

Assignment 1: Air Transportation

Date Due: January 31,2020

Instructor: Trani

Problem 1

Familiarize yourself with the Great Circle Mapper application (<http://www.gcmap.com/>). Plan two trips from New York, Newark International airport (EWR) as follows: 1) EWR to SIN (Singapore) and 2) EWR to LHR (London).

- 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 each site pair. 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 altitudes (or sometimes called flight levels) for the flights selected in part(b) and comment on the altitudes flown.
- Extract the complete speed and altitude profiles for two of the flights (one for each city pair) and compare the speeds flown by the aircraft.

Problem 2

You are conducting a study for an airline company.

- Use the Aviation Database T-100 Domestic Market (all carriers - see figure below) to extract the number of passengers boarding (enplaned) at Atlanta (ATL) and at Charlotte (CLT) 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).

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Search the Results:

Analysis Type

- Table
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- Terms & Definitions
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Analysis Summary

Air Carriers : T-100 Domestic Market (All Carriers)

Sum : On-Flight Market Passengers Enplaned by OriginAirportID for 2019

[Format results for printing](#) [Download results](#) [Databases](#) [Data Tables](#) [Table Contents](#)

Filter Categories Filter Variables Filter Statistics Filter Years

OriginAirportID Passengers Sum 2019

Latest available 2019 data is July

Note: US Airways and America West started to report combined on-time data in January 2006 and combined traffic and financial data in October 2007 following their 2005 merger announcement. Delta and Northwest began reporting jointly in January 2010 following their 2008 merger announcement. Continental Micronesia was combined into Continental Airlines in December 2010 and joint reporting began in January 2011. Atlantic Southeast and ExpressJet began reporting jointly in January 2012. United and Continental began reporting jointly in January 2012 following their 2010 merger announcement. Endeavor (9E) operated as Pinnacle prior to August 2013. Envoy (MQ) operated as American Eagle prior to April 2014. Southwest (WN) and AirTran (FL) began reporting jointly in January 2015 following their 2011 merger announcement.

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Code	Description	Summary
10005	Little Squaw, AK: Little Squaw Airport	20
10009	Homer, AK: Augustin Island	14

b) Use the same database to extract the top three airports in the nation with the highest passengers originating at the airport in 2019.

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 Los Angeles International (LAX) in the past 3 years. Make a plot (or a bar chart) and comment on the results observed.

The screenshot shows the Bureau of Transportation Statistics website. The main heading is "Bureau of Transportation Statistics". Below it are navigation tabs: "Topics and Geography", "Statistical Products and Data", "National Transportation Library", and "Newsroom". The current page is "OST-R > BTS".

The main content area is titled "Air Carriers : T-100 Domestic Segment (All Carriers)". It shows a search for "Sum : Departures Performed by Origin for 2019". The filters are set to "Origin" for Filter Categories, "DepPerformed" for Filter Variables, "Sum" for Filter Statistics, and "2019" for Filter Years. The latest available 2019 data is July.

The data table shows the following information:

Code	Description	Summary
05A	Little Squaw, AK: Little Squaw Airport	12

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 2014 to 2019. Make a plot and comment on the results observed.

b) Estimate the average domestic fares from three airports in the Washington area: IAD, DCA and BWI. Compare the fares at these airports with average nationwide fares. Offer some plausible explanation about the trends observed.

Problem 5 - Short answers - Consult the Web

- Explain the reasons behind the growth in air traffic from airports like Chicago Midway (MDW) in the US in the past 35 years.
- Name two reasons for the success of the Douglas DC-3 as the first commercially viable airliner
- 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.