The semester, our team was tasked with working along Arcelor Mittal, located in Steelton, Pennsylvania, in order to create a forecasting tool for their fleet of rail cars. This tool is essential to their everyday regimens because rail transportation is their main form of product transportation, and in the current system there is no way of telling how many rail cars will be on hand in the near future. This makes it difficult to accurately plan shipments to consumers, and when they commit to a shipment they do not have enough rail cars for, extra rail cars are rented at a higher cost. A forecasting tool will eliminate these expensive rentals by allowing better logistical planning due to the advanced knowledge they will have of rail car returns and the amount they will have at their disposal on specific days.

To create this tool, the first task was to identify the top locations that Arcelor Mittal ships to and complete cycle times to these locations based on data provided by Arcelor Mittal. Data from 2013 and 2014 was used to determine this data and then was validated against current 2015 data. However, variability in this environment makes it especially difficult to determine set cycle times. Dwell days occur at certain locations and the length of the dwell time is completely out of the control of Arcelor Mittal; once the rail car arrives at the consumer they can hold onto it for as long as they desire or need to use up all the product. For this reason, the analysis included calculating means and standard deviations to determine the most accurate cycle times possible.

These cycle times will then be entered into the forecasting tool, created entirely within Excel at request from Arcelor Mittal. Due to the variability in the process, no two trips to the same location necessarily take the same length. The forecasting tool will be able to return the estimated rail cars that return on a selected date by the system user, but it will also return a forecast for returns over the course of the week before and week after. This will give the user a better idea of how many cars they will have over a longer range of time and present a more accurate number. The forecasting tool accounts for the top 11 locations Arcelor Mittal works with, and in comparison to 2015 data, these locations represent up to 60% of their total shipments. This represents a vast improvement over their current system, and the tool has the ease of use that they can continue to add more locations to the tool to increase the scope of its abilities to more locations.