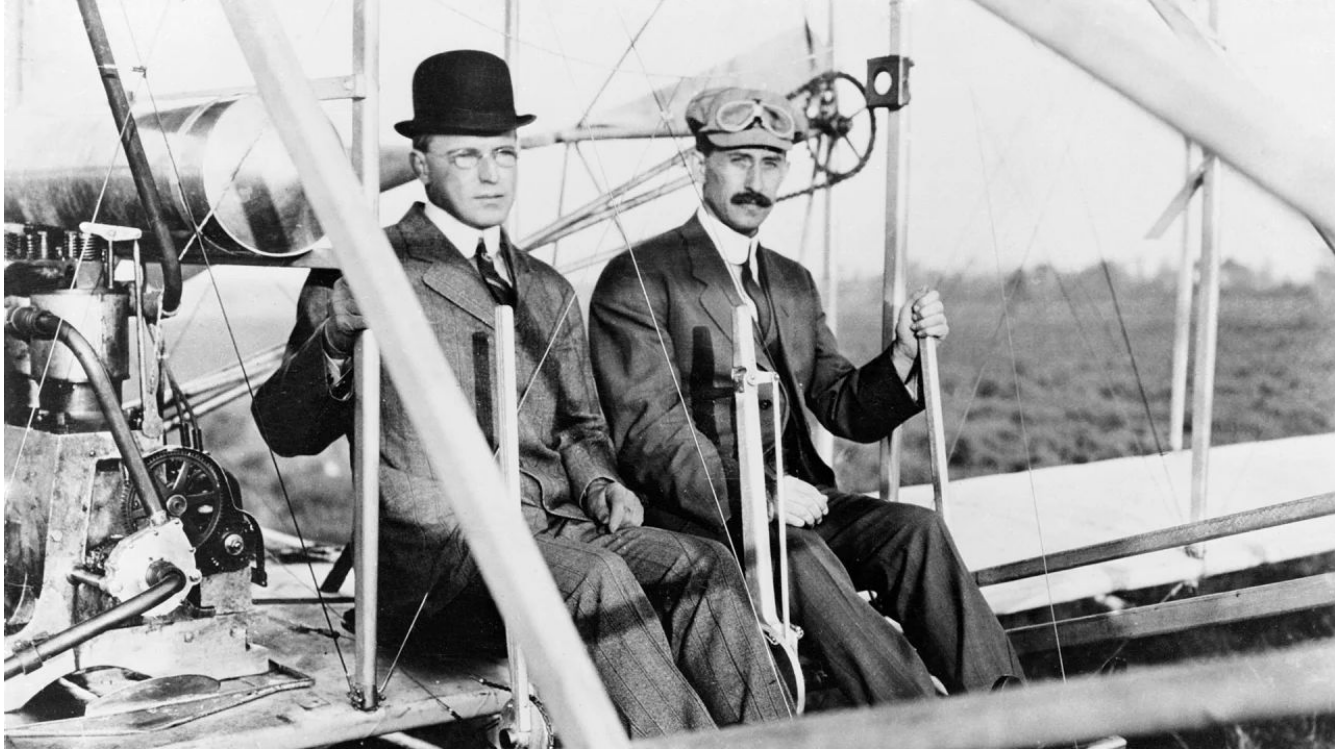# Analyzing Plane Crash Data
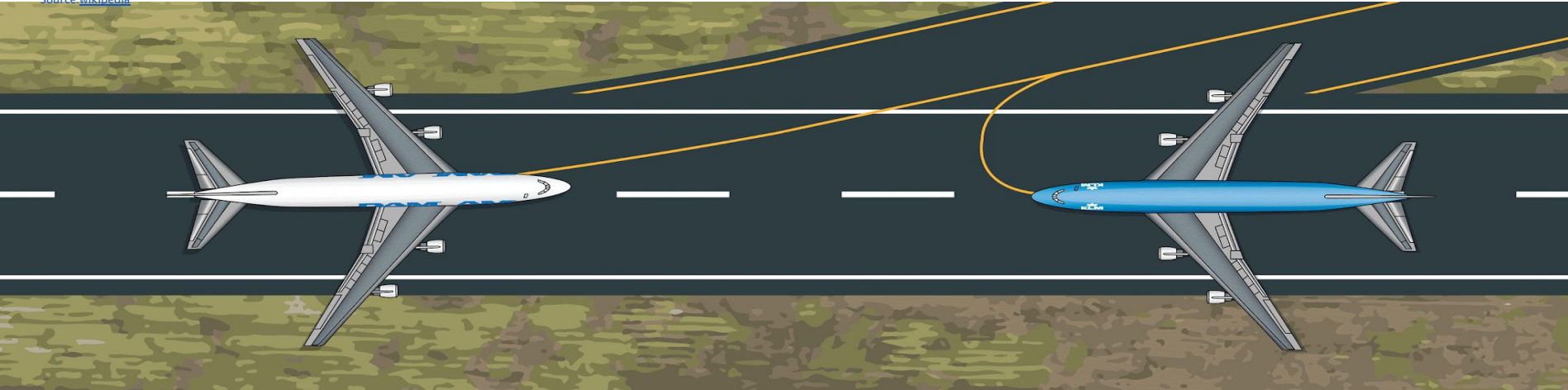# 1908 – 2024

Nichol Flowers, Tonderai Madamba

Taking flight....

Let's Dig Deeper....

- Despite these advancements, airplane crashes have instilled widespread fear and have resulted in numerous fatalities globally.

- Trends: location, fatalities, operators, and causes.

Questions of Interest

1. Where are airplane crashes most common?

2. How has the number of plane crashes (and fatalities) changed over time?

3. Which operators have had the most crashes? fatalities?

4. Are there common causes?

5. Any other significant relationships?

Data Levels

ACCIDENT DATABASE

The aviation accident database includes:

- All civil and commercial aviation accidents of scheduled and non-scheduled passenger airliners worldwide, which resulted in a fatality (including all U.S. Part 121 and Part 135 fatal accidents)
- All cargo, positioning, ferry and test flight fatal accidents.
- All military transport accidents with 10 or more fatalities.
- All commercial and military helicopter accidents with greater fatalities.
- All civil and military airship accidents involving fatalities.
- Aviation accidents involving the death of famous people.
- Aviation accidents or incidents of noteworthy interest.

<= 1920 1921 1922 1923 1924 1925 1926 1927
1930 1931 1932 1933 1934 1935 1936 1937
1940 1941 1942 1943 1944 1945 1946 1947
1950 1951 1952 1953 1954 1955 1956 1957
1960 1961 1962 1963 1964 1965 1966 1967
1970 1971 1972 1973 1974 1975 1976 1977
1980 1981 1982 1983 1984 1985 1986 1987
1990 1991 1992 1993 1994 1995 1996 1997
2000 2001 2002 2003 2004 2005 2006 2007
2010 2011 2012 2013 2014 2015 2016 2017
2020 2021 2022 2023 2024

1985

Date	Location / Operator	Aircraft Type / Registration	
01 Jan 1985	Near La Paz, Bolivia Eastern Air Lines	Boeing B-727-225 Adv N819EA	
09 Jan 1985	Kansas City, Kansas TPI International Airways	Lockheed L-188AF Electra N357Q	
18 Jan 1985	Jinan, China CAAC	Antonov AN-24B B-434	38/41(0)
19 Jan 1985	Havana, Cuba Cubana de Aviacion	Ilyushin IL-18D CU-T899	38/38(0)
20 Jan 1985	Carson, New Mexico Air Taxi - EMS	Bell 206 L-1 N40TE	3/3(0)
21 Jan 1985	Reno, Nevada Galaxy Airlines	Lockheed L-188A Electra N5532	70/71(0)
22 Jan 1985	Off Puerto Castilla, Honduras Military - U.S. Air Force	Lockheed C-130A 56-0501	21/21(0)
23 Jan 1985	Cerro el Plateado, Colombia Aerolineas Centrales de Colombia	de Havilland Canada DHC-6 Twin Otter 300 HK-1910	23/23(0)

ACCIDENT DETAILS

Date:	January 20, 1985
Time:	2315
Location:	Carson, New Mexico
Operator:	Air Taxi - EMS
Flight #:	?
Route:	Albuquerque, NM - Taos, NM -
AC Type:	Bell 206 L-1
Registration:	N40TE
cn / ln:	45712
Aboard:	3 (passengers:2 crew:1)
Fatalities:	3 (passengers:2 crew:1)
Ground:	0
Summary:	The helicopter crashed in open terrain during a turn to reverse direction. Witnesses stated the aircraft was heading north and was on a converging course with high tension lines that were about 80 to 100 ft high and the belly counted spotlight was illuminated when it passed overhead. The helicopter impacted snow covered terrain in a steep descending bank to the right at a high rate of speed on a southerly heading. The power lines showed no evidence of having been struck. Pilot did not maintain directional control.

Accident Details

ACCIDENT DETAILS

|	
Date:	January 20, 1985
Time:	2315
Location:	Carson, New Mexico
Operator:	Air Taxi - EMS
Flight #:	?
Route:	Albuquerque, NM - Taos, NM -
AC Type:	Bell 206 L-1
Registration:	N40TE
cn / ln:	45712
Aboard:	3 (passengers:2 crew:1)
Fatalities:	3 (passengers:2 crew:1)
Ground:	0
Summary:	The helicopter crashed in open terrain during a turn to reverse direction. Witnesses stated the aircraft was heading north and was on a converging course with high tension lines that were about 80 to 100 ft high and the belly counted spotlight was illuminated when it passed overhead. The helicopter impacted snow covered terrain in a steep descending bank to the right at a high rate of speed on a southerly heading. The power lines showed no evidence of having been struck. Pilot did not maintain directional control.

{'place_id': 317938577,
 'licence': 'Data © OpenStreetMap contributors, ODbL 1.0. http://osm.org/copyright',
 'osm_type': 'node',
 'osm_id': 151687386,
 'lat': '36.3644667',
 'lon': '-105.7652927',
 'class': 'place',
 'type': 'hamlet',
 'place_rank': 20,
 'importance': 0.22579409450000001,
 'addresstype': 'hamlet',
 'name': 'Carson',
 'display_name': 'Carson, Taos County, New Mexico, 87517, United States',
 'boundingbox': ['36.3444667', '36.3844667', '-105.7852927', '-105.7452927']}

Sanity Check
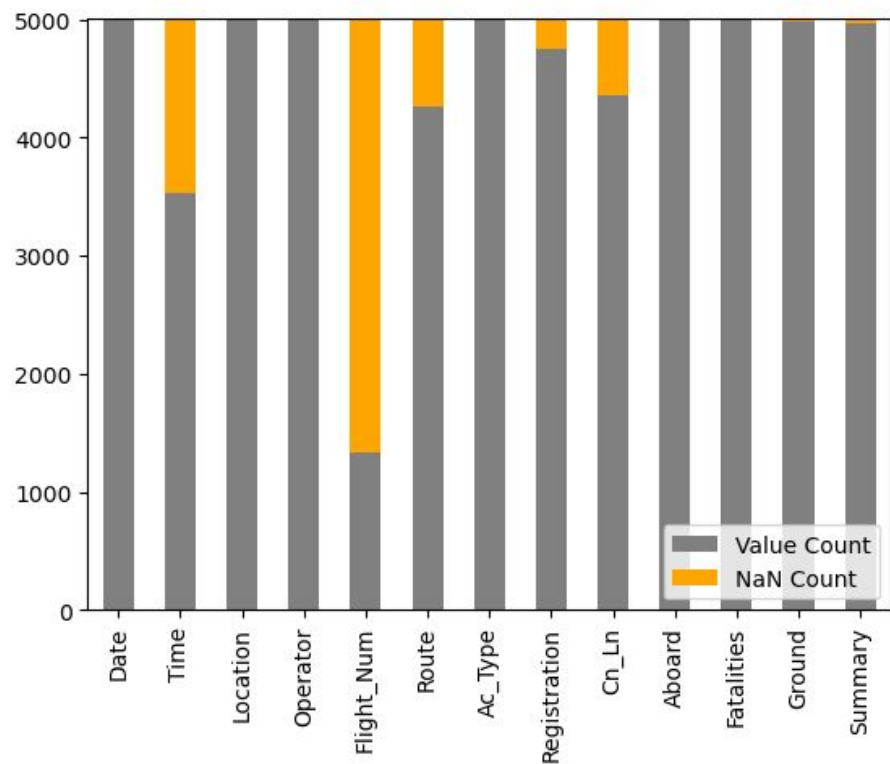
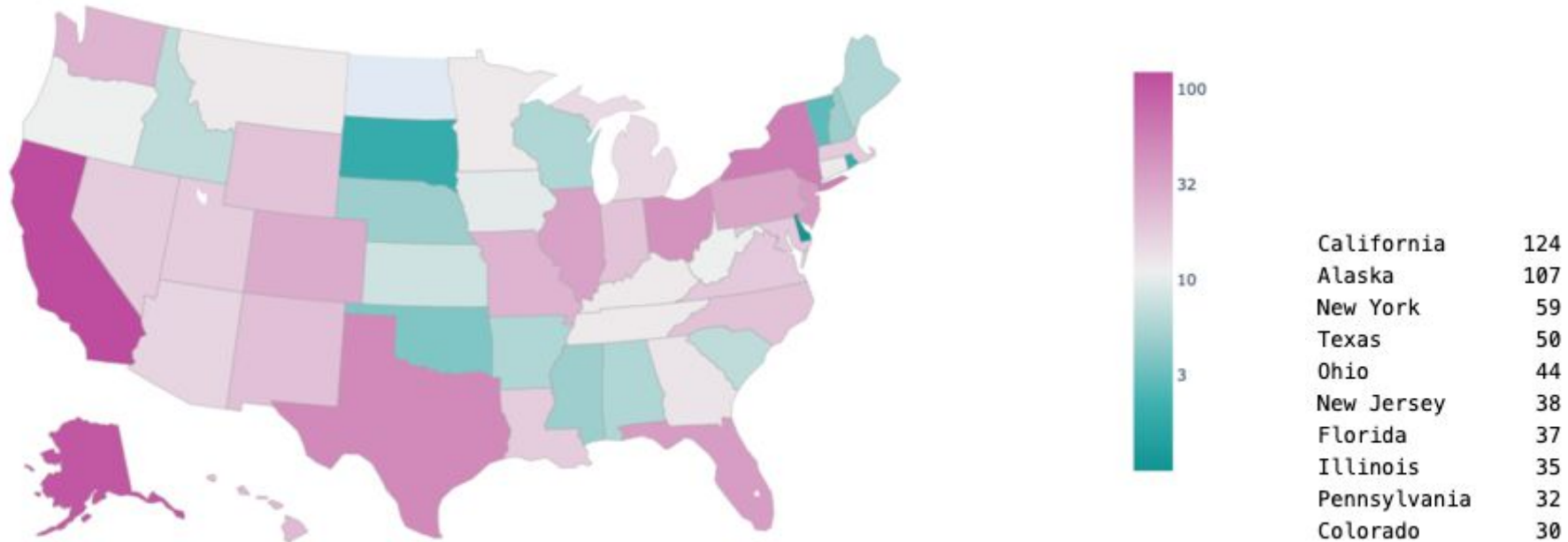| Column	Non-Null Count	Dtype
------	---------------	-----
Decade	5013 non-null	int64
Date	5013 non-null	datetime64[ns]
Time	3526 non-null	object
Location	5013 non-null	object
Operator	5002 non-null	object
Flight_Num	1339 non-null	object
Route	4267 non-null	object
Ac_Type	5000 non-null	object
Registration	4750 non-null	object
Cn_Ln	4361 non-null	object
Aboard	5013 non-null	object
Fatalities	5013 non-null	object
Ground	4982 non-null	float64
Summary	4962 non-null	object
Aboard_Total	5013 non-null	int64
Fatalities_Total	5013 non-null	int64
Operator_Military_Compiled	5002 non-null	object
Country_location	5013 non-null	object
Code	4926 non-null	object
Country_Geopy	5013 non-null	object

The Analysis

At a glance...

country	Total_Crashes	Total_Aboard	Fatalities_Plane	Fatalities_Ground
	Global			
United States	1087	26713	15663	3179.0
Russia	260	10963	8563	90.0
Brazil	179	4576	3205	65.0
Canada	160	3211	2192	15.0
Colombia	157	3524	3072	38.0
United Kingdom	144	3593	2614	121.0
France	138	3787	3077	32.0
Germany	129	3408	2847	66.0
India	108	3695	2890	195.0
China	103	4173	2665	55.0

state	Total_Crashes	Total_Aboard	Fatalities_Plane	Fatalities_Ground
	United States			
California	124	3769	1673	86.0
Alaska	107	1678	1026	0.0
New York	59	3098	1623	2778.0
Texas	50	942	635	1.0
Ohio	44	355	229	0.0
New Jersey	38	735	472	13.0
Florida	37	1255	607	1.0
Illinois	35	1089	665	14.0
Pennsylvania	32	745	446	2.0
Colorado	30	736	308	1.0

Global Totals – Crashes

United States	1087
Russia	260
Brazil	179
Canada	160
Colombia	157
United Kingdom	144
France	138
Germany	129
India	108
Indonesia	103

US Totals – Crashes

California 124
Alaska 107
New York 59
Texas 50
Ohio 44
New Jersey 38
Florida 37
Illinois 35
Pennsylvania 32
Colorado 30
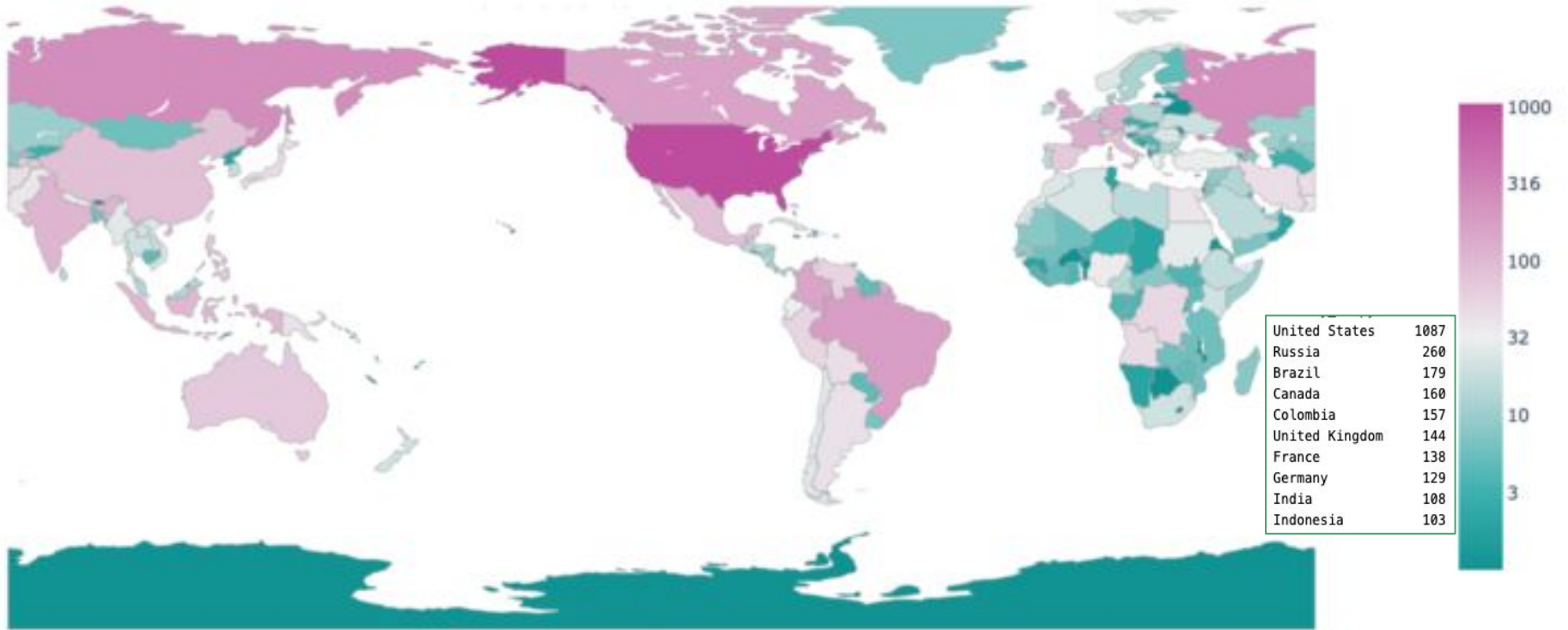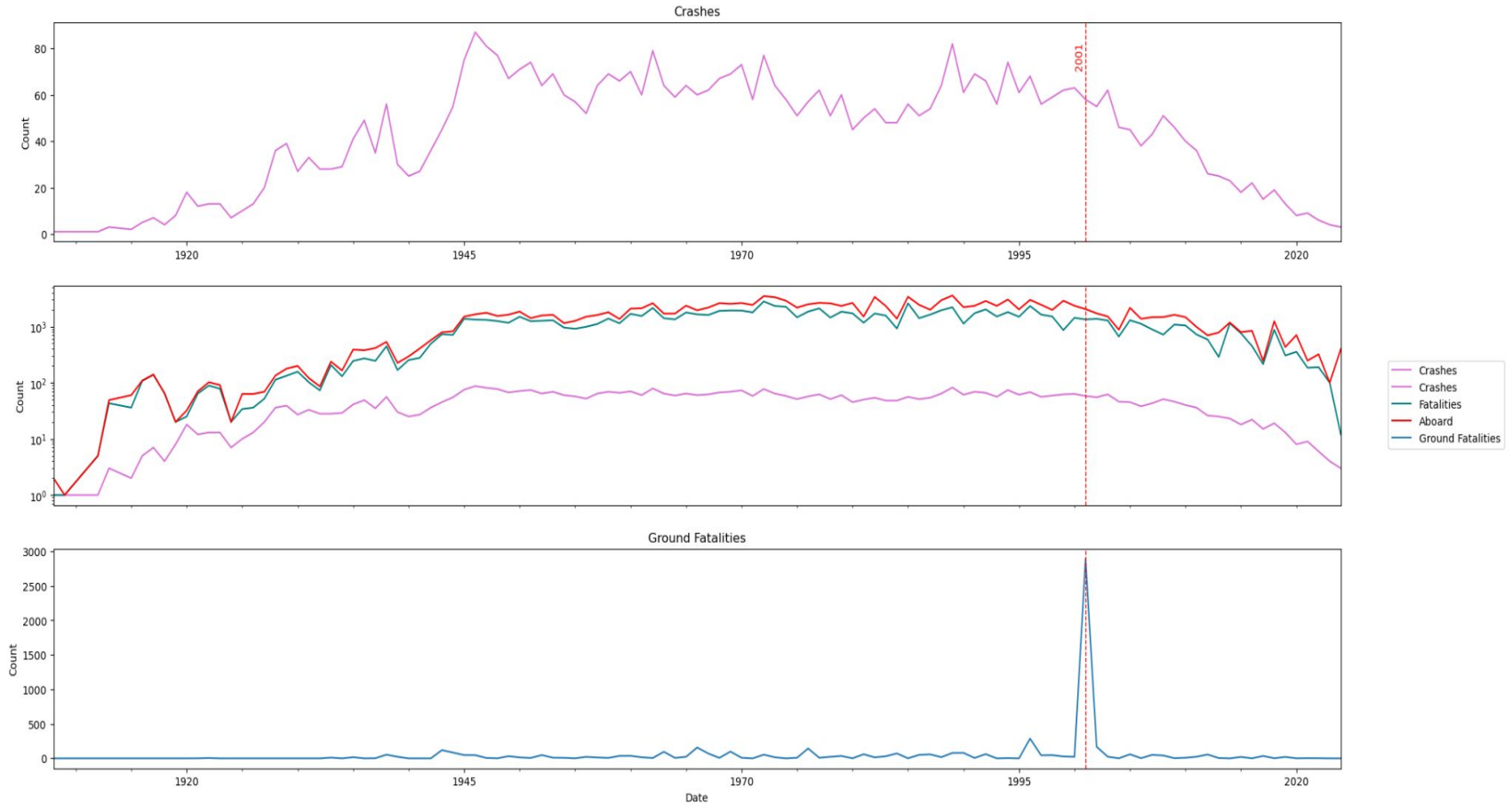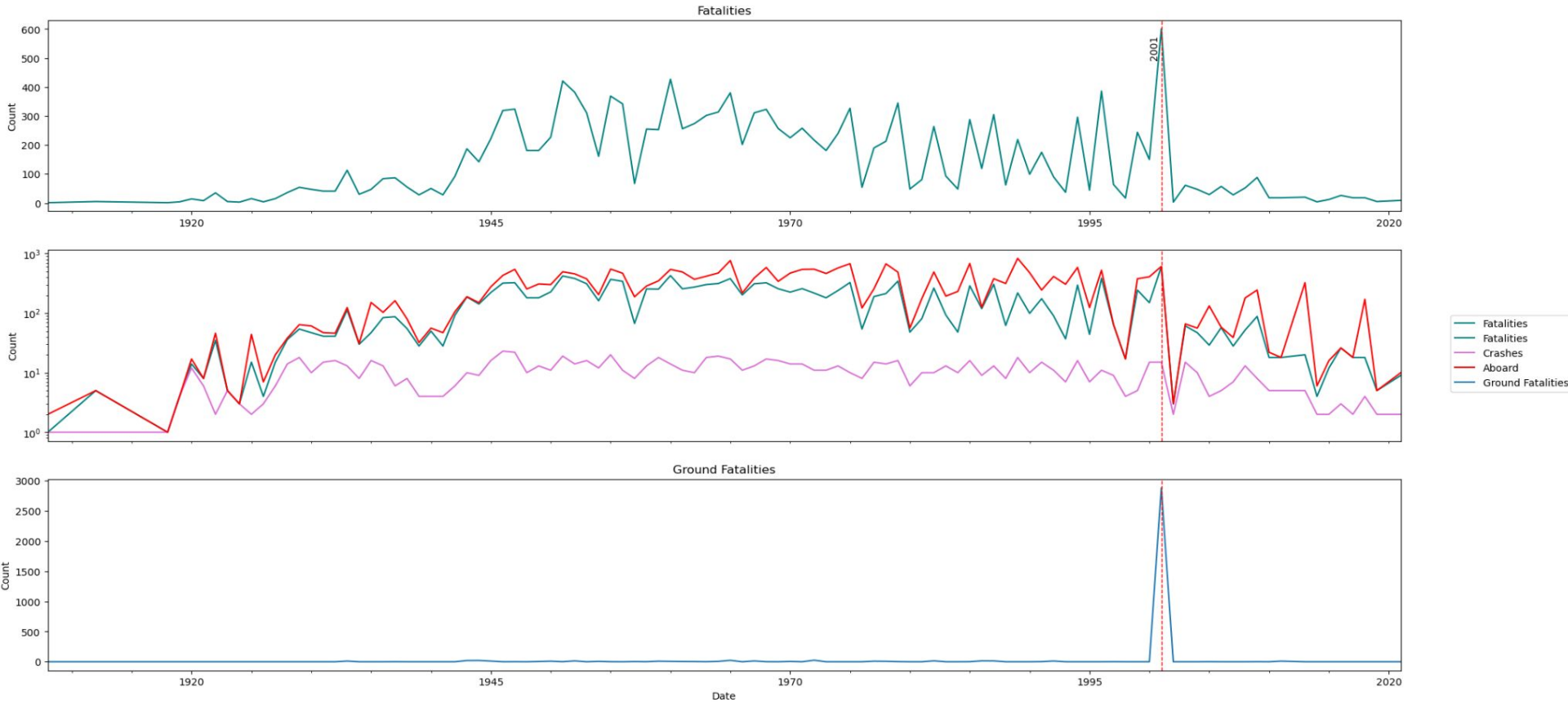
Top 10 Operators (log scale)
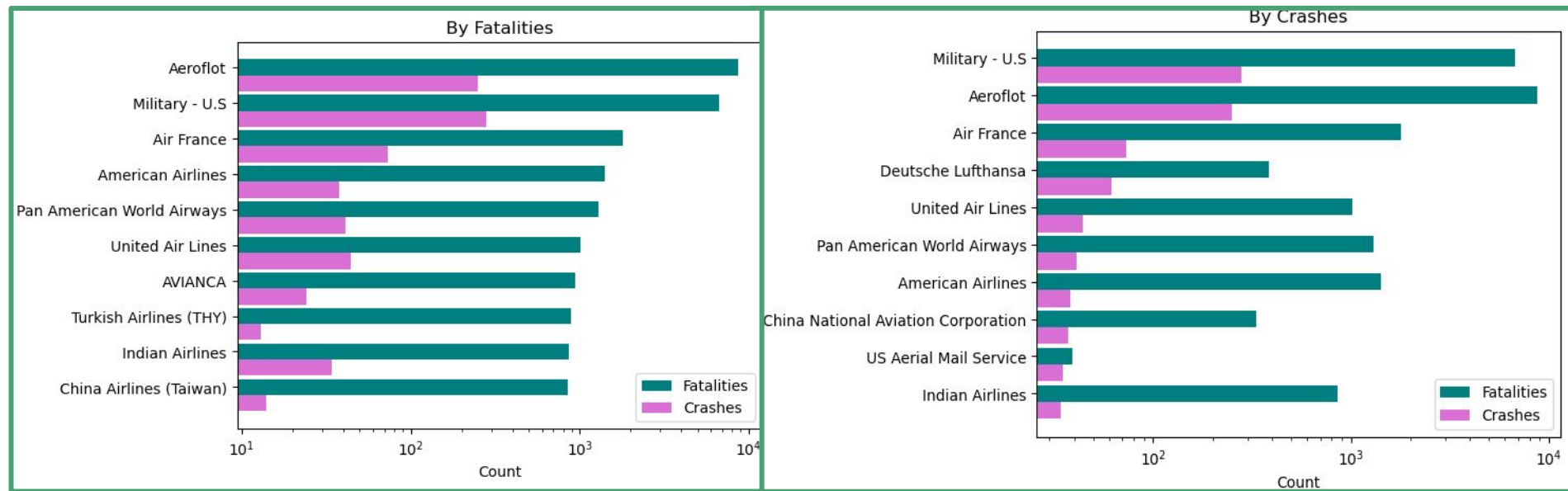
Crashes & Fatalities (Global)

Crashes & Fatalities (US)

Crash Causes: 1908 – 1940
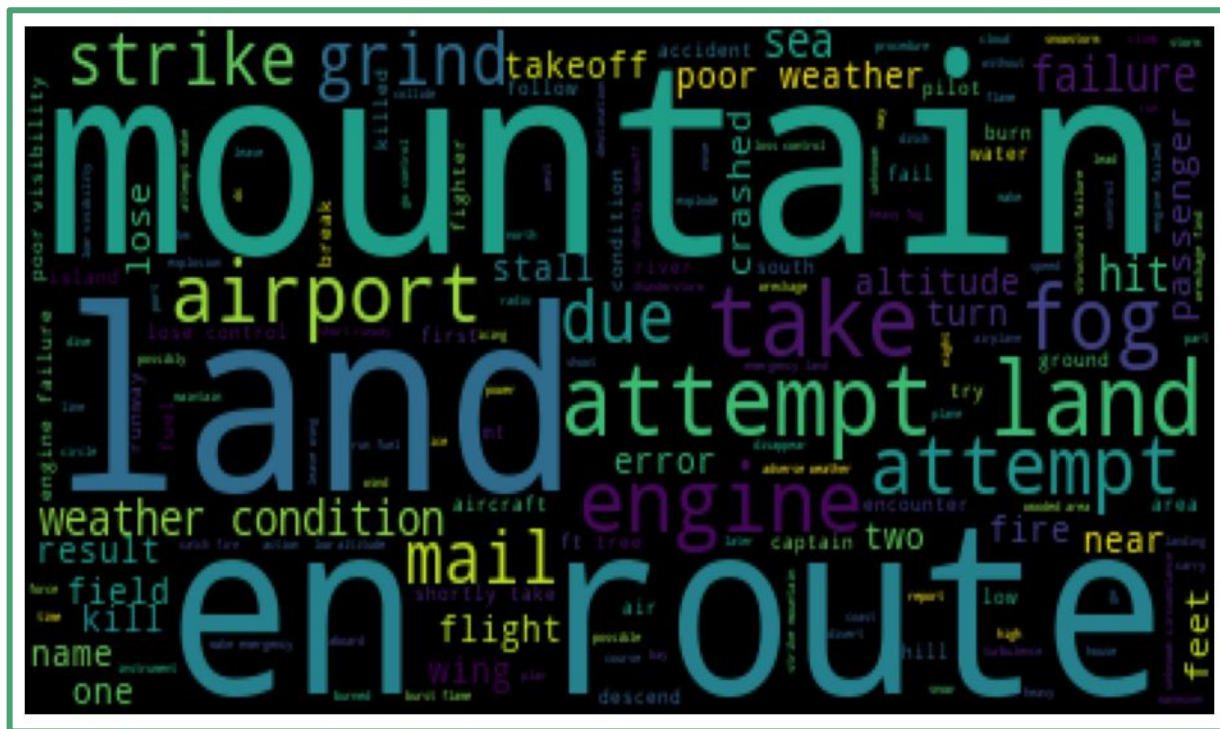
land	199
attempt	180
engine	152
take	140
off	137
strike	106
poor	106
weather	101
en	101
lose	100
failure	99
altitude	96
mountain	93
control	86
hit	85
low	84
grind	83
make	80
wing	69
due	68

Crash Causes: 1940 - 1980

land	508
engine	413
take	395
off	362
failure	345
strike	329
attempt	326
runway	320
control	312
altitude	243
weather	229
lose	228
mountain	212
make	205
due	203
leave	201
loss	187
right	185
en	182
result	178

Crash Causes: 1980 - 2024
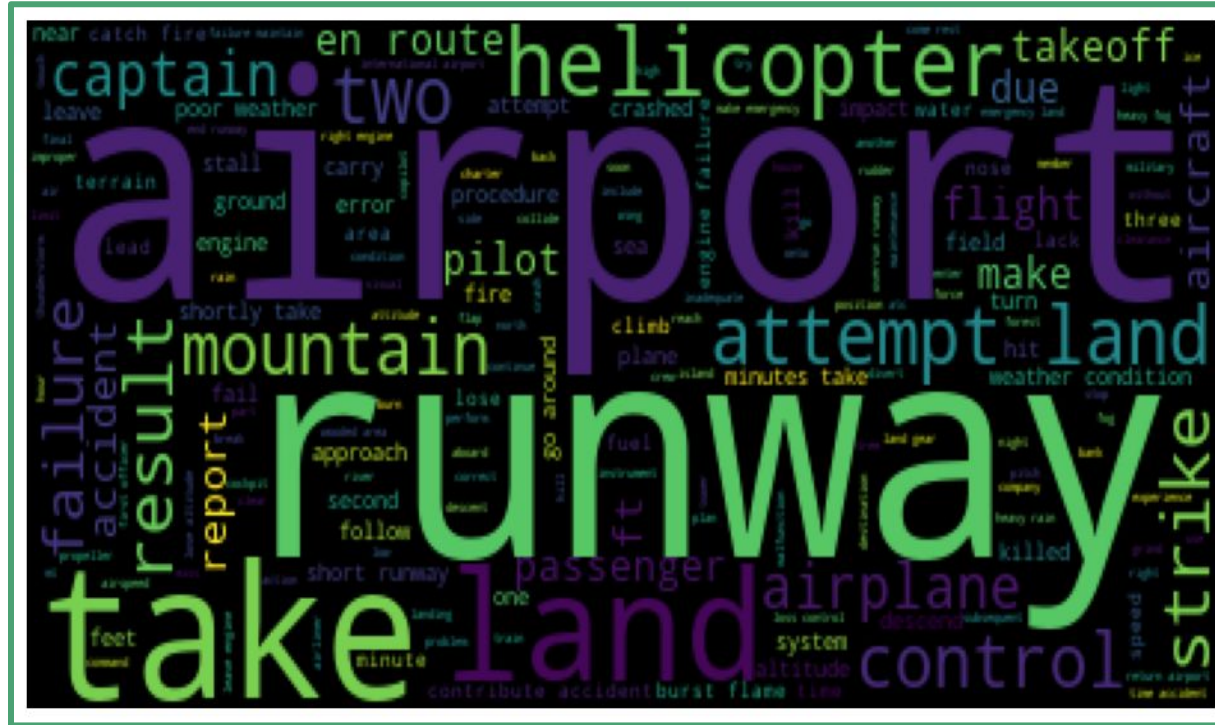
land	420
take	380
off	356
runway	325
engine	300
failure	293
attempt	277
control	225
accident	184
lose	180
airport.	168
make	167
airport	166
altitude	160
weather	160
leave	154
result	152
strike	151
poor	145
helicopter	143

Thank You!