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Stat 480 Homework 2

Question 8
Average Arrival Delays for each day of the week (from 2007 to 2008):
[1] 9.402934 7.880886 8.277983 10.608164 12.043961 5.819331 9.925622
Therefore, Average Arrival Delays are minimized on Saturdays (5.819331), so Saturday is the best day of the week to fly.

Question 9
Average Arrival Delays for each day of the Month (from 2007 to 2008):
[1] 10.038581 8.347670 7.157116 8.595337 8.361154 8.112159 8.348323
[8] 8.612245 8.623283 9.400009 8.951881 8.135688 7.894449 9.352992
[15] 11.843079 10.642763 9.013132 9.502615 11.331052 8.725341 10.841925
[22] 11.306045 9.115103 7.737640 9.192238 11.318314 11.172735 8.119991
[29] 7.181018 8.447295 10.614867
Therefore, Average Arrival Days are minimized on the 3rd of each month (7.157116), so the 3rd is the best day of the month to fly.

Question 14
Weather Delay and Arrival Delay Regression (from 2007 to 2008):
Large data regression model: biglm(formula = formula, data = data, ...)
Sample size = 8800023
Coef (95%   CI)   SE p
(Intercept) 16.9910 16.9608 17.0212 0.0151 0
WeatherDelay 1.0862 1.0837 1.0887 0.0012 0
Therefore, from this model we can conclude that weather delays are associated with larger Arrival Delays. The effect is somewhat large (1.0862) and for all flights that had Arrivals Delays, about 2.588% of the delay was due to the Weather Delay.

Question 15
Arrival Delay Regression with many other variables in the data set (from 2007 to 2008):
Large data regression model: biglm(formula = formula, data = data, ...)
Sample size = 8800023
Coef (95%   CI)   SE p
(Intercept)   -5.7810 -5.8048 -5.7572 0.0119 0
TaxiIn   0.2018 0.2000 0.2036 0.0009 0
TaxiOut   0.1879 0.1870 0.1887 0.0004 0
Distance   -0.0017 -0.0017 -0.0017 0.0000 0
CarrierDelay   1.0166 1.0162 1.0170 0.0002 0
NASDelay   0.9957 0.9952 0.9963 0.0003 0
SecurityDelay   1.0386 1.0309 1.0464 0.0039 0
LateAircraftDelay 1.0384 1.0380 1.0388 0.0002 0
From this data we can conclude that TaxiIn, TaxiOut, CarrierDelay, NASDelay, SecurityDelay, and LateAircraftDelay are all associated with larger Arrival Delays. The effect is very small for TaxiIn and TaxiOut. The effect is somewhat larger for CarrierDelay, NASDelay, SecurityDelay, and LateAircraftDelay. Distance is not associated with larger Arrival Delays.