

Why Is There a Gender Wage Gap in Professional Golf?

By

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Abstract:

This paper will discuss the history of the game of golf and analyze the wage gap between PGA and LPGA golfers using literature review, descriptive statistic analysis, and a regression analysis. The writer has collected data from the PGA and LPGA tour for the 2018 season including driving distance, driving accuracy, greens in regulation, scoring average, total holes played, year to date victories, and money won. Does a significant statistical difference exist between PGA players and LPGA players ? What factors can influence the wage gap between PGA players and LPGA players?

Introduction:

Not only is there a gender wage gap in the United States right now but there is also one in professional golf. The industry of golf is operated using business principles just like any other business. Many job occupations and industries across the United States contain wage gaps between male and female employees. These issues need to be identified and discussed. Are women paid fairly or are they underpaid compared to men? Golf is a game of skill, precision, and focus. Over a century ago on April 10th, 1916 The Professional Golfers' Association(PGA) was founded. The Ladies Professional Golfers' Association(LPGA) was founded in the 1950s by 13 ladies who had dreams and visions of playing professional golf.¹ The origins of golf are not really clear and do have some debate, but its been accepted that modern golf was developed in scotland 1457, but women were not allowed to play because they were unfit for sports. Clearly golf has seriously been dominated by the male gender for hundreds of years, but that didn't stop ladies from creating their own professional golf tour. There are even old sayings about the game of golf that excludes women for example people say Golf stands for Gentlemen Only Ladies Forbidden. This could lead to the question that Is there a gender wage gap between the The PGA Tour and the LPGA Tour.

¹ "About LPGA | LPGA | Ladies Professional Golf Association." LPGA. Accessed April 5, 2018. <http://www.lpga.com/about-lpga>.

Literature Review:

Since 1980 the wage gap in the United States has reduced but for the last 15 years it has remained about the same causing many people to ask the question, why are women being paid less? There are many measurable factors and non-measurable factors to account for this question. Some of the measurable factors include education completion, occupational segregation, and work experiences. Much of this gap has been narrowed from large increases of women that have had an impact on these factors. But the non-measurable factors include gender discrimination and this is believed to be one of the main factors as to why women don't get paid fairly compared to men. Stated in the article "In a 2017 Pew Research Center survey, about four-in-ten working women (42%) said they have experienced gender discrimination at work, compared with about two-in-ten men (22%) who said the same" Even though some men claimed to have discrimination against them, it's not an issue right now as to women are being discriminated against and it is affecting their pay. Also "One-in-four employed women said they have earned less than a man who was doing the same job; just 5% of men said they have earned less than a woman doing the same job." Women doing the same job that a male would do or already has done and a woman takes over his spot, she should be getting paid the same amount of money the last person was making unless it's a position that you work up and make more money from. Also what can impact women in the long term is taking off time from work to give birth or care for a child/family. "Mothers were also nearly twice as likely as fathers to say taking time off had a negative impact on their job or career. Among those

who took leave from work in the past two years following the birth or adoption of their child, 25% of women said this had a negative impact at work, compared with 13% of men.” Should taking time off to care for their family impact the mothers work life, Women do something that men cannot do which is give birth and this not impact the way they are being paid because of a natural occurrence, they should be getting more help because they are not working and helping their child which is almost another job in itself²

Just like in the business world there are outputs, inputs and negotiations that take place before you have your final product. Professional Golf is the same way. You have the group of people who enjoy watching golf, attending tournaments and play it for fun, you also have the group of golfers, which is the most important group, and then you have tournament sponsorships who supply the prize money and also position where the tournament will be held and the contracts to be televised. The Golfers will be the input to Profesional Golf. For golfers who exert high levels of skill, it's a no brainer to try and become a Professional golfer. But due to the way golf tournaments prize money is set up, for golfers on the margin they should find work elsewhere because they be better off economically. Except for established and high profile newcomers, who have travel, clothing and other expenses covered through endorsements contracts and sponsorship, the tournament player has to cover all the cost of travel, lodging, meals, child care, caddies, equipments fee, entry fees, etc.³ It could become a very expensive hobby for the regular

² Graf, Nikki, Anna Brown, Eileen Patten, Nikki Graf, Anna Brown, and Eileen Patten. "The Narrowing, but Persistent, Gender Gap in Pay." Pew Research Center. March 22, 2019. Accessed March 2019. <http://www.pewresearch.org/fact-tank/2018/04/09/gender-pay-gap-facts/>.

³ Shmanske, Stephen. *Golfonomics*. New Jersey: World Scientific Publishing, 2006. Accessed April 2018. <https://econpapers.repec.org/bookchap/wsiwsbook/9206.htm>.

tournament golfer. There is an equal opportunity for anyone to make a professional golfers tour. But once on tour you have to decide which tournaments you will enter or skip, or play in them all. Tournaments take place between January and November. The top golfers on tour will usually only play in 20-30 golf tournaments each year. Shmanske shows multiple variables that can affect why a golfer will participate in a tournament, this includes, the earnings from the prize, the location, earnings they have made in previous events and their health, and who the competitors are in the tournament. Also golfers who are rank low will usually play in all of the tournaments available to try and make the most currency they can.⁴

There are many factors that contribute to why professional golfers make what they make on tour. Does there skills and focus effect there earnings? Driving distance, driving accuracy, fairways hit, greens hit in regulation, and putting all effects the earnings that a player will make on their respected tour. Does their gender affect the earnings they make? Gender does not affect the earnings that will be made on the respected tours. Viewership, attendance, and sponsorships all have to do with how much a golfer makes that week for a tournament. The highest paid golfer on the PGA tour in 2017 was Justin Thomas with \$9,921,560. In just 25 events out of 43 tournaments that count towards money earnings.⁵ The highest paid LPGA golfer was Sung Hyun Park with only \$2,335,883. In 23 events out of the 34 that they offer. You can clearly see that the Highest paid LPGA player was awarded significantly less than Justin Thomas

⁴Shmanske, Stephen. *Golfonomics*. New Jersey: World Scientific Publishing, 2006. Accessed April 2018. <https://econpapers.repec.org/bookchap/wsiwsbook/9206.htm>.

⁵"Stat – Official Money." PGA Tour. Accessed April 2018. <https://www.pgatour.com/stats/stat.109.2017.html>.

on the PGA tour. I believe there is a wage gap in golf and i believe women are still discriminated against in golf.

Golf is a game where individual skill impacts your performance and earnings on tour, unlike other sports where you're playing with a team. For example in the 2005 Masters Tiger Woods was playing Chris DiMarco that went to a sudden death style playoff hole where Dimarco Two putted for par while Woods made an 18 footer for birdie and that missed Putt cost Dimarco \$504,000. One stroke cost him a half of million dollars. In golf you need to earn your spot on both the PGA tour and the LPGA with a membership card. There are many different ways to earn your card, like Q school, web.com tour, and monday qualifiers or sponsor exemptions. In other sports, athletes are drafted and paid a salary from which the contract they sign to be apart of that team. However, in golf there is no set pay on how much you could win that week in golf tournament and that's what makes it really interesting.

In the article *Tournament Earnings and Performance Differentials between the Sexes in Professional Golf and Tennis* by David Marple, he argues the point that there is income inequality between males and females. Marple states Four issues with respect to earnings differentials are identifiable from these statements: (1) seasonal winnings on the respective circuit or tour; (2) earnings from endorsements and noncompetitive situations related to one's prowess in tennis or golf; (3) the respective winnings offered by each tournament; (4) and the relative position of the top earners to the middle level earners in respective tours. I also believe these aspects have a factor of respective earnings on each tour. The results of Marple's findings is that in women's golf, total purses on the LPGA tour increased from \$1.2 million in 1975 to a guaranteed \$2.2million in 1976 (the men's tour offered \$9 million for the same year).The issue

of higher pay for men in both tennis and golf has been a constant point of contention. In 1974, the PGA tour offered \$8 million with individual purses ranging from \$150,000 to \$300,000. The total women's tour was worth \$1.7million. The highest purse was \$200,000 and the lowest purse \$35,000. ⁶ This proves that even back when the LPGA has been around for 14 years at this point and they still are receiving significantly less from their tours.

Also the article *How big is golf's gender pay gap?* supports the argument that there is a wage gap in golf. This article shows statistical research from 2015 that there is a huge wage gap still in golf today. For example statistics from 2015 PGA tour And LPGA tour were closely studied and it showed that women shot on the Green in Regulation(GIR) 5.3% higher than men did that year. Also on average women had a 12% higher driving accuracy than men did, but on average men outdrove women by 47 yards, and women had on average one shot less over a tournament than men and putting matched the men on tour in 2015. The average male golfer will receive 6 times more winning a tournament than a female does. In 1963, John F Kennedy passed the Equal Pay Act demanding an end to wage disparity between the sexes and it still remains federal law today. A similar act was passed in the UK in 1970 prohibiting less favourable treatment between men and women with regard to pay and conditions in employment. Tiger Woods, for example, was the catalyst for a huge increase in funding, sponsorships, and prize winnings in men's golf in the early 2000s. He got people interested, on a global scale. Golf was cool. Before Woods, the leading money winner couldn't expect to earn more than an average Major League Baseball player. PGA Tour purses quintupled the seasons after he turned pro. This

⁶ Marple, David. "Tournament Earnings and Performance Differentials between the Sexes in Professional Golf and Tennis." *Tournament Earnings and Performance Differentials between the Sexes in Professional Golf and Tennis*. February 1983. Accessed April 2018. *Tournament Earnings and Performance Differentials between the Sexes in Professional Golf and Tennis*.

proves that one individual could change the game of golf, and its perception, while making the game mainstream to the world.⁷ The results of this article shows that there is a wage gap in golf and men have a chance of earning 83% more than women on their tours.

In golf your mental state is everything. One small negative thing can tighten you up and mess up your entire day. Sport psychologists like Dr. John Bartholomew at The University of Texas at Austin he states "Some top golfers even picture smiley faces on the flags at the holes because it helps them see shots as non-threatening," says Bartholomew. "In sports, you find a really good example of the interconnectedness of mind and body. Anxiety, while primarily a mental and emotional condition, can increase arousal and cause muscles to tighten. This not only impacts the ability to perform the coordinated movements required in sport but can even lead to injury. If you're able to use your mind to see an idealized shot or see yourself weaving through the defensive line and almost floating to a touchdown, that puts you in a comfort zone where you can relax. It can only help your actual physical performance."⁸

Coaches and players have used mental training to gain a competitive edge on their opponents. If you're not playing in your zone than you are not playing the best golf you could potentially be playing up to and this could affect your earnings the most on tour. We see it a lot in tour pro, a good example to use would be Rickie Fowler who is chasing his first major still and has come in second in a lot of these majors as well. Why is that though? Its because he mentally breaks down when he playing and it causes him to mess up or lose a couple shots that he shouldn't have. Golf

⁷"How Big Is Golf's Gender Pay Gap?" Golfsupport Blog. July 18, 2018. Accessed September 2019. <https://golfsupport.com/blog/golfs-gender-pay-gap/>.

⁸"Athlete's Mental Toughness as Important as Physical Strength, Say Sport Psychologists." UT News. August 08, 2018. Accessed September 2019. <https://news.utexas.edu/2008/11/24/athletes-mental-toughness-as-important-as-physical-strength-say-sport-psychologists/>.

isn't just about mental toughness though, you also need the skill and endurance to win. You golf swing has three major things you need to work on in order to make sure the rest of your swing and game stay intact, Balance, Tempo and Tension awareness all have importance in your skill to win. Balance is big because if you are falling over after every shot you take that's not gonna make you a good golfer. Also tempo is important because you can expect to just swing fast and hit the ball far, you have to find the right speed for you swing, for some people like Hideki Matsuyama he stops his swing at the stop for a few seconds before he is on his downswing. Nobody is going to swing the same way or the same speed, you need to find what is right for you. And Tension awareness is also important because you need to find out where our tension is in your swing if your arms, jaw, wrist, and shoulders. A lot of golf is standing around waiting for the group to hit, so tension can build up while you're standing thinking to yourself. Many people have different ways of beating tension like, whistling on their walk to the ball, sing to themselves, or just take a couple deep breaths before each shot.⁹

Tiger woods single handedly changed the economics of golf that we know today. Herrington states that Golf is a radically different endeavor, both at the professional and recreational level, “because of Woods and his 79 PGA Tour wins, 14 major championships, \$110 million in on-course PGA Tour earnings and millions more off.” That's almost a fraction of what he has made in off the course sponsorships. When “Tiger first signed his first endorsement deals with Nike to wear their clothing and shoes, was an estimated 40 million, 6.5 million a year for

⁹Nilsson, Pia, Lynn Marriott, Ron Sirak, Dom Furore, Pia Nilsson, Lynn Marriott, Ron Sirak, and Dom Furore. "Pia Nilsson & Lynn Marriott: 3 Skills Every Golfer Needs." *Golf Digest*. October 10, 2017. Accessed April 2018. <https://www.golfdigest.com/story/marriott-nilsson-three-skills>.

five years with a 7.5 million dollar signing bonus and he also signed with Titleist to use the company's clubs and balls for an estimated 3.5 million for three years. But how ridiculous were those numbers actually? There has been no other reports of single endorsement to a golfer worth who would get paid more than 5 million dollars a year.” “What Michael Jordan did for basketball, [Woods] absolutely can do for golf,” said Nike chairman Phil Knight. “The world has not seen anything like what he’s going to do for the sport.” Also how much influence did Tiger have on financial aspect of the game. “In 1996 before Tiger turned pro the average purse for a golfer would be 1.5 million dollars while the first place check could bring in on average \$263,341 and in 2016 the average purse for a golfer would be 6.9 million dollars while the first place check would bring in \$1,258,861. In 2016 the average winner would take home would be \$995,520 than the winner would have in 1996. Also will Tiger increased the popularity of the game of golf it would also increase the amount of courses that were starting to be built after the 1990s. In 1996 there were 12,885 golf courses around the US, in 2006 we see that number increased to 14,968 golf courses were established and now in 2015 we see that number decrease to 14,289 golf courses in the US.” In the last decade a market correction occurred with many courses closing around the US due to too much inventory and not enough sales. Also Tiger's contributions have led to an increase in youth participation. “In 1996 there were 140,011 boys playing high school golf and in 2014-2015 there were 148,823 boys playing high school golf with the peak years for boys being 1998-1999 the year after Tiger won his first Masters with 167,781 playing golf. In 1996 39,364 girls playing high school golf, and in 2014-15 72,582 girls played high school golf, that year also being the peak year for girls high school golf. In 1996 men's D1 golf had 281, D2 had 164, and D3 had 261, in the years 2014-2015 men's D1 golf had

297, D2 had 239, and D3 had 295. The increase for mens D1 golf was 5.7% increase, D2 was 45.7% increase, and D3 was 13% increase. Also between those years women's D1 golf increased participation 62.9%, D2 increased participation by 375.6%, and D3 increased participation by 123.9%.” Tiger Woods will go down as the man who changed the economic game of golf how we know it today, and everyone on the PGA Tour should thank Tiger Woods each day because without him we really don't know how popular golf could really be today. ¹⁰

Consequently, the article *Gender, Skill, and Earnings in Professional Golf* by Stephen Shmanske claims that there is no wage gap in golf. Shmanske starts by examining the relationship of the LPGA Tour and the PGA tour between gender, skill and earnings. He goes on by stating that yes men earn higher purses on the PGA tour but they also play more rounds of golf in the year compared to women, in front of more people, on longer courses and exhibit a greater skill on the course than women do. Yes women play on shorter courses than men do but men also out drive women by 47 yards on average from stats on the PGA tour website in 2015. He also states, “The statistical results show which golf skills are the most valuable by estimating the effect of the skill on earnings. Furthermore, the results show that once skill levels are accounted for, women are not underpaid compared to men. Even though the tournament form of compensation rewards the relative skill levels within each tournament, the professional golf

¹⁰ Herrington, Ryan. "What Golf Looked Like Before Tiger Woods Turned Pro And Changed The Game Forever." *Golf Digest*. Accessed May 2018. <https://www.golfdigest.com/story/what-golf-looked-like-before-tiger-woods-turned-pro-and-changed-the-game-forever>.

industry appears to reward the absolute level of skill with no gender bias.”¹¹ His data was conducted in 2000 before the leap of Tiger Woods changing the game to way we know it today.

Similarly, the article *Still a Man's Game: Gender Representation in Online Reviews of Video Games* by James Ivory explains how video games have also had an impact on gender representation in sports.¹² He explains how males have been the number one priority when creating games because the audience of most games were young men at the time. The PGA tour has been coming out with a video game since 1990 called PGA tour. However, in 1999 they changed the name of the game to Tiger Woods: PGA tour. The first time women were put into this video game alongside with the men was in 2014 when they released Tiger Woods: PGA Tour 14. Also something very important about this game is that women are also allowed to play against men on the PGA tour which is actually allowed for women to compete on the PGA tour but PGA tour players cant compete in the LPGA.¹³ It took almost 20 years to put women into this video game with men, The LPGA started in 1950, thus women should have be introduced in this video game in 1990 when it came out. Still then people believed that sports, especially golf, was still not for women.

¹¹ Shmanske, Stephen. "Gender, Skill, and Earnings in Professional Golf - Stephen Shmanske, 2000." SAGE Journals. Accessed April 2018.

<https://journals.sagepub.com/doi/10.1177/152700250000100404>.

¹²Ivory, James D. "Still a Man's Game: Gender Representation in Online Reviews of Video Games, Mass Communication & Society." *Still a Man's Game: Gender Representation in Online Reviews of Video Games, Mass Communication & Society*. November 2009. Accessed April 2018.

https://www.researchgate.net/publication/251201285_Still_a_Man's_Game_Gender_Representation_in_Online_Reviews_of_Video_Games.

¹³"New Tiger Woods Video Game Includes Women's Professional Tour For First Time."

ThinkProgress. Accessed May 2018.

<https://thinkprogress.org/new-tiger-woods-video-game-includes-womens-professional-tour-for-first-time-9dddc6dd7818/>.

In 1863, Tom Morris established the first 18 hole layout on a course and that course is St Andrews. Women were not allowed to go in the club house or even be members at this golf course until a vote changed it in 2014 to allow women to be members there. To present day there is not a changing room in the main clubhouse for women. In fact, they have to go 100 yards away from the clubhouse to use their facilities.¹⁴ Is this how we want women to see golf? No the game of golf is suppose to be equal to everyone and with courses and people still discriminating against women it's hard for women to pick up the game of golf having to face challenges that dont even need to exist. St. Andrews made a change that nobody thought they would ever do, and it is a right step in the direction even though there are still obstacles that women still may face at the club but this is the change the game of golf needed because with one of the oldest courses finally changing its rules to allow women members, and play it encourages women to want to join the game and try to make better changes throughout the game.

Does the wage gap in america also limit these ladies from playing golf? “In a 2017 Pew Research Center survey, about four-in-ten working women (42%) said they have experienced gender discrimination at work, compared with about two-in-ten men (22%) who said the same” and also “One-in-four employed women said they have earned less than a man who was doing the same job; just 5% of men said they have earned less than a woman doing the same job.”¹⁵ In this day in age no women should be getting paid less to do the same job as a male, if they both

¹⁴Murray, Ewan. "St Andrews Women Members Still Have No Changing Room in Main Clubhouse." *The Guardian*. January 25, 2017. Accessed September 2019. <https://www.theguardian.com/sport/blog/2017/jan/25/st-andrews-women-members-changing-rooms--clubhouse>.

¹⁵ Graf, Nikki, Anna Brown, Eileen Patten, Nikki Graf, Anna Brown, and Eileen Patten. "The Narrowing, but Persistent, Gender Gap in Pay." *Pew Research Center*. March 22, 2019. Accessed March 2019. <http://www.pewresearch.org/fact-tank/2018/04/09/gender-pay-gap-facts/>.

have the same experiences and both get the job done good. But what are some of the reasons behind this? Why do they get paid less. One article i found states “The gender pay gap is the result of many factors, including occupational segregation, bias against working mothers, and direct pay discrimination. Additionally, such things as racial bias, disability, access to education, and age come into play.”¹⁶ Things like education and racial bias and age, should not even be a problem unless the women has less of and education and less experience then the other person who has the job or who has the job. What should be looked at is your education and your experiences, if you're qualified for the position no matter what your age, gender or ethnicity is you should be getting paid the fair amount for that position. The only correlated effects this gender wage gap has on golf, i would say is only to the professionals where Professional women golfers are getting paid severely less than a male professional golfer. In another article i found it states “ The LPGA has been running for more than 50 years, yet equal pay is far from close. And like many other sports, female golfers have been needlessly overlooked. As a sport that has been long considered a *'man's game'*, is it worth holding onto that image at the cost of discrimination? Golf is one of the worst culprits in sport for its gender pay gaps.” also this articles states “our research shows professional male golfers can expect to earn 83% more in winnings this year than the next winner on the female tour. They play the same game, to the same level, the only difference is one chromosome, yet their trophies and achievements are worth less.”¹⁷ I understand that men make more revenue a year from sponsorship and viewership but these should not be the reason women are paid less. If they exert the same amount of skill,

¹⁶ "The Simple Truth about the Gender Pay Gap." AAUW. Accessed May 2018.

<https://www.aauw.org/research/the-simple-truth-about-the-gender-pay-gap/>.

¹⁷ "How Big Is Golf's Gender Pay Gap?" Golfsupport Blog. July 18, 2018. Accessed September 2019. <https://golfsupport.com/blog/golfs-gender-pay-gap/>.

and focus, regardless of gender, pay should be much similar. Also in an article from espn it states “When Jordan Spieth rounds Amen Corner this weekend and begins making his way back to the clubhouse at Augusta National Golf Club, the world will be watching as he tries to defend his 2015 Masters title. A short distance away, through a thick curtain of magnolia trees and across Rae's Creek, lies the ninth fairway at Augusta Country Club, where for nearly three decades, until 1966, the best women's golfers played the first major of their season, the Titleholders. The tree line and creek separating the courses act as a metaphor for the seemingly insurmountable distance that separates the financial compensations for the best male athletes in the world and their female counterparts. Three weeks ago, Novak Djokovic questioned equal pay in tennis. Last week, players on the U.S. women's national soccer team turned to the law to fight for equality. Last Sunday, Lydia Ko won the LPGA's first major, the ANA Inspiration in Rancho, Mirage, California, and received a \$390,000 check. It was 21.6 percent of the \$1.8 million Spieth earned for his 2015 Masters victory.¹⁸ Lydia Ko only won 21.6 percent of what Jordan Spieth made, and like the article said it acts like a metaphor.

Women, are being treated unfairly in most workplaces. Professional women's golf has made some advances in trying to close the gender gap but also there has been a few setbacks over time as well. Women, will need to keep fighting and playing the same, if not better than some men because the skills are there even though they lack driving distance, all other skills are almost equal. Will there ever be a women Tiger Woods? If that is the case, the gender gap would close just as quickly as it spread when Tiger started to play. The tv ratings, and spectator

¹⁸"Big Gap in Earnings between Men and Women Professional Golfers." ESPN. Accessed April 2018.

<http://www.espn.com/espnw/sports/article/15160220/big-gap-earnings-men-women-professional-golfers>.

attendance at events will need to increase and this should cause sponsors to want to pay out the women more than what they receive now. The gap has narrowed over the years but still seems to be an issue, but with good progress that has been happening we will see this gap eventually go away.

Golf and tennis are not the only sports with a gender wage gap. The United States Women's national soccer is also treated very unfairly to their male counterparts. In recent years there have been lawsuits filed against the U.S Soccer federation. "In a wage-discrimination complaint filed with the Equal Employment Opportunity Commission in March, five top players on the women's team accused U.S. Soccer of paying them and their teammates about a quarter of what their counterparts on the men's national team receive. Wielding the federation's own financial reports as evidence, the women excoriated a compensation and bonus structure that they said tilted heavily in favor of the men and pointed out that their team's on-field success had produced millions of dollars in revenue for U.S. Soccer in 2015 and was projected to do the same this year."¹⁹ The main question that most people ask in this case is that, do the women bring in more revenue than the men? This article from The New York Times states "In most years? Yes. Over the long term, the more established men's game brings in consistently higher game revenue year over year. (Sponsorships and television revenue are not counted in game revenue calculations; Nike, Fox Sports and ESPN, for example, are "buying the crest," in U.S. Soccer vernacular, not the rights to a single team.)" But it also states "in 2015, the women's team won the World Cup and then embarked on a scheduled 10-city victory tour that yielded an

¹⁹Das, Andrew. "Pay Disparity in U.S. Soccer? It's Complicated." The New York Times. April 21, 2016. Accessed May 2018.
<https://www.nytimes.com/2016/04/22/sports/soccer/usmnt-uswnt-soccer-equal-pay.html>.

eight-figure bump to U.S. Soccer's bottom line. As a result, the women brought in more than \$23 million in game revenue, about \$16 million more than the federation had projected. An anomaly? Yes. And a welcome one if you are U.S. Soccer. After expenses, the women turned a profit of \$6.6 million last year. The men? Their profit was just under \$2 million. Looking ahead, U.S. Soccer's 2017 budget predicts that trend will be repeated: Expecting another Olympic gold medal, and another victory tour, the federation has forecast a profit of more than \$5 million for the women's team in the next fiscal year (on \$17.5 million in revenue)." and it also says the men are projected to lose a million that year.²⁰

What have these women done in the short term though that deserves them better pay? In the article Comparing the USWNT and USMNT Just Isn't Fair states "But ever since the USWNT burst onto the scene in 1991, it's been the women, not the men, who have loomed large in U.S. Soccer. The USWNT, currently ranked 1st in the world, has won three World Cups, four Olympic Gold Medals, and notched seven CONCACAF Gold Cup wins. The USMNT, on the other hand, has never done better than the quarterfinals in the World Cup and failed to qualify for the upcoming 2016 Olympics in Rio."²¹ The women's team has proven over the recent years that they are out performing the men in their national division games. The USWNT has been the face of US soccer on the main stage. This article also states "Ask any American to name three members of either team, and you're far more likely to

²⁰

Das, Andrew. "Pay Disparity in U.S. Soccer? It's Complicated." The New York Times. April 21, 2016. Accessed May 2018.

<https://www.nytimes.com/2016/04/22/sports/soccer/usmnt-uswnt-soccer-equal-pay.html>.

²¹ DiCaro, Julie, and Julie DiCaro. "Comparing USWNT And USMNT Just Isn't Fair - To The Men." The Cauldron. April 01, 2016. Accessed May 2018.

<https://the-cauldron.com/comparing-uswnt-and-usmnt-just-isn-t-fair-to-the-men-aaaf0fe3cbc0>

hear “Abby Wambach,” “Carli Lloyd,” “Alex Morgan,” and “Hope Solo” than you are any player on the men’s team. (MAYBE with the exception of Clint Dempsey.)”²² I agree with this statement because i could name people on the USWNT but the USMNT i would fail to answer that question and so would many other people. But that's not enough for some people to believe that the women should be paid equally. Also “The World Cup Final match between the USWNT and Japan in 2015 was the most-watched soccer game in US broadcast history” The numbers are there now, and they are projected to surpass the men over the next few years, if they keep it up.

The USWNT is unfairly treated to their male counterparts, because that they are women, not because they don't produce better gameplay, tv views, and support from the country. If the numbers were not their there would be no argument, but the numbers are their and the women are fighting for their equal rights with the U.S Soccer Federation.

Methodology:

This paper will analyze data collected from the PGA tour and LPGA tour for the 2018 season through 10/6/2018. Golf is a game where the goal of the players is to hit a small ball into a hole located anywhere from 100 yards to 600 yards away in the lowest amount of strokes possible. Golf scores are compared to par, which is the expected number of strokes required to complete the hole. Typically, golf courses will have holes that are structured as par 3, par 4, and par 5’s. If the hole is a par 3, the golfer is expected to hit the green in one shot and putt the ball twice. If the hole is a par 4, the golfer is expected to hit the green in two shots and putt the ball

²² DiCaro, Julie, and Julie DiCaro. "Comparing USWNT And USMNT Just Isn't Fair - To The Men." The Cauldron. April 01, 2016. Accessed May 2018.
<https://the-cauldron.com/comparing-uswnt-and-usmnt-just-isn-t-fair-to-the-men-aaaf0fe3cbc0>

twice. If the hole is a par 5, the golfer is expected to hit the green in three shots and putt the ball twice. The statistics that will be analyzed in the paper include driving distance, driving accuracy, greens in regulation, scoring average, year to date victories, total holes played, putts per round and total money won. Driving distance is the average distance that the golfer hits driver off of the tee box. Driving Accuracy is the percentage that the golfer hits the fairway off of the tee box. The fairway is the shorter grass on the golf course that typically guides the golfer to the hole. Greens in regulation is the percentage that the golfer hits the ball on the green, which is the short grass area where the hole is located, where they have an opportunity to putt the ball twice into the hole for par. Par is the expected number of strokes expected on each hole. Scoring average represents the typical eighteen hole score that the golfer averaged during the 2018 season. Year to date victories represents the number of wins that the golfer had in the 2018 season. Golfers win by having the lowest cumulative score over four day tournaments. Total Holes Played measures the number of holes that a golfer played in the 2018 season. Typically, after the first 36 holes of a tournament only a specified number of golfers make the “cut”, which entitles them to compete on the weekend for prize money. It can be assumed that more holes played would be related to more cuts made. Putts per round measure the average number of putts by each golfer during a typical round of 18 holes over the course of the 2018 season. Money won represents the total money won during the 2018 season by the golfer. The writer will use regression analysis to determine how changes in statistical factors affect the golfers predicted money won for both PGA and LPGA golfers on a standalone and combined basis.

Data:

PGA Tour 10/6/18	Driving Distanc e	Driving Accurac y	GIR	Score Average	YTD Victories	Total Holes Played	Putts Per Round	Money won
Justin Thomas	311.9	0.5783	0.6952	69.118	3	1,476	28.27	\$8,694,821
Dustin Johnson	314	0.5827	0.7063	68.698	3	1,332	28.3	\$8,457,352
Justin Rose	303.7	0.6486	0.7043	68.993	2	1,118	28.54	\$8,130,678
Bryson DeChambae u	305	0.619	0.701	69.646	3	1,674	29.09	\$8,094,489
Brooks Koepka	313	0.5634	0.683	69.444	2	1,116	28.69	\$7,094,047
Bubba Watson	312.9	0.5783	0.6854	70.384	3	1,422	29.25	\$5,793,748
Tony Finau	315.3	0.5455	0.7051	69.52	0	1,764	28.99	\$5,620,138
Tiger Woods	303.4	0.5898	0.681	69.35	1	1,224	28.47	\$5,443,841

Webb Simpson	293.6	0.6185	0.6812	69.293	1	1,656	28.43	\$5,376,417
Jason Day	309.7	0.5814	0.6599	69.603	2	1,224	28.18	\$5,087,461
Francesco Molinari	301	0.6433	0.7079	69.797	2	1,260	29.52	\$5,065,842
Patrick Reed	298.3	0.544	0.6348	70.106	1	1,548	28.22	\$5,006,267
Rory Mcilroy	319.8	0.555	0.6648	69.303	1	1,098	28.32	\$4,410,296
Rickie Fowler	300.6	0.6447	0.6984	69.435	0	1,332	28.86	\$4,235,237
Xander Schauffele	304.6	0.5909	0.6579	70.486	0	1,674	29.15	\$4,047,538
Jon Rahm	309.5	0.5916	0.7083	69.958	1	1,188	29.06	\$3,992,678
Tommy Fleetwood	306.9	0.6365	0.6935	69.342	0	1,188	29.23	\$3,935,147
Paul Casey	304.3	0.6275	0.6824	69.85	1	1,278	28.96	\$3,641,771
Jordan Spieth	299.7	0.6129	0.7072	69.904	0	1,368	29.07	\$2,793,536
Alex Noren	299	0.6053	0.6627	69.973	0	1,080	29	\$2,699,150

The data collected shows that LPGA golfers are underpaid compared to PGA golfers This first table contains the Top 20 men in the PGA, sorted by money won, through 10/6/18. The male

ranking system is based on the Fedex Cup ranking system, compared to the women ranking system which utilizes money won to rank the golfers. What is the PGA tour Fedex point system? The PGA TOUR's 2018-2019 FedExCup competition runs from the 2018 Safeway Open through the 2019 Wyndham Championship in Greensboro and concludes with the 2018-2019 FedExCup Playoffs. Points are awarded at four levels, Official PGA TOUR events each award 500 FedExCup points to first place. The Masters Tournament, THE PLAYERS Championship, U.S. Open Championship, The Open Championship and the PGA Championship will award 600 FedExCup points to first place. Each of the four World Golf Championships events will award 550 FedExCup points to first place. Additional events played during the FedExCup competition (those played the same week as a Major or World Golf Championships) will award 300 FedExCup points to first place.²³ The PGA tour golfers are sorted by money won to compare them with the LPGA tour golfers.

LPGA Tour 10/6/18	Driving Distance	Driving Accuracy	GIR	Score Average	YTD Victories	Total Holes Played	Putts Per Round	Money won
Ariya Jutanugarn	267.33	67.14%	71.26%	69.4	3	1,566	28.68	\$2,261,377
Brooke Hederson	270.84	71.63%	75.07%	69.69	2	1,404	29.59	\$1,364,956

²³"FedExCup 101." PGATour. Accessed February 2019.
<https://www.pgatour.com/fedexcup/fedexcup-overview.html>.

Sung Hyun Park	271.15	69.23%	73.45%	70.61	3	1,062	30.1	\$1,261,595
Senior Proj	259.5	70.23%	72.76%	70.04	1	1,314	29.3	\$1,229,837
Minjee Lee	259.6	75.07%	74.17%	69.66	1	1,440	29.45	\$1,187,576
Nasa Hataoka	260.06	69.81%	70.60%	70.22	1	1,296	29.22	\$1,093,790
Sei Young Kim	263.16	65.96%	71.78%	70.15	1	1,350	29.39	\$1,077,485
Inbee Park	246.45	78.96%	71.63%	70.17	1	846	29.13	\$979,527
Jin Young Ko	253.34	83.38%	77.63%	69.59	1	1,332	30	\$954,401
Angela Stanford	256.51	74.79%	69.44%	71.21	1	1,404	29.59	\$947,798
Moriya Jutanugar n	245.99	74.24%	72.69%	70.11	1	1,494	29.35	\$891,525
Carlota Ciganda	266.81	67.90%	72.15%	70.28	0	1,296	29.6	\$881,793
Austin Ernst	260.83	70.09%	74.92%	70.11	0	1,260	29.8	\$848,381
Jessica Korda	270.02	69.11%	73.95%	69.84	1	1,044	29.41	\$839,669

Georgia Hall	257.66	72.44%	68.43%	70.71	1	1,134	29.19	\$832,515
Lydia Ko	256.06	68.98%	71.20%	70.08	1	1,368	28.91	\$829,900
Lizette Salas	257.1	78.23%	72.30%	70.39	0	1,260	29.43	\$732,564
Hyo Joo Kim	247.01	78.65%	67.05%	71.1	0	1,044	29.16	715,412
Marina Alex	252.55	81.01%	73.49%	70.66	1	1,260	30.06	\$696,596
Amy Yang	260.74	68.37%	73.68%	69.87	0	1,098	29.36	\$683,002

This table here shows the Top 20 Female golfers on the LPGA Tour through 10/6/18. The females unlike money are ranked in overall rankings by money won on the tour for that year. Unlike the men, you can see that the woman's statistics are very close with each other, each women being very similar with driving distance, Greens in regulation, their scoring average and putts per round are all very close in numbers.

Tour 10/6/18	Driving Distance	Driving Accuracy	GIR	Score Average	YTD Victories	Total Holes Played	Putts Per Round	Money won
Justin Thomas	311.9	0.5783	0.6952	69.118	3	1,476	28.27	\$8,694,821

Dustin Johnson	314	0.5827	0.7063	68.698	3	1,332	28.3	\$8,457,352
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Webb Simpson	293.6	0.6185	0.6812	69.293	1	1,656	28.43	\$5,376,417
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Francesco Molinari	301	0.6433	0.7079	69.797	2	1,260	29.52	\$5,065,842
Patrick Reed	298.3	0.544	0.6348	70.106	1	1,548	28.22	\$5,006,267

Rory Mcilroy	319.8	0.555	0.6648	69.303	1	1,098	28.32	\$4,410,296
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Carlota Ciganda	266.81	0.68	72.15%	70.28	0	1,296	29.6	\$881,793
Austin Ernst	260.83	0.70	74.92%	70.11	0	1,260	29.8	\$848,381
Jessica Korda	270.02	0.69	73.95%	69.84	1	1,044	29.41	\$839,669
Georgia Hall	257.66	0.72	68.43%	70.71	1	1,134	29.19	\$832,515
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Lizette Salas	257.1	0.78	72.30%	70.39	0	1,260	29.43	\$732,564
Hyo Joo Kim	247.01	0.79	67.05%	71.1	0	1,044	29.16	715,412
Marina Alex	252.55	0.81	73.49%	70.66	1	1,260	30.06	\$696,596

Amy Yang	260.74	0.68	73.68%	69.87	0	1,098	29.36	\$683,002
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This Table shows the coed ranking system for the men and women by money won in tournaments. As you can see the male who won the most money that year was Dustin Johnson, who won \$8,457,352 by the date of 10/6/18, also to note he leads the men with the lowest scoring average on tour. The female who won the most money on her tour was Ariya Jutanugarn, and she won \$2,261,377. She also leads the women with the lowest scoring average on tour. Ariya Jutanugarn made \$6,195,975 less than Dustin Johnson during the year. Their stats are very similar to each other as well, the only significant thing that is different is that Dustin drives the golf ball 314 yards while Ariya only drove it 267 yards.

	Driving Distance	Driving Accuracy	GIR	Score Average	Total Holes Played	Putts Per Round
PGA	306	0.59	0.68	69.61	1,315	28.78
LPGA	272.2	0.72	0.72	70.19	1,264	29.43

This last table shows the averages for both the respected tour, notice the women lead in driving accuracy and Greens in Regulation. Also notice that to the date 10/6/18 men have also played more holes of golf than women as well with 1,315 holes played for men and 1,264 holes played for women.

Descriptive Statistics:

PGA	<i>Driving Distance</i>	<i>Driving Accuracy</i>	<i>GIR</i>	<i>Score Average</i>	<i>YTD Victories</i>	<i>Total Holes Played</i>	<i>Putts Per Round</i>	<i>Money won</i>
Mean	306.31	0.59786	0.686015	69.61015	1.3	1351	28.78	5381022.7
Standard Error	1.5139509	0.007335	0.004648	0.1013154	0.2523573	48.087310	0.0911592	409827.8236
Median	304.8	0.59125	0.68945	69.5615	1	1305	28.91	5076651.5
Mode	#N/A	0.5783	#N/A	#N/A	0	1332	#N/A	#N/A
Standard Deviation	6.7705943	0.032803	0.020790	0.4530963	1.1285761	215.05299	0.4076763	1832805.745
Range	26.2	0.1046	0.0735	1.788	3	684	1.34	5995671
Minimum	293.6	0.544	0.6348	68.698	0	1080	28.18	2699150
Maximum	319.8	0.6486	0.7083	70.486	3	1764	29.52	8694821
Count	20	20	20	20	20	20	20	20

This table shows the performance output as a whole. The mean driving distance for the top 20 PGA golfers in the 2018 season was 306.31 with a standard deviation of 6.77 yards. The minimum driving for the men is 293.6 yards while the maximum is 319.8 yards, as you can see below, the men outdrive the women's maximum distance of 271.15 yards with their minimum

distance. Also the average money won on the PGA Tour is \$5,381,022.70, which is \$3,313,798.30 less than the most money won on tour and it's \$2,681,872.20 more than the minimum money won. Also the top 20 men on tour average about 1 win per year, most people on tour always have a chance to win, but the odds are lower.

LPGA	<i>Driving Distance</i>	<i>Driving Accuracy</i>	<i>GIR</i>	<i>Score Average</i>	<i>YTD Victories</i>	<i>Total Holes Played</i>	<i>Putts Per Round</i>	<i>Money won</i>
Mean	259.1355	0.72761	0.723825	70.1945	1	1263.6	29.436	1015484.9
Standard Error	1.72374446	0.0112384	0.005396	0.1072882	0.191942	39.686030	0.081354	79013.793
Median	259.55	0.7093	0.72495	70.13	1	1296	29.4	919661.5
Mode	#N/A	#N/A	#N/A	70.11	1	1260	29.59	#N/A
Standard Deviation	7.70881960	0.0502596	0.024135	0.4798078	0.858395	177.48132	0.363830 4	353360.42
Range	25.16	0.1742	0.1058	1.81	3	720	1.42	1578375
Minimum	245.99	0.6596	0.6705	69.4	0	846	28.68	683002
Maximum	271.15	0.8338	0.7763	71.21	3	1566	30.1	2261377

This table shows the LPGA Tour performance output as a whole. The mean driving distance for the top 20 LPGA golfers in the 2018 season was 259.1355 with a standard deviation of 7.708 yards. Also what is interesting is that the women's mean Green in Regulation is 72%

while the above the men only have a 68% GIR. The mean for money won on the LPGA Tour is \$1,015,484.90 that is \$1,245,891.10 less than the maximum money won on LPGA tour.

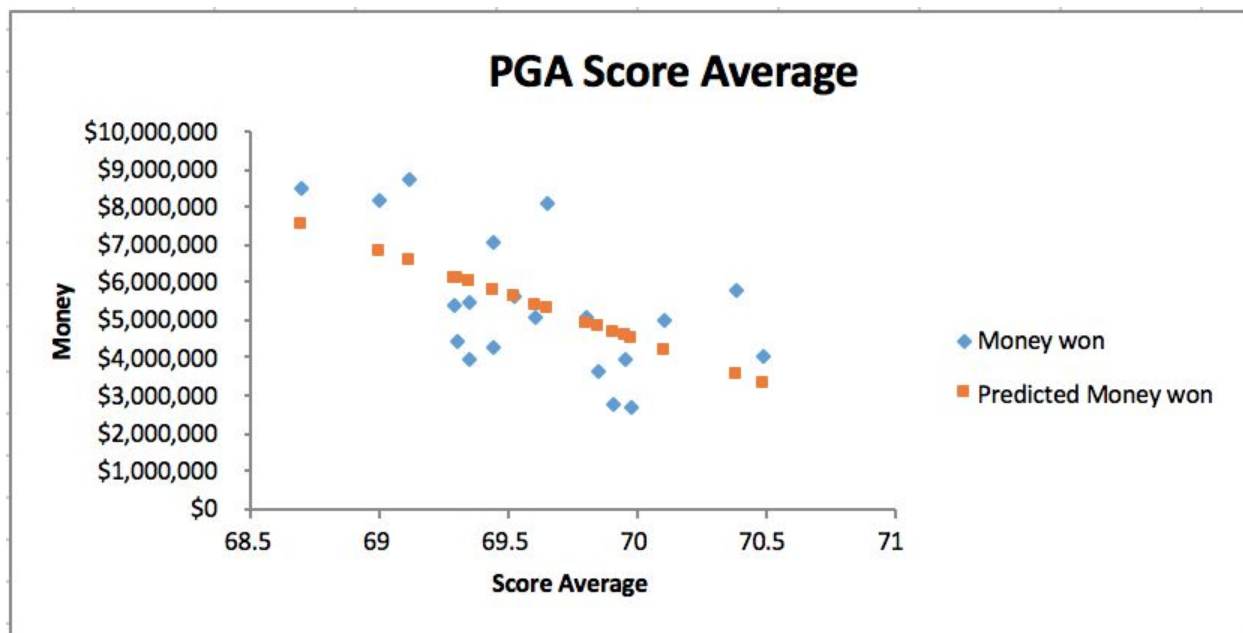
Combined	Driving Distance	Driving Accuracy	GIR	Score Average	YTD Victories	Total Holes Played	Putts Per Round	Money won
Mean	282.72275	0.662735	0.70492	69.902325	1.15	1307.3	29.108	3198253.8
Standard Error	3.9430565	0.012320	0.0046393	0.0865632	0.1583164	31.557724	0.0799689	405709.2
Median	282.375	0.6541	0.70615	69.887	1	1296	29.155	2480263.5
Mode	#N/A	0.5783	#N/A	70.11	1	1260	29.59	#N/A
Standard Deviation	24.938079	0.077920	0.0293417	0.5474737	1.0012812	199.58857	0.5057677	2565930.4
Range	73.81	0.2898	0.1415	2.512	3	918	1.92	8011819
Minimum	245.99	0.544	0.6348	68.698	0	846	28.18	683002
Maximum	319.8	0.8338	0.7763	71.21	3	1764	30.1	8694821
Count	40	40	40	40	40	40	40	40

This table shows the performance output as a whole for both the top 20 men and women combined from the PGA Tour and LPGA. The mean driving distance increased for the women and decreased for the men. The standard deviation for drivance distance is 24.9 yards. Also the

mean scoring average is 69.9 which shows the men and women aren't all the far from the same scores. While the men's scoring average is 69.6 and the women is 70.1 so this indicates that the shoot similar scores. Even with the men playing longer courses than the women we take into account that women drive the ball a lot shorter in distance than the men so to each respective tour they shoot similar scores.

Regression Analysis:

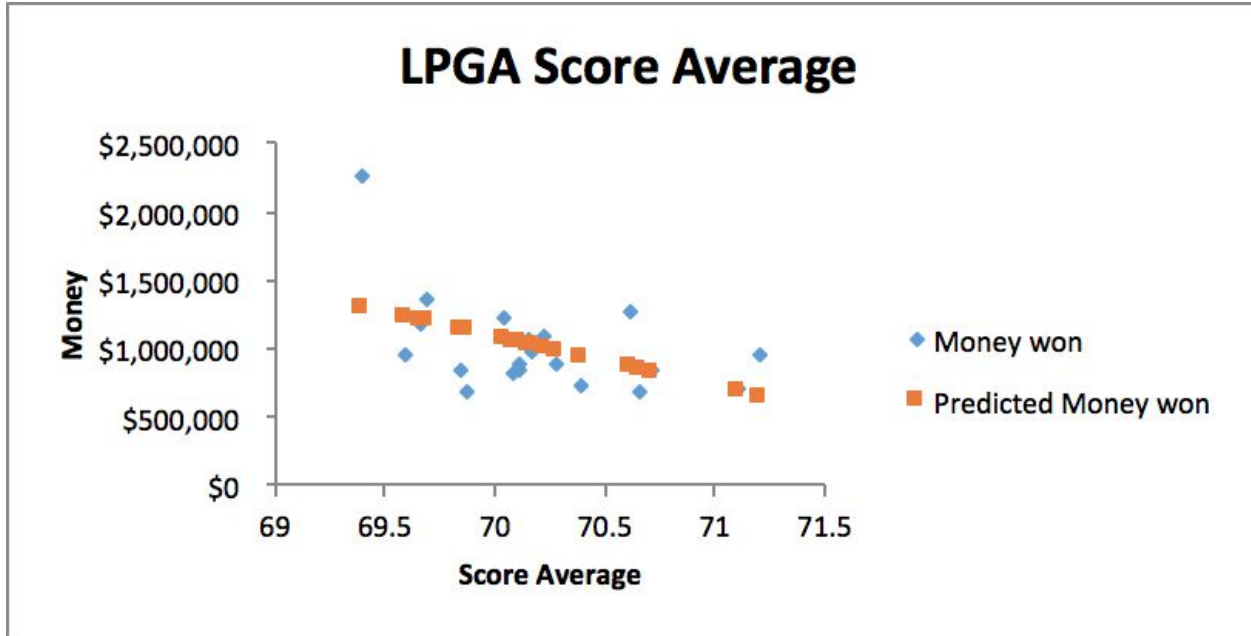
Regression analysis is a statistical tool that predicts the impact of a change in a dependent variable based on changes in the independent variable.²⁴



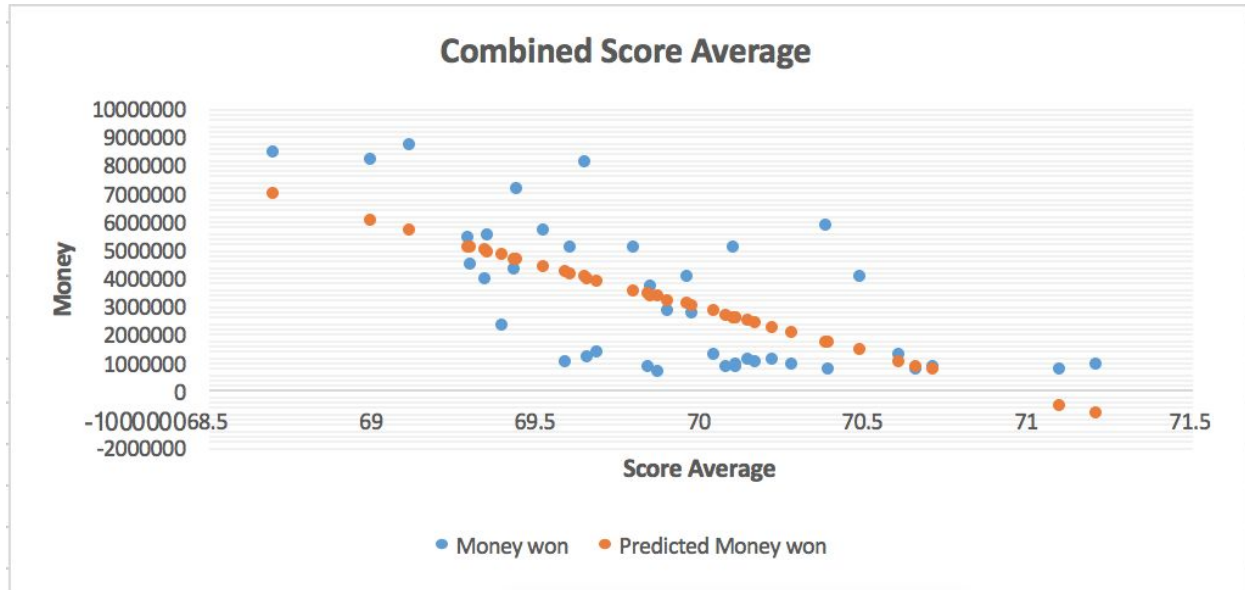
²⁴Gallo, Amy, Thomas H. Davenport, and Jinho Kim. "A Refresher on Regression Analysis." Harvard Business Review. November 30, 2017. Accessed March 2019. <https://hbr.org/2015/11/a-refresher-on-regression-analysis>.

The above regression analysis shows that a significant relationship exists between money won and scoring average on the PGA tour. The p-value was less than 0.05 which rejects the null hypothesis. The predicted value of money won for PGA players varies from a high point of ~\$8 million and a low point of ~\$3.3 million. It should be noted that money won is affected by numerous factors include cuts made and tournaments won. PGA players participating in the sport's four major tournaments, the US Open, the British Open, the Masters Tournament, and the PGA Championship have access to larger prize pools and earnings potential. The prize pool for these tournaments in 2018 were \$12 million, \$10.5 million, \$11 million, and \$11 million, respectively. This is compared with the average prize pool of \$6 million to \$9 million for the regular tournaments.²⁵

²⁵ "Official Home of Golf and the FedExCup." PGATour. Accessed April 2019. <https://www.pgatour.com/>.



The above line fit chart from a regression analysis of money won by LPGA scoring average is significant. The p-value below 0.05 rejects the null hypothesis. The dispersion of the money won values from the predicted money won values appears to be larger in the LPGA than the PGA on a percentage basis. Additionally, the predicted money values for LPGA players appear to have a smaller range with the highest predicted value being approximately \$1.4 million with the lowest figure being approximately \$700 thousand dollars compared to a predicted high money won value of approximately \$8 million and predicted low money value of \$3.3 million for PGA tour players.



A regression analysis was completed using the combined data from the PGA and LPGA tours.

Y= Money Won

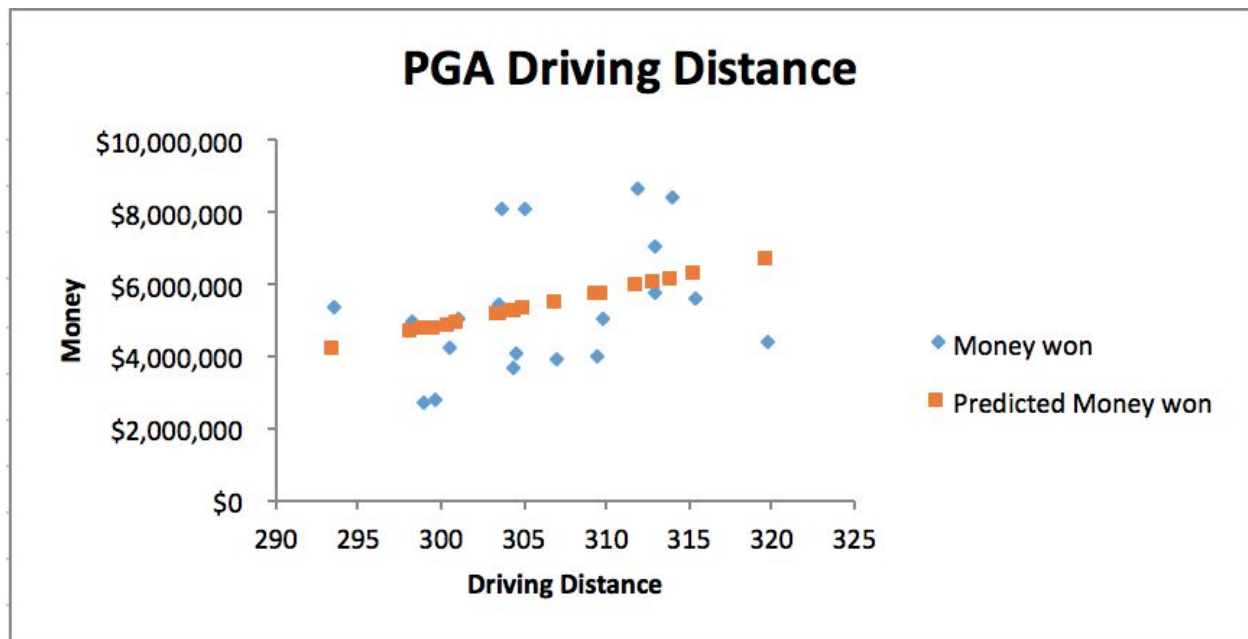
X1= Score Average

X2= Gender

The line fit plot shows that a wage gap exists between male and female golfers. For example, male golfers with a scoring average of 70 shots per round can expect to receive approximately \$4.9 million dollars in prize money compared to \$1.2 million dollars for female golfers with a similar scoring average. The regression analysis confirms that a wage gap exists between the PGA and LPGA tour with similar performance metrics. Why does this wage gap exist? “ In 2013, the last year in which both organizations' tax documents are available, the PGA Tour Inc. brought in \$1.075 billion in total revenue with \$364.8 million coming from TV rights and an additional \$290 million from sponsors. That same year, the LPGA earned \$102.8 million in total revenue, with \$14.6 million coming from TV and \$5.8 million from sponsors.”²⁶ An ESPN article

²⁶ "Big Gap in Earnings between Men and Women Professional Golfers." ESPN. Accessed April 2019.

examined the wage gap between male and female golfers in 2016 and highlighted the difference in total revenue generated from TV and sponsorships. TV revenue is expected to grow at a CAGR of 4.3% over the next 5 years, per a PWC market analysis.²⁷

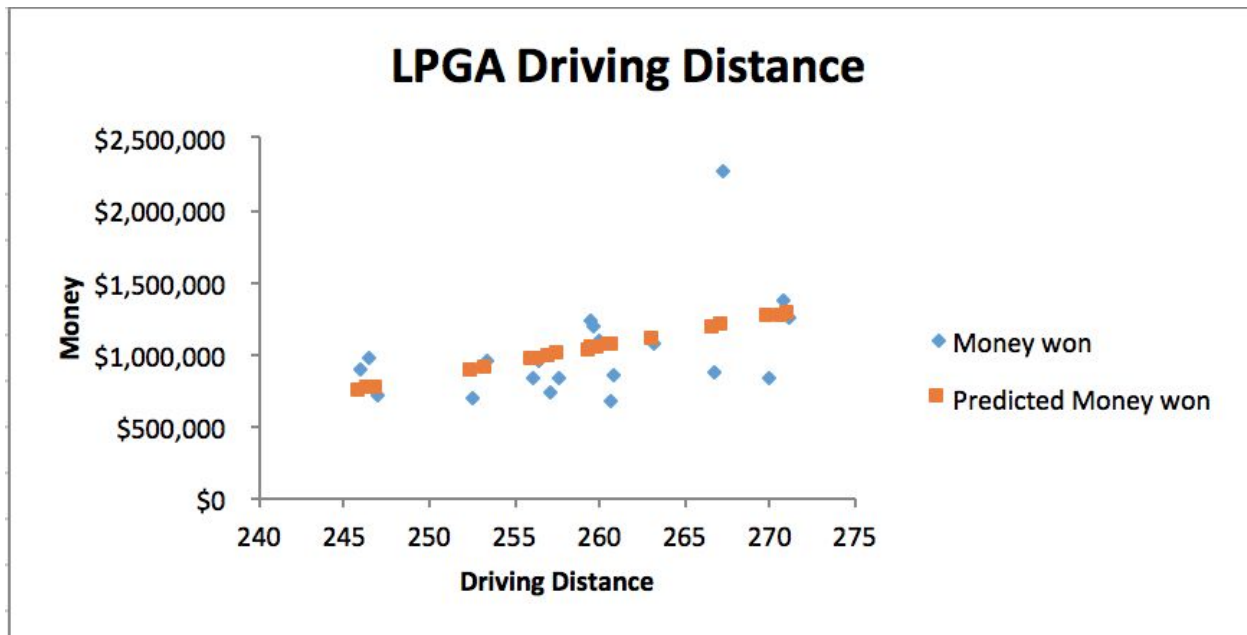


For men, a regression analysis between driving distance and money won was not statistically significant. The p-value of 0.13 is above the .05 threshold that would allow us to reject the null hypothesis. Additionally, we can see that the predicted money won line fit plot does not fit well with the actual results. This is further indicated by the R-squared figure of 0.12. Ultimately, the above analysis shows that increased driving distance does not have a statistically increase money won.

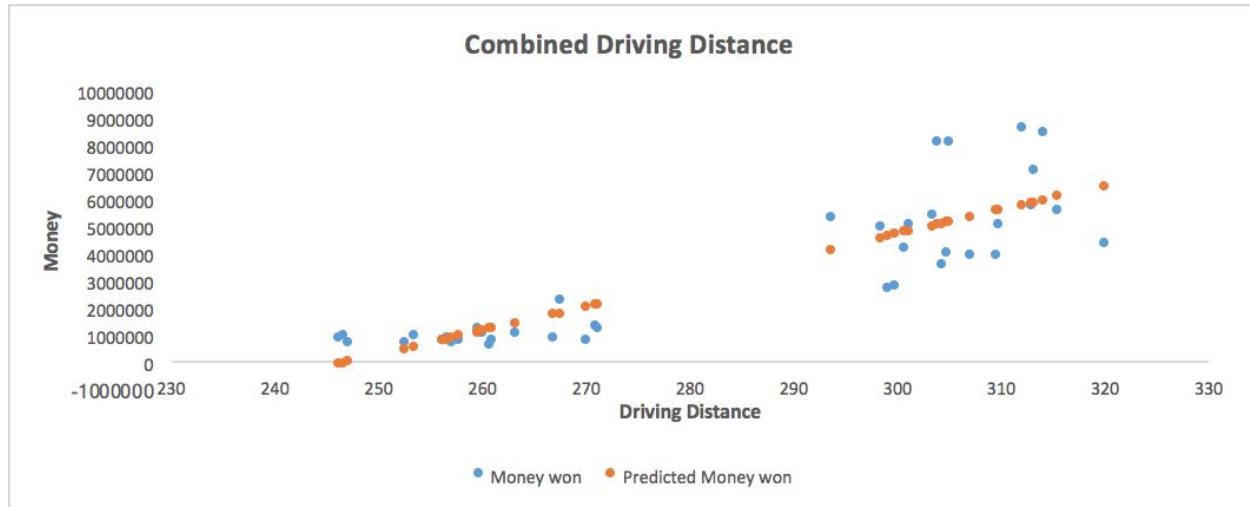
<http://www.espn.com/espnw/sports/article/15160220/big-gap-earnings-men-women-professional-golfers>.

²⁷ PricewaterhouseCoopers. "Outlook for the Sports Market in North America through 2021." PwC. Accessed March 2019.

<https://www.pwc.com/us/en/industries/tmt/library/sports-outlook-north-america.html>.



LPGA golfers gain a statistically advantage when they hit the golf ball farther off of the tee. As shown by the above regression analysis, driving distance impacts money won on the LPGA tour. Additionally, the p-value of 0.04 is statistically significant. We can reject the null hypothesis. The R-squared figure is low at .21 due to the impact of outliers. It should be noted that a larger sample size would improve the quality of the regression analysis.



The above chart represents the driving distance line fit plot between money won and driving distance for both PGA and LPGA golfers. On a combined basis, we can see that driving distance does have a significant impact on money won. Furthermore, the gap between money won and driving distance for men and women is illustrated. The p-value of driving distance is less than 0.05 which shows that the relationship is statistically significant. The R-squared figure is 0.72 which is higher than both the LPGA and PGA on a stand alone basis. The R-squared figure does not show a perfect fit but a relatively strong fit. It should be noted that a larger sample size would reduce the margin of error.

Conclusion:

In conclusion, the analysis shows that LPGA golfers are not paid less because of decreased performance, as measured by scoring average, compared to PGA golfers. PGA golfers and LPGA golfers have similar performance metrics in terms of putts per round and scoring

average. Yet, PGA golfers on average have higher driving distance of 306.31 yards compared to 272.60 yards by LPGA golfers. PGA golfers have a greater likelihood to earn higher prize totals than LPGA golfers due to larger prize pools. The PGA tour generates more revenue from TV deals and sponsorships than the LPGA tour which results in larger prize pools for men. Tiger Woods, a PGA tour player, is a recognizable household name who has helped grow the game of golf. The LPGA does not have a transcending figure, like Tiger Woods, that is recognizable by non sports fans. The LPGA tour cannot offer equal compensation when compared to the PGA tour until society acknowledges that women in sports deserve equal pay. More women in executive level positions in corporate America can help fill the wage gap and help women to be equally compensated across all industries. In 2018, only five percent of US corporations had female CEO's in the United States. Women in leadership positions can help break the wage gap in America and increase the earning potential for women in all industries.²⁸ LPGA tour players earn less than their male counterparts on the PGA tour due to disparities in tour revenue which results in smaller prize pools. Investment in the LPGA sponsorships by corporations lead by executives of all genders can help bridge this gap and help grow the game of women's golf. Ultimately, this paper analyzed income inequality between the PGA tour and LPGA tour players in 2018. A question that we need to ask ourselves is as a society: Will we ever see the wage gap between male and female golfers bridged? Only time will tell.

²⁸Mishra, Subodh, and Institutional Shareholder Services, Inc. "Women in the C-Suite: The Next Frontier in Gender Diversity." The Harvard Law School Forum on Corporate Governance and Financial Regulation Women in the CSuite The Next Frontier in Gender Diversity Comments. Accessed February 2019.
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