


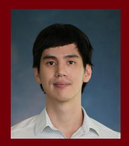


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PROBLEM STATEMENT

Predicting Fan Attendance and Identifying Vulnerable Ticket Buyers

Key Questions to Address

1. What are the characteristics of ticket buyers who are most likely to skip attending a game?
2. What factors influence attendance likelihood?
3. How can the Gamecocks reduce the number of "no-shows" and improve overall attendance?

BACKGROUND

Not all ticket purchasers attend the games, leading to "no-shows" and a drop in attendance rates. "No-shows" result in empty seats, a diminished atmosphere, lost concession revenue, and a weakened overall fan experience. UofSC Athletics aims to mitigate the risk of future "no-shows" to increase true attendance.

DATA COLLECTION AND PREPARATION

UofSC Athletics Provided Three Main Data Sources:

Fan History and Behavioral Data
Information on Merchandise Purchased (30 days, 90 days, 1 year), Donation Amount (lifetime total, maximum amount, year-to-date total), Fan Engagement, Attendance Records, etc.

Ticketing Data for Each Sport
Information on Ticket Revenue (purchase price), Event Attendance (ticket scanned at the event), Ticket Section, Row and Seat.

Coordinates
Coordinates for Williams-Brice Stadium, Founders Park and Colonial Life Arena for each seat.

Collected Metadata
As a group, we gathered information on UofSC's rank at time of match, the opponent's rank at time of match, match order and date.

Data Preparation Steps:

1. Merged datasets on primary key and added metadata to existing datasets
2. Filtered only on tickets that were sold/resold
3. Subsetted data to each sport
4. Added logic to fill in nulls
5. Feature engineered new columns
6. Removed highly correlated values
7. Standardized numerical values

MODEL BUILDING

We initially developed a logistic regression model to identify significant predictors of fan attendance, allowing us to understand which variables were most strongly associated with the likelihood of attending a game. To capture variability among individual ticket buyers, such as personal preferences, we then implemented a mixed-effects logistic regression model. This approach included both fixed effects for observed factors and random effects to account for unobserved individual-level differences.

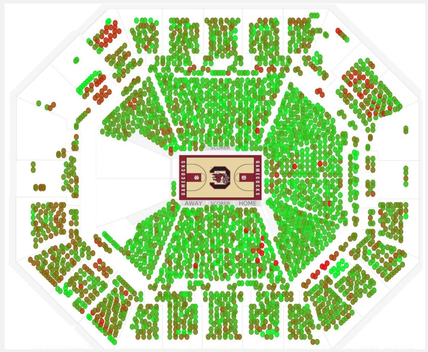
Football		Baseball		Women's Basketball		Men's Basketball	
Positive Impact		Positive Impact		Positive Impact		Positive Impact	
Variable	**Beta**	**Variable**	**Beta**	**Variable**	**Beta**	**Variable**	**Beta**
Season Attendance Percentage	1.29	Initial Purchase via SFMC	6.36	Season Attendance Percentage	2.75	Season Attendance Percentage	4.18
Seating - White	1.22	Ticket is Resold	2.85	Ticket is Resold	1.97	Ticket is Resold	3.22
Seating - Tan	0.99	Lifetime Attendance Percent	1.59	Total Tickets Scanned / Game	1.68	Initial Purchase via SFMC	1.48
Negative Impact		Negative Impact		Negative Impact		Negative Impact	
Variable	**Beta**	**Variable**	**Beta**	**Variable**	**Beta**	**Variable**	**Beta**
Free Ticket	1.55	Length of Season Tickets	0.97	Upper Deck General Admission	1.67	Total Tickets Scanned	0.87
Season Ticket	0.75	Total Tickets Scanned	0.84	Initial Purchase via SFMC	1.37	Seating - Other	0.82
Total Tickets Scanned	0.67	Final Purchase via Salesforce	0.79	Upper Reserved	1.19	Free Ticket	0.81

VISUALIZATIONS

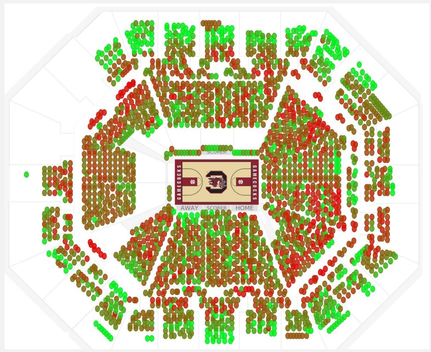
Based off the model, these visualizations are heat maps representing "no-show" risk for the 2024-2025 season.

Football	
Predicted Attendance Rate	89%
Actual Attendance Rate	87%

Baseball	
Predicted Attendance Rate	53%
Actual Attendance Rate	41%



Women's Basketball	
Predicted Attendance Rate	66%
Actual Attendance Rate	66%



Men's Basketball	
Predicted Attendance Rate	42%
Actual Attendance Rate	45%

FINDINGS

Our model predicted the likelihood of ticket purchasers not attending a game.
We created three thresholds to categorize fan "no-show" risk: Low, Medium and High.

"No-Show" Risk

Football			Baseball		
Category	Values	Percentage	Category	Values	Percentage
Low	0-0.5	**95.90%**	**Low**	0-0.5	**23.67%**
Medium	0.5-0.75	**2.63%**	**Medium**	0.5-0.75	**33.19%**
High	0.76-1.0	**1.47%**	**High**	0.76-1.0	**42.42%**
Women's Basketball			**Men's Basketball**		
Category	Values	Percentage	Category	Values	Percentage
Low	0-0.5	**47.46%**	**Low**	0-0.5	**16.58%**
Medium	0.5-0.75	**27.15%**	**Medium**	0.5-0.75	**18.27%**
High	0.76-1.0	**25.39%**	**High**	0.76-1.0	**65.15%**

RECOMMENDATIONS

Targeted Reminder Campaign

Use model outputs to generate list of high-level risk attendees for each game and send personalized reminder emails.

Automated email reminders for at-risk fans to use or return tickets.

Day of Game Seat Upgrade Offers

For games with low overall predicted turnout, offer last minute seat upgrades to high-level risk sections or fans as an incentive to attend.

Upgrade fans with general admission tickets into unsold premium seats.

Early Momentum Attendance Program

Introduce discounted pricing or bonus incentives for new or casual ticket buyers attending their first game of the season.

Data shows that getting fans into the stadium increases the likelihood they will keep coming back.

Fan Feedback Loop

After targeting high-risk fans and first-time ticket buyers, gather feedback from those who chose to attend.

Use surveys or quick polls to refine messaging and offers for future games.