COMPARING TRADITIONAL SPORTS AND ELECTRONIC SPORTS

BY

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THESIS

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ABSTRACT

Electronic sports (eSports) viewership numbers have been growing over the years. Video games such as *League of Legends, Counter Strike: Global Offensive, or Hearthstone: Heroes of Warcraft* have a large following. During the League of Legends regular season matches, 250,000 people regularly tune in to watch the games. Professional players such as Enrique “Xpeke” Cedeno-Martinez have 470,000 Twitter followers. In this study, we built two visualizations to explore similarities and differences between eSports and traditional sports. We focused on the salaries earned by eSports players and the emergence of a new way of interacting with professional players via live streaming. We then compared how fan loyalties differ between the two fields.
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CHAPTER 1

INTRODUCTION

Electronic sports, or eSports for short, are professional computer gaming. It stands at the intersection of gaming and sports. In traditional sports, we have many different categories such as basketball, football, or volleyball… Esports is no different. There are tournaments and leagues for different video games such as League of Legends, Counter-Strike: Global Offensive, or Starcraft2. League of Legends has two teams of five players competing against each other. On the other hand, Starcraft2 is a one-on-one game. Hence, just like basketball or tennis, there are different categories in eSports. Furthermore, it is widely accepted to be only at its inception, and it is expected to gain a lot more popularity as time goes on [1].

The 2014 world finals of League of Legends have drawn 27 million people. In contrast, the NBA finals the same year had 18 million people watching it [2].

In this study, we explore the differences and similarities between traditional sports and eSports. We first take a look at the lifestyles of professional video gamers. What it takes to become a pro-gamer? What are the different avenues open to the players once they retire? Secondly, we study the different mediums of watching eSports and compare it to broadcast television which is the main venue for watching sports live. In fact, these streaming platforms exhibit
similar behavior to cheering the teams in a stadium [3, 4]. We build a visualization that shows that streaming video games is a new avenue for players to make a decent living. Finally, we take a look at fandom in eSports. Teams in eSports are extremely volatile. Rosters change frequently within a season, and players retire quickly. The gaming industry has been filled with scandals of organizations exploiting players [5, 6] so some organizations just vanish from the scene extremely quickly. We created an interactive visualization that explores how League of Legends fan have shifted from one season to another and compare the behavior to basketball.
CHAPTER 2

BACKGROUND

Our work compares the video game League of Legends with the NBA. We decided to focus on League of Legends because it’s currently the most popular game of the world and we are familiar with the professional scene. Basketball and League of Legends have similarities. They are both games with two teams that have five players, and the playoff formats for both games are similar. In the sections below, we describe the game league of legends and its championship series. We then give a detailed explanation on how streaming video games work on platforms such as Twitch.tv.

2.1 League Of Legends

League of Legends is a multiplayer online video game. It is a team-based game, where the teams fight against each other to destroy the opponent’s base. The most popular game mode has 5 players on a team and the teams compete on a map called Summoners Rift. Each player has a position in the game. The available positions are top, jungle, mid, adc, and support. This can be thought in similar terms to positions in basketball with point guard, shooting guard, power forward, center, and small forward. After a player has decided on which position
they want to play they can choose a champion that will fit that role from a pool of 123 champions. Once the teams are ready, they enter the Summoners Rift and fight on average for 40 minutes to take over the base of the enemy team and destroy a building called the *nexus*.

The League of Legends Championship Series (LCS) is the professional eSport competition ran by Riot Games in Europe and North America. As of 2015, there are 10 teams in both regions. The European LCS (EU LCS) is on Thursdays and Fridays. The North American LCS (NA LCS) is on Saturdays and Sundays. Each team plays two games against each other for a total of 18 games during a split. At the end of a split, the top 6 teams enter the playoffs that allow them to get cash prizes and accumulate points to enter more prestigious tournaments. Every team’s main goal is to be qualified to go to the World Championship, which takes place at the end of season. Teams from Europe, North America, Korea, China, South East Asia, and wild card teams qualify for this tournament and compete for a prize pool of $1,000,000 for first place.

### 2.2 Streaming Platforms

Live video game streaming platforms such as Twitch.tv are gaining popularity rapidly. In 2013, Twitch had 34 million unique monthly viewers [7]. As shown in Figure 1, once you get on the website you get a list of games that people are watching. The list is sorted by popularity of the game at the time.
Usually, games that have a tournament going on will be at the top of the list. Once you click on a specific game, you get to see a list of live channels that are again sorted by popularity. Twitch allows you to stream any game from a PC, Xbox, or Playstation. In Figure 2, we show the 6 most popular streamers playing the game League of Legends. Riot Games is broadcasting a tournament game, which has 75,164 viewers. Michael “Imaqtpie” Santana is a popular streamer that has regularly around 30,000 viewers. Once you decide which streamer’s broadcast you want to watch, you click on the stream image and you get redirected to the streamer’s channel. As shown in Figure 3, a stream session has a title, the video game from the perspective of the streamer, and an IRC chat on the right hand side for the viewers to interact with each other and the broadcaster.

The streamer usually puts an overlay on top of the gameplay footage while streaming. The overlay is used to advertise sponsorships, have the webcam video of him, and display additional information such as the music playing in the background. Viewers can interact with each other or with the streamer by typing in the chat. Special emoticons are such as “Kappa” is spammed a lot in chat as certain events happen in the game [3]. In this example, Kappa is used as a sarcastic icon to make fun of the streamer. Viewers can follow a stream for free. They will get notified whenever the stream goes live. If they wish to support the streamer they can also subscribe to the stream for 5 U.S. dollars. This creates a
monthly payment to the streamer where $2.5 goes directly to the broadcaster’s pocket and the other half to Twitch.

2.3 Figures

Figure 1. Games Listed By Popularity on Twitch.tv
Figure 2. Live Channels For League of Legends
Figure 3. Riot Games Channel
CHAPTER 3

REVENUE OF PROFESSIONAL PLAYERS

3.1 Introduction

Electronic sports are still at its infancy. Professional players in League of Legends (LoL) are very young. Riot Games requires the players to be 17 years old to compete in the LCS. Every player earns a minimum salary of $12,500 per split. They can potentially earn a lot more by winning tournaments, but very few teams can achieve that level of success. A split consists typically of a period of 4 months [8]. Because of the format of the LCS, player contracts are usually written on a split basis and transfers happen frequently. Therefore, the career of pro players is short. We have gone through the history of 63 retired LoL players, and the average career length is 2 years and 1 month. During that period, the average pro player switches 3.6 teams. In comparison, the average career length of a NBA player is 4.8 years and they earn $5.2 million [9]. Considering that many eSport professional drop out of high school to pursue their dream, it is still a very questionable decision. Almost 13% of the retired LoL players went back to studying. However, a decent amount (35%) is still involved in eSports. The most common route taken by the ex-players is to stream on Twitch.tv. Other popular alternatives are becoming a coach, working at Riot Games as a caster, game analyst, or QA.
In the following section, we describe an interactive visualization that displays the earnings of 23 Twitch streamers. Our goal is to bring enlightenment in both how streaming generates money and to show that this new emerging market has a lot potential.

3.2 Visualization

Our interactive visualization [12] is displayed in figure 4. We display the name of the streamer in the top left corner along with how much money they have earned in one month. In this screenshot, the streamer’s name is Imaqtpie and he has earned $14,433 over 30 days. He has earned 85% of his revenue ($12,303) from advertisements. The remaining $2,130 came from subscriptions to his channel. We decided to display the money distribution as bar charts because it’s easy to compare the values visually. Below the money distribution, we have the viewership and subscriptions panels as shown in figure 5. The viewership panel is a line chart of all the streaming sessions held by the streamer. The median number of hours streamed is displayed in the x-axis. We also display the median number of viewers on the right hand side of the graph. Therefore, for Imaqtpie we can tell that in general he streams 9 hours with 15264 people tuning to watch him every streaming session. Once you click on one of the grey lines, the subscription panel changes its distribution for that session. We display a bar chart of how many people have subscribed every hour for the selected streaming session. Finally, on
the right hand side we have a vertical bar chart of all 23 streamers we have kept track of. The bars are sorted by money earned during one month. After selecting another streamer, all of the other panels get updated and you can see the breakdown of the earnings of that particular streamer.

3.3 Data Collection

We collected viewership data and Twitch chat data from 11/6/2014 to 12/6/2014. The viewership data was gathered by using the Twitch public API, we pinged the servers every 10 minutes to collect the number of viewers for a channel. The subscription data was collected from the Twitch chat. We wrote a Google Chrome plugin that reads the chat. Whenever the plugin reads a message of the format: “%s has just subscribed!” we store that information in a database. The database had information about the following triplet for subscribers:

\( \text{(streamer\_name, subscriber\_name, timestamp)} \) and for viewership:

\( \text{(streamer\_name, count, timestamp)} \). We then apply a transformation step by merging all the data into a single JSON file to be read by our javascript code in the front-end.

3.4 Observations

Among the top 10 streamers in terms of income, only 3 of them are pro-players: Piglet, Bjergsen, and Dyrus. Full-time streamers gain more money from
subscribers than pro-players with similar number of viewers. For example, the median number of viewers for Imaqtpie is 15,264 and he has earned 14.7% of his salary from subscribers. Similar pro-players such as Piglet only made 4.1% or Dyrus with 4.0%. We speculate that subscriptions are correlated with the intimacy between the streamer and the viewers. Full-time streamers tend to focus more on being entertaining. On the other hand, pro-players’ main goal is to climb the ladder in game and they don't talk as much. The lack of attention on the viewers results in less subscribers. Full-time streamers are also extremely hard working. Imaqtpie, Trick2g, and Nightblue3 work at least 8 hours per day. Trick2g streams usually 11 hours a day with 27 streaming sessions, and Imaqtpie had 30 sessions out of 30 days of recording data! Although, professional players tend to get huge viewership numbers, such as Bjergsen with a median number of 30050.5, they don't stream as much. Bjergsen usually streams for 4.5 hours and had 16 sessions during one month.

Advertisements are in all cases the biggest source of income. However, for the two female streamers Behkuh and Kaypea subscription revenue is pretty close to advertisements. Unfortunately, our sample size is too small to draw any conclusions. It would be interesting to compare female and male streamers with similar viewership numbers.
3.5 Measurements

We posted our visualizations on HackerNews [10]. It got 23680 page views over the span of 3 days and generated 55 comments as shown in figure 6. Overall, we are satisfied with the discussion generated by our visualization as it has been shared and viewed in 126 countries with the most views from the United States to Zimbabwe.

3.6 Discussion

We had a phone discussion with a research scientist at Twitch after they saw the visualization on HackerNews. It appears that our estimation of revenues from advertisement is reasonable. However, apparently Twitch does not display all subscriptions in the chat. It is a setting that needs to be enabled by the subscriber. Therefore, our subscription estimation was a lot lower than reality. This means that streamers earn substantially more than predicted!

In conclusion, we showed that professional eSports players have an emerging new prospect for them once they retire. Streaming seems to be a promising avenue for making money. Unfortunately, it requires a lot of dedication. In order to become successful, one needs to stream at least 8 hours almost everyday of the month. A lot of streamers are afraid of taking a vacation because they are scared of losing members of their audience to another streamer.
3.7 Figures

Figure 4. Twitch Earnings For 23 Streamers

Figure 5. Hovering Over A Stream Session
Figure 6. Google Analytics Results for Our Visualization
CHAPTER 4  
FANDOM IN ELECTRONIC SPORTS

4.1 Introduction

Fandom in electronic sports emerges and behaves differently than traditional sports. First of all, unlike traditional sports the fans of a game usually have played the game before so they have experience with it [11]. Electronic sports are not tied to location. It’s common for viewers from North America to watch games in Europe, Korea, and China just as many as their own region for League of Legends. Finally, the distance between professional gamers and a casual gamer is definitely smaller than traditional sports. In video games, players climb a ladder and organizations scout the top players in the ladder. Regular players can cross professionals more easily. This results in many interactions over social media and making you more attached to the professional players. In the sub-sections below, we show an interactive visualization that shows that fans of eSports are also not as loyal as fans of traditional sports.

4.2 Visualization

We built a Sankey diagram of LoL teams for both Europe and North America as shown in figure 7. The interactive [13] is essentially a bipartite graph of how fans have moved from Season 4 to Season 5. Every node (rectangles) in
the graph represents a team. There were only 8 teams in Season 4, but this number increased to 10 in season 5. The width of the rectangles is a constant, however the height represents the number of supporters. Therefore, the longer is your rectangle the more supporters that team had. The color of every node represents the main color theme of the team. We display the logos of the teams next to the rectangles for people familiar with the scene to identify their team easily. The links represent the amount of fans that have moved over from one team to the other. The height of the link at a node is proportional to the amount of fans leaving to support another team. We also display in tooltips next to the team nodes the percentage of supporters associated with the team in that season. For example, Fnatic had 37% of all supporters in season 4, whereas Gambit Gaming had only 9%.

Upon hovering on a team node, we display in a dark tooltip the name of the team and the number of fans for the team as shown in figure 8. The name of team is displayed for viewers that might not be familiar with the logos. The links that leave the team are highlighted in the team’s main color and its opacity is increased. We can also see the percentage of fans that every team in the other season got from the team you hovered on. For example, when we hover over the season 4 Fnatic team, we can see that only 51% went back to Fnatic. A large amount, 21%, went to a newly formed team called Unicorns of Love. The opposite view can also be seen if you hover over a team in season 5. As shown in figure 9, the season 5 SK Gaming has 10927 fans compared to 3475 from season
4. They got 31% of their fans from the old Alliance team, and 23% from the old SK Gaming roster. Overall, this interactive allows a viewer to see the fan shifts in League of Legends from one season to another.

4.3 Data Collection

The data was collected through a survey conducted on the League of Legends sub-reddit [14]. Every participant had the option of selecting a team that they supported in season 4 or season 5 in North America or Europe. No questions related to the identity of the participant were asked. The survey was posted around 9:00am CDT in order to reach both European and North American fans. In total, we got 68539 responses to the survey. Therefore, we believe that the proportion of fans associated with each team is a good representation of reality. The League of Legends sub-reddit is the main forum browsed by players of the game. Even the casters of the LCS refer to it frequently during streams on Twitch.

4.4 Observations

The oldest teams in North America, TSM and CLG, have the largest fan base. TSM had 37% of the total fan base with a count of 24295 fans in season 4. They kept 81% of their fans transitioning to season 5 but their support has
decreased to 21653. On the other hand, CLG gained supporters from season 4 to season 5. They have 26% of the fan base in season 5 with 17020 fans.

Unlike traditional sports, it is common for teams to re-brand from one season to another. Therefore, it is hard to achieve brand loyalty. The supporters seem to be more attached to personalities and team standings. Perhaps taking a look at Team Dignitas (DIG) might be the best way of observing this. Dignitas had 5168 fans in season 4, but they dropped to 443 in season 5. When two DIG players, Scarra and ZionSpartan, made the move to CLG, 29% of the DIG fan base transferred to CLG as well. Furthermore, the retirement of Imaqtpie resulted in Dignitas keeping only 7% of their fans.

We can also see how much performance matters. At the time of the survey SK Gaming was undefeated in the European LCS. Their number of supporters increased from 3475 to 10927.

As mentioned earlier, eSports are not tied to a location. For North America, the tournament happens at the Riot Games studio in Los Angeles, CA. For Europe, the tournament is in Berlin, Germany. Almost every team is staying near the city where the tournament takes place. Therefore, you don't necessarily see local support for the teams. In total, only 1 team out of 10 in both NA and EU
LCS has rosters with the same national background. Recently, however, both regions have brought on more players from Korea and China.

Starting on August 6, 2012, the LCS has been active for less than three years. Sponsorships cause team names to change frequently. For example, Team Curse became Team Liquid and Alliance renamed themselves to Elements. Rosters also change frequently between splits depending on the performance of the players. In NA, only two teams from the previous split remained with the same roster out of 7 teams that continued. In EU, all the teams had a roster change.

The loyalty rates for both NA and EU are pretty low. There were 7 teams that moved on from season 4 to season 5. In NA, 68% of fans have supported the same team across both seasons. In EU, only 45% of the viewers have supported the same team, which means more than half have switched over teams.

4.5 Measurements

The visualization was posted again on the League of Legends sub-reddit achieving 4th place on the front page [15]. It got 760 comments and 1709 karma points. Over the span of a few days it got more than 130,000 page views as shown in figure 10. The social media pages of LCS teams such as the Unicorns of Love and Winterfox shared the visualization. The feedback for the visualization was
positive and the community seemed to try to find reasons on the observed behaviors.

4.6 Discussion

In conclusion, we can see that the “bandwagoning” effect occurs in League of Legends from one season to the other. This phenomenon is not common in traditional sports as it’s usually frowned upon switching teams. However, in eSports spectators are more attached to players than brands as brands change frequently. Perhaps, given more time this paradigm will shift into more traditional sports as teams become more and more established in the scene.

4.7 Figures
Figure 7. European LCS Fan Shifts From Season 4 to Season 5
Figure 8. Hovering Over A Season 4 Team
Figure 9. Hovering Over A Season 5 Team
Figure 10. Google Analytics Results For Fandom In Esports
CHAPTER 5
CONCLUSIONS

Electronic Sports is still at its infancy. League of Legends, Counter-Strike: Global Offensive, and Hearthstone are all emerging eSports that are trying to find the best way of creating a sustainable ecosystem for the teams. In this thesis, we have shown that there are regularly at least 200,000 viewers for the LCS. We have built two visualizations to show different aspects of eSports compared to traditional sports.

The Revenue Of Professional Players is an interactive visualization of Twitch revenues of both professional players and full-time league of legends streamers. First of all, we explain how streaming is a unique avenue for players to interact with their fans and make money at the same time. We can compare it to reality TV shows, except at a lot more personal level. The most successful professional player earns around $10,600 a month only streaming part time.

The Fandom in Esports interactive is a bipartite graph visualization that displays how fans shifts loyalty from one season to another. First of all, switching teams from one season to another is common. This is due to loyalties being more attached to personalities over team brands. However, performance seems to matter a lot as well. Whereas, in traditional sports no matter how bad your team does you are supposed to still support your local team.
Both of our projects demonstrate some similarities but also important differences to traditional sports. In the future, we would like to look into the lifestyle of professional players. Such as what is the schedule of a player, how do they communicate in game with members that speak different languages, and finally looking into successful coaches and how they managed to transition from one game to another?
REFERENCES


