Stadium Ticket Mapping with Purdue Athletics

Matt Boyle, Stephen Cline, James Darschewski, Luke Halasy, Adithya Iyengar, Josh Knull, Gia Peduto, and Tyler Slome

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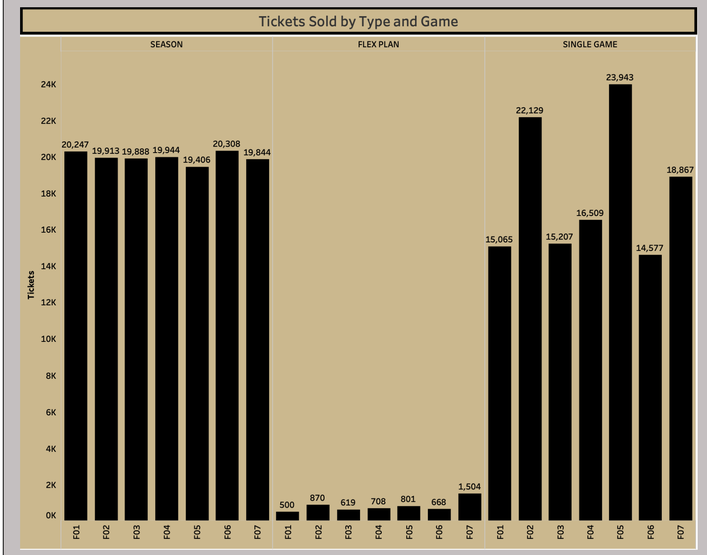
Introduction

Over the past academic year, students from the Data Mine Learning Community have worked with the Purdue Athletics. The students broke into two sub-teams focused on Business and Coding to work on various projects.

The Business team worked on projects that focused on analyzing past ticket sales data in order to offer new insights going into future seasons. With this focus, the team worked on projects where they mapped COVID restricted seating charts for Mackey arena, as well as created Tableau visuals analyzing ticket sales by type and game.

The Coding team worked on projects that focused on creating insightful, but easy to use tools to replace older practices within the Purdue Athletics team. From this, the coding team updated the Ross-Ade map with suites, created an interactive R Shiny app that allows users to update Ross-Ade with sales data and analyze individual seats and coded a Cron Job that timestamps ticket sales on a daily basis for a simpler reference.

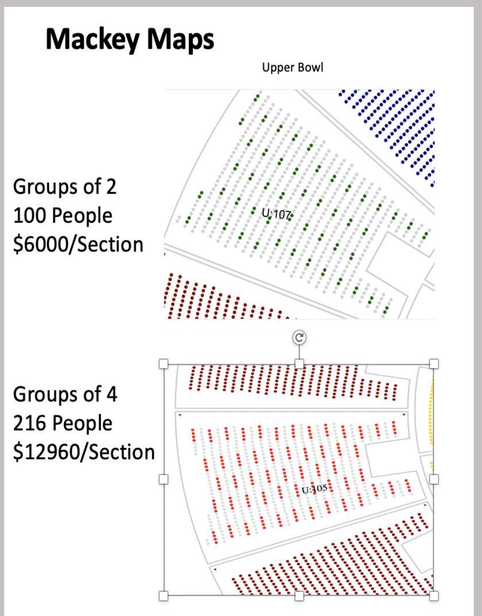
Tableau Sales Data



- Attempted to create useful graphics within Tableau for the Purdue Athletics Team to better analyze how different types of tickets sold over time
- Created a mock dataset which allowed us to each create numerous graphics
- The feature graphic portrays the tickets sold by ticket types from the 2019 home games at Ross Ade Stadium
  - First 7 bars are tickets sold per game based on the season type
  - Middle 7 represent tickets sold per game by flex plan
  - Last 7 show tickets sold for single game sales

Mackey COVID Restrictions

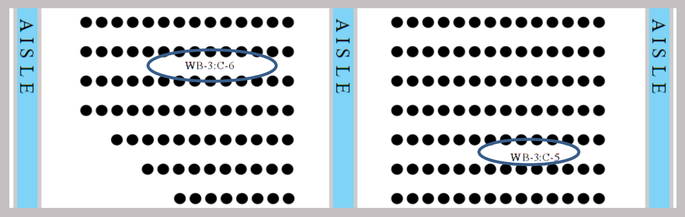
Mackey Maps



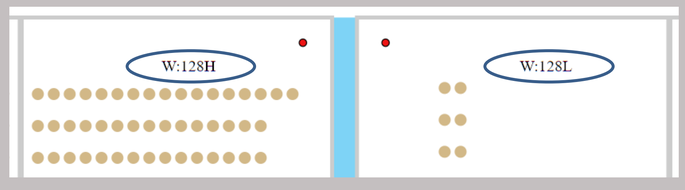
- Early fall semesters, we received word of Big Ten Basketball operating at Mackey
- Began drafting potential seating arrangements around Mackey Arena if fans were allowed inside
- The images to the left portray a grouping of two seats and four seats with a varied profit value based upon each grouping created

Map Formatting and Suite Additions

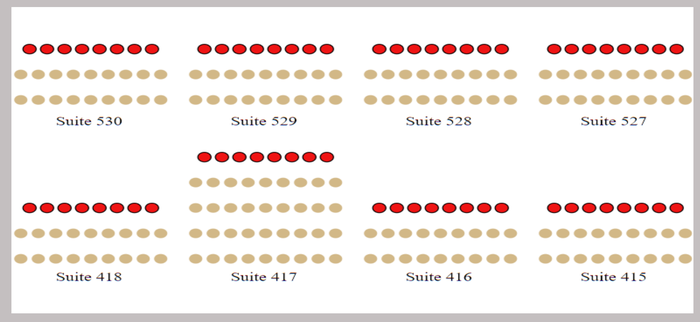
Old Map Formatting Issues



New Improvements



Suite Addition



- Received the initial Ross Ade map in a large file which was difficulty work around
- Began adapting the labeling and adding the suites that were not in the original map
- Created a functional map that can be viewed outside of ticket office system

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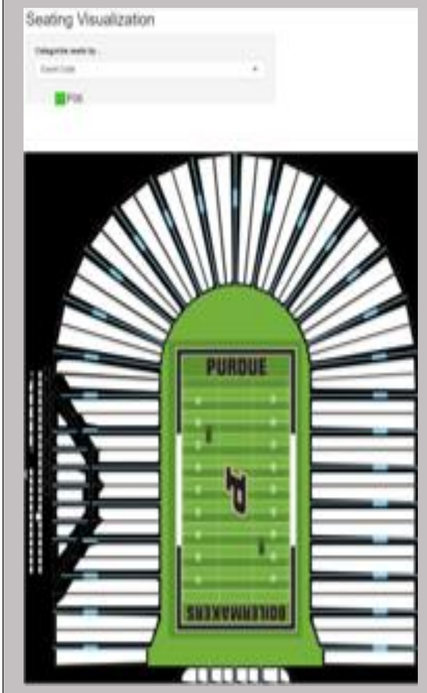
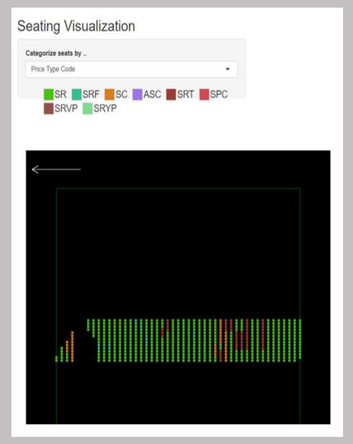
Stadium Mapping

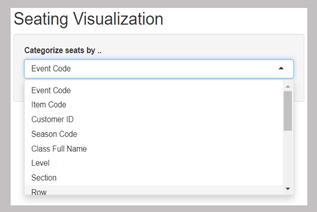
Main View

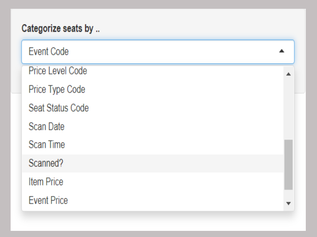


Section Zoom View



Categorization Dropdown





- R-Shiny application to visually depict Ross-Ade seats different characteristics in the categorization dropdown that the user chooses from
- Click on one of the white sections in the main view will
- return a zoomed in view of the section with the populated seats colorized by the variable color key
- Click back arrow to go back to main view
- Easily replicable for Mackey Arena

Future Plans - RShiny Calendar Feature

- Create an R Shiny based application which allows the user to simply click or input a date on a calendar and retrieve the excel file
- Simpler to fetch statistics from any historical game
- Adding an excel file viewer which will allow Purdue Athletics to showcase the file without having to download it.
- Include extra analysis in the summary files
- Combine and allow users to view and analyze these metrics alongside the sales data

Future Plans - Interactive Map

- The figure presents a mapping goal found on LinkedIn
- Hope to create a fully interactive map for Ross Ade Stadium
- Build off of this map provided, but also attempt to create more features focused around assisting Purdue Athletics

Closing Remarks

Looking back on the past year, we have learned so much through the progress and bumps in the road. Even though the project took an unexpected turn when the Big Ten canceled and then uncancelled Fall Sports, we believe we helped to make a positive impact within the Purdue Athletics External Team. Throughout the year, members of our team gained experience in R by updating the Ross-Ade map to replace the outdated version being used and by creating COVID safe seating charts within Mackey Arena. Some members learned how to create interactive R Shiny Apps in order to automate the Ross-Ade Stadium with sales data, and other members gained knowledge with Tableau which assisted Purdue Athletics to better analyze sales data. We appreciate the opportunity to work on these projects and we are excited to see where the next team can take it!

Next Year and Future Projects

Goals for the near future:

- Create an interactive database of basketball/football ticket sales to track progress over time
- Incorporate live seating models at Mackey/Ross-Ade with R Shiny
-Create reports and Tableau dashboards to analyze gate scans and trends on different gamedays

Acknowledgements

Thanking everyone who helped us along the way this year!

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