

WHY DO FLIGHTS KEEP GETTING DELAYED? VISUALIZING THE HIDDEN PATTERNS OF U.S AIR TRAVEL.

**AN INTERACTIVE DATA ANALYSIS OF
FLIGHT DELAYS & CANCELLATIONS IN
THE UNITED STATES**

MP2

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A. DATA SOURCES

**THE FOLLOWING DATASETS WERE USED TO CREATE MY
RESTRUCTURED FLIGHT DELAYS DATASET:**

- **BTS ON-TIME PERFORMANCE (TRANSTATS DELAY CAUSE DATA)
OFFICIAL DEPARTMENT OF TRANSPORTATION SOURCE
CONTAINING FLIGHT-LEVEL DETAILS INCLUDING CAUSES OF
DELAY (CARRIER, WEATHER, NAS, SECURITY, LATE AIRCRAFT).**

LINK: [HTTPS://WWW.TRANSTATS.BTS.GOV/OT_DELAY/OT_DELAYCAUSE1.ASP](https://www.transtats.bts.gov/OT_Delay/OT_DelayCause1.asp)

- **KAGGLE — U.S. FLIGHT DELAYS & CANCELLATIONS (2015
SNAPSHOT).**

LINK: [HTTPS://WWW.KAGGLE.COM/DATASETS/USDOT/FLIGHT-DELAYS](https://www.kaggle.com/datasets/usdot/flight-delays)

- **KAGGLE — FLIGHT DELAY & CANCELLATION DATASET (2019–
2023).**

LINK: [HTTPS://WWW.KAGGLE.COM/DATASETS/PATRICKZEL/FLIGHT-DELAY-AND-CANCELLATION-DATASET-2019-2023](https://www.kaggle.com/datasets/patrickzel/flight-delay-and-cancellation-dataset-2019-2023)

B. ANSWERABLE QUESTIONS

- 1. WHICH AIRPORTS IN THE U.S. HAVE THE HIGHEST RATES OF DELAYS AND CANCELLATIONS?**
- 2. WHICH AIRPORTS ARE THE MOST RELIABLE WITH ONTIME DEPARTURES AND ARRIVALS?**
- 3. WHICH ROUTES (ORIGIN-DESTINATION PAIRS) ARE MOST DELAY-PRONE?**
- 4. WHICH AIRLINES CONSISTENTLY PERFORM BEST, AND WHICH PERFORM WORST, WHEN IT COMES TO ON-TIME FLIGHTS?**
- 5. WHICH AIRLINES HAVE THE HIGHEST CANCELLATION RATES?**
- 6. DO LOW-COST CARRIERS EXPERIENCE MORE DELAYS THAN MAJOR LEGACY AIRLINES?**
- 7. HOW DO DELAYS VARY BY TIME OF DAY AND DAY OF THE WEEK?**
- 8. DO FLIGHTS SCHEDULED EARLIER IN THE DAY HAVE FEWER DELAYS THAN THOSE LATER IN THE DAY?**
- 9. WHICH MONTHS OF THE YEAR SEE THE HIGHEST AVERAGE DELAYS?**
- 10. WHAT PERCENTAGE OF DELAYS ARE CAUSED BY WEATHER COMPARED TO AIRLINE-RELATED OR SYSTEM-RELATED ISSUES?**
- 11. WHICH AIRPORTS EXPERIENCE THE MOST WEATHER RELATED DELAYS?**
- 12. WHICH AIRLINES FACE THE MOST CARRIER RELATED DELAYS?**
- 13. ARE WEATHER DELAYS GENERALLY LONGER THAN CARRIER OR SYSTEM DELAYS?**
- 14. ARE THERE CLEAR SEASONAL PATTERNS IN DELAYS, SUCH AS WINTER STORMS OR SUMMER THUNDERSTORMS?**
- 15. DO HOLIDAY TRAVEL WEEKS LIKE THANKSGIVING OR CHRISTMAS HAVE HIGHER CANCELLATION RATES?**
- 16. ARE SHORT-HAUL FLIGHTS MORE LIKELY TO BE DELAYED THAN LONG-HAUL FLIGHTS?**
- 17. ARE INTERNATIONAL FLIGHTS MORE LIKELY TO BE DELAYED THAN DOMESTIC FLIGHTS?**
- 18. DO CONNECTING FLIGHTS FACE MORE DELAYS THAN NONSTOP FLIGHTS?**
- 19. HOW MUCH TIME DO PASSENGERS TYPICALLY LOSE DUE TO DELAYS?**
- 20. WHICH AIRPORTS AND AIRLINES PROVIDE THE MOST RELIABLE TRAVEL EXPERIENCE FOR PASSENGERS?**