Factors Impacting TV Viewership on the PGA Tour

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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.

3.) **Methodology**

a) Data Summary

We successfully collected the following data for use / potential use in this project…

- Pre-Tournament Betting Odds for Major Championships (1993-2021)
- 3rd and 4th Round Nielsen TV Viewership Data for Majors only (1993-2021)
- PGA Tour Leaderboards scraped from ESPN.com (2018-2022)
- Weekly Official World Golf Ranking Updates (2019)
- Strokes Gained and Player Performance Statistics (2010-2021)

The first category of data we have successfully collected for use in this project encompasses every player's pre-tournament odds to win each of the four major championships dating back to 1993. Relating these odds to TV viewership is certainly a practical starting place, given everything we've discussed in the uncertainty of outcome section of the literature review. Unfortunately, as was articulated by Gooding and Stephenson, the most valued and variable rounds to track in terms of relating uncertainty of outcome to TV ratings are the 3rd and 4th round, meaning this pre-tournament data is potentially not as valuable as pre-round 4 betting odds. Ultimately, this pre tournament betting data proved to be insignificant, and our search for pre round 4 betting data was unsuccessful. Having said that, it is certainly an avenue of research that we would look to develop in the future, as it remains true that some relationship exists between the presence of heavy favorites and subsequent audience viewership. Given this discussion about pre-tournament vs pre-round betting odds, it is important to note that naturally, TV

viewership ratings are readily available on a round by round basis. As such, we were able to easily collect 3rd and 4th round major championship data, measured in terms of average viewership and Nielsen rating. This data was collected from SportsMediaWatch, the same source referenced in the Gooding and Stephenson paper. With a little more manual investigation, we found a more extensive sample that includes more tournaments per year over a shorter time period (2018-2022). In the end, we decided to model TV viewership with this smaller dataset that contains both majors and non-majors over a shorter time period, as we believe it is a better indicator of the current demand of PGA Tour viewership, especially when considering the impact of starpower mentioned in the literature review. In the end, our final dataset contains 45 tournaments from the 2018-2022 seasons, each of which has the following attributes: Year, Tournament, Major (dummy), Average Final Round Viewers, Nielsen Rating, Leader Margin (pre round 4), Margin of victory (post round 4), Playoff (dummy), Tiger Woods Making the Cut, Presesce of the following players in the top 10 at the end of the tournament: Tiger Woods / Phil Mickelson / Rory McIlroy / Bryson DeChambeau / Jordan Spieth / Justin Thomas, and a count of the number of star players (those listed above). The style we used in terms of splitting our attributes into tournament effects, uncertainty of outcome effects, and individual player effects was heavily influenced by the Gooding and Stephenson paper from 2017. Having said that, we chose this methodology path because we wanted to see if any individual star today has evolved to a point that comes close to Tiger in terms of attracting viewership. For this reason, we chose these 4 other players (Bryson DeChambeau, Justin Thomas, Jordan Spieth, and Rory McIlroy), as they were at the top of the PIP list in 2021, and are widely considered four of the most popular golfers in the

2018-2022 time period we are examining. Given the fact that Tiger and Phil have not played in nearly as many events over the past five seasons, we would expect their influence to still be strong, but maybe not as strong as their peak in the mid 2000s.

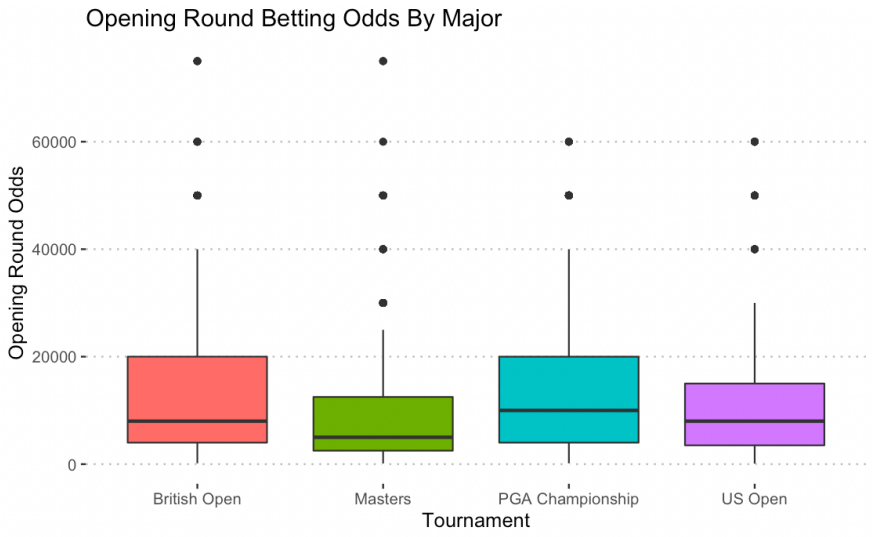
The next two datasets mentioned in the introduction of this section can be considered secondary applications that could prove to be valuable with a little more refinement. For the weekly OWGR rankings, this would serve the purpose of factoring in a player's current status and recent movement in the Official World Golf Rankings. If combined with final round viewership, we could likely find some relationship between the presence of any given category of player (Top 5, Top 10, Top 50 Ranked Player) and TV ratings. In terms of the final player performance dataset mentioned above (i.e round by round performance data from 2010-2021), this application would require a bit more work to apply, Essentially, this investigation of player performance could allow us to "type" players into more specific areas of performance, as it relates to entertainment value. For example, perhaps extraordinary drivers of the golf ball like Bryson DeChambeau, Rory McIlroy, and Cameron Champ impact viewership because of their aggressive style of play to an extent that is not factored in by their general popularity. Again, this would take some work to reduce endogeneity and properly cluster/evaluate golfers in this sense, but it's a factor we could consider, based on the data available. Lastly, you might have noticed the lack of tournament attendance data as an investigative variable. This is quite simply because this type of data is much harder to track in golf than we originally thought, and as a result, a clean dataset was incredibly difficult to find. If the ability to gather this type of data presents itself (and the concerns laid out in

Alavay, Gaskell, Leach, and Szymanski are found to be manageable), then attendance may prove to be an alternative measure of evaluating popularity.

b.) Exploratory Data Analysis

As explained in our data summary, the use of betting odds from 1993 - 2021 would be an interesting application of the uncertaintly of outcome question in golf. As such, we decided to begin our exploratory analysis by looking at the distribution of betting odds between the four major tournaments we have at our disposal. A box and whisker plot of the accompanying distributions are shown below. To avoid majorly skewed results, only players with sub +100000 odds are included in the plot.

Figure 1



As the graph shows, the PGA Championship & British Open have the highest interquartile ranges, with the US Open third, and Masters fourth. This makes sense considering that the Masters has only about half the number of players than either of the other three majors. The other interesting thing about the Masters (and the British Open to a lesser extent) is that the 1st and 2nd quartile appear to be extremely top heavy, meaning more players occupy a smaller range of betting odds at the beginning, before quickly

expanding with the major longshots. Given the nature of betting odds, this isn't too surprising to see as a concept overall, but it's still interesting to note the differences between each tournament's distribution. Overall, analyzing betting odds would have certainly been an interesting avenue to explore, but given the constraints mentioned in previous sections (i.e data from non major tournaments from 2018-2022), they were not ultimately included in the final regression models.

c.) Modeling Methodology

Now that we have examined past research, looked into our data sources, and began exploratory analysis, it is now time to evaluate and apply specific modeling techniques to the question at hand – What factors influence PGA Tour viewership?. We'll begin by evaluating the modeling methodologies and variable setups that make the most sense, given everything we've reviewed thus far. The first technique or concept that we will include would be this idea of tournament and player effects measured within a standard OLS model. In the Gooding and Stephenson paper, they made sure to include fixed effects for the tournament as well as player effects for Phil Mickelson and Tiger Woods, who at the time were by far the most popular players in professional golf. In today's day and age, the presence of either Tiger or Phil as a top 10 player on a Sunday leaderboard is nonexistent in that it's happened only two times in the past three years (Phil ~ 2021 PGA Championship, Tiger ~ 2019 Masters). As such, we thought it would be interesting to apply this methodology to the new wave of talent on the PGA Tour (Bryson DeChambeau, Rory McIlroy, Jordan Spieth, and Justin Thomas.). Besides Tiger and Phil, these three players are probably the most popular and potentially influential

players that the PGA Tour has to offer. As the PGA Tour prepares for life after Tiger and Phil (Tiger, age 46 & Phil, age 51), this seems like a valuable application of our research question. In terms of data manipulation, we included similar measure of "presence" variables (i.e Rory top 10 after Round 4) in addition to our tournament effects and uncertainty of outcome measures (Pre / Post round margin, Playoff, etc.). Below is the first iteration of our multiple linear regression with all relevant variables used as predictors of Final Round Viewership.

Model 1:

Model 1: All Attributes

	Dependent variable:
	FinalRoundAvgViewers
year	-0.232
	(0.199)
tournamentFarmers Insurance Open	-0.429
	(0.945)
tournamentGenesis Invitational	-0.250
	(0.926)
tournamentMasters Tournament	6.405***
	(0.944)
tournamentMemorial	-0.892
	(0.947)
tournamentOpen Championship	1.493
	(0.992)
tournamentPGA Championship	2.688**
	(0.997)
tournamentQuicken Loans / Rocket	0.142
	(1.193)
tournamentU.S Open	1.369
	(0.892)

Playoff	-0.619
	(0.781)
LeaderMarginEnteringFinalRound	-0.134
	(0.146)
LeaderMarginEnd	-0.279
	(0.170)
TigerMakeCut	0.354
	(0.686)
TigerTop10	0.600
	(0.723)
PhilTop10	-0.401
	(1.193)
RoryTop10	-0.226
	(0.467)
SpiethTop10	-0.250
	(0.716)
BrysonTop10	-0.507
	(0.555)
ThomasTop10	-0.286
	(0.704)
Constant	473.089
	(401.889)
Observations	45
R^2	0.865
Adjusted R^2	0.753
Residual Std. Error	1.244 (df = 24)
F Statistic	7.699^{***} (df = 20; 24)
Note:	*p<0.1; **p<0.05; ***p<0.01

In the above output, it is apparent that Major tournaments are the most important factor in determining viewership size. This general idea is consistent with previous research on the topic, and is not very surprising. From there, we see that most other variables, including Tiger Woods Top 10 / Make cut, Leader Margin, and all other player effect attributes are also not statistically significant. For the Tiger Woods variables, this is

a bit surprising, but is likely just a result of the lack of sample size in the 2018-2022 dataset combined with the presesce of unneccesary variables in the current model. In an attempt to correct this mistake and create a more accurate view of PGA Tour viewership, we'll adjust our model to include the "StarTop10Count" variable in place of the unneccesary player effects (Phil, Rory, Bryson, Spieth, Thomas), while also adjusting for heterskadasicity via robust standard errors for applicable attributes. The output for the refined model is shown below.

Model 2:

Model 2: Refined Attributes

	Dependent variable:
	FinalRoundAvgViewers
year	-0.220
	(0.162)
tournamentFarmers Insurance Open	-0.482
	(0.875)
tournamentGenesis Invitational	-0.225
	(0.755)
tournamentMasters Tournament	6.511***
	(0.802)
tournamentMemorial	-0.859
	(0.836)
tournamentOpen Championship	1.581*
	(0.795)
tournamentPGA Championship	2.714***
	(0.791)
tournamentQuicken Loans / Rocket	0.069
	(1.061)
tournamentU.S Open	1.486*
	(0.766)

Playoff	-0.549
	(0.661)
LeaderMarginEnteringFinalRound	-0.113
	(0.112)
LeaderMarginEnd	-0.278*
	(0.136)
TigerMakeCut	0.325
	(0.554)
TigerTop10	1.045
	(0.627)
StarTop10Count	-0.309
	(0.255)
Constant	447.823
	(326.656)
Observations	45
R^2	0.864
Adjusted R^2	0.786
Residual Std. Error	1.159 (df = 28)
F Statistic	11.076*** (df = 16; 28)
Note:	*p<0.1; **p<0.05; ***p<0.01

The results from this second regression are much more interesting for a variety of reasons. For one, as we would expect, the Major tournaments remain the key indicator of PGA Tour viewership, but in this version, the "LeaderMarginEnd" variables ends up being significant at the 10% level with a p-value of .051. To interpreate, this would provide some evidence that the uncertainy of outcome hypothesis is indeed a key indicator of viewership during the final round, given the -.278 coefficient. Logically, this makes sense, as tournaments with a lower ending margin of victories are likely more closely contested and more entertaining to watch. In addition, although the output does not specifically show it, the Tiger Woods Top 10 variable is approaching significance with a p-value of .106. As hinted at above, this dataset only had nine instances of Tiger

Woods in the top 10, which is likely why this variable is not as significant as past research. Having said this, there remains no doubt that *when* Tiger Woods tees it up, he is the center of attention, even if this model doesn't support it to the extent it has in the past.

4.) Conclusion

In summation, our research into the factors impacting TV, attendance, and overall popularity on the PGA Tour proved extremely insightful. As noted in the introduction, it was our hope that this paper would not only analyze an updated dataset on the topic of PGA Tour viewership, but lay the groundwork for a more comprehensive study, expanding upon the sentiments described throughout all segments of this paper. Before conducting extensive research into this topic, there were several different avenues that we considered exploring, and upon completing the literature review, data investigation, and subsequent modeling, the significance of the uncertainty of outcome variable (MarginEndofRound) is certainly a new and interesting conclusion that sheds light onto the preferences of golf viewers in an ever-evolving landscape of golfers and fans alike. In addition, the results of the player effects portion of the models show that no individual players have near the effect that Tiger Woods has had on the game in terms of attracting viewership. Even the top tier of stars in today's game (Rory McIlroy, Jordan Spieth, Justin Thomas, and Bryson DeChambeau) do not move the needle on their own. As a final thought, the reason we chose to investigate this topic is not only because we are fans of golf, but that we see the clear opportunity to investigate the post Tiger Woods world that is quickly approaching the PGA Tour. In addition, with the incentivization of the LIV golf circuit, both golf brands and tours alike are searching for every possible insight

into the mind of a golf fan. With time, dedication, and patience, we truly believe that the concepts outlined in this paper will prove to be extremely valuable to the golf industry.

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