

Assignment 1: Familiarization with Aviation Data Sets

Date Due: January 30, 2017

Professor: Dr. Trani

Problem 1

A new generation of highly efficient regional aircraft are being tested by manufacturers like Mitsubishi (MRJ), Embraer 175/190 E-Jet E2 series and the Bombardier CS100. Consult the aircraft manufacturer data (available as links on our web site) and state some of the relevant parameters for these aircraft (i.e., wingspan, length, landing gear width, etc.). These larger and new generation regional jets will be replacing “older” generation regional jets with 50 seats (i.e., Bombardier CRJ-200 and the Embraer 145).

Explain the implications of such vehicles in airport design compared to older generation regional jets like the CRJ-200 and the Embraer 145. For example, the pictures below shows Bombardier CRJ-200 parked at Chicago O’Hare airport terminal 2.



Figure 1. Layout of Terminals 2 and 3 at ORD Airport.





Figure 2. Section of Terminal 2 at ORD Airport.








Problem 2

Identify the commercial aircraft presented in the Table 1. State the FAA Aircraft Design Group (ADG), Taxiway Design Group (TDG) and Aircraft Approach Class (AAC). Here is a list of possible choices (more choices than pictures to add a little challenge): Boeing 767-300, Boeing 757-200, Boeing 747-400, Bombardier DHC-8C (Dash-8), Airbus A330-200, Boeing 787-8, Boeing 737-800, Boeing 717-200, Bombardier CRJ-700, Airbus A380-800, Airbus A321-200, Airbus A320-200, Embraer 145 and Embraer 170.

You can consult various web sites to help you identify these aircraft. Examples are: <http://www.airliners.net> and <http://www.jetphotos.net>.

Table 1. Aircraft for Problem 2. All Pictures by A.A. Trani.

Picture	Aircraft Name	ADG	TDG	AAC
				
				

Picture	Aircraft Name	ADG	TDG	AAC
				
				
				
				
				
				
				

Problem 3

Airport Statistics using the Bureau of Transportation Statistics (BTS) web site.

Go to the BTS web site (accessible through our page with "[Interesting Web Sites](#)") and look at the following 2 airports using the airport snapshot link: <http://www.transtats.bts.gov/airports.asp>.

- 1) Los Angeles International airport (LAX).
- 2) Miami International airport (MIA).

For each airport answer the following questions.

- a) Find the total number of passengers boarding U.S. Flights at the airport in the last two years of data. Comment on the trends observed (i.e., increasing or decreasing passengers).
- b) Find the market share for the top three airlines operating at the airport (market share means the percent of passengers carried by an airline at the airport).
- c) Find the top 3 destinations from the airport selected. Comment on the destinations.
- d) Comment on the departure delays experienced by aircraft operating at the airport in the past three years and compare them to the national average. Are the on-time performance numbers improving with time?

Problem 4

Airport features using the Airnav.com web site.

Go to the Airnav web site (accessible through our page with "[Interesting Web Sites](#)") and look at the following airports:

- 1) Los Angeles International airport (LAX).
 - 2) Miami International airport (MIA).
- a) For each airport create a simple table with the following data: find the number of runways and the runway length and width for each runway at the airport. Note: A runway has two runway ends labeled numerically. For example Runway 18/36 indicates the number of degrees from the magnetic North multiplied by 10. So an aircraft landing on runway end 18 would be flying South (180 degrees from the magnetic North)
 - b) Find out if runway 7R at LAX has any obstructions according to the Airnav database.
 - c) Find out if the longest runway at MIA has a approach light lights.