



The effect of stadium type on fan atmosphere in the MLS

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INTRODUCTION

Founded in 1993, Major League Soccer had a lot of catching up to do as far as fan base and popularity with long-standing sport giants like the NFL and the NBA.

- The MLS built many soccer-specific stadiums to try and increase their attendance
- Recent addition of 8 new teams (as pictured in Figures 1 and 2) since the 2016 season and 9 new soccer specific stadiums
- Specific focus on fan environment that is experienced while attending a game in a soccer-specific stadium vs. an NFL or multi-purpose stadium.



Figure 1: Expansion teams from 2020-2022

RESEARCH QUESTION

How does having a soccer specific stadium affect fan atmosphere in the MLS?

METHODOLOGY

- A fixed effect model was utilized to observe the effects of stadium type on average attendance within teams who may have switched from an NFL stadium
- Dependent variable: Average Attendance (AVG)
- Independent variables: home win percentage (WINPCTHOME), whether or not the stadium was soccer specific (SOCCSPEC), whether or not the stadium had standing room (STAND), percent capacity (PCTSTADFILL), and population (MSAPOP).
- Data was collected for all 28 MLS teams and their 2016-2022 regular season games

PREVIOUS LITERATURE

- Love et al. (2013) researched how the soccer-specific stadiums influenced MLS attendance.
 - The novelty-effect is the notion that when teams move into their own stadiums, meant specifically for soccer, the fan base will increase as well as attendance.
 - This paper found that soccer-specific stadiums were helpful in gaining attendance numbers.
- DeSchrive et al. (2015) found that expansion teams increase attendance within the MLS.

PREDICTOR VARIABLES AND CORRELATIONS

Table 1.

Descriptive Statistics

Variable	n	Minimum	Maximum	Mean	Std. Deviation
WPCTHOME	142	6	84	51.09859	14.05173
TEAMSEAS	142	1	27	14.19014	8.542703
MSAPop	142	303940	12.5m	3414543	3403975
CAP	142	18000	75412	33909.92	18447.79
SOCCSPEC	142	0	1	.75	.437
AVG	142	4070	53002	20647.81	8031.429
YEARSSTAD	142	1	105	20.3662	26.50585
PCTSTADFILL	142	7.502166	110.7222	70.19169	23.31986
STAND	142	0	1	.19	.394

- There are a few variables of note:
 - The highly negative correlation between capacity and soccer-specific stadiums shows that these stadiums tend to have less capacity.
 - The percent capacity is highly and positively correlated with soccer-specific stadiums.

Table 7

Descriptive Statistics and Correlations

Variable	M	SD	CAP	AVG	YEARSTAD	TEAMSEAS	SOCCSPEC	MSAPOP	PCTSTADFILL	STAND
Capacity	33909.92	18447.79								
AVG Attendance	20647.81	8031.429	.580**							
Years at Stadium	20.3662	26.50585	.269**	-.076						
Total Team Seasons	14.19014	8.542703	-.335**	-.395**	-.150					
Soccer Specific Stadium	.75	.437	-.857**	-.475**	-.305**	.266**				
City Population	3414543	3403975	.078	.204*	-.195*	-.112	-.044			
Percent Stadium Filled	70.19169	23.31986	-.736**	.060	-.320**	.105	.636**	.010		
Standing Seats	.19	.394	-.249**	-.063	-.257**	-.127	.282**	-.058	.230**	
Win PCT at Home	51.098	14.05173	.102	.193*	-.081	-.009	-.075	.142	.013	-.139

** p is significant at .01 level ; * p is significant at the .05 level

RESULTS

- The SOCCSPEC variable indicated that teams that switched from NFL or multi-purpose stadiums into soccer-specific stadiums lost around 7,318 fans in average attendance in the initial year of the switch ($p < .01$).

Table 3.

Final Predictive Model

Variable	Coefficient	Coefficient t-statistics	Significance
(Constant)	38936.47	5.00	0.000 ^a
WPCTHOME	4.271377	0.33	0.745
SOCCSPEC	-7318.333	-4.15	0.000 ^a
STAND	448.4538	0.29	0.772
PCTSTADFILL	214.7396	12.35	0.000 ^a
MSAPOP	-.0083818	-3.85	0.000 ^a
		F-statistic	47.45
		Significance	.000 ^a
		R ²	0.68928

^aSignificant at the .01 level ; ^bSignificant at the .05 level



Figure 2: Expansion teams from 2017-2020

IMPLICATIONS

- Declining rate of attendance in teams when switching from an NFL or multi-purpose stadium means the MLS does not need to spend hundreds of millions of dollars to build new stadiums.
- It would be helpful to know that it is not necessarily beneficial for teams to build their own stadium with two more expansion teams on the way for 2023.
- Even when population is increasing, fan attendance is decreasing, so finding new and innovative ways to capture new fans is important.