

Assignment 1: Air Transportation

Date Due: September 1, 2014

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Problem 1

Familiarize yourself with the Great Circle Mapper application (<http://www.gcmap.com/>). Plan two trips from JFK International airports as follows: 1) JFK to LAX and 2) JFK to BOS.

- Extract the great circle distance for these flights.
- Now use the Flightaware web application (<http://flightaware.com/>) and extract flight information for flights flown between those cities. Select two random flights for each Origin and Destination airport pair.
- Compare the actual distances filed in the pilot's flight plan (these are typically stated as "Planned" in Flightaware.com) versus the great circle distances. Comment on the detour factor observed for each of the flights. The detour factor is the ratio of the distance flown and the great circle distance calculated by the mapper <http://www.gcmap.com/>.
- Extract the cruise flight levels for the flights selected in part(b) and comment on the altitudes flown. Is there a trend?
- Extract the complete speed and altitude profiles for three of the flights (one for each city pair) and compare the speeds flown for the three distinct stage length segments. Do you see a trend?

Problem 2

You are conducting an airline passenger an airline company.

- Use the Aviation Database T-100 Domestic Market (all carriers - see figure below) to extract the number of passengers enplaned at Boston (BOS) and at San Diego (SAN) airports in the past 3 years. Make a plot and comment on the results observed. The T-100 database is available at the BTS web site (www.transtats.bts.gov).
- Use the same database to extract the top three airports in the nation with the highest originating at the airport in the year 2013 (or 2012 if 2013 is not available).

Problem

The screenshot displays the RITA website interface. At the top, there is a navigation bar with links for 'About RITA', 'Press Room', 'Offices', 'Jobs', 'Photos & Video', and 'Contact Us'. Below this is a search bar. The main navigation menu includes 'About BTS', 'BTS Press Room', 'Data and Statistics', 'Publications', 'Subject Areas', and 'External Links'. The current page is titled 'Air Carriers : T-100 Domestic Market (All Carriers)'. The search results are for 'Sum : On-Flight Market Passengers Enplaned by Origin for 2010'. The filter categories are 'Origin', 'Passengers', 'Sum', and '2010'. The page also includes a search bar, navigation menu, and a 'Recalculate' button.

Problem 3

You are conducting a study of flight demand for various airports in the country.

- a) Use the Aviation Database T-100 Domestic Segment (all carriers - see figure below) to extract the number of departures performed and seats offered from San Diego International Airport (SFO) in the past 3 years. Make a plot (or a bar chart) and comment on the results observed.

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Problem 4

You are conducting a study of domestic passenger statistics.

- a) Use the RITA (BTS) database to extract the U.S. domestic passenger enplanements from 2000 to 2013. Make a plot and comment on the results observed.
- b) Estimate the average domestic fares from three airports in the New York area: LGA, EWR and JFK. Compare the fares at these airports with average nationwide fares. Offer some plausible explanation about the trends observed.
- c) Estimate the market share of flights by American Airlines for the following two airports: a) MIA and b) DFW. Plot the market share over the past 5 years and comment on the trends observed.

Problem 5 - Short answers - Consult the Web

- a) Explain the reasons behind the fast growth in aviation passengers in the US in the past 3 decades.
- b) Research some of the reasons for the success of the Douglas DC-3 as the first commercially viable airliner.
- c) Explain what is that the US has some many airports in the system. Are the majority of the airports public?
- d) Research (on the web) about the introduction of the first commercial jet aircraft. Mention three important milestones achieved by commercial jets between 1950 and 1970.