

# Implications from Plane Crash Data Analysis 2007 - 2017

#### First-World Airlines Have Fewer Crashes

Safety scores for 1985-1999 and 2000-2014 are based on incidents fatal accidents and fatalities per availabile seat kilometers flown

\*Includes regional subsidiaries

	PER CAPITA GDP	SAFETY SCORE		
	OF AIRLINE'S HOME COUNTRY	1985-99	2000-14	COMBINE
Southwest Airlines	\$34,620	+0.99	+0.82	+0.9
Cathay Pacific*	24,970	+0.91	+0.86	+0.8
Lufthansa*	25,595	+0.80	+0.96	+0.8
British Airways*	25,876	+0.90	+0.85	+0.8
Air Canada	22,205	+0.73	+0.73	+0.7
Qantas*	21,779	+0.77	+0.65	+0.7
United / Continental*	34,620	+0.37	+0.98	+0.6
KLM*	26,056	+0.46	+0.76	+0.6
Virgin Atlantic	25,876	+0.57	+0.62	+0.6
Singapore Airlines	21,441	+0.60	+0.58	+0.5
All Nippon Airways TAP - Air Portugal	35,014 12,445	+0.57	+0.57	+0.5
Finnair	25,234	+0.42	+0.47	+0.4
Hawaiian Airlines	34,620	+0.42	+0.41	+0.4
LAN Airlines	4,952	+0.12	+0.62	+0.3
Austrian Airlines	26,598	+0.35	+0.35	+0.3
Aer Lingus	25,848	+0.26	+0.40	+0.3
American*	34,620	+0.40	+0.26	+0.3
Delta / Northwest*	34,620	-0.16	+0.79	+0.3
Iberia	31,447	+0.03	+0.46	+0.2
Air New Zealand*	15,176	+0.39	+0.06	+0.2
Condor	25,595	+0.00	+0.44	+0.2
COPA	4,074	-0.05	+0.49	+0.2
Alaska Airlines*	34,620	+0.39	-0.00	+0.2
Aerolineas Argentinas	7,970	+0.03	+0.36	+0.19
Air France	24,930	+0.15	+0.16	+0.10
Japan Airlines	35,014	-0.45	+0.74	+0.1
Turkish Airlines	3,942	+0.11	+0.17	+0.1
South African	3,029	-0.24	+0.47	+0.1
Aeromexico*	6,073	-0.06	+0.22	+0.0
Swiss*	38,339	-0.31	+0.42	+0.0
Thai Airways	1,989	-0.54	+0.57	+0.0
SriLankan Airlines / AirLanka	889	-0.08	+0.10	+0.0
Alitalia	21,258	-0.34	+0.33	-0.0
SAS*	29,207	+0.28	-0.31	-0.0
Korean Air	9,906	-0.98	+0.74	-0.1
TACA	2,102	-0.20	-0.05	-0.1
US Airways / America West*	34,620	-0.59	+0.34	-0.1
TAM	3,414	-0.13	-0.16	-0.1
Xiamen Airlines	861	-0.66	+0.32	-0.1
Gulf Air	10,026	+0.32	-0.77	-0.2
Vietnam Airlines	375	-0.98	+0.46	-0.2
Air India*	460	-0.50	-0.19	-0.3
Saudi Arabian	8,360	-0.87	+0.07	-0.4
Malaysia Airlines	3,455	+0.26	-1.10	-0.4
Royal Air Maroc	1,407	-1.11	+0.15	-0.4
Philippine Airlines	1,081	-1.29	+0.04	-0.6
Avianca	2,429	-1.86	+0.43	-0.7
Kenya Airways	1 451	+0.23	-1.71	-0.7
EgyptAir Garuda Indonesia	1,451	-1.49 -1.42	-0.01 -0.21	-0.7
China Airlines	13,535	-1.42	-0.21	-1.3
Pakistan International	579	-2.45	-1.07	-1.49
Ethiopian Airlines	122	-2.74	-0.64	-1.6
Aeroflot*	1,334	-4.59	+0.08	-2.2
Velouor	2,004	1.00		
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#### INTRODUCTION

Several incidents involving planes that have occurred over the last couple of years has led to an increase in traveler anxiety when it comes to flying. Thankfully, airplane incidents have been well documented dating as far back as 1908. The data being analysed is a subset of all of the data on airplane incidents that have occurred since 1908. This data consists only of incidents that have happened within the last decade.



# **Problem Statment and Solutions**

The main problem that needs to be solved can be expressed in the form of several questions.

What are the riskiest airline operators to fly with? What locations pose the greatest risk for travelers? What trends can be noticed in regards to airplane incidents? Is the occurrence of an airline incident largely random?

A good way to analyze the data after it has been properly cleaned would be several line plots that document the general trends in airplane incidents over a period of time. The data can further be visualized using a bar plot and a word cloud to point out significant point of failure as well as locations of concern.

#### **RESULTS**

Figure 1: Word cloud illustrating most prominent words used in plane incident summaries.

Figure 2: Trends in plane crashes by year and month illustrated by a line graph and bar plot.

**Figure 3:** Plane operators broken out by rate of incidents over the last decade.

Figure 4: Locations ranked according to total plane crash fatlities

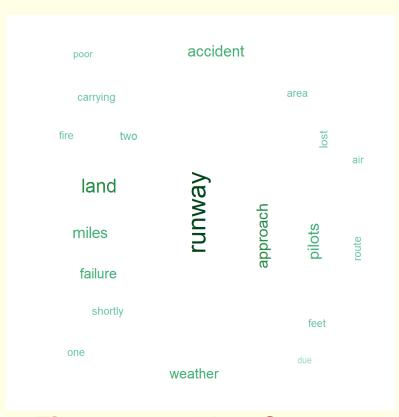
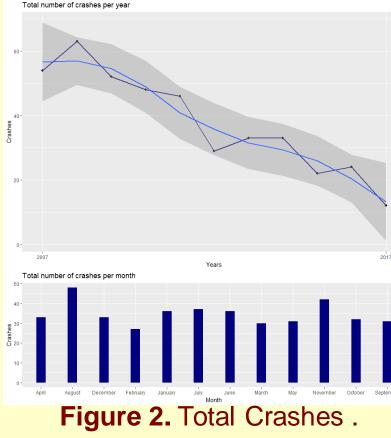


Figure 1. Incident Summary



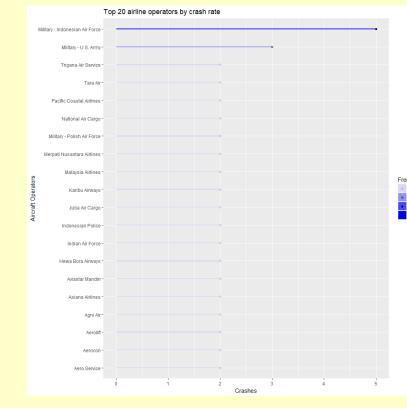


Figure 3. Airline operators

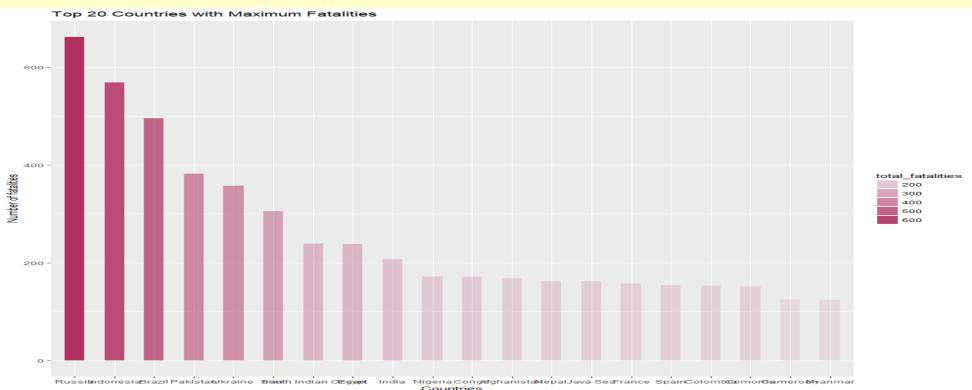


Figure 4. Fatalities by Country

# **DISCUSSION**

Analysis based on the plots created shows an overall decrease in incidents over the last decade. This shows that there has been a concerted effort by airline operators to increase safety measures to prevent future incidents.

The plots also reveal more at-risk locations to consider when traveling. These locations include, inorder, Russia, Brazil, Colombia, USSR, France, India, China, Indonesia, Japan, Canada.

Another point of relief for potential travelers is the fact that most incidents seem to originate on military aircraft or lesser known airlines.

Lastly is the word cloud that helps to give an idea of what is the most probable location and occurrence of an incident. Analysis of the word cloud shows that many of the aircraft incident summaries point to incidents occurring during landing and enroute due to things such as weather and engine failures.

# CONCLUSIONS

Upon analysis of airline incident data over the last decade it can be concluded that a potential traveler should be able to feel confident in the safety of their trip if they are flying with most major airlines. The trends in the data suggest that safety is a top priority among airline operators and potential flyers will be safe as long as they are cautious when choosing airline operators and what locations they will be flying to and from.

# REFERENCES

- 1. https://rpubs.com/apubh/airplane\_crash\_analysis
- 2. https://fivethirtyeight.com/features/should-travelers-avoid-flying-airlines-that-have-had-crashes-in-the-past/