Problem: Assess BART ridership trends to more effectively address transit system improvement.

Dataset: BART Rider Reports - https://www.bart.gov/about/reports/ridership

There are monthly reports from 2001-Current that provide the monthly average “entry-exit” counts for each of the 42 stations. The data is in 42x42 matrices, is provided in .xls format, and is split into types of days (weekday, Saturday, Sunday). There is also more in-depth data from 2016-2018 that provides hourly counts as well.

Real World Application and Proposed Solution: The San Francisco Bay Area has seen a staggering increase in residents, resulting from the increasing pull of Silicon Valley, with an expected 2 million new residents by 2040. BART (Bay Area Rapid Transit) serves as a main method of trans-bay travel for many commuting residents and will need to provide significant upgrades to accommodate the growing population. Currently, there are 13 ongoing improvement projects listed on the BART webpage (https://www.bart.gov/about/projects), 4 of which focus on passenger traffic:

- *Station Modernization Program*: upgrading and modernizing stations to improve capacity and flow.
- *Transit-Oriented Development*: create communities near stations through development of BART property.
- *BART Earthquake Safety Upgrade*: Parts of the transit system with the highest traffic will be upgraded for safety.
- *Transbay Capacity Relief*: increase peak hour capacity into San Francisco.

By visualizing trends and analyzing rush-hour traffic times we will be able to identify impacted stations that require immediate improvement and perhaps identify stations that would require a larger focus in the near future. We may also address the following side questions:

1. What’s the passenger increase/decrease during sports events, holidays, etc.?
2. Is there a yearly increase/decrease pattern at the stations?

Projects Steps:
The following table includes the tasks, intended duration, and tentative leaders:

Task	Duration	Lead
Collect and Organize Data	1 week	Jiaqi Yan
Explore overall usage trends	1 week	Teng Ma
Explore individual station trends	2 weeks	Charlene Cuellar
Visualize Data	1 week	Arun Joseph

Git Repository: https://github.com/CharleneC/ECE143_F18