Data Analytics: How Can it Impact the NFL?

Group 4

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**Introduction**

This report analyzes attendance trends for the four NFC West NFL teams. The Arizona Cardinals, Seattle Seahawks, Los Angeles Rams, and San Francisco 49ers based on Excel data covering home and away games over multiple seasons. The dataset also indicates whether a team went to the Super Bowl during a particular year. By examining this information and referencing graphical trends, we can better understand how game location and team success influence fan attendance.

One of the most consistent patterns observed across all four teams is that home game attendance was high. This trend holds true for every team, every season. This isn’t surprising, as fans are more likely to attend games hosted in their home cities due to convenience and local support but this is another reason as to why people watch home games it also has to do with the stadium capacity, While the capacity is a huge impact in this number as well it is an important aspect in the attendance. This raises morale and keeps fans engaged.

The Seattle Seahawks and San Francisco 49ers stood out with especially strong home attendance numbers even in seasons when they did not reach the Super Bowl. This suggests that these teams have developed a solid and loyal fan base that supports them regardless of performance. Home games are seen that fans are supportive and watch most of the games. Especially when promotions on tickets or food are also given to fans. This is extremely important because even though games may not have won, the support of the fans still stands, while this is important for both the team and the players it is important to the fans because they feel wanted instead of just another way to make money from them.

Another important trend identified in the data is the relationship between Super Bowl appearances and fan attendance. In the years when a team advanced to the Super Bowl, there was a notable increase in average attendance at home games. This was particularly evident for the 49ers and Rams, they had huge improvements in support from fans, and it is shown in the charts. This pattern suggests that team performance and postseason success are strong drivers of fan engagement. Fans are more likely to attend games when their team is winning. The excitement surrounding a possible playoff appearance can create a buzz that carries through the entire season, drawing more fans to stadiums. This is huge for fan engagement and ability to keep morale up.

Based on the Excel data and the visual trends displayed in the graphs, two conclusions are shown, NFL teams consistently attract more fans to home games Lastly, Fan attendance increases significantly during seasons when teams reach the Super Bowl. These findings are valuable not only for understanding fan behavior but also for strategic planning by teams and league organizers. Marketing campaigns, ticket sales strategies, and fan engagement initiatives can benefit from knowing when and where fans are most likely to show up. Teams that invest in winning seasons and cultivate loyal home audiences are more likely to see sustained high attendance and long-term support. The data shows that location matters and so does winning. A strong season capped with a Super Bowl run doesn’t just boost the team’s reputation, it fills the stands.

Descriptive

From the data that we collected we see that the Arizona Cardinal’s average home attendance was 56,322 fans, this seems like a lot however compared to other teams this average is not a lot. The highest year of attendance was in 2016, While this is chart explain the abilities of the attendance and improvements of the team's highpoints and low points, we notice that in 2003 the lowest attendance occurred in home games, this was due to the team's season of 4-12 record. This completely dropped the morale of the fans and made the on-field performance noticeably different.

The combination of poor performance and lack of exciting gameplay likely led to decreased fan enthusiasm. Many fans may have chosen not to attend games due to the low score in wins, this was very important to understand because the morale of the fans would definitely have an impact on the team as well, without cheering and encouragement players may not do as well as when they have this constant roaring of fans this is seen throughout the season. And it has made such a dent in the games throughout the season.

Another reason why the attendance was so low was due to where the games were being played, during this time the Cardinals were at the Sun Devils stadium, bring that this was a college stadium alcohol and advertising were limited and faced many restrictions. This being an important aspect to fans, the amenities were greatly affected. To be able to watch a game and enjoy it fans need to have the ability to be comfortable and willing to want to stay for a multi hour game. The average wins for this team were 6.9 and the playoff appearance was 4. This is very low compared to the other teams and it shows a reflection in the attendance rate. The Cardinals have increased in attendance throughout the years, and we see that more fans choose to attend, however being that the cardinals did not do as good for a very long time it shows in later years.

When we look at the overall team, Seattle Seahawks, we notice that they have 67,187 fans in average attendance, this is extremely impressive compared to the Arizona Cardinals. While fans seem to be more engaging in attendance and value the team more, it is shown in the charts as well that in 2016 it is at its peak attendance. This has a huge impact for the Seattle Seahawks, while this has a huge influence by the number of wins during the season it is also affected by the star players as well. These have a huge impact on the teams as it makes more people want to watch games and purchase merchandise. The Seattle Seahawks had so much opportunity during this period, and they did not limit themselves. The lowest point of the Seattle Seahawks, this was mainly due to the relocation of the Husky Stadium therefore the stadium experience and the transitional period was a huge part of the lack of attendance. The Seattle Seahawks made a Season record of 6-10, this is not a terrible number of wins however they have a done a whole lot more in the upcoming years. The Average Wins per Season was 9.1 and the playoff appearance was 14. Compared to the Cardinals, this was a massive difference, and it shows in the charts that the attendance was a lot more. We will see that this team has the highest playoff appearances.

On the Rams, we are shown that the average home attendance is 63,279. This is another huge difference from the Cardinals. The Rams had die-hard fans that came to most games even with low records of winnings during the seasons. We notice that in 2016 it is the highest attendance, and this is due to the win ratio, The Rams returned to LA during this time from an absence of 21 years, as well as large venues. The Rams had a huge stadium that accommodated so many fans and practically did not limit the amount of people to attend the games. This was huge because it encouraged so many people to want to go as there wouldn't be limitations on seating. Huge media exposure was also seen during this period, and this had a huge impact on people wanting to watch the teams' games. The lowest attendance was in 2015; this was due to the rams missing the playoffs for the 11th consecutive year with a record of 7-9 season. During this period the Rams also had issued with stadium, with outdated amenities. This has a huge impact on key fans' attendance. The average wins per season from 2000-2019 is 7.2 and the playoff appearance is 5.

The San Francisco 49ers had a huge home attendance average from 2000-2019 which consisted of 68,805, This being the most attendance of fans out of all the teams. This huge number of fans impacted the game's performance, and you can see it in the chart total wins. In 2010 SF 49ers had the highest performance, being that the highest performance was due to the wins and fan morale we also see that a lot of fans are die hard home attendance fans. This has a huge impact on morale because the people who do go to these games are impacted more due to the games at home being with a lot more similar players winner intention. This makes them more of a family to each other and wanting the same goal accomplished. We see that in 2004 the lowest attendance in SF 49ers’ stadium was due to the low field performance with a record of 2-14. Coaching was not great either during this period and this had an impact on the team's performance. The average wins per season from 2000-2019 was 7.4 and the playoff appearances was 6, this is a lot second in lead to the other teams.

**Predictive**

Some of the recommendations to improve fan engagement are offering tickets or food promotions this would bring so many more fans to the games. Having these incentives would mean that more people would also enjoy the game more. While at times games are not perfect for the weather, purchasing drinks when it is extremely hot for outrageous prices does not have a good impact on team morale as some people may not want to purchase them. This would have a huge impact on whether fans would want to come back or not. Comfortability is a huge deal in sports, and the more comfortable fans are the more likely they will want to come back. Ticket promotions will encourage people to want to buy, they would feel more comfortable paying less for a ticket and a little more for food as they notice that they got a deal on something at least. Getting them in the stadium and having them in a seat is vital for attendance and having both promotions makes it so much more likeable for fans as they feel that they are wanted and seen for their fan ability to want to attend games and give support to their home games.

Some other improvements to fan engagements would be upgrading the stadium and seat comfort. This has a huge impact on whether or not fans want to come back or not. If you are sitting for almost the whole game you want to be somewhere that is comfortable, being on an uncomfortable chair that feels like a rock is an issue that will make people not want to come back. This is an easy fix for most stadiums as they can install padding in the seats that are already built, and this would make people so much more comfortable during these long periods of game times.

Improvement in stadium capacity is extremely important especially for those who are disabled or have issues walking. The stadiums are at times a long way from parking lots and having these transportation services is vital to supporting everyone, you would not want to walk a quarter of a mile then attend a game, it is such a workout by itself. You want to have fun and not have to park and know that it would take you twenty minutes just to reach the game just to have you already become out of breath and exhausted. These improvements let fans keep their morality before it goes to waste just to get to the stadium. Constant transportation is also an important aspect for wait times, pickups being 24/7 during the game is important in that no one gets missed.

The stadium capacity is also vital, being that you want as many fans as possible to attend. Should a stadium not be large enough to accommodate fans, less morale would be shown as, and less people would look to try and purchase tickets as they may think they even have a chance of receiving a ticket. Stadium capacity is huge because you want to take any chance to have as much fans as possible to join, this not only improved the morale of them fans themselves but it also improves the teams too because you have so many home fans cheering them on and wanting them to win. While capacity is important the performance of the games is also vital. This is huge especially because it gives fans to be able to engage more and become more excited.

This brings us to improving the team, having great players join and making them star players is extremely important. Winning games brings so much more excitement to the games and keeps fans engaged. This is huge in the sports because it makes fans want to come back. Having your home team only feet from the touchdown lines with only a few seconds on the clock to take it all and become the winning team is one of the most thrilling events to be made in football. This brings fans to their feet and has them become so excited to see the next play.

**Prescriptive**

In our excel file where we generated the forecast in attendance in home games attendance for all four teams which can be saved in the directory which the file is also dynamic, as we run the code we saw the generated forecast of a 3 season moving average, this is more accurate the naive forecast. The charts also exemplify the historical data where we based our forecasts off of. Based off the 3-season moving average, the Arizona Cardinals having a lower success between 2016-2019 fans are still consistently showing up for their team and due to this it can be predicted that they will see a lot more once fan engagement if they continue to improve.

The Seahawks, one thing is for sure, have the highest attendance numbers with very little movement over the 19-year span. The team is consistently winning which is bringing them to playoffs. This then gives fans the morale and support that the seahawks need to continue to be a great team and the morale that is wanted in football. Having a huge impact on attendance is extremely important because it also brings more fans to purchase merchandise and therefore promotes their team even more by visuals. Being on fans who love their team encouraging others to watch one of their games.

The rams went from an up and down phase as they moved from St. Louis to LA in 2016. This move made them gain their fans attendance all over again especially when they were not in LA for over two decades. The Rams upgraded their stadium so much however when they moved and this made fans more likely to purchase tickets as they have something to look forward to, their wins were also increased which made fans want to attend as well and ticket sales are so important especially to recuperate the money that was put into the upgrade of the stadium.

The San Francisco 49ers have a strong home fan base. Over the data span of 19 years this team has had an average attendance of over 65.000 throughout. Having this support from fans is extremely important and a huge reason why the team did so well. Having this morale and support keeps players on their toes and gives them a reason to keep on winning and trying to go to the playoffs.

**Conclusion**

The conclusion is that we can see a strong correlation between fan engagement and team success; this is so important in any sport because it keeps players “on their toes” and gives them a reason to want to win. They have thousands of fans that they do not want to let down and give them the reason as to why they bought that ticket, supported their team and gave them a reason to purchase their merchandise. Fans are extremely important because they are not just numbers on a price chart, but they are hope and support for the teams and players. We see that through the seasons some teams who do not win every single game still show constant support from fans at home games. Having this support is extremely important because engagement is also increased.

We notice that forecasting can be used to demonstrate future trends. However, in the end it is how well your team performs that will determine how successful the franchise is as a whole. Having games on is important to keep morality high attending games that are always lost does not keep fans morality high, to be able to win games gives fans a reason to keep purchasing tickets because it gives them a higher question on which team is going to win instead of automatically knowing their home team will lose because they have constantly shown that they are not a winning team. Having this feeling is huge because there's only little doubt or no doubt at all their team will win so it makes the game more interesting and driven to want to see the winner.

We see that marketing and promotional offers are essential if a francise is struggling to win. This is huge because while some teams may not be doing as good as others it's another reason to keep fans happy. Having discounted prices on tickets or food is a great way to keep fans engaged and seats filled. It keeps players on the team that morality of cheering and support from the fans. This is extremely important to keep fans engaged and a reason to come back. While promotions and marketing are huge it gives fans the ability to also support by purchasing merchandise and letting other people know that the team is liked and possibly persuades other people to want to watch a game since they know others like their team as well so they must be good.

References

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