



SINGAPORE
MANAGEMENT
UNIVERSITY

IS428 Visual Analytics for Business Intelligence

User Guide

G1-T9

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Application compatibility

This application is suitable for running on a screen with at least 1280x760 resolution.

This application is compatible with Windows IE, Microsoft Edge, only available if chrome had enable reading local files.

Code

This application is separated into two parts, one is for the presentation purpose (view-only), the other is the source code for processing the all necessary business logics, such as, retrieve data from database, compute delay. The rationale behind is if we combine them as one, the data retrieval and processing will take a very long time. Thus, we exclude the processing and computing part in the view-only version, we only used the prepared and computed data, so as the users can open it in a short time.

Folder VApp is the view only version, the view only version is able to open directly if your running apache server or EasyPHP server. To view the app, you need to place VApp in proper place based on your computer path and then navigate to VApp/Web/index.html for home page. e.g. <http://127.0.0.1/VApp/web/index.html>

Folder va is the source code for the whole project, the data that used in the VApp some are derived from the va project. To run this application, you need the following application to be downloaded and installed.

- NetBeans 8.0 above
- MySQL localhost
- Apache

By following the the steps below, you should be able to run va project on your PC.

1. unzip the folder va, and import the unzipped va as a project. Then inside the folder, you will see va.sql and apr-clean-fill.csv
2. Go to your MySQL server, import va.sql, the database and table will be auto generated.
3. Click on flight_detail, import data apr-clean-fill.csv, the data is very big, you might need to upload few times. (Note, if the time out message is shown during the upload, then just upload again, it will continue from where it stopped previously)
4. Deploy va to apache, or if you are in NetBeans environment, right click run.

Navigation

Airlines Analyse Dashboard

Delay Analysis

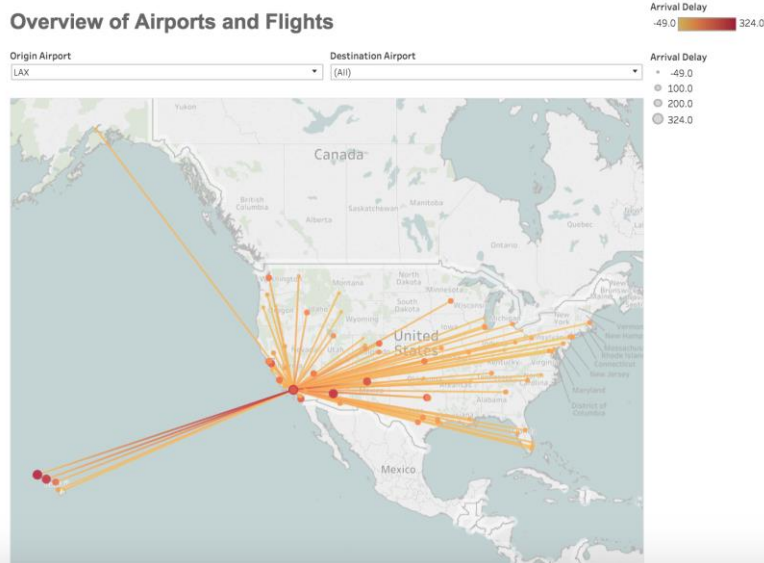
Cancellation Analysis

Network Analysis

Our application consists of 4 sections, Home, Delay Analysis, Cancellation Analysis and Network Analysis. You can go to the specific analysis by clicking on the navigation bar.

Home

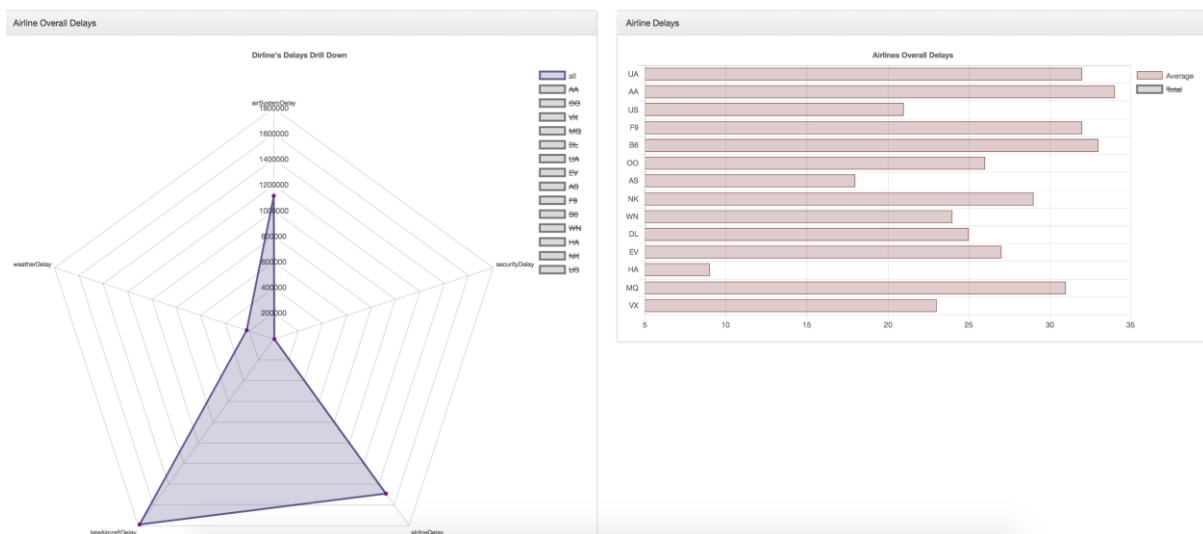
Flight delays has been a very common problem for travelers, the delay can be attributable to various problems, such as, aircraft issues, weather issues at origin airport or/and destination airport. The delay has no doubts will disappoint air travelers and affect their flight experience greatly. Thus, in this project, our team aims to investigate the performance of different airlines and flight delays in detail. In addition, airport network is a very critical and complex transportation infrastructure for a nation, it is increasingly important for public policy considerations. The disruptions of the airport network, caused by terrorist attack, disease transmission or other reasons, can lead to huge economic loss. Thus, the study on the airport network can assist us better understand the relationship between different airports, for example, identify most critical airport, and take proactive measures to prevent occurrence of disruptions.



The home page consists of the problem statement, and a flow chart generated by Tableau. User is able to select the specific path by clicking the circle in the map. The origin airport was set to be LAX, and destination airport set to all, if you wish to change the origin airport or destination airport, you can change in the drop-down list on top of the charts. The color of the path and the size of the bubble represent the average arrival delay of each route.

Delay Analysis

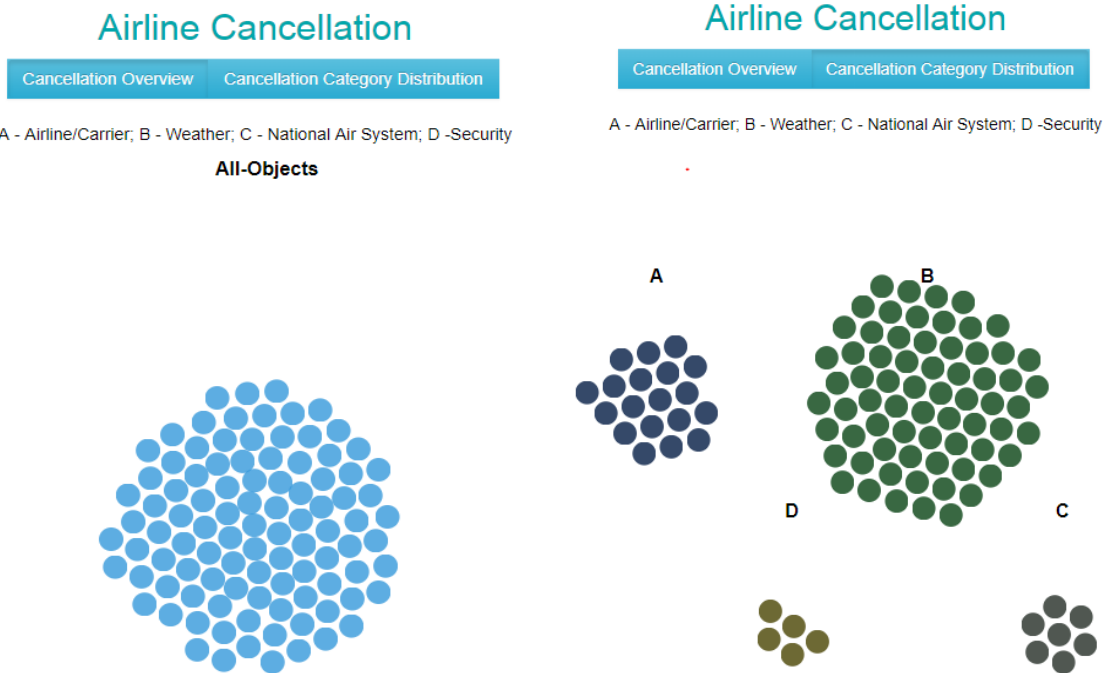
In this tab, we are trying to analyze the delay for each airline. The radar plot on the left shows the total delay time of all airlines breakdown by five detailed reasons. The bar chart on the right, gives an overview of overall and average delay of each airline.



Users are able to view/hide detailed delay time of different airlines (breakdown by five delay reasons) by clicking the legends on the right of the graphs. User is able to hover to the dot to see the exact number.

Cancellation Analytics

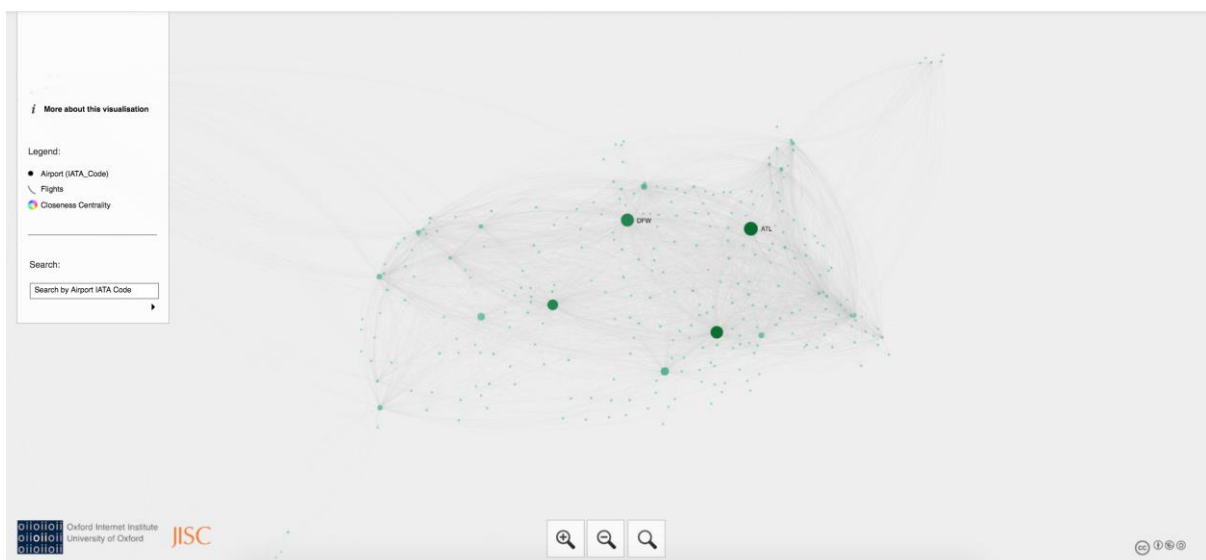
In this tab, we are trying to analyze cancellation of the airlines.



Users are able to click on cancellation overview or cancellation category distribution to update the view, on the other hand, user is able to hover on top of each bubble to see the details of each node.

Network analysis

In this tab, we are trying to find out the relationship between each airport by SNA centrality measures. The opacity of color shows the closeness centrality of each airport, while the size of nodes shows the betweenness centrality of each airport.



User is able to search the airport by entering the IATA code on the left of the search board. On the other hand, user can click the magnifying glass on the bottom of the page to zoom in

or out. By hovering to the dot, user is able to see the IATA code, by clicking the dot, user is able to see the full detail of the specific airport.