Project Name – PSU Beaver Stadium Concessions

Overview
The team was tasked with improving the efficiency of concession operations and fan experience at Beaver Stadium during football games. Currently, football fans experience long wait times because of overcrowding at concession stands. Football is particularly tricky to plan concessions for because fans tend to get food during halftime, creating a rush of people, thus, our team was tasked with using our industrial engineering knowledge to decrease wait time, increase service speed, and establish a line facilitator.

Objectives
The goal of this project was to optimize Beaver Stadium concessions to decrease the wait time for customers and improve the overall fan experience by expediting the way food is produced, prepared, and served.

Approach
• **Data Analysis** – analyzed sales data from 2015-2017 to determine how certain factors (i.e. weather, kickoff time) affected the popularity of certain products
• **Background research** – benchmarked the current state of Beaver Stadium by comparing it to the Mercedes-Benz stadium, researched food preparation techniques (primarily chicken baskets) and potential new technology and web integration methods
• **Customer Needs** – conducted a survey with Penn State football fans to determine what aspects of concessions could be improved to improve their fan experience
• **Simulation & Queuing Model** – developed an interactive Excel workbook and a Simio model to depict the current state of the concession system, as well as how the system would change as alterations are made
• **Forecasting Model** – developed a model which would forecast sales data based on differing conditions (i.e. weather, kickoff time)
• **Standard work** – created an instruction set to eliminate variation in the food preparation process between concession stands

Outcomes
• The project provided tools with which to analyze the performance of concessions sales during football season
• The team found trends in sales based on weather and kickoff time to more accurately stock concession stands