Assignment 1: Air Transportation

Date Due: August 31, 2018   Instructor: Trani

Problem 1

Familiarize yourself with the Great Circle Mapper application (http://www.gcmap.com//). Plan two trips from Washington, Dulles International airport (IAD) as follows: 1) IAD to LHR (London) and 2) IAD to LGA (New York LaGuardia).

a) Extract the great circle distance for these flights.

b) 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.

c) Compare the actual distances filed in the 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// .

d) Extract the cruise flight levels for the flights selected in part(b) and comment on the altitudes flown. Is there a trend?

e) Extract the complete speed and altitude profiles for two 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.

a) Use the **Aviation Database T-100 Domestic Market** (all carriers - see figure below) to extract the number of passengers enplaned at Atlanta (ATL) and at Los Angles (LAX) 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).

b) Use the same database to extract the top three airports in the nation with the highest passengers originating at the airport in 2016.
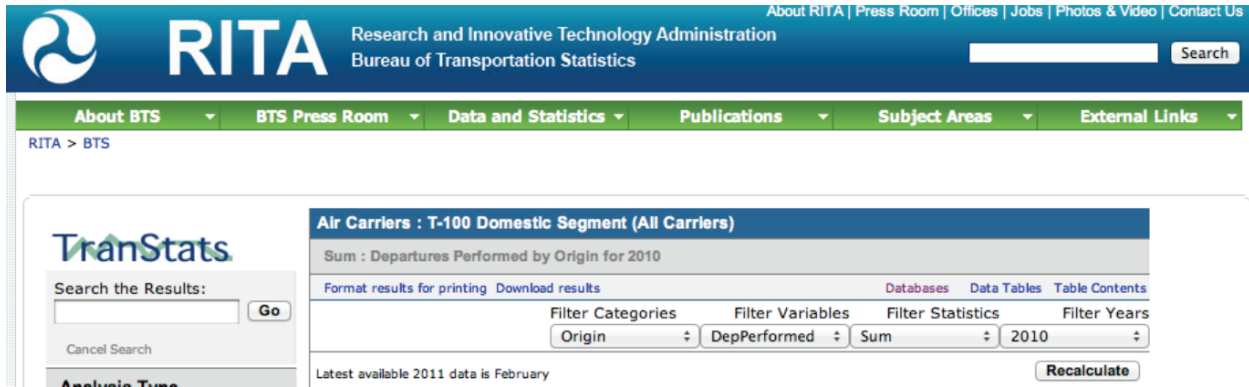
Problem

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 Atlanta Hartsfield-Jackson airport (ATL) in the past 3 years. Make a plot (or a bar chart) and comment on the results observed.

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 2007 to 2016. Make a plot and comment on the results observed.

b) Estimate the average domestic fares from three airports in the New York area: EWR, LGA 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) LAX and b) CLT. Plot the market share over the past 3 years and comment on the trends observed.

Problem 5

Use the FAA Operations and Performance Database (ASPM) available at https://aspm.faa.gov and do the following:

1) Use the ASPM data and generate an airport analysis report to extract the number of scheduled flights to Los Angeles International Airport on May 25-26, 2018 (see graphic below).

2) Plot the scheduled arrivals and departures on those days.

3) Comment on the trend of arrivals and departures as a function of time.

ASPM : Airport Analysis : All Flights Report

From 5/25/2018 To 5/25/2018 ; Airport=LAX : Use Flight Plan

Facility	Date	Hour	GMT Hour	Scheduled Departures	Scheduled Arrivals	Departures For Metric Computation	Arrivals For Metric Computation	% On-Time Gate Departures	% On-Time Airport Departures	% On-Time Gate Arrivals
LAX	05/25/2018	0	7	20	13	20	14	70.00	55.00	71.43
LAX	05/25/2018	1	8	15	3	13	1	69.23	46.15	100.00
LAX	05/25/2018	2	9	5	1	5	3	60.00	60.00	100.00