

# Factors Affecting E-sports Viewership

by

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## **Abstract**

With the rapid growth of the video game industry in recent years comes a similar, if not greater, growth in e-sports viewership. Like with traditional sports, where there are viewers, advertising will follow. At least, understanding advertising revenue might be a goal for a future paper. For now, e-sports tournament viewership data is readily available, and this paper seeks to understand some of the factors that drive viewership by analyzing them through a quantitative lens. Specifically, Average Concurrent Viewership is the chosen metric and a regression is run with it as the independent variable and prize pool, air time, organizer, venue, and game, as the dependent variables. Although a cause-and-effect relationship cannot be proven, the paper draws on outside research and combines it with regression results to highlight patterns in the data and suggest implications for the future of e-sports advertising.

## Background

The video game industry has been growing at an astounding speed. Games have become more technologically advanced, expanding to a multitude of platforms, across just about every imaginable genre. The target age range is increasing, and the gender gap is decreasing.

Activision Blizzard and Ubisoft, two of the largest video game developers, have far outperformed the S&P 500 (Exhibit 1). In 2018, hardware and software revenues relating to video games totaled \$43.4 billion, which is an 18% growth from the previous year (ESA 2019).

To increase player engagement and to increase revenue for a game, companies have turned to hosting tournaments or entire sports leagues, for their games. The rise of e-sports is being closely followed by many major investment banks. Goldman Sachs, for example, believes that e-sports viewership will equal NFL viewership by 2022 (Ross 2018).

In July 2018, the Overwatch<sup>1</sup> League Grand Finals, hosted by Activision Blizzard, sold out its physical stadium in the Barclays Center in New York, drew an average minute audience<sup>2</sup> of about 860,000, and became the first competitive video game to air on ESPN during prime time (Ellingson 2018). The winning team received \$1 million, split among all its members (Fortier 2018).

While the size of this prize pool may be surprising, many e-sports tournaments have prize pools comparable with that of traditional sports. For example, in 2017, The International, a Dota<sup>3</sup> tournament, offered prizes totaling \$24.7 million (Bhardwaj 2018). Exhibit 2 shows how some e-sports and traditional tournaments' prize pools compare. Not all e-sports prize pools resemble

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<sup>1</sup> First person shooter developed by Blizzard Entertainment

<sup>2</sup> The average number of viewers during any 60-second portion of the broadcast (Patel 2016)

<sup>3</sup> Battle arena game developed by Valve Corporation

the ones in Exhibit 2. For example, Dell Gaming Liga Pro #3, a CS:GO<sup>4</sup> tournament, only offered \$1,200.

## **Research question**

Given the variation in prize pools and the popularity of tournaments, I hypothesized that the quality of competitors that are drawn into the competition has a positive relationship with the prize pool size, which would also have a positive relationship with the number of viewers for a given tournament. Those viewers, depending on their demographics, would be valuable for advertisers. Although advertising and sponsorship data is not widely available like it is for mainstream sporting events like the Superbowl, I hope to gain an understanding, using quantitative and qualitative means, of the factors contributing to a successful e-sports event.

## **What is E-sports?**

According to dictionary.com, e-sports refers to “competitive tournaments of video games, especially among professional gamers.” An article on Investopedia under “Alternative Investments” defines e-sports as follows: “ESports turns online gaming into a spectator sport. It mimics the experience of watching a professional sporting event, except instead of watching a physical event, spectators watch video gamers compete against each other” (Chen 2016). Like traditional sports, some tournaments are league-based while others have open registration. Most offer prize pools for the winners. Companies or other organizations sponsor tournaments, teams, or individual players.

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<sup>4</sup> First person shooter developed by Valve Corporation and Hidden Path Entertainment

## History of E-sports

The first e-sports event took place in 1972 at Stanford University, where students competed on the game Spacewar for a subscription to a magazine. In 1980, a much larger competition was held: the Space Invaders Championship attracted 10,000 participants.

(BountieGaming 2018)

In 1990's the rise of the internet enabled competitive multiplayer games. Nintendo and Blockbuster sponsored tournaments during this time. In 1997 the winner of the Red Annihilation tournament for the "Quake Game" received John Carmack's<sup>5</sup> Ferrari as the grand prize. The same year, the Cyberathlete Professional League was formed and held a tournament offering a \$15,000 prize pool, which was considered very large at the time.

Over the years, e-sports leagues such as Major League Gaming and ESL<sup>6</sup> grew in popularity, as well as a few dominant games such as League of Legends and Dota 2 (Defense of the Ancients).

The Game Awards 2018 is an award show that honored the best video games of the year across many categories, similar to how the Oscars picks the best movie for a multitude of categories. Overwatch won best "Esports Game."

## Revenue Model – An Example

Overwatch has many merits that make it deserving of the title. It created the Overwatch League, which ended up being more successful than Blizzard Entertainment predicted it would become. The league has many sources of revenue, some of which are similar to those for traditional sports and some of which are native to gaming.

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<sup>5</sup> Lead developer of Quake

<sup>6</sup> Formerly known as Electronic Sports League

The first is the franchising fee, which is a one-time fee paid to Blizzard Entertainment for a team to become part of the league. The league started in 2018 with twelve teams that each paid a franchising fee of \$20 million. Originally many sports journalists predicted that this was too expensive for an immature e-League to handle, but eight new teams were added for the 2019, with a franchise fee for each team of around \$50 million. This indicates that the 2018 season was a success and that an even higher fee would still be profitable.

Next, Blizzard sells merchandise related to the game and its franchises on its website, such as apparel, plush toys, and action figures. It also has sponsors such as HP, Intel, and T-Mobile. Advertisements for each sponsor are played during breaks between matches, and HP and Intel provide some of the equipment that the players use. The league sells tickets for the games at the physical stadium, although physical ticket sales are only a small percent of total revenue. It also partnered with Nielsen holdings, which is expected to greatly increase sponsorships in the future as Nielsen will apply its ratings service to help Blizzard gather data on audience demographics and preferences, allowing for more relevant and effective advertising.

Where Overwatch League's revenue streams differ from that of traditional sports is in its partnership with Twitch, the video streaming service. Starting in season 1, viewers on Twitch could donate money to receive in-game items for their own copy of Overwatch. If a player donated a certain minimum, they became eligible to receive in-game costumes based on how much the cumulative player base donates. They could also buy a pass that would allow them to watch exclusive player interviews after each match and receive additional in-game items, similar to a virtual VIP pass. In season 2 this pass was changed so that holders could watch any player's point of view during the tournament. Recently, Overwatch League signed a deal with ESPN,

Disney, and ABC, that will bring the e-sports league closer to the mainstream, which will eventually translate into more viewers and higher revenue.

## Demographics

This section examines studies that have been done on the advertising preferences and demographics of e-sports viewers. All these sources describe the aggregate audience, not the fanbase per tournament or per game.

According to the 2016 Newzoo Global Esports Market report, 54% of e-sports enthusiasts are aged 21-35. In comparison to the overall online population, those enthusiasts are higher earners – with 53% earning “high income” compared to 37% of the general online population. E-sports enthusiasts, compared to the general online population, also spend more on digital subscriptions such as Spotify and Netflix, and on hardware. Additionally, the report suggests that there are differences between mobile phone brand preference, payment provider, mobile game spending, and cell phone carrier of enthusiasts compared to the general online population, suggesting there is space for non-endemic brands to advertise in e-sports.

The 2017 Nielson Esports Playbook report supports many of the findings of the Newzoo report. E-sports fans do not watch much TV – US fans watch an average of 4.4 hours of TV a week, but play an average of 8.2 hours of video games a week. The audience leans heavily male but has some differences across games. Overwatch is 79% male, while FIFA<sup>7</sup> is only 68%. US e-sports fans follow an average of 5.7 titles, indicating that it may be useful for advertisers to target multiple games at once.

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<sup>7</sup> Soccer game developed by Electronic Arts

Additionally, there has been a concern among advertisers and the e-sports community that the audience carries an aversion to corporate sponsorship, and that sponsoring a game or tournament may have a negative effect on the brand image. Thankfully for advertisers, this is not true. In the US, 58% of respondents had a positive attitude toward brand involvement in e-sports, and only 5% had a negative reaction. This is similar across several other countries and indicates that even non-endemic brands like the ones mentioned in the Newzoo report, may be able to advertise. There is, however, a strong preference for endemic brands, which refers to brands who “create products that are used in the production or playing of eSports, such as software and computer component manufacturers and energy drinks” (ESA 2017). About 80% of respondents answered that the involvement of endemic brands was “very appropriate,” while only about 30% answered that the involvement of non-endemic brands was “very appropriate.”

A MarketingWeek article (Rogers 2018) takes a closer look at how advertisers must engage its audience in order to survive in e-sports. The audience “can be very unforgiving, but equally [it] will embrace and love brands,” so the advertising must be specific to individual games. Gillette sponsors League of Legends, which makes sense since its fanbase is overwhelmingly male. High-end PC brands should sponsor games that are graphics intensive and have an audience with enough disposable income to afford the hardware.

## **Sponsorships**

This section gives examples of sponsors of different levels of organizations within e-sports. The lists are by no means comprehensive. Notice the presence of both endemic (Intel, Mountain Dew, Red Bull) and non-endemic (Mastercard, State Farm, BMW USA) brands.

Table 1 below shows sponsors at a tournament level. They will usually sponsor or organize some tournaments but not the professional league.

*Table 1: Tournament Sponsors*

<b>Sponsor</b>	<b>Game</b>
Mastercard	League of Legends
Coca-Cola	Legend of Legends
Red Bull	Starcraft 2, Dota2

Some companies instead sponsor leagues:

*Table 2: League Sponsors*

<b>Sponsor</b>	<b>League</b>
Mercedez-Benz	ESL
Mountain Dew	Mountain Dew League
Comcast Xfinity	ESL
OMEN by HP	Overwatch League
T-Mobile	Overwatch League
State Farm	Overwatch League <sup>8</sup>
Nike	League of Legends Pro League
Intel	Overwatch League
Jersey Mike's	North American League of Legends Championship Series <sup>9</sup>

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<sup>8</sup> Overwatch League partners page

<sup>9</sup> Fitch 2018

There are also sponsorships for teams, which in this context refer to organizations that own several teams which each compete in one game. For example, Cloud9 is an organization that owns teams from many different games including CS:GO, Fortnite, Overwatch League, and League of Legends.

*Table 3: Team Sponsors*

Sponsor	Team
Mountain Dew	Splyce, Team Dignitas, Team SK Gaming
Comcast Xfinity	Evil Geniuses, Philadelphia Fusion <sup>10</sup>
Airbus	Out of the Blue <sup>11</sup>
Audi	Astralis
Red Bull	Cloud9
BMW USA	Cloud9

## Leagues

The existence of a league indicates that the players are contracted to play and practice for a team and attend regularly scheduled tournaments. At the highest level of professional play, for example in Overwatch League, ELEAGUE, and ESL Pro League, players are full-time professionals that play for a team, such as Team Liquid, Cloud9, or compLexity Gaming, and enjoy perks such as team housing. The support structure for minor leagues is more varied. For example, Americas Minor Championship - London 2018 is classified by Valve as a minor championship and offered \$30,000 in prize pool. The winners were comLexity Gaming which is

<sup>10</sup> This is a team within Overwatch league, not an organization that owns multiple teams

<sup>11</sup> eGency Global 2018

a large e-sports organization that owns several teams. The team that received 7<sup>th</sup> place, Swole Patrol, does not belong to an organization and the players must support themselves.

Of the games for which I include in my analysis, the table below lists the professional major leagues associated with them. This is important to consider because the existence of a professional league means that players are salaried and may receive money from sponsorships as well. As a result, some people believe that prize pools matter less for the viewership of those tournaments than storylines and competition (Knocke 2016).

*Table 4: Examples of Professional Leagues*

<b>Game</b>	<b>League Name</b>
Dota 2	Dota 2 Professional League
Overwatch	Overwatch League
League of Legends	North America League of Legends Championship Series
CS:GO	ESL Pro League, ELEAGUE

## **Media Rights**

Most tournaments do not belong to leagues and are not broadcast on traditional media. They are typically broadcast on streaming sites such as Twitch, YouTube, and Facebook. This means that anyone with an internet connection can watch a tournament broadcast for free.

Some games have tried to push for mainstream by entering traditional media channels. In May 2018, ESPN secured rights to stream NA LCS<sup>12</sup> on ESPN+, a subscription streaming service (Murray 2018). NA LCS is streamed on Riot Games,' League of Legend's developers,

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<sup>12</sup> North America League of Legends Championship series

Twitch, and YouTube pages. Viewers receive rewards for watching on the League of Legends website.

Similarly, in July of 2018 Overwatch League signed a deal with ESPN, Disney, and ABC to broadcast future Overwatch League matches (Hume 2018).

## **Data and Methodology**

In total, I collected information on 729 tournaments across 7 games:

- Fortnite, the recently wildly popular battle-royale developed by Epic Games
- Counter-Strike: Global Offensive, a multiplayer first-person shooter developed by Hidden Path Entertainment and Valve Corporation
- League of Legends, a battle arena game developed by Riot Games
- Dawn of the Ancients 2, a battle arena game developed by Valve Corporation
- Overwatch, a team-based first-person shooter developed by Blizzard Entertainment
- Magic: The Gathering, a trading card game developed by Richard Garfield
- FIFA, a series of soccer simulation games developed by Electronic Arts.

My data came from an e-sports analytical agency called Esports Charts, and for each of the games above I recorded every tournament from January 1, 2018 to early February 2019. I chose this timeframe because I wanted a consistent one to compare these games across, and since the industry is changing quickly it would not make sense to go too far back in time.

For each tournament, I collected the following information:

- Start date/end date
- Prize pool (if any)
- Organizer (if any)

- Venue (if any)
- Total time watched (across all platforms)
- Average CCV – Average concurrent viewers refers to the number of people that are watching the tournament at any given time.
- Air time, in hours
- Peak viewers

## **Competition for Share of Mind and Share of Budget**

One factor that is not accounted for in the data is the presence of similar events happening at the same time as a tournament. It may be helpful to have an idea of what those events could be.

Close substitutes for video games include watching cable television, streaming movies or TV shows online, or watching traditional sporting events. Substitutes for any given e-sport event include other streamers broadcasting the same game, other e-sports events broadcasting at the same time, and playing the game itself.

## **Challenges and Issues with Empirical Analysis**

I collected data for 729 tournaments but used only the 568 that had prize pools. The rest may be missing because the prize is in a foreign currency – and sometimes the prize pool is not recorded if this is the case, or the tournament did not offer prize money to begin with because it was a qualifier, preliminary round, or a “for fun” tournament like Overwatch All-Stars Weekend.<sup>13</sup> Either reason may bias my results.

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<sup>13</sup> Overwatch All-Stars Weekend is part of Overwatch League, hosted by Blizzard Entertainment and featured casters playing the game instead of regular professionals, as well as “arcade” game modes

The data were also collected manually from Esports Charts so there is a small chance of human error in the data.

## **Results and Discussion**

### **Part 1 – All Games**

I ran two regressions (using Minitab), one with “Average CCV” as the dependent variable and the other with “Total Time Watched” as the dependent variable. For each, the independent variables were the same: the first four were “Prize Pool,” “Air Time,” “Has Organizer,” and “Has Venue.” I also gave each game a dummy variable, using League of Legends as the reference level, for a total of ten independent variables. I used the existence of a venue and the existence of an organizer as dummy variables, hoping that the existence of either meant that the tournament would be better funded and better managed, and therefore more successful. For easy readability, I included a column that indicated if the regression coefficient for each independent variable was significant to  $p \leq 0.05$ .

Several fields were not used. Start and end date would have been useful for determining seasonality, but because the data only spanned a little over a year, it would be difficult to draw conclusions from it. Peak viewers could have been another dependent variable, but it would probably be more indicative of the presence of highly anticipated rivalries or star players rather than the overall viewership of a tournament. However, this is just a hypothesis and is outside the scope of my current focus.

The correlations can be found in Exhibit 3. For completeness, correlations were run on every variable, including the game dummy variables and both dependent variables. However, the correlations between the game dummies are of little significance since no tournament contained

more than one game. The part of the table excluding the game dummies with each other is outlined for ease of interpretation. Most correlations are lower than 0.1, between independent variables and between a dependent and independent variable. The highest correlation is between Total Time Watched and Average CCV at 0.797, which signals that results are similar under either regression. Prize Pool and Air Time have the highest correlations with the dependent variables, ranging from 0.15-0.35 for each.

The regression results for Average CCV and Total Time Watched can be found in Exhibits 4 and 5, respectively. A comparison of the results of the regressions shows that Total Time Watched has a slightly higher r-squared value, which is probably due to the Air Time term having a t-value of over 5 (not shown). However, since Average CCV has lower or equal p-values on every other term, CCV will be used for discussion in this paper.

As stated in the Demographics section, the audience for each game is unique and so dummy variables were created to take variations across games into account. Only three of the ten independent variables were not significant: “Has Organizer,” “Fifa,” and “Fortnite.” The lack of significance from the organizers’ variable may be due to the data itself: it is highly unlikely that a tournament would truly not have an organizer, and it is much more likely that for any given tournament the organizer was simply unofficial or there were multiple organizers, which led the “Organizer” category to be blank. For example, Fiesta Bowl Collegiate Championship was recorded as having no organizer, but the Fiesta Bowl website clearly indicates that Fiesta Bowl is the organizer. The high p-value of FIFA was likely due to its low number of observations: the data only showed six FIFA tournaments with prize pools. The high p-value for the Fortnite dummy variable may be due to a unique combination of its high prize pools, open

sign-ups, and lack of salaried players, at least when the competitive scene was starting up. This will be made clearer in the next model.

The regression suggests very high coefficients for some of the terms, particularly the game dummies. In fact, it states that if the game is not League of Legends, the average CCV for that tournament will drop anywhere between 1 million and 1.5 million. It is important to remember that these numbers are only true for the model and variables used. In other words, it cannot be interpreted in a vacuum. To emphasize this, Table 5 shows the distribution of CCV for all games.

*Table 5- CCV distribution - All Games*

<i>Bins</i>	<i>Frequency</i>	<i>Cumulative %</i>
1,000	102	17.89%
10,000	269	65.09%
50,000	78	78.77%
100,000	31	84.21%
250,000	24	88.42%
500,000	27	93.16%
1,000,000	19	96.49%
2,000,000	9	98.07%
10,000,000	7	99.30%
More	4	100.00%

Only 39 games, or about seven percent of the games in the data had an average CCV above 1 million. The games with high CCV were not concentrated in League of Legends either, as Table 6 below show.

*Table 6- Average CCV Distribution -  
League of Legends*

<i>Bins</i>	<i>Frequency</i>	<i>Cumulative %</i>
1000	26	27.37%
10000	35	64.21%
50000	16	81.05%
100000	4	85.26%
250000	4	89.47%
500000	0	89.47%
1000000	0	89.47%
2000000	3	92.63%
10000000	3	95.79%
More	4	100.00%

Only ten of the games under League of Legends averaged more than 1 million concurrent viewers. From this it can be deduced that the model used one of the terms with positive coefficients such as Air Time or Prize Pool, to significantly increase the CCV before dropping it in one of the game dummies. Due to this, one should not focus on the exact coefficients when interpreting the results or applying it, and should instead focus on the direction and, to a lesser extent, the relative magnitude of the coefficient.

As hypothesized in the Results section, the coefficient “Has Venue” was positive, indicating that a tournament being held at a venue is correlated with a higher viewership. In fact, it increased average CCV by 588212 in this model. A tournament held at a venue means that players are physically sitting in the venue in order to compete. This is a given in traditional sports, but the alternative for e-sports is to have an online tournament where players can be anywhere around the world but compete at the same time. A venue has several advantages: fans can sit in the stadium and watch the game live, so the tournament can collect ticket revenue, and tournaments often use LAN, which minimizes any delays that a regular internet connection may cause, ensuring a more accurate, fair, and arguably high-skilled tournament. The disadvantages

are that it is expensive: the venue must be built or rented out, and it takes more effort, organization, and event staff to run it smoothly.

It is likely because of this additional expense that “Has Venue” had a positive correlation with viewership. Organizers who can afford a venue and provide the staff, half-time entertainment, and accommodations such as transportation for the players can either afford advertising or run a well-known or official league which many fans already know about and are likely to watch.

A recent example to support this conclusion is the announcement of Comcast Spectator and The Cordish Companies’ plan to build a \$50 million arena for the Philadelphia Fusion, a team they own that competes in the Overwatch League (Webb 2019). It will span 60,000 square feet, seat 3,500 fans, and include a training facility, broadcast studio, and team offices. It is a grand gesture that not only legitimizes their interest in the industry through a large investment but will improve the competitiveness of the team that has more resources to train, and improve the quality of broadcasts from that stadium by using equipment dedicating for e-sports. A stronger team and higher production quality will both drive viewer numbers in the future.

The results for Prize Pool indicate that for each extra dollar of prize money offered at a tournament, Average CCV increases by 0.325. The Air Time results indicate that for each extra hour of air time for a given tournament, the average CCV increases by 6698. Without additional data, the simplest explanation for Prize Pool is that players are motivated to an extent by the prize money offered. A large prize pool may also serve as a signal to viewers, that the tournament will be well-organized and well-run.

The explanation for the Air Time coefficient is similarly straightforward. Esports Charts, the data source, often condensed an entire stage, which often spanned several matches on

different days over the course of a few weeks, into a single entry. Therefore, the longest tournaments would be the ones that are well-organized, with many players competing, possibly featuring eliminations and different levels of qualifying rounds. In addition, longer tournaments may part of a professional league which already receives plenty of media coverage and attention, and the tournament may gain additional attention as it goes on.

From this model it is reasonable to conclude that e-sports tournament viewership as a whole moves together. Even when seven games are studied together, almost all the variables were significant. The biggest hint in the regressions results that the model could be improved is the low r-squared value of 8.16%. To address the issue, I ran separate regressions for each game (Exhibit 6). Conventionally one would use interaction terms between the game dummies and the other independent variables, but due to the large number of game dummies I chose to run separate regressions for ease of interpretation.

## **Part 2 – Individual Games**

The r-squared value for regressions on individual games ranged from about 21-83%. While the figures are still not ideal for several of these games, they were all higher than the r-squared with all games together. This is consistent with the idea in the Rogers article, which stated that advertisers must cater to the unique preferences of each game in order to succeed in the industry.

FIFA only contained six observations. Although there were more tournaments over the selected time period, prize pool information for those tournaments was unavailable or nonexistent. The low number of observations also contributed to high p-values, rendering every variable insignificant. Because of this, it will not be possible for any further discussion on this game.

While in the previous model coefficients were positive for prize pool and air time as expected, it is worth noting that under several of the individual regressions some of the signs became negative. Specifically, the Air Time coefficient was negative for League of Legends and Fortnite.

It may be that contrary to the previous explanation for Air Time, a tournament dragged on for too long and viewers lost interest, or it could be that the most exciting tournaments were not league-based and instead only lasted a few hours. For example, the Fortnite tournament with the highest average CCV was the Fortnite Celebrity Pro-am, which spanned two days, lasted 6 hours, and attracted an average CCV of 1,346,457.

Fortnite has several crucial distinctions from the other games surveyed that make it the only game other than FIFA to have an insignificant dummy variable, but have the highest r-squared value when the regression was run individually. Most of the tournaments were organized by its developer, offer massive prize pools up to \$3 million, and have open qualifiers, meaning there are no set players for a tournament and anyone can sign up. For example, the PAX West 2018 Summer Skirmish registration was on a first-come first-serve basis (The Fortnite Team 2018). The popularity of the game itself and its open signups, along with the extremely low p-value of its prize pool variable and high r-squared value, all support the hypothesis that the number of viewers is drawn to the quality of competitors, which is drawn by the prize pool.

Compare Fortnite's statistics to those of Overwatch, where 34 of the 48 tournaments were not open qualifiers – either invitationals or league-based. Overwatch had a p-value for Prize Pool of 0.659, compared to Fortnite's p-value of 0.000. Overwatch League is known for being a structured league that gives its players many benefits. The viewership is no longer correlated

with prize pool, so following the theory earlier, the audience must be driven by something other than player participation.

Of course, with the data used it is only possible to conclude that there are strong correlations, and not a cause-and-effect relationship. Fortnite is a unique case because it has the highest r-squared value with extremely low p-values for its prize pool and air time terms, but the prize pool coefficient is positive while air time is negative. The Celebrity Pro-am had the highest average CCV but not the highest prize pool. That tournament was even more special in that it consisted of 50 teams of 2: a selected Fortnite professional paired with celebrity, mostly actors, athletes, and singers. Among the celebrities competing were Fall Out Boy band member Pete Wentz, NBA player Paul George, and iCarly actor Nathan Kress who played Freddie Benson (PC Gamer 2018). In the case of this tournament it is reasonable to assume that the high viewership stemmed from the audience's eagerness to watch celebrities, rather than Fortnite professionals, play the game, and that the prize pool may have been less of a motivating factor for the competitors than it is in other tournaments.

Two conclusions can be drawn from Fortnite's results. First, as seen in the Celebrity Pro-am, there is space for creative marketing that can propel a game into the mainstream. However, this may be highly dependent on the structure of the game itself. Second, there are a multitude of factors that can influence viewership that is difficult to capture just by looking at statistics – and certainly would have been missed without looking individually at tournaments. Like traditional sports, an e-sports audience can be responsive to star players and the storylines of players and teams.

## Conclusion

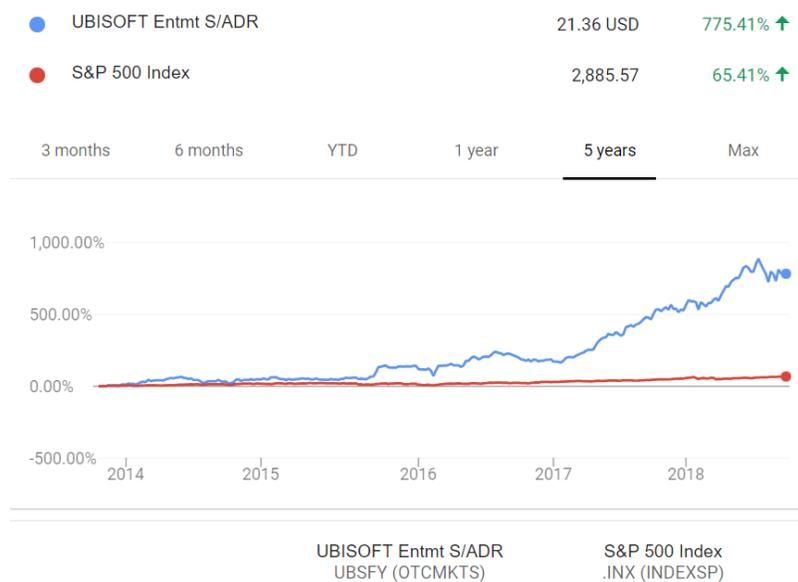
In this paper I sought to gain an understanding of the factors that affect e-sports viewership, anticipating that with the rapid growth of the industry, there would be an influx of advertising. Those advertisers would, like in TV, media, and traditional sports, be interested in the number of “eyeballs” on a broadcast. A topic that could be studied in the future, as more detailed audience data becomes available, is how the chosen independent variables or any other predictors may influence a specific subset of an audience. Online advertising allows for much flexibility that would make targeting those viewers easier and increase return on advertising spend.

Ultimately, the most important conclusion is that while the data may seem to suggest that a higher prize pool and the existence of a venue can be highly correlated with a successful tournament, it is much more likely that there are unseen factors driving its success. If an organizer is willing to spend more on advertising to attract viewers, then the view count will go up, but that advertising spending is not recorded in the data used in this paper.

On a very high level, e-sports is just like any other sport: a well-funded, publicized, generous event will be successful. But on closer inspection, it is unique, in terms of demographics, league and team structures, broadcasting medium, and audience. Without an understanding of those factors, advertisers and any interested parties cannot hope to achieve the results they want.

## Exhibits

### Exhibit 1



\*Data and graphs collected from Google Finance

## Exhibit 2

### How eSport prize purses compare to traditional sports



Sources: esportsearnings.com; Total Sportek; FIFA; cityam; CBS; TSM Sportz; PGA Tour; USTA

statista | BUSINESS INSIDER

Bhardwaj, Prachi. "How eSport prize purses compare to traditional sports." Business Insider, 8 June 2018, [www.businessinsider.com/esports-prize-pools-vs-traditional-sports-2018-6](http://www.businessinsider.com/esports-prize-pools-vs-traditional-sports-2018-6).

**Exhibit 3**

Variables that are not game dummies are outlined.

<b>Correlations</b>											
	Prize Pool	Has Organizer	Has Venue	Ttl. Time Watched	Avg CCV	Air Time	Fortnite	CS:GO	Overwatch	Dota 2	MtG
<b>Has Organizer</b>	0.035										
<b>Has Venue</b>	0.085	-0.092									
<b>Total Time Watched</b>	0.159	0.040	0.053								
<b>Avg CCV</b>	0.153	0.048	0.093	0.797							
<b>Air Time</b>	0.130	0.230	-0.056	0.338	0.166						
<b>Fortnite</b>	0.132	-0.097	-0.078	-0.017	-0.009	-0.109					
<b>CS:GO</b>	-0.078	0.107	-0.035	-0.077	-0.097	-0.139	-0.147				
<b>Overwatch</b>	-0.016	0.104	0.041	-0.022	-0.028	0.035	-0.051	-0.230			
<b>Dota 2</b>	0.123	0.102	-0.061	-0.015	-0.015	0.077	-0.075	-0.340	-0.118		
<b>MtG</b>	-0.035	-0.462	0.213	-0.034	-0.046	-0.158	-0.061	-0.274	-0.095	-0.140	
<b>FIFA</b>	-0.000	-0.048	0.010	-0.016	-0.021	-0.060	-0.029	-0.130	-0.045	-0.066	-0.054

**Exhibit 4**

Regression results for Average CCV

<b>Model Summary (Average CCV)</b>	
<b>R-squared</b>	8.16%
<b>R-squared (adj.)</b>	6.52%

<b>Regression Results (Average CCV)</b>			
<b>Term</b>	<b>Coefficient</b>	<b>P-Value</b>	<b>Significant?</b>
<b>Constant</b>	841681	0.093	X
<b>Air Time</b>	6698	0.042	✓
<b>Prize Pool</b>	0.325	0.002	✓
<b>Has Organizer</b>	-10436	0.978	X
<b>Has Venue</b>	588212	0.011	✓
<b>Overwatch</b>	-1443976	0.002	✓
<b>Magic: the Gathering</b>	-1479702	0.003	✓
<b>FIFA</b>	-1342104	0.203	X
<b>Dota 2</b>	-1241151	0.003	✓
<b>Fortnite</b>	-1150469	0.103	X
<b>CS:Go</b>	-1336795	0.000	✓

## Exhibit 5

### Regression Results for Total Time Watched

Model Summary (Total Time Watched)	
<b>R-squared</b>	10.13%
<b>R-squared (adj.)</b>	8.52%

Regression Results (Total Time Watched)			
Term	Coefficient	P-Value	Significant?
<b>Constant</b>	28846170	0.600	✗
<b>Air Time</b>	1812010	0.000	✓
<b>Prize Pool</b>	34.9	0.002	✓
<b>Has Organizer</b>	-20087416	0.626	✗
<b>Has Venue</b>	37557480	0.140	✗
<b>Overwatch</b>	-117901173	0.024	✓
<b>Magic: the Gathering</b>	-93565769	0.083	✓
<b>FIFA</b>	-84927099	0.464	✗
<b>Dota 2</b>	-104605544	0.021	✓
<b>Fortnite</b>	-85242286	0.273	✗
<b>CS:Go</b>	-93632809	0.012	✓

**Exhibit 6**

Regression results for individual games

Dota 2			
Term	Coefficient	P-Value	Significant?
Constant	-332378	0.384	X
Prize Pool	0.1247	0.000	✓
Air Time	7834	0.009	✓
Has Venue	552178	0.002	✓
Has Organizer	-13318	0.972	X
Number of Observations	79		
R-squared	42.77%		
R-squared Adjusted:	39.71%		

League of Legends			
Term	Coefficient	P-Value	Significant?
Constant	-305543	0.890	X
Prize Pool	21.21	0.000	✓
Air Time	-11199	0.052	X
Has Venue	275243	0.676	X
Has Organizer	463734	0.835	X
Number of Observations	93		
R-squared	79.17%		
R-squared Adjusted:	78.23%		

Fortnite			
Term	Coefficient	P-Value	Significant?
Constant	352218	0.001	✓
Prize Pool	0.2684	0.000	✓
Air Time	-26114	0.000	✓
Has Venue	129227	0.088	✗
Has Organizer	45040	0.587	✗
Number of Observations	18		
R-squared	83.35%		
R-squared Adjusted:	78.59%		

Magic: the Gathering			
Term	Coefficient	P-Value	Significant?
Constant	-2091	0.443	✗
Prize Pool	0.01870	0.000	✓
Air Time	292	0.006	✓
Has Venue	2086	0.074	✗
Has Organizer	726	0.453	✗
Number of Observations	68		
R-squared	40.21%		
R-squared Adjusted:	36.47%		

Overwatch			
Term	Coefficient	P-Value	Significant?
Constant	-119926	0.590	✗
Prize Pool	0.059	0.659	✗
Air Time	2034	0.024	✓
Has Venue	106623	0.117	✗
Has Organizer	59303	0.789	✗
Number of Observations	48		
R-squared	21.70%		
R-squared Adjusted:	14.58%		

Counter-Strike: Global Offensive			
Term	Coefficient	P-Value	Significant?
Constant	-12101	0.624	✗
Prize Pool	0.4441	0.000	✓
Air Time	380	0.159	✗
Has Venue	38586	0.016	✓
Has Organizer	228	0.993	✗
Number of Observations	250		
R-squared	39.92%		
R-squared Adjusted:	38.95%		

FIFA			
Term	Coefficient	P-Value	Significant?
Constant	-83807	0.309	X
Prize Pool	-0.064	0.642	X
Air Time	5581	0.154	X
Has Venue	13906	0.566	X
Has Organizer	-1930	0.938	X
Number of Observations	6		
R-squared	86.73%		
R-squared Adjusted:	60.19%		

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