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One of the issues major airlines face are flight delays and flight cancellations. This causes a chain reaction as other connecting flights are delayed or cancelled. This is very problematic not only for the passengers but for the airlines as well. According to the Federal Aviation Administration, it is estimated that flight delays cost airlines \$22 billion yearly. I am working in conjunction with Aerospace Engineering Professor Dr. John-Paul Clarke and Industrial Engineering Professor Dr. David Goldsman. The question at hand is based on the time history of the boarding pass scans, how is the probability of late departure times affected.

The data we received is from a major US airline company. It looks at a single day's worth of passengers who boarded each plane at differing times. For each entry there is the time of when the passenger scanned their boarding pass and boarded the plane, the flight number of the plane, the type of aircraft, the seat the individual was assigned to, and the time of the plane's pushback (when the plane leaves the passenger terminal to the runway or taxiway).

The data has quite well over 10,000 entries and to perform statistical analysis by hand would not be the most efficient way. I will be using Python programming that I learned over the past summer in my CS 2316 class to extract/filter out useful information. We will also use some linear regression to predict the future time differences between boarding pass scans and the pushback. We expect to see several scenarios that contribute to late departure times as follows:

1. Plane is on-time but the Federal Aviation Administration imposes a delay
2. The plane is near full capacity, but the passengers/staffs do not arrive on time