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Project Presentation
Airline Delays

Group 5: Xuening Yang, Violet Chen, Yuyang He

Brief Description of the Project

- Original file name: 2019 Airline Delays w/ Weather and Airport Detail (under "raw_data" folder)
- Total 7 files
  - All files are used, except T3_Air_carrier_summary_airport_activity
  - Stacking ontime_reporting_2019 and ontime_reporting_2020 together to the "ontime_reporting.csv", only include Jan.~ Mar. 2019 and Jan.~ Mar. 2020.
  - Stacking airport_weather_2019 and airport_weather_2020 together to the "airport_weather.csv", only include Jan.~ Mar. 2019 and Jan.~ Mar. 2020

```
AIRPORT_COORDINATES.csv          ONTIME_REPORTING_2020_01.csv
B43_AIRCRAFT_INVENTORY.csv       ONTIME_REPORTING_2020_02.csv
CARRIER_DECODE.csv               ONTIME_REPORTING_2020_03.csv
                                 P10_EMPLOYEES.csv

ONTIME_REPORTING_2019_01.csv     airport_weather_2019.csv
ONTIME_REPORTING_2019_02.csv     airport_weather_2020.csv
ONTIME_REPORTING_2019_03.csv     airports_list.csv
```
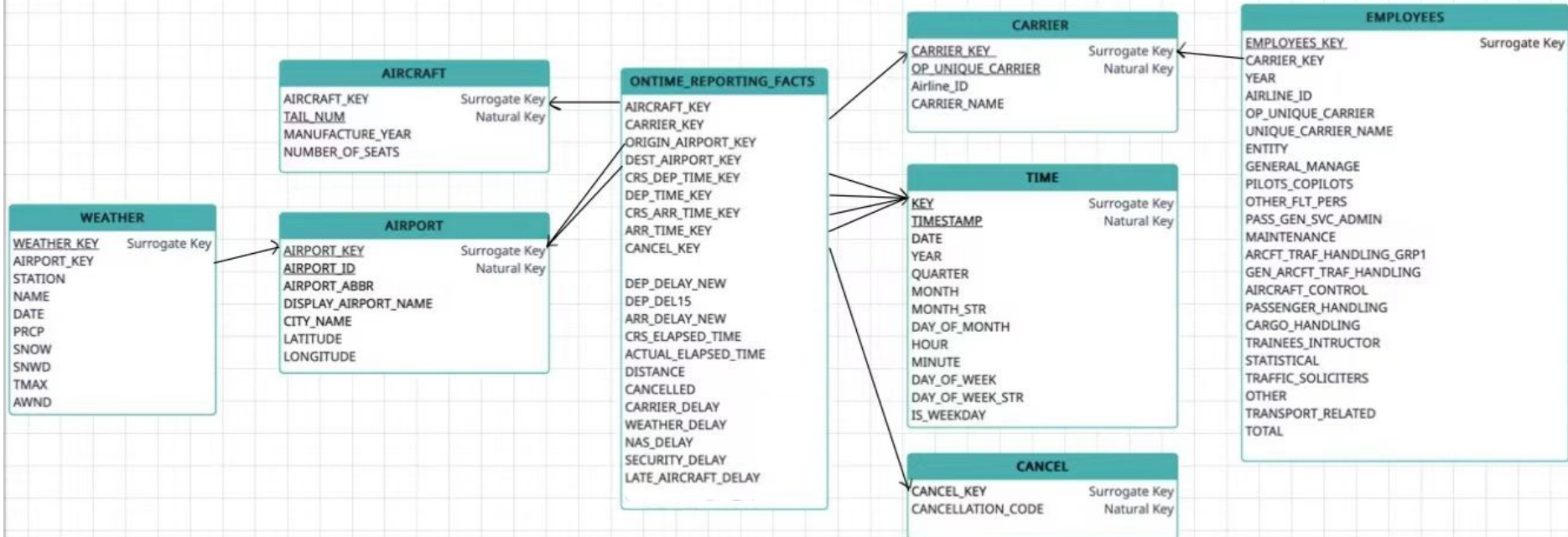
Data Sources and Methods Used to Acquire and Clean Data

- Data source: Kaggle
- Tools: Rstudio (duplicates removal and data cleaning); SQL (data acquirement); Excel & Matplotlib (data visualization)
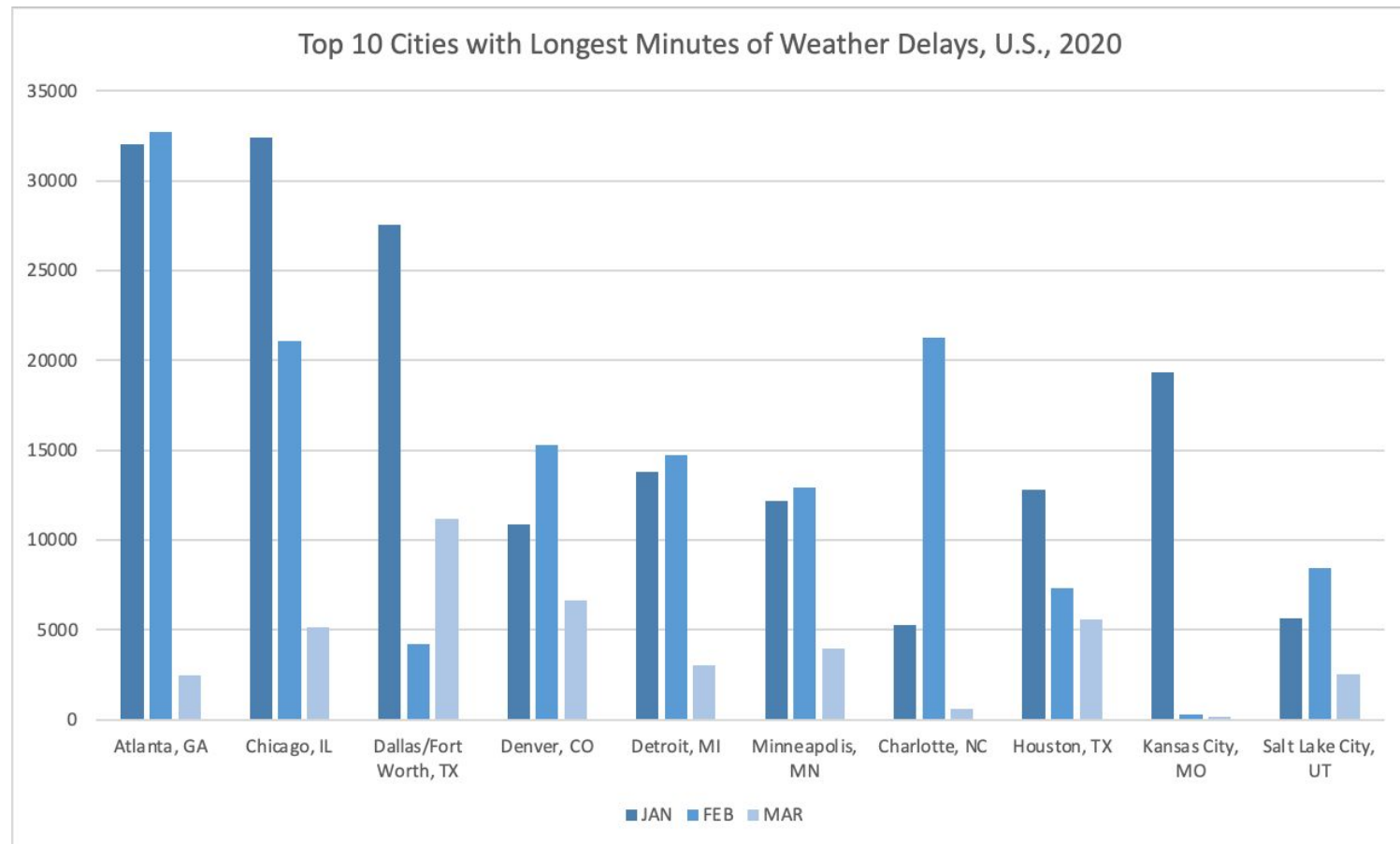
Dimensional (Star Schema) Model

Q1: How should U.S. government allocate their funds to the regional airports?

city_name	jan_weather_delay_min	feb_weather_delay_min	mar_weather_delay_min	total_weather_delay_min
Atlanta, GA	32044	32696	2497	67237
Chicago, IL	32396	21098	5172	58666
Dallas/Fort Worth, TX	27534	4246	11208	42988
Denver, CO	10899	15301	6624	32824
Detroit, MI	13821	14738	3024	31583
Minneapolis, MN	12179	12923	3972	29074
Charlotte, NC	5295	21274	587	27156
Houston, TX	12819	7329	5576	25724
Kansas City, MO	19310	309	177	19796
Salt Lake City, UT	5682	8445	2539	16666

Weather delay is one of the most common problems we face in reality, so we want to find out which city has airports with the most weather delays (in minutes).

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Result and Bar Chart

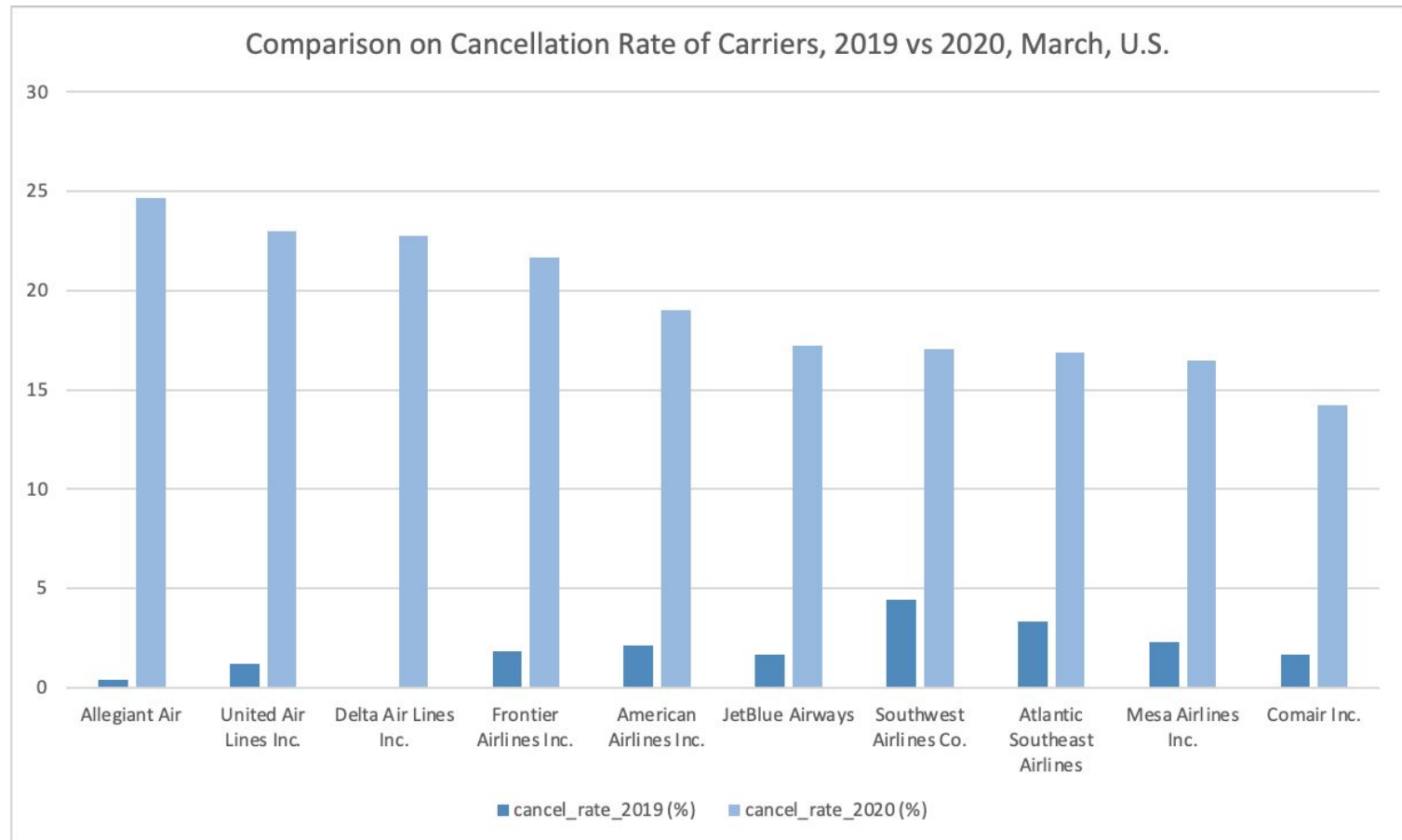Top 10 Cities with Longest Minutes of Weather Delays, U.S., 2020

Solution: Airports locate in these cities should invest more on mitigating the impact of weather conditions on flights and ensuring resilience to poor weather conditions.

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Q2: **What should airline and airport management prepare for if the next pandemic arrives?**

carrier_name	cancel_rate_2019	cancel_rate_2020
Allegiant Air	0.4094	24.6554
United Air Lines Inc.	1.2004	22.9634
Delta Air Lines Inc.	0.0784	22.7799
Frontier Airlines Inc.	1.8487	21.6686
American Airlines Inc.	2.1480	19.0240
JetBlue Airways	1.6392	17.2234
Southwest Airlines Co.	4.4334	17.0290
Atlantic Southeast Airlines	3.3380	16.8547
Mesa Airlines Inc.	2.2776	16.4779
Comair Inc.	1.6935	14.2177

In consideration of Covid-19, we want to investigate if pandemic has an serious impact on airline business, so we compare the data of March 2019 and March 2020.

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Result and Bar Chart

Comparison on Cancellation Rate of Carriers, 2019 vs 2020, March, U.S.

Solution: Airlines should always be prepared with sufficient funds for a possible pandemic, even though we are almost back to normal life.

Conclusion

U.S. regulations & policies

Attestation

Participation Details:

Submission Date: <April 27th 11:59pm>
Group Lead for this assignment: <Xuening Yang>
All Participants: Fill the following table: (Group lead responsibility)

Student Name	Question No	Group Participation in discussions (min)/week	Final submission date	Percent Participation in discussions (0-100)	Percent Participation in final proof reading and editing
Yuyang, He	All	13hrs/week	04/27/22	100	100
Xuening, Yang	All	13hrs/week	04/27/22	100	100
Yiqi, Chen	All	13hrs/week	04/27/22	100	100

Thank you for listening!