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DOES INSTALLING ARTIFICIAL TURF CREATE A HONEYMOON EFFECT FOR
COLLEGE FOOTBALL TEAMS?

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Abstract

Most research conducted related to the honeymoon effect and attendance focused on Major League Baseball and stadium renovation. This study however, examined the connection between attendance and installation of artificial turf at the collegiate level. Seven Division I Football Bowl Subdivision Universities in Ohio have installed artificial turf and hosted home games for at least four full seasons. Cincinnati and Miami (Ohio) fit the honeymoon theory, reaching maximum attendance numbers in year two and leveling out by year four.

Artificial turf continues to be a growing trend at all levels of sports. The synthetic grass is installed as an alternative to natural grass and is used to cut back costs and maintenance fees that come with natural grass. Upon installing the artificial turf, the community and its users are usually filled with a sense of excitement. However, like anything over time the value tends to diminish and the excitement fade, thus known as the “honeymoon effect” (Zygmunt & Leadley, 2005, p. 278). According to Hamilton and Kahn (2005, p. 253) “the honeymoon begins to fade after three years,” meaning that by the fourth year a decline in happiness or satisfaction can be detected.

In college football, artificial turf continues to grow in popularity. However, the installation of these fields are not inexpensive. For instance, on average “Fieldturf may cost about \$5.50 per square foot, or \$450,000 per full-sized field, for an initial installation” (Renstrom, 2004). Thus, investors inspect a complete return on investment.

This research focuses on Division I, Football Bowl Subdivision schools located in Ohio who have installed artificial turf and have hosted home games for at least four full seasons. Weather plays a major role in field conditions and in some cases game outcomes.

Price and Sen (2003) stated that college football is a vital part of campus life and the revenue generated from the program out weighs any other sport offered at the Division I level. “Ticket sales are the main contributor to total revenue,” (Renstrom, 2004). The biggest issue with ticket sales however, is that spectators at most institutions are-often more inclined to buy single game tickets verses season

tickets. This is why research must fill the void and address the independent variable of team performance. Team performance consist of several factors, the most important being win/loss record.

Literature Review

The article “When is the Honeymoon Over? Major League Baseball Attendance (2005)” addresses the issues or concerns with the building of a new stadium and how the honeymoon effect plays a role in a project at the professional level. Several different factors were analyzed including increased attendance from winning percentage, ticket price and unemployment rate and a formula to predict a honeymoon effect was developed (Zygmont & Leadley, 2005). The research examined new major league stadiums built between 1970-2000 (Zygmont & Leadley, 2005).

Zygmont and Leadley found that in the first two seasons of developing a new stadium, attendance and price had a positive relationship, meaning as one increased so did the other. However, by year five, ticket prices remained high but attendance began to fall. An increase in attendance and ticket price was important for two reasons. The first being an “increase in revenue might cover a significant part of the cost....and second there might be a local economic impact” (Zygmont & Leadley, 2005, p. 296). Thus, proving a honeymoon effect existed between attendance and stadiums.

“Impact of New Minor League Baseball Stadiums on Game Attendance (2008)” also raised the question of whether or not a new stadium would lead to an attendance boost or if it simply noted as a “novelty effect” (Roy, 2008, p. 146). One-

hundred one stadiums built between 1993-2004 were examined over a 12-year span to determine if the attendance spike was short-term or long-term (Roy, 2008).

The researcher approached this study with three different questions, the first being, does a new stadium result in short-term and/or long-term attendance increase. Second does it matter if the team is moving from an old stadium to a new stadium? Finally does attendance among different levels of minor league baseball lead to a variation in attendance (Roy, 2008)? Data was collected using the average attendance for each of the stadiums first five years in existence. The research determined that a novelty effect did indeed exist and that year two showed roughly a 4% higher attendance rate than displayed in year one (Roy, 2008). By year five, at most levels of minor league baseball, the data presented a negative trend in attendance rates. This is important when addressing minor renovations and new stadium projects. Attendance is key for any spectator sport and knowing attendance trends helps to identify sources of revenue.

Attendance is not just measured at the professional sports level, but it is also used at the collegiate level when making decisions such as whether to build new facilities or renovate existing venues. Judge and Petersen analyzed NCAA Division I institutions, more specifically the current state of their strength and condition facilities. The main goal was to determine a relationship between the facilities budget, staffing and equipment based on the overall usage by athletes (Judge et al., 2014). Usage of the facilities was much higher from institutions with football programs than those without. In addition, "in the past five years, schools in the NCAA's top six sport conferences raised more than \$3.9 billion for new sport

facilities,” (Judge et al., 2014, p. 2259). Among the top of expenditures, upgrades to new stadiums was a primary concern for institutions.

Upgrades are important when addressing concerns within a facility because at the collegiate level, the largest revenue for institutions are ticket sales (Price & Sen, 2003). What exactly influences ticket sales was based on three variables. The first being the quality of the opponent and the weather on game day. The second being the length of the game and location, as well as age of the facility. Thirdly was variables specific to the University (Price & Sen, 2003). The research examined one-hundred twelve Division I-A college football teams during the 1997 season and studied average home game attendance based on stadium size (Price & Sen, 2003). Price and Sen found that game day attendance is influenced by several factors and the most important factors were past team performance and the visiting teams record and the size of the University (Price & Sen, 2003).

When making renovations to any facility, cost is a major concern. That is why it is critical to determine the question, if a University installs artificial turf, does it experience a life cycle similar to a honey moon effect and see an increase in attendance?

Methods

Population and Sample

There are roughly 128 football bowl subdivision teams in the National Collegiate Athletic Association (“National Collegiate Athletic Association,”2016). All 128 teams are divided among ten conferences across the United States and span

from the east coast to the west coast (“National Collegiate Athletic Association,”2016).

The sample group consisted of seven Football Bowl Subdivision Division I Universities located in Ohio who have installed artificial. The Universities included Bowling Green State University, Akron University, Kent State University, Cincinnati University, Miami (Ohio) University, Toledo University, and The Ohio State University. Further each has used the turf for at least four full seasons. Division I colleges in the state of Ohio were selected for two reasons. The weather in Ohio is much different than that of other states, thus eliminating the chance at skewed data due to incomparable weather. Secondly the researcher was trying to collect data that would impact and have value on our own University.

Attendance data was collected for all seven Universities, four seasons pre-artificial turf and four seasons post artificial turf.

The data was collected from the National Collegiate Athletic Associations official database (“National Collegiate Athletic Association,”2016). All members of the NCAA must report attendance numbers at the conclusion of each contest, providing the most accurate information in collegiate sports (“National Collegiate Athletic Association,”2016).

Measures

The dependent variable is the age of the artificial turf and where exactly the surface is in its life cycle. This was paired with the average attendance in the first four seasons of the turfs life cycle and the four seasons prior to its installation. The age of the artificial turf is vital when determining a honeymoon effect because the

attendance spike is most likely to peak in the first four seasons, reaching maximum attendance levels within that time frame and leveling out by year four.

Win/loss records were also collected, as the number one factor in game attendance is team performance (Price & Sen, 2003). In order to compare overall record with attendance, wins and losses were added together and then divided by the number of wins to get what is known as a winning percentage. If the data presented an upward trend and peaked within the four-year time frame then the artificial turf was part of a honeymoon effect. However if a downward trend was presented or no trend was determined then the data is reliable, but inconclusive.

Procedure/Treatment

The independent variable, attendance, was then displayed as a percentage of the facilities total capacity, this is the average attendance for each season and dividing it by the total capacity of the stadium to get an accurate representation of total attendance. The capacity of each stadium was obtained using the Universities respective athletic website. Akron and Ohio State were the only two schools where capacity changed pre-turf to post turf. Akron built a new stadium in 2008 ("University of Akron," 2016), while Ohio State expanded seating in its existing facility between the 2006-2007 season ("Ohio State University," 2016).

Winning percentage, was determined by taking the wins from each season and dividing them by the total number of games that season. The winning percentage for all four seasons pre-turf and post turf were also determined, in order to compare the percent of capacity and the success of the team. This was done for all seven Universities within the study.

Design and Analysis

The population in this study included seven NCAA Football Bowl Subdivision Division I institutions from the state of Ohio who have had artificial turf for at least four seasons. The seven teams included Bowling Green State University (northwest Ohio), University of Akron (northeast Ohio), Kent State University (northeast Ohio), University of Cincinnati (southern Ohio), Miami (Ohio) University (southern Ohio), University of Toledo (northern Ohio), and Ohio State University (central Ohio). The study analyzes the average game attendance and compares it with winning percentage, as well as taking into factor the maximum and minimum attendance each year of the four-year time frame.

Figure 1: Baseline Pre-Turf

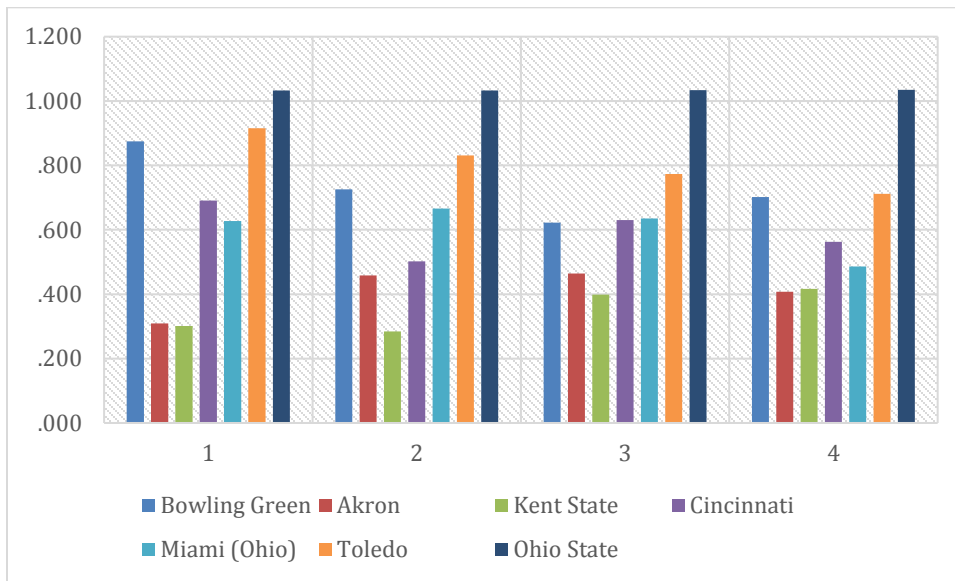


Figure 1. The figure represents the baseline for the four season pre-turf for all seven Universities examined in the study. The figure is based on the percent of stadium capacity filled on average each season. (a) The horizontal axis is the year in which

the attendance was measured. (b) The vertical axis represents the percentage of capacity each individual University reached in each of the four seasons measured.

Results

The research conducted was based on the hypothesis that a honeymoon effect would be present following the installment of artificial turf. In addition, by year two of the life cycle it would peak at maximum attendance rates and level out by year four. To test this hypothesis, attendance based on the percent of capacity was compared to win/lose records for the four seasons pre-turf and compared the data to the four seasons post turf. The dependent variable, artificial turf was examined at various levels of its life cycle in order to determine if the presence of a honeymoon effect existed. The independent variable attendance was then displayed in the form of percent of capacity, which was found by taking the average total attendance for the year and dividing it by the total capacity of the stadium. For example, in year one at Bowling Green State University, Doyt Perry Stadium, the average attendance was 17,909 which was divided by 24,000 (the stadium's total capacity) to get the percent of capacity of .746 ("Bowling Green State University," 2016). This was done for all four seasons pre-turf and post turf and for all seven Universities examined.

The results appeared to be inconclusive in this study as a significant change in attendance was not visible, however the data is still reliable. Of all the Universities examined two displayed the greatest change in attendance pre turf to post turf. The University of Cincinnati and Miami (Ohio) University fit the research best.

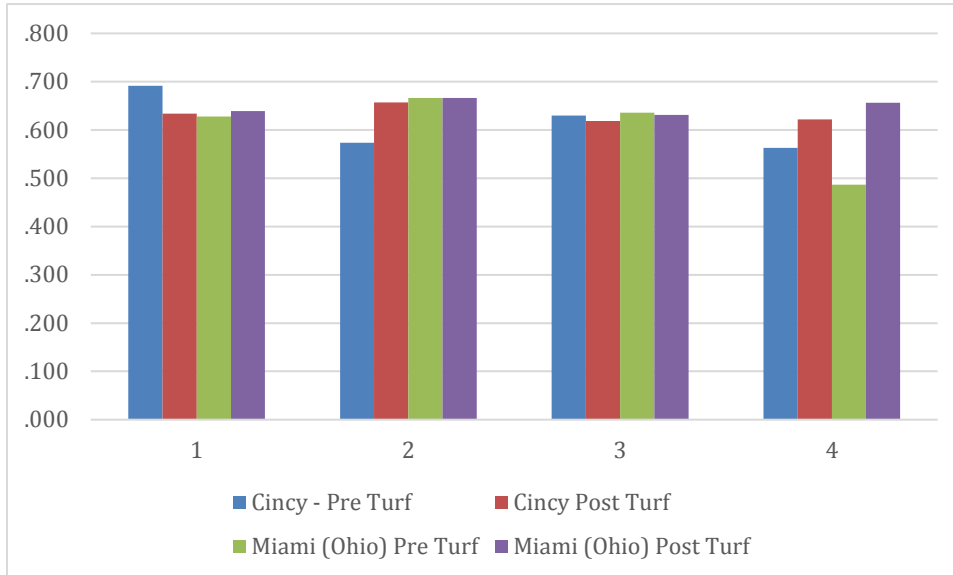
Figure 2: Cincinnati / Miami (Ohio) Percent to Capacity

Figure 2. Cincinnati and Miami (Ohio) percent to capacity is displayed both pre turf to post turf. (a) The vertical axis represents the four season pre turf and post turf when attendance numbers were collected. (b) The horizontal axis represents the percent to capacity corresponding to the Universities total capacity numbers.

These two institutions support the hypothesis in that year two of playing on artificial turf attendance numbers peaked before experiencing a steady decline in the years to follow. The number one factor in attendance is team performance and in each of the seasons examined above the win/lose record for both teams were roughly similar pre-turf to post turf. Cincinnati's pre-turf winning percentage was .422 and post turf winning percentage was .520. As for Miami (Ohio) its pre turf winning percentage was .224 and post turf .360 respectively. Thus presenting the data as once again reliable but inconclusive.

As for Bowling Green, Akron, Kent State, Toledo, and Ohio State a change in attendance is present but not significant. Bowling Green presented the same

downward trend both pre-turf and post turf. However, the winning percentage pre-turf was roughly .612 and post turf was .460, meaning that based on this study Bowling Green attendance numbers are in direct relation with team performance and the installment of artificial turf had little to no effect.

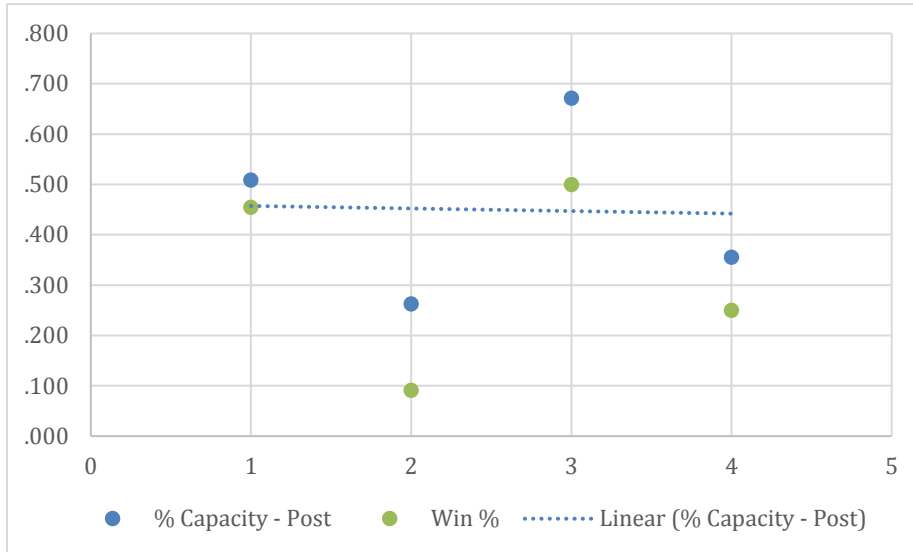
Akron peaked in year one of post turf reaching roughly .579 percent of capacity but slowly declined from there, leveling out by year four where it reached its lowest point of .309. Meaning that it doesn't fit the hypothesis that maximum satisfaction levels will be met in year two but instead was met in year one. Akron was unique in that a downward trend was depicted post turf but yet percent of capacity was higher post turf then pre turf. Pre turf on average was .410 and post turf reached .438, displaying a spike in attendance when turf was present. This may be due to one of two variables. Akron built a new stadium when artificial turf was installed. Second, the total capacity changed from 35,202 to 30,000, thus presenting a higher percent to capacity post turf ("University of Akron", 2016).

Kent State also displayed a unique trend post turf, it actually peaked in year three instead of the predicted year two. Kent State winning percentage pre-turf was .326 and post turf was .326, meaning that team performance in this case is equivalent and can be observed but is not the main factor on attendance.

The results post turf for Kent State displayed a slim downward trend, however the total attendance numbers post turf were higher, reaching a total of roughly 11,384 or .450 percent to capacity. Where pre-turf, Kent State recorded roughly 8,998 in total attendance or .355 percent to capacity, thus showing that turf

may have had an effect on attendance but did not necessary follow the honeymoon pattern (peak in year two and level out by year four).

Figure 3: Kent State Post Turf



Toledo's highest attendance post turf was met in season four when attendance reached on average 22,156.8 or .844 percent of capacity. The attendance peaked at its highest point during the 2004 pre-turf era reaching .915 percent of capacity before slowly declining until 2008. The data post turf did not support the hypothesis as attendance numbers reached their lowest point of .621 percent of capacity in year two and peaked in year four post turf. The data presented by Toledo also fits the idea that winning percentage is an important factor in game attendance, for example during the 2009 season average attendance was 16,284 and the teams winning percentage was .417. However, by 2011 (the highest registered attendance data) attendance was 22,156 and a winning percentage of .692 was recorded. Even though Toledo does not fit the exact model of the hypothesis the data presented is

still valid in that post turf attendance did display an upward trend, while the pre-turf era fell from .915 percent of capacity in 2004 to .711 by 2007.

As for Ohio State, the attendance numbers were slightly different in that year four displayed the highest attendance numbers both pre-turf and post turf. Post turf a giant jump in attendance was seen between year two and year three with the attendance leveling out by year four. Post turf reached its highest point of capacity in year three when it reached 1.029 and the exact same percent of capacity 1.029 was displayed in year four. This can be deemed in relation to the presence of turf as the winning percentage in year three was only .846 but reached .923 in year four, eliminating the factor of winning percentage. Ohio State is another unique case where total capacity of the stadium changed from 101,568 pre-turf to 102,329 post turf but the results still favored the idea of a honeymoon effect in that satisfaction levels were met by year four and leveled out by the end of the four-year lifecycle.

Discussion

The results for all seven Universities showed a change in attendance from pre-turf to post turf. The percent of capacity for Kent State, Akron and Cincinnati all displayed higher on average percent to capacity post turf than pre-turf, with Cincinnati peaking in year two. The results suggest that artificial turf has an effect on attendance and a honeymoon effect can be detected but the significance may be minimal.

This study did provide contributions to existing literature and overall influences attendance. For instance, an increase in attendance is important for several reasons, the first being “the resulting increase in revenue might cover a

significant part of the cost” (Zygmunt and Leadley, p. 296). This supports the research conducted in that attendance is the most important factor in team revenue and should be deemed as one of the most important factors when making a decision. McEvoy, Nagel, Deschrive, and Brown (2005) stated that “ticket sales have long been a vital revenue source” reassuring the importance of attendance. The attendance numbers in this study fluctuated based on different factors but the overall results displayed that any change in venue or team can have a significant impact.

The study can be used as an informal tool when deciding whether or not upgrading a facility with the addition of artificial turf is a profitable decision. It provides an insight into the effects of post artificial turf upgrades and the various cycles Universities can expect to experience. I feel that artificial turf is a great upgrade to an existing facility and that a much larger study would display a positive impact. I recommend the installation of artificial turf when looking to have an increase in attendance as this study demonstrated a positive relationship. I believe that not only in Ohio but in Universities across the nation attendance numbers can be in direct relation to the installation of artificial turf and will help lead to higher attendance numbers early in its life cycle.

Individuals looking to do future research on this topic may want to extend the current study from seven Universities in Ohio to Universities throughout all of Division I football bowl subdivision. A limitation of this study was the population size as it was adequate for this study but a much more definite change could be seen with a much larger population. It may also want to examine different factors such as

opponents throughout each season examined, as well as the amenities offered at the various stadiums. This was another limitation in this study, it addressed attendance and win/loss record with out examining things such as family day and various services offered by Universities. In summary the results of this study could be applied when looking at attendance patterns in relation to a honeymoon effect.

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