Factors Impacting TV Viewership on the PGA Tour (Part 1)

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1.) Introduction

TV and attendance viewership is a heavily researched field across many avenues of sport economics. From television network executives to league commissioners, sport industry professionals are constantly searching for new ways to capture their target audience and formulate the next generation of sports fans. Along this train of thought, a few key questions must be answered in prefacing this paper. For one, how do we measure captivation in sports? It's no secret that TV ratings and fan attendance are not the only way to measure fan engagement. No matter the sport, someone with a digital strategy background might look at web traffic or social media following as a central indicator of popularity, while a CRM analyst might look at things purely through the lens of ticket sales and sponsorship deals. The successful operation of several different avenues must work together if a sport commodity is to optimize the data available in making more informed decisions about their product. With this in mind, we chose to investigate our area of interest through the lens of TV viewership simply because there are innately quantitative measures that seemed to have sufficient data. If data became publicly available in the space of social media or brand activation to a larger extent, we would certainly expand upon this research through its inclusion in some form or fashion.

With the above ideas in mind, we will now introduce our specific research question and means of investigation. In short, we are searching for a more complete understanding of the factors that impact television ratings on the PGA Tour. In conducting this study, we will first review the vast array of research that resides in the

field of sport and leisure intelligence overall, before exploring potential modeling methodologies and expansions on our current data sources. In the literature review portion, we will begin by reviewing general factors affecting TV and attendance viewership. From there, we will look at this commonly referred to concept of "starpower", with literature examples from both the NBA and PGA Tour. Upon identifying the niche differences that the sport of professional golf tends to have in this field of study, a more comprehensive review of the power of Tiger Woods will take shape. After that, we will then review the uncertainty of outcome hypothesis, again, with hopes of establishing a more complete view of PGA Tour fandom. As it stands now, this is our most direct avenue to formulating impactful results, as the intersection between competitive products and tournament ratings is well established in many sports. From there, we will describe the variables used in our dataset and overall feature selection process, before analyzing and interpreting the results of our regression models, as they relate to the factors that influence TV viewership on the PGA Tour.

2.) Literature Review

a) Sporting Popularity ~ Factors Influencing Viewership

There are many factors that influence attendance at professional sporting events. Influences may include factors related to the sport itself, such as the home team's performance or the quality of their opponent; factors related to the specific day of the game, such as weather conditions or promotional giveaways; the level of competition (ex. Major League vs. Minor League sports); or the socioeconomic background of the attendants of the events. These factors that influence attendance at sporting events and ratings for TV broadcasts of these events have been previously studied in great detail. Some earlier studies focused on the relationship between team performance and fan attendance at events (Hansen and Gauthier, 1989). However, team performance was found to not be the only determinant of attendance at professional sporting events. Other early studies measured the impact of economic factors on attendance. These included ticket prices (Kahane & Scmanske, 1997), average income (Domazlicky & Kerr, 1990), and population (Hill, Madura & Zuber, 1982). Other studies combined the previously mentioned economic factors with demographic factors (Noll, 1974). It was not until the 2000's when studies which examined factors that were controllable by sports marketers became more prevalent. Boyd and Krehbiel (2006) analyzed the impact of certain types of promotional giveaways and times of games for game attendance to determine when promotions will be most successful at increasing attendance at Major League Baseball games. Fans respond to certain promotions and certain times of games, with promotions during night games found to result in the greatest increase in attendance. Paul (2011)

analyzed Minor League Hockey attendance and found that fans responded positively to different factors that occur within games. In the case of Minor League Hockey, Paul found that attendance increased for teams who participated in the highest rate of fighting during the season. Studies on in-game and in-event activities are increasingly important with a new generation of sports fans that are increasingly reliant on technology in most aspects of their lives, including when attending sporting events. In-game events dependent on specific sports such as fights, goals, or close finishes may help attract more fans to not only attend games but also watch on TV. In addition to this, as more states legalize gambling, more sports fans will be able to place bets on their favorite teams, which may lead to a positive impact on attendance and TV ratings for sporting events. One popular sport which attracts large numbers of spectators attending their tournaments, as well as high TV viewership ratings, is the PGA Tour, the main organizer for professional golf tournaments in North America.

b) Starpower in Golf

One major difference between professional golf and other major sports leagues in North America is that where other sports are team-oriented, golf tournaments are made up of hundreds of individual golfers who solely influence their own performance. The PGA Tour thus relies heavily on these players to drive fan interest and produce revenues. As a result of this individuality in golf, some golfers have attracted a greater fan following than others. Most notably, Tiger Woods, often considered to be one of the greatest golfers (and athletes) of all time, has attracted a large following due to his unprecedented level of success. Woods' individual impact on tournament attendance and tournament broadcast viewership has been so notable and unprecedented that we will

focus on the “Tiger Woods Effect” individually in the next section of our Literature Review. Woods may be the greatest example of the impact of “star power” in not just golf, but in all of professional sports. The opportunity to watch one player, who is popular in their sport and plays at a high level, may likely positively impact a fan’s decision to either attend or watch a sporting event on TV. The impact of a star player on attendance and viewership has mostly been applied to the National Basketball Association (NBA). Berri and Schmidt (2004) used a multiplicative model to examine the role that star player attractions of the NBA play in promoting fan interest through ticket sales. Their research concluded that individual star power does not have a strong factor in ticket sales, but rather the overall competitive balance of the league has a strong factor. Grimshaw and Larson (2020) analyzed the impact of starpower on TV viewership as opposed to ticket sales, specifically looking at the impact of starpower on viewership for NBA All-Star Games. The TV audience of the NBA All-Star Game was shown to depend on high skill level and fan interest and attachment to specific players on certain teams. Where prior research asserted the importance of player celebrity over skill in generating ticket sales and TV audience, these papers indicate that skill level may be a more important driver of attendance and viewership. These findings help back why players with higher levels of sustained success, such as Tiger Woods, have such a strong influence on golf tournament attendance and TV viewership ratings. In addition, specific rivalries between teams and players may positively impact attendance and viewership. An example of team rivalries in professional golf is the Ryder Cup, played between teams of golfers representing the United States and Europe. While this event is immensely popular across multiple countries, it occurs just once every two years. However, it has helped

transform the popularity of certain players who perform well at these events, which lasts for the remainder of their careers. In recent years, there have been more individual rivalries between golfers, especially since the PGA Tour's introduction of the Player Impact Program (PIP), which rewards players financially for their contributions towards helping popularize professional golf. While this new program will certainly provide a greater insight into the impact of starpower in professional golf, this topic has been addressed in prior literature. Golfers can also create a name for themselves by beating previously established superstars in tournaments, although this is not easy to do. Brown (2011) analyzed how player's change their strategies (become riskier) when playing against superstars (mainly Tiger Woods). Brown tested to find if players became riskier in the final round with a chance to beat Woods in a tournament. Risky play, especially in golf tournaments, where one bad shot can ruin an entire round, may increase entertainment value and TV ratings. Brown found that on average, higher-skill PGA golfers' tournament scores are nearly a full stroke higher when Tiger Woods participates, as opposed to when he does not.

c) Tiger Woods Effect

The extent to which Tiger Woods has impacted the popularity and subsequent TV viewership and attendance is unparalleled. As of the writing of this paper, Woods has 82 career PGA Tour victories, which is tied for the all-time-record amongst professional golfers. His 15 all-time victories in Major Championships rank second all-time to Jack Nicklaus' 18, and he has won all four of the Major Championships at least three times. Most notably, Woods is a five-time Masters Tournament winner and has an all-time conversion rate of 44-for-46 (95.7%) when leading a tournament heading into the final

day of play. His unprecedented level of dominance has brought with it an intense following and a large fanbase, as well as great levels of popularity among golf fans and sport fans all over the world. When Woods is in contention, especially on the final day of a tournament, people will watch. There is no comparison to his impact on TV viewership in other professional North American sports. Woods' winning performances have also garnered greater levels of TV viewership compared to other tournaments in which he is not in contention on the final day of the competition. For example, Woods' come-from-behind playoff victory in the 2008 U.S. Open captured a 21% increase in TV ratings from the broadcast of the previous year's tournament, in which Woods finished second. Rau (2009) further analyzed the "Tiger Woods effect", using regression analysis to determine what factors were most important in determining golf tournament attendance. His qualitative research results found that Woods' presence at an event was the most important factor influencing attendance. A study by Nielsen came to the conclusion that Woods' presence increased golf viewership by 150 percent and raised badge demand by 20 percent (Whiting, 2019). Given that Woods is still an active member of the PGA Tour, having most recently competed in the 2022 Masters Tournament, it should be expected that his commitment to certain Tour events will undoubtedly lead to an increase in the attendance and viewership of these events compared to other tournaments in which he does not compete. However, Woods is now 46 years old and has gone through major surgeries over the past decade. These factors have limited his ability to compete and win on Tour in recent years. Woods won 5 times on Tour in the 2013 calendar year, but has won just 3 times since then, most recently at the 2019 Zozo Championship. While Woods may still enter into tournaments, it is less likely that he will win them as opposed to his

dominant stretch of nearly 20 years dating back to when he first turned professional in the mid-1990's. A 2016 Data Golf article, "Quantifying the "Tiger Effect"" attempts to show the effect of Woods' level of performance on his playing partners over time. It was found that players played significantly worse, relative to their usual standard of play, when playing with Tiger in nearly all the years from 1997-2013. However, players have been playing better on average when paired with Woods from 2014 onward, which coincides with a drop-off in the level of performance from Woods. Even when Woods was at the top of his game, he didn't win every tournament he played in. With over 125 golfers entering each tournament, working on their own to win on their own, there is more uncertainty towards each outcome of every tournament compared to the outcomes of other professional sporting events, played by teams rather than individuals. This ultimately leads into a final discussion on the application of the uncertainty of outcome hypothesis as it relates to PGA Tour tournaments.

d) Uncertainty of Outcome

In previous sections, we have established that there are select, innate differences that impact the viewing experience of golf tournaments that do not exist in most other sports. It is now time to review one of the most fundamental economic concepts used in measuring the demand of a sporting event, and that is the uncertainty of outcome hypothesis. On a superficial level, golf is just like any other sport; fans watch tournaments because they are interested in seeing how the best players perform on the biggest possible stage. Oftentimes, there are several players pitted against each other at the same time, which often promotes a more optimal viewer experience in terms of entertainment value. Having said that, tournament style sports can also lead to runaway

victories, in which case, the highest-value day (Sunday) can often prove to be underwhelming on the back nine. Based on what we learned in the previous section, if a player like Tiger Woods is running away with a tournament, his large margin of victory (and any feeling of certainty that comes with it) may be counteracted in the moment. In the long term; however, it is important to acknowledge that a sport-evolutioning player like Tiger Woods will not always be the one running away with the tournament on Sunday evening. As such, testing the uncertainty of outcome hypothesis by looking at tournament type, leader margin, and player effects on a wider scale would begin to answer a few of our research questions. In the article *Superstars, Uncertainty of Outcome, and PGA Tour Television Ratings,* Gooding and Stephenson (2017) attempt to answer this exact question using several economic concepts alluded to already. In this paper, the authors used tournament level, 3rd and 4th round Nielsen television ratings in the form of average viewership as their dependent variable. A concrete conclusion they came to was that certain tournaments, notably majors (Masters, PGA Championship, Open Championship, and US. Open) had a significantly positive effect on TV ratings. This comes as no surprise, as these are universally viewed as the most important professional golf events in the world. From there, they utilized a number of player-specific and overall margin of lead measures to dig into this uncertainty of outcome dilemma. They found that, with the exception of Martin Kaymer's runaway victory at the 2014 U.S Open, none of their non-player effect uncertainty of outcome variables proved to be statistically significant as it relates to TV ratings. In the end, they acknowledge the significant effect that both Tiger Woods and Phil Mickelson have on TV ratings as a standalone factor, as both players were included in the data with distinctions "making the

cut" and "Top 10 entering round". With this concept in mind, they reiterated the sentiments of the Tiger Woods effect portion of this review by concluding that the presence of Tiger on a Sunday leaderboard increases TV viewership by 50%. As an additional note, the Mickelson top 10 and Woods top 10 entering round variables proved to be significant, as one might expect. In terms of how the methodologies used in this paper would relate to our research, there are a few additional factors that we believe should be considered. For one, instead of betting odds entering the final two rounds, the authors focused on stroke margin entering the round. Given obvious differences in player skill level, betting odds would be a better indicator of how uncertainty of outcome impacts measures of popularity in sport, especially considering the noted impact of star power on golf tournament leaderboards. A five-stroke lead held by an elite player is much more valuable than a five-stroke lead held by an average player, and betting would help explain this concept in practice. As a final note, by researching other uncertainty of outcome papers, there are a few concerns and potential significance limitations related to several methods of measuring popularity that warrant mentioning. In the paper *On the Edge of Your Seat: Demand for Football on Television and the Uncertainty of Outcome Hypothesis,* several of these concerns are made clear by Alavay, Gaskell, Leach, and Szymanski (2010). For one, they mention that betting markets for their sample of European soccer games have been historically inefficient, given the implied probability of draws and an overestimation of the effect of home field advantage. In addition, they mention that because soccer teams can usually sell out stadiums regardless of match significance, these results could be limited by censorship and stadium size. Similar ideas may or may not directly impact PGA Tour golf tournaments in the same exact ways, but

these are certainly factors to keep in mind if we are to include measures of attendance in addition to TV ratings.