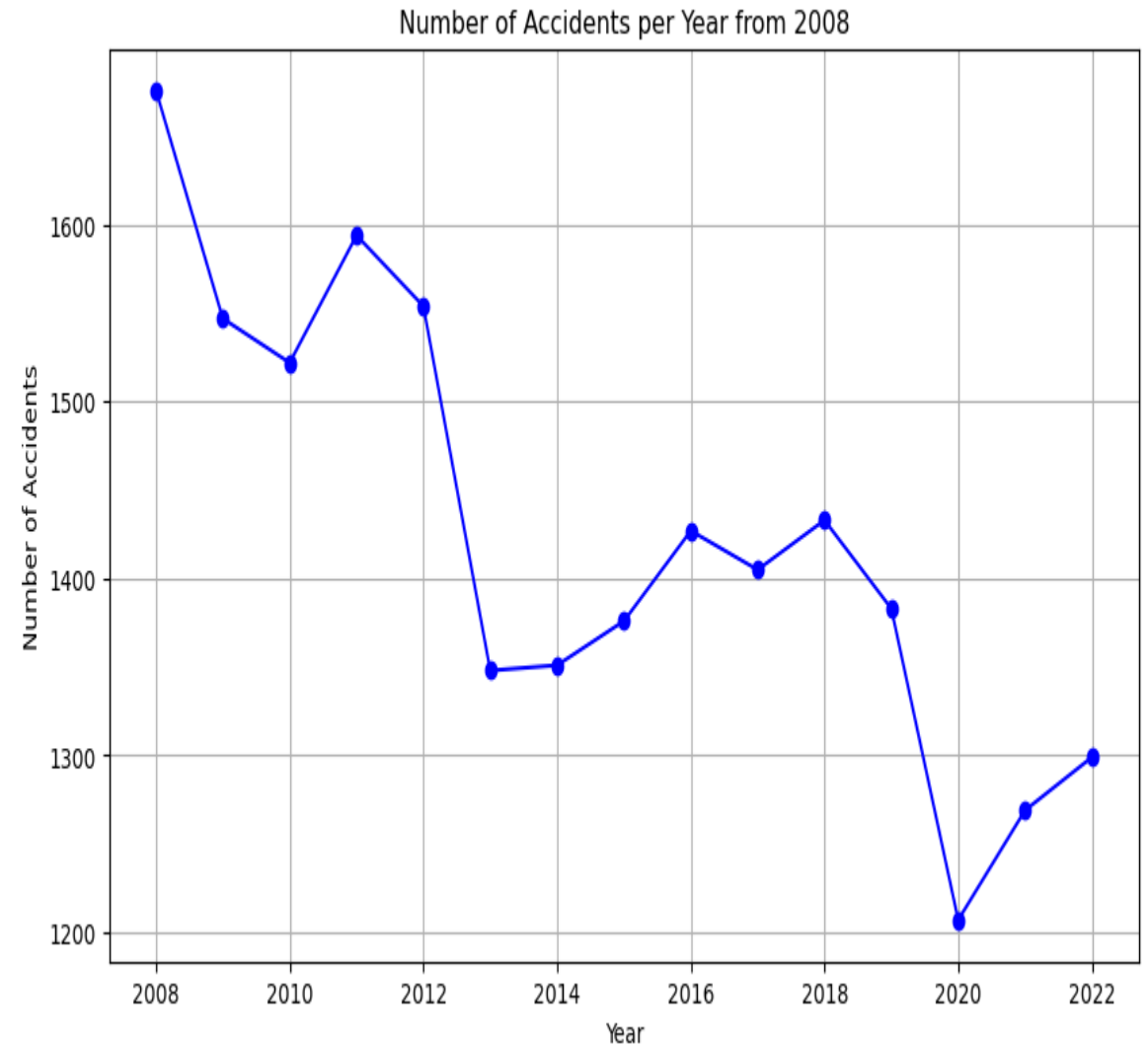
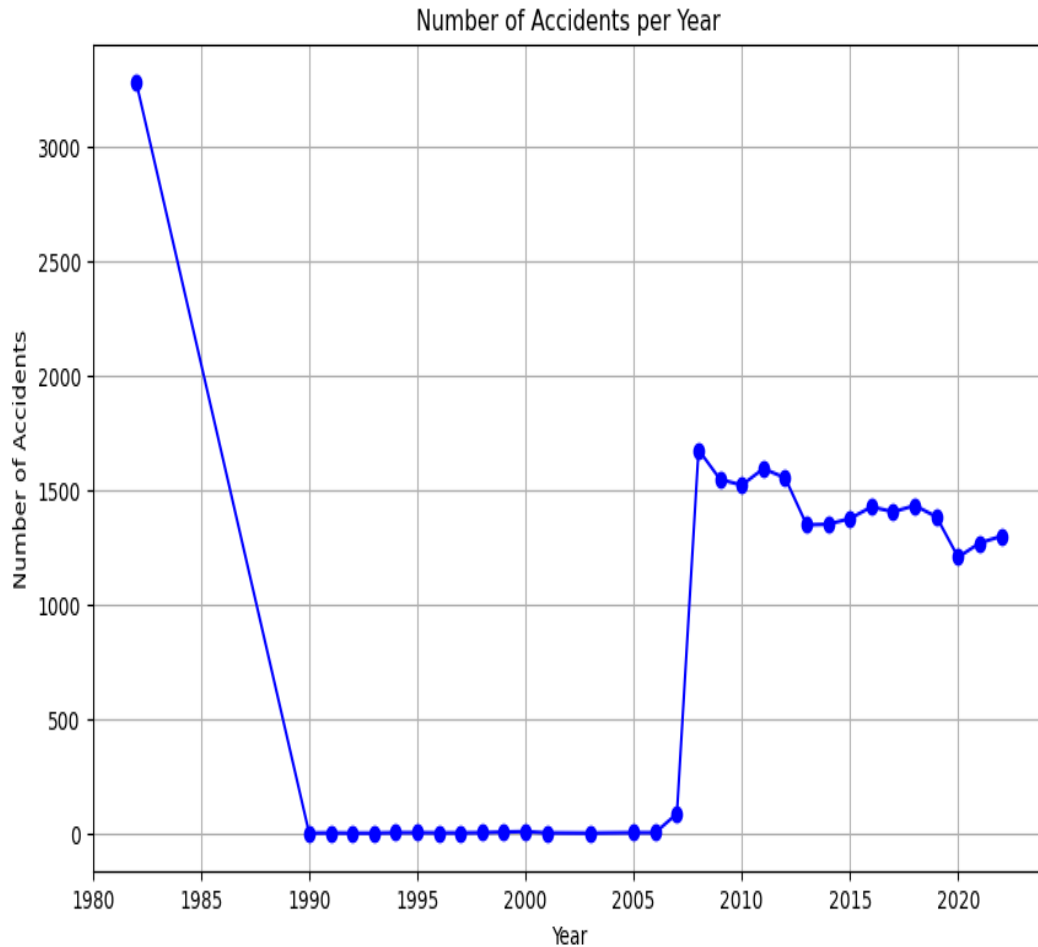


Airplane and Helicopter Trend



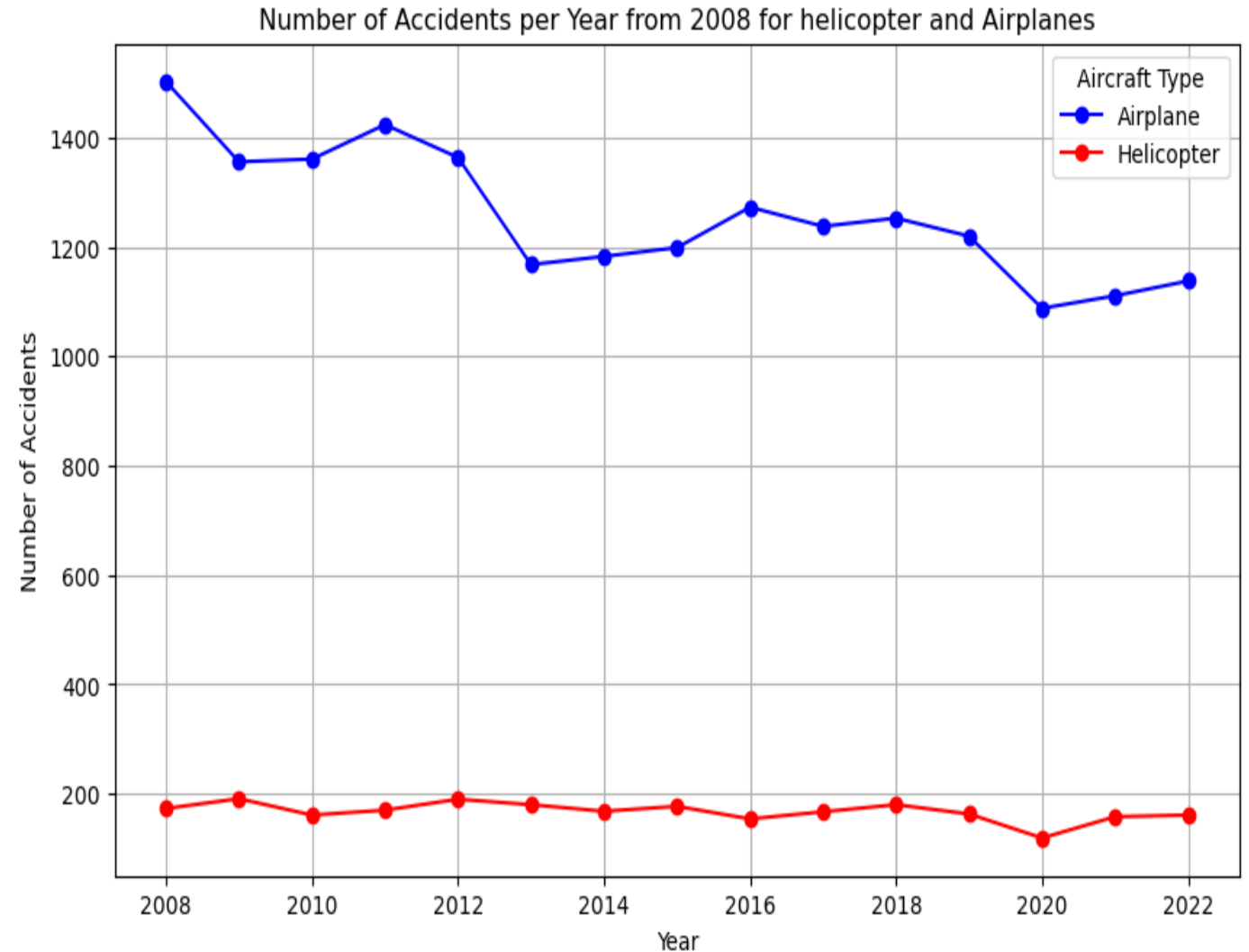
Methodology

- Used consistent data from 2008



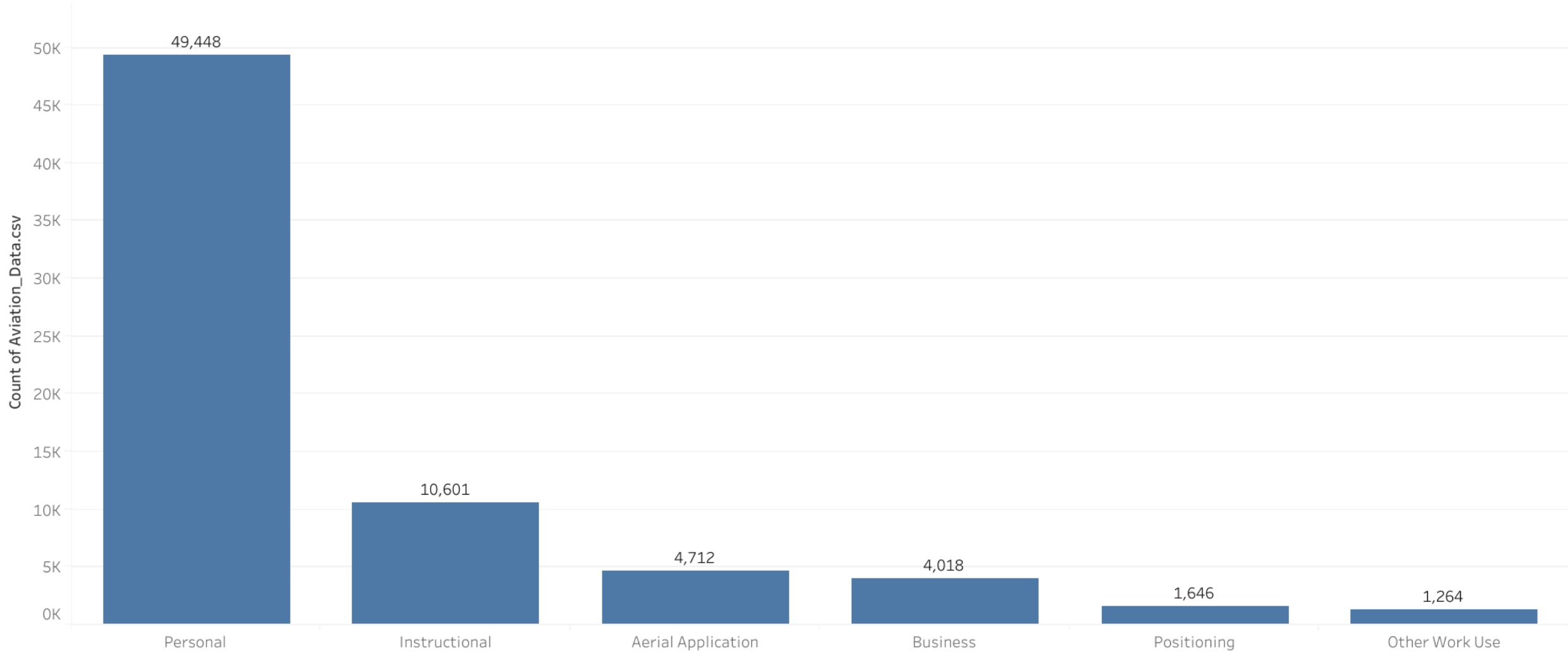
Methodology Cont'd

- Separated Airplane and Helicopter Aircrafts
- Weighted factors for safety score
- Calculation:
 - Accidents per model
 - Fatalities, serious injuries, minor injuries
 - Aircraft damage
 - Safety score formula

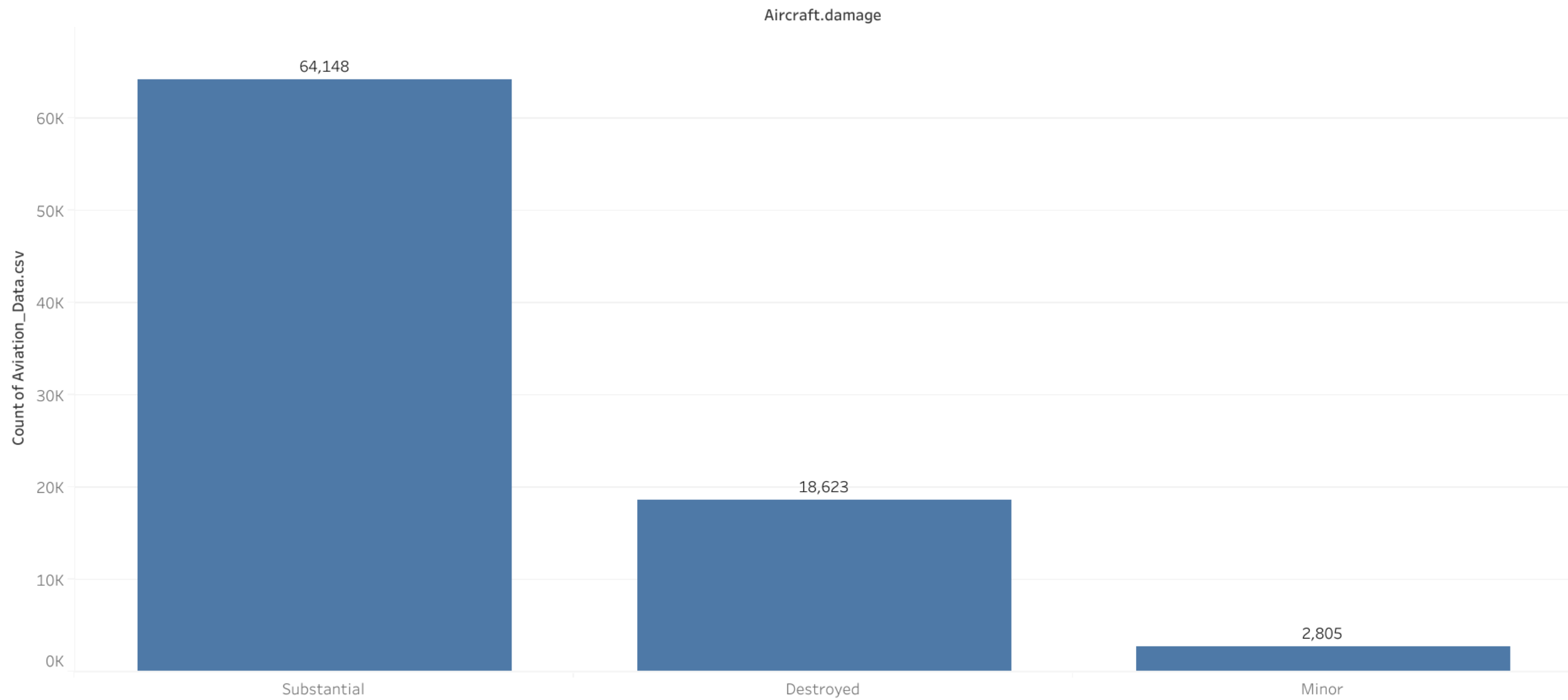


<Aviation Data Visualization>

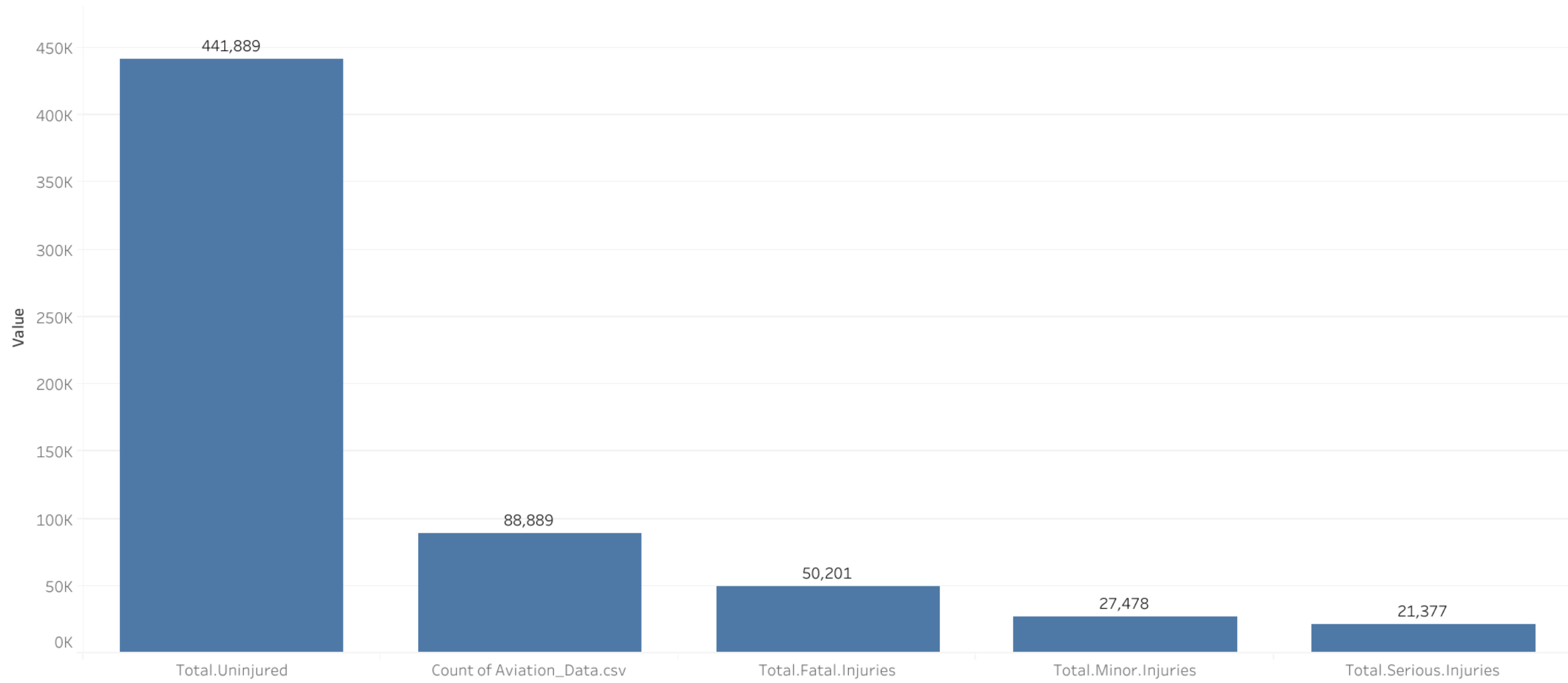
Purpose.of.flight



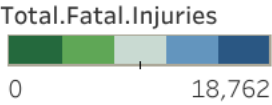
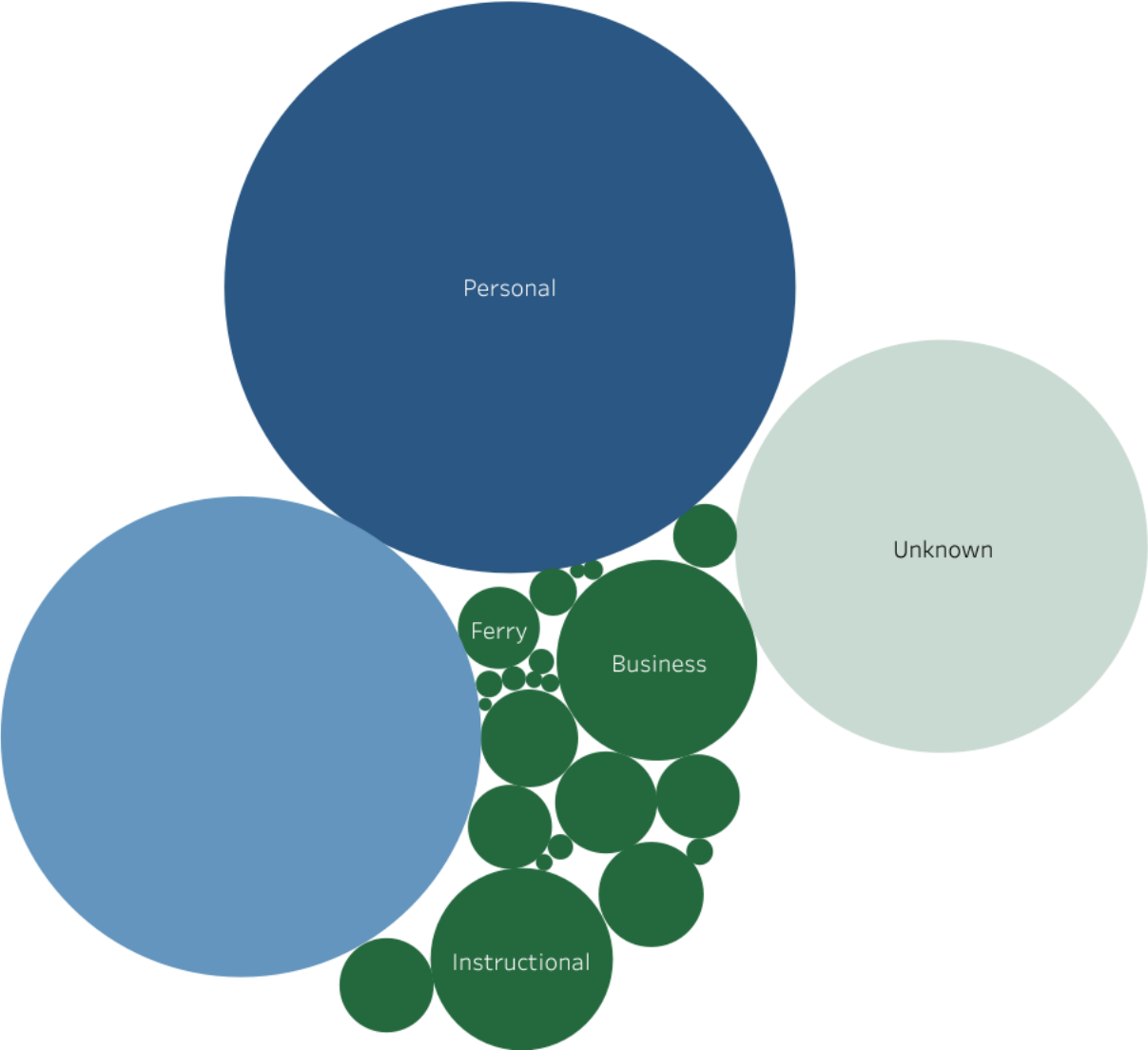
aircraft damage



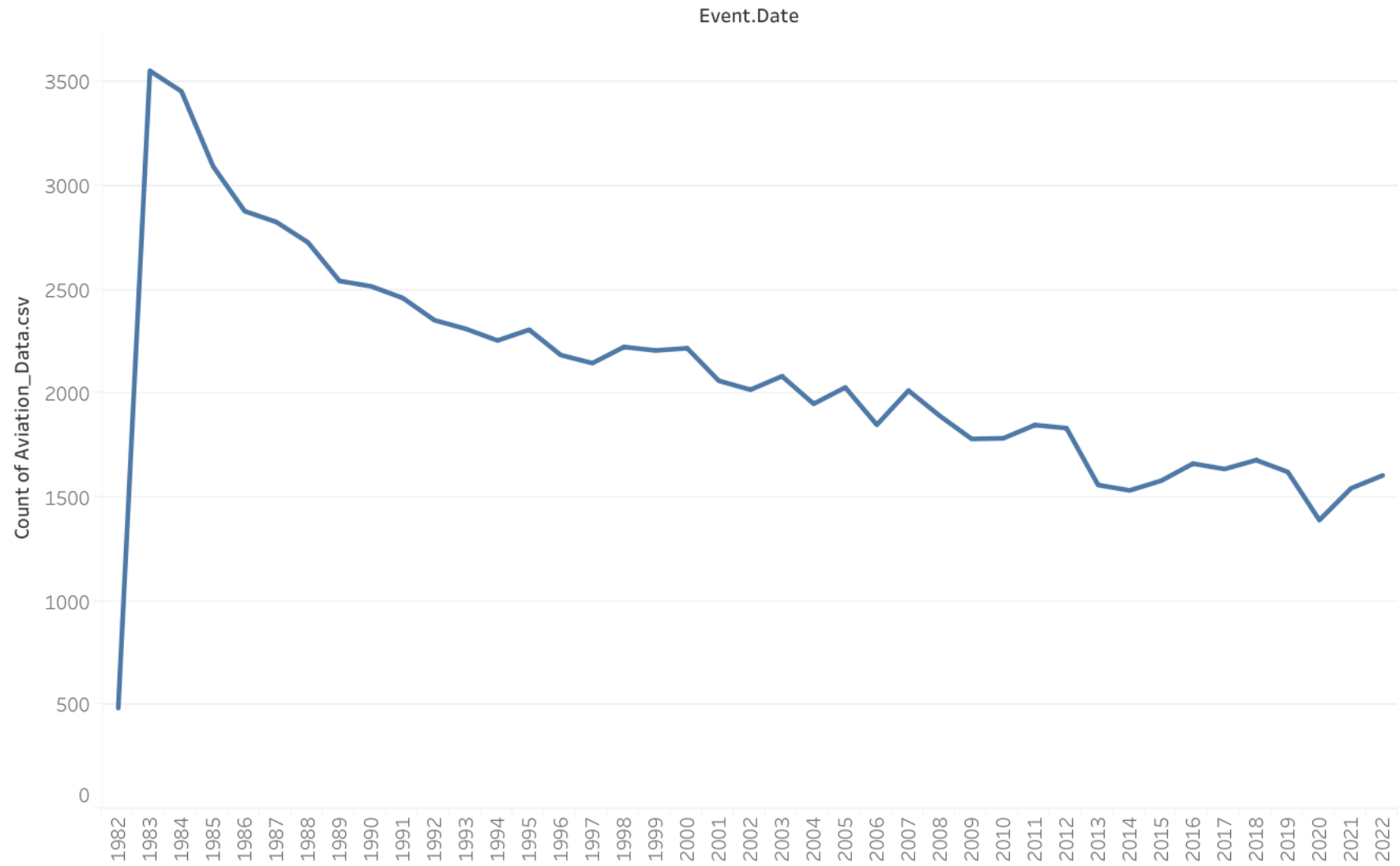
injury levels



purpose of flights

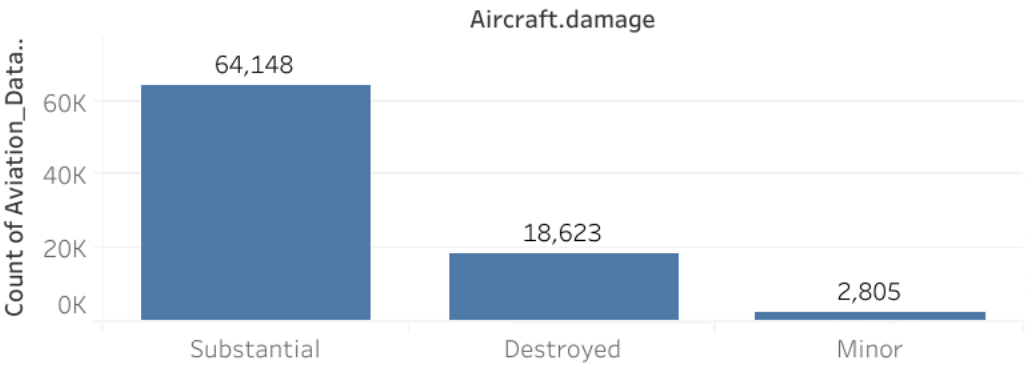
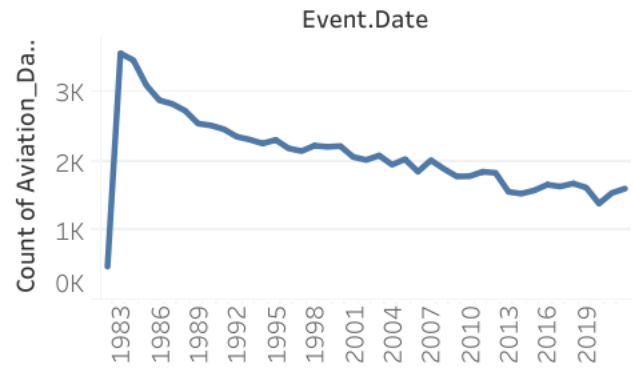
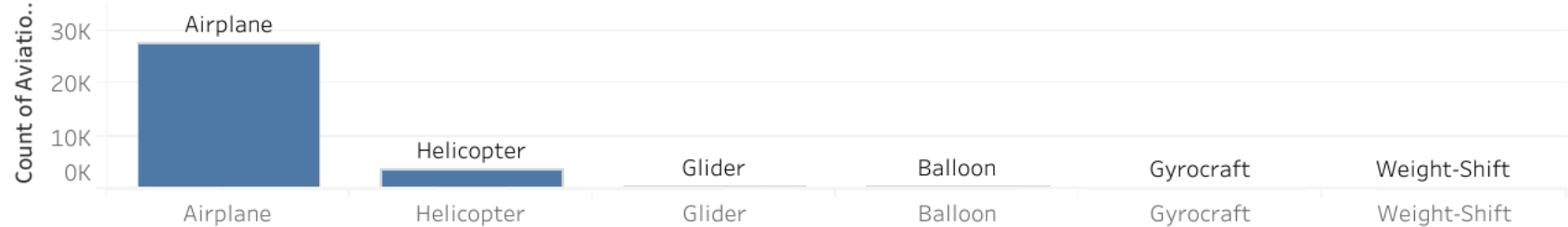
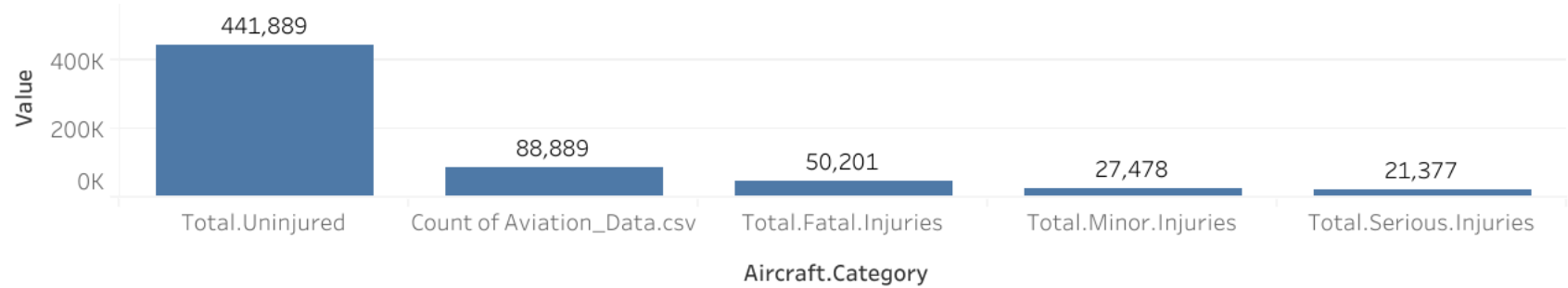


Accidents rates yearly



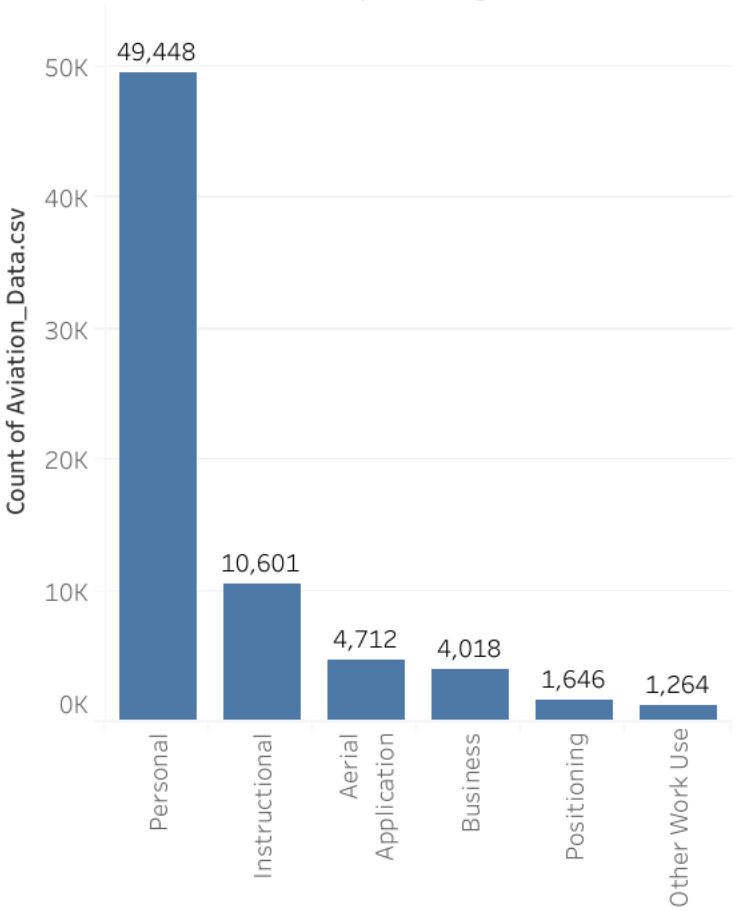
Aviation Dashboard

injury levels



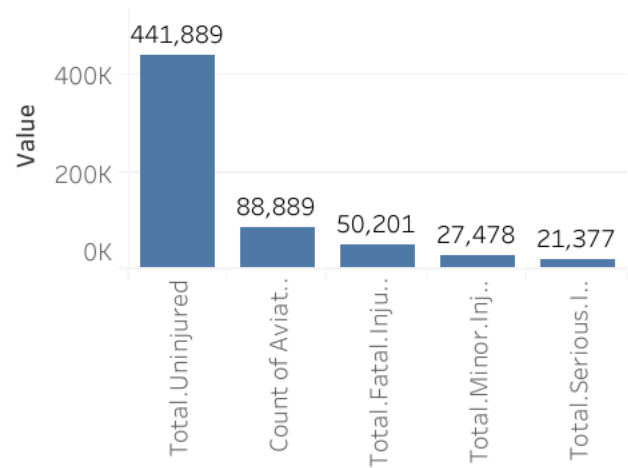
Navigation

Purpose.of.flight

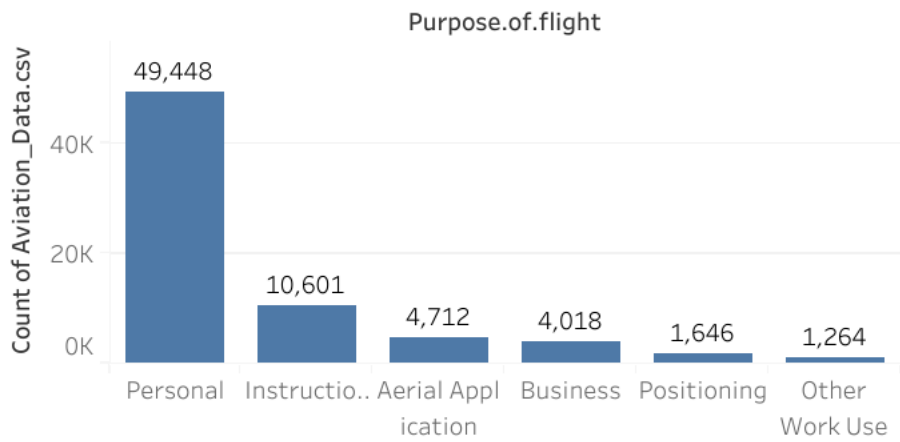


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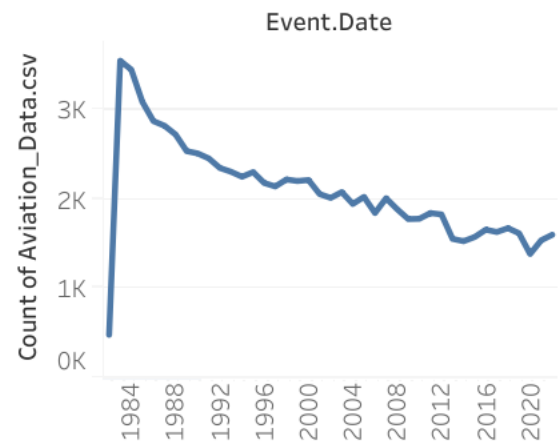
injury levels



<Aviation Data Visualization>



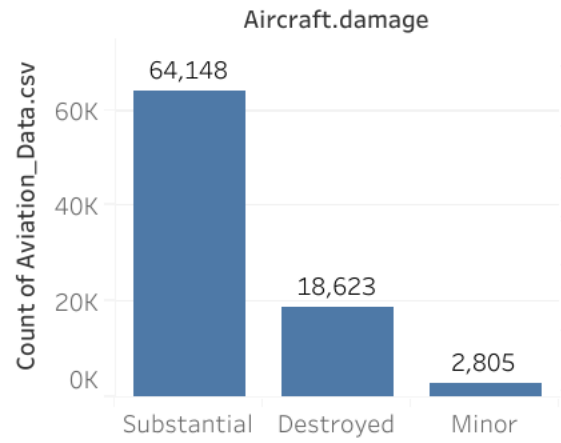
Accidents rates yearly



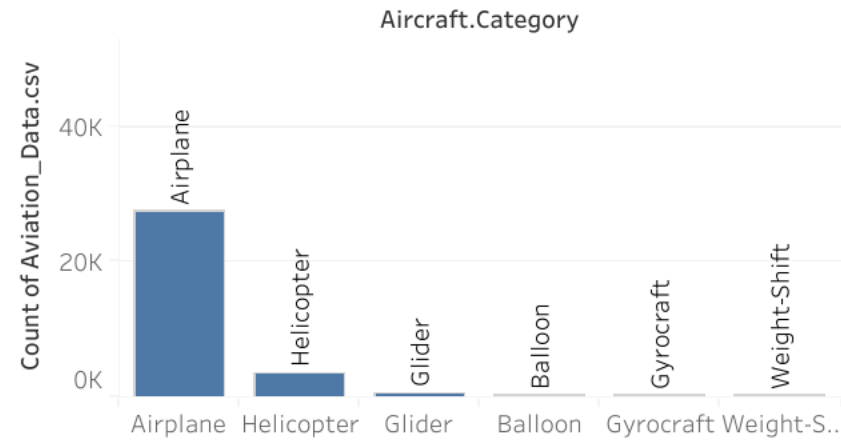
models

Make		
1st Ftr		
NULL	Gp	3XTR
Abc	Abc	

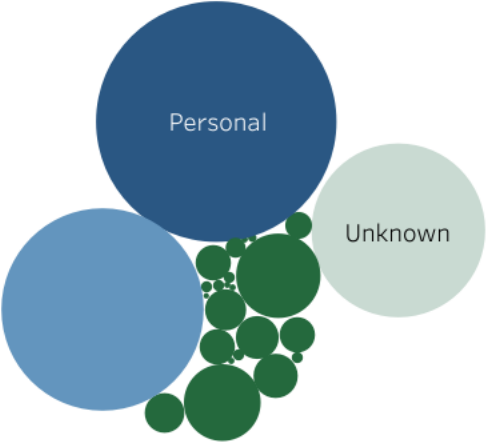
aircraft damage



Aircraft category



purpose of flights



Make

✓	NULL
✓	1st Ftr Gp
✓	3XTRIM
✓	5 RIVERS LLC
✓	67 Flying Dutchman
✓	85 Manista
✓	107.5 Flying Corporat..
✓	177MF LLC
✓	737
✓	777
✓	1200
✓	1977 Colfer-chan
✓	2000 Mccoy
✓	2001 Mcgirl
✓	2003 Nash
✓	2007...

Safety Score Calculation

- Factors considered:
 - weight fatalities = 0.4
 - Weight serious injuries = 0.3
 - Weight minor injuries = 0.2
 - Weight aircraft damage = 0.1
- Injury Severity:
 - weight injury severity fatal = 0.4
 - Weight injury severity serious = 0.3
 - Weight injury severity minor = 0.2
 - Weight injury severity non fatal = 0.1
- Formula: $(\text{weights} * \text{factors}) / \text{total accidents}$

Results - Airplanes

- Table of safety scores for each model – top 5

	Model	Safety Score	Make
1	787	0.03	BOEING
2	STALKER	0.03	LOCKHEED
3	HEAVISIDE2	0.03	KITTY HAWK
4	JAS4-2	0.03	JOBY AERO INC
5	J3F-50	0.03	PIPER

Results - Helicopters

- Table of safety scores for each model – top 5

	Model	Safety Score	Make
0	APT70	0.03	BELL
1	MATRICE	0.06	DJI
2	400	0.07	SAFARI
3	S-58ET	0.07	SIKORSKY
4	S-58HT	0.07	SIKORSKY

Recommendations

Based on safety scores and accident history

- Suggested Models: Airplane
 - BOEING 787,
 - LOCKHEED Stalker,
 - KITTY HAWK HEAVISIDE2
- Suggested models: Helicopter
 - Bell APT70
 - DJI MATRICE
 - Safari 400
- Considerations for commercial and private use:
 - Airplane for commercial- Bristell ELSA
 - Airplane for private use – piper J3F-50
 - Helicopter for commercial use – Enstrom F28F
 - Helicopter for private use – Safari 400

Q&A

THANK YOU