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RANDOMNESS IN APEX LEGENDS: INFLUENCES ON PLAYER AND ESPORTS VIEWER EXPERIENCES
A Study on User Retention and the Effects of RNG

ABSTRACT

When looking at esports and directly at Apex Legends, its randomness has always been contested, and along with its esports scene, the community branded it as a downside that has to be dealt with when playing. From the randomness of in-game mechanics around the map to finding loot, to unpredictable strategies caused by the shrinking play area of a battle royale game, it seems that randomness is, indeed, a nuisance creating unfair situations, affecting both players and viewers. However, has this really been the case or has it been just a reaction of the game community to what is perceived on the surface as random?

This paper takes up that vision and looks deeper into the effects of randomness and how they affect the retention and motivation of playing the game and watching its esports broadcasts. Using online autoethnography with observations as data collection, player data on in-game amount of action, game duration and perceived randomness among others was collected. Watching the Apex Legends Global Series, viewer data was also gathered on in-game action seen on stream, perceived randomness and informativeness among others.

Somewhat contrary to the discourse on the negativity of randomness, it was found that if approached skilfully, randomness can be used to the user's advantage. With numerous, but finite, possibilities for the random elements in Apex, they can be planned for. As a casual player, the randomness is used to extract more fun when playing the game, while as a viewer, the randomness is transmitted through the point of view of the esports players, who in turn tend to avoid unpredictability if possible and instead adapt to it in order to achieve a better tournament placement, with the better prepared teams having greater results. Likewise, this produces a more positive experience for the viewer derived from watching a higher level of play. Consequently, randomness is more than just a chaotic element of the game; when used adequately, it results in greater satisfaction for the casual player, while in esports, teams adapting to it means higher viewer retention as well as higher quality gameplay. This can also be applied to the larger game industry, where properly incorporating randomness into games can result in positive experiences for all users, rather than an annoying game mechanic to deal with.

Keywords: Randomness, esports, RNG, Apex Legends, retention, user experiences

The originality of this thesis has been checked using the Turnitin Originality Check service.

PREFACE

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LIST OF ABBREVIATIONS & DEFINITIONS

ALGS	Apex Legends Global Championship
Beacon	Survey Beacon, device that scans and shows players alive for a few seconds
Circle	the ring, shrinking area of the map with random, but finite ending locations
Console	Ring Console, device that scans the location of the next ring
Contest, contesting	two teams landing in the same location and fighting at the start of a game
Death box	item with player's equipment left behind after death; replaces the dead body
DZ	DarkZero, esports organization
EA	Electronic Arts
Kills (number of)	referring to number of eliminations a player has done in game
LAN tournament	Local Area Network tournament, held on a local network at a physical location
Ring	Circle and the area within it visible on the in-game map which shows the constantly shrinking playable area
RNG	Random Number Generator
Spawn Rate	The percentage chance at which game elements, such as beacons and consoles, appear in certain locations
Teabagging	action where the player's character repeatedly crouches over the defeated player's body or death box
Third party	Situation when two teams are fighting and a third joins, usually resulting in the third one winning
TSM	Team SoloMid, esports organization

1 INTRODUCTION

Randomness in the form of random number generators (RNG) has been around in games in more simple forms ever since games were digitalised. However, in the last decade, it seems to have been taken to a new level where it is intentionally incorporated in the gameplay in order for players to adapt to it and use it. When it comes to competitions and esports, this initially seems like a bad idea. After all, competitions should potentially only be about finite outcomes that can be planned for and approached in multiple ways that could lead to success. However, esports has started to integrate randomness into its facets through the games containing RNG themselves. Countless discussions about the usefulness and fairness of randomness in competitive games have been taking place, with even more dramatic events happening, such as the Hearthstone world champion being decided by RNG in 2018 (Wood, 2018).

Numerous genres of esports games have been developed and popularised throughout the history of esports ever since its inception in the 1970s through the Spacewar game and through its first competition, the "Intergalactic Spacewar Olympics" (Larch, 2022). Fast forward 25 years and esports is becoming more and more popular. In the middle of the 2010s, the first battle royale (BR) esports game is popularised, Player Unknown Battlegrounds (PUBG). From there, battle royales became more and more popular with the game Fortnite. Battle royale games have intrinsic mechanics in them, some of which are based on randomness or apparent randomness at first. Part of the appeal and enjoyment and playing them comes from this apparent randomness with higher or lower numbers of distinct outcomes. This randomness is experienced at different levels by a casual player, professional player or viewer.

After Fortnite, another successful example of a battle royale that came a bit later is Apex Legends and its thriving esports scene. As a non-professional player, you can still encounter randomness by playing the game casually, because mechanics that are based on randomness, such as quality of loot you find and spawning rates of certain devices on the map, are integrated into its core. On top of that, there is also the natural randomness that comes from the chance of encountering enemy teams at different times and places on the map. As a viewer, watching an esports competition of Apex Legends, the involvement is not as direct, but mostly through the professional players on the screen. They are subject to the same randomness sources and take them into account for their game plan. The seeming randomness they go through provided by the game, such as the aforementioned loot or a

random chance of getting a device that scans the whole map on their starting location, affects them and their gameplan directly, as well as the viewer indirectly.

While it might not be obvious to the player and viewer at first, this randomness can have important effects. For a player, it will add or take away from the enjoyment of playing the game, adding frustration even if it's a prevalent occurrence. Using the gameplay data collected as a player during the research, these randomness effects can be amplified or decreased by other game mechanics. Likewise, as a viewer, the satisfaction and retention can be emphasized or lowered through the effects of randomness. Narinen (2014) shows us, after all, that player retention highly depends on psychological concepts which create motivation and anticipation. A concept that we can apply to Apex players and the viewers of Apex esports as well. This randomness is integrated into the game as part of its design through game mechanics and the nature of the action that is created by the players using those mechanics and their game plan. It can create more action and therefore more satisfaction for the viewers and players, boosting retention, however it can also have negative effects on said retention and therefore needs to be managed properly. Research such as Tyrväinen's (2018) and Kim & Ko's (2019) shed light on the ways to approach this randomness and how viewers and players are affected by it, as well as how retention can be maintained and increased.

Throughout this paper, after the background containing a short esports and battle royale games history, Apex and its mechanics are introduced, along with the randomness that is part of that and its importance. A discussion on the significance of randomness containing elements from Apex Legends and their influence follows, which is then concluded by the theoretical framework. The methodology chapter describes the approach for the research, with observations and keeping a researcher's diary being the main ones as part of the larger online autoethnography frame. These methods have been determined as most suitable when wanting to incorporate the personal experience of playing and watching that the researcher went through. The results are separated into player and viewer data and will set the stage for the following discussion on how the randomness influences the player's and viewer's experiences and the overarching effects of the randomness on the user base.

While we can almost certainly say that the outcome of games that incorporate randomness into their mechanics is going to be influenced by at least one random event, and Apex Legends is a clear example of this, the goal of this paper takes that further and aims to highlight the effects of randomness on players of Apex Legends and on viewers of its esports scene through observations done at a player and viewer level, as well as through documenting personal experiences in a diary. The player data was gathered over the course of 7 days by

playing the game, while the viewer data was collected by watching the 8 games of the finals day of the *Apex Legends Global Series* (ALGS) of the 2023 season, where teams played for the world champion title. Furthermore, based on this collected data as a player and viewer, sources of randomness were determined and then used in order to assess player and viewer satisfaction and retention. This was done with the help of theoretical and practical studies conducted before on user satisfaction and retention, such as Tyrväinen (2018), Narinen (2014), Aseriskis & Damaseivicius (2017) and Huang et al. (2023). The analysis led to conclusions about the extent of the effect of randomness on viewer experiences of the Apex esports scene and ALGS. The viewer data collected on randomness crucially depends on the quality of the broadcast and the viewer experience following the games and teams. Thus, a dimension of viewer interface and gameplay clarity, such as missed versus shown team fights on stream, of the broadcast was included and used to analyse the effects of randomness. The diary study helped add more context and less quantifiable impressions to the research.

Overall, an autoethnographic method, narrowed to online autoethnography using observations and notes, was used to collect and analyse the data. The intended conclusions are meant to revolve around how randomness translates from a player to a viewer experience in Apex esports and how it affects the experience of both actors. Moreover, the conclusions also create possible future insights into viewer satisfaction, motivation and retention through game and viewer interface design, as well as potentially, game design. Furthermore, conclusions about randomness are drawn and used to determine if it does add or take away from the quality of playing and watching Apex Legends competitions. This leads back to one of the starting points for the research question of this paper about determining the effects of randomness on players' and viewers' motivation and retention. Initially, the topic of randomness significantly affecting the game experiences of the users was observed as hotly debated on the public forums of Apex and the general trend seemed to be that it is a categorically negative aspect of the game. Thus started the journey of looking into that randomness to determine its actual effects. As this paper shows, the randomness has become less of a negative aspect and it is used by players to boost their satisfaction and by viewers, through the professional players, to invigorate their viewing experience.

2 BACKGROUND & THEORETICAL FRAMEWORK

2.1 Esports & battle royales history

It is important to start with a brief history of competition in video games in the recent decades which can be tied to a very early version of esports. Egenfeldt et al. (2013) describe the 1970s as an explosive expansion for electronic video games, especially in the form of arcades. While not directly competing, there is a case to be made about a sense of competition still being present between the players, fighting for high-scores and speed runs. However, the first recognized esports tournament in its infancy form was the "Intergalactic Spacewar Olympics" in 1972 at Stanford University (Larch, 2022). From there, the 1980s brought high-score lists and more competitions, and also the world's first professional gaming team, the U.S. National Video Team (Larch, 2022). However, competition and esports in its most similar form to today started in the late 1990s and early 2000s. Shooter games such as Counter-Strike, Quake and Halo set the tone for what we see today in esports in terms of competition. While it is worth noting that there was a plethora of competitions outside of the shooter genre, such as with FIFA and StarCraft (Egenfeldt et al. 2013), the focus of this paper's arguments will be on shooter games, as battle royale games, which includes Apex Legends, are part of that genre. I will also posit that shooter games represent the true catalyst for esports even in other genres, as they have kickstarted a culture of competing with and against other players.

Since esports is now almost an inseparable part of the conversation when it comes to the shooter genre, and more specifically battle royale, definitions tended to vary over time, but are now clearer. One of the oldest and focused definitions of esports comes from Wagner (2006) as "an area of sport activities in which people develop and train mental or physical abilities in the use of information and communication technologies". This definition comes from the standpoint of comparing esports with sports and attempting to classify esports as such. However, this equation of sports and esports tends to be too interpretable. Hamari & Sjöblom (2017) argue that today, many, if not most, of the sports activities are computer-assisted and use one form or another of information technology. Furthermore, given that Wagner's definition refers to a large set of activities through its vagueness, arguments could be made that even office-based learning and software training could be classified as sports and esports (Hamari & Sjöblom, 2017). Therefore, the starting point of esports being sports falls away rapidly when considering the early definitions. I argue that the emphasis should be put on the electronic aspect of games and sports, and that equating esports and sports leads to too much interpretation and lack of structure in defining and building around it.

Esports should, and it potentially already is, its own entity. The electronic characteristic of games modifies irrevocably the general definitions of sports, and therefore creates something new. As Hamari & Sjöblom (2017) continue to argue, in traditional sports, "all outcome-defining activities can be seen to happen in the real world, even though the sport's practitioners may employ electronic and computerized systems to aid the sporting activities" (Hamari & Sjöblom, 2017, p. 213). In esports on the other hand, these outcome-defining activities take place in an electronic environment, or "virtual world" (Hamari & Sjöblom, 2017). Thus, despite the players residing in the physical world, the activities for the outcomes of their actions take place and matter in the virtual world, a key difference to traditional sports. Without going into philosophical topics, this highlights the need, and possibly the outcomes already present, of why esports is on its way to become a highly independent industry.

Furthermore, another step in the discussion is to include the results of the actions players are taking in the virtual world. From the late 1990s and early 2000s with the first esports shooters, the outcomes of what the players were doing in competitions mattered more in the online world. Granted, back then and perhaps even more so nowadays, the outcome of winning a game or competition in an esports competition means that there are real-world outcomes, too, such as prizes to be won and contracts to be signed. Perhaps now more than ever before, a player or team winning or losing in, even a low-level, esports competition could mean them being signed by a professional team or missing out on it. One recent example is FunPlus Phoenix's (FPX) roster from the game VALORANT, a team-based shooter with a fast-developing esports scene. FPX's successful roster was composed of players from two unsigned, almost unknown, teams that were having the most success on their own in competitions (Liquipedia, FunPlus Phoenix - History, 2022). Therefore, nowadays there are real chances that the effect of the actions in the virtual world competing against other players will lead to real-world effects, especially to the benefit of the players, thus possibly prompting another evolution in the definition of esports. This idea is also important for the topic of this paper in Apex Legends, as the players following the rules and game design of the competition, along with any core randomness the game might have, will influence the players' results and their success within the esports scene. Therefore, any chance and success they have is also influenced by the random nature of some of the game mechanics. A similar argument is made about the viewers that watch the esports competition, where their retention and satisfaction is derived from the coherence and action they see on screen and in some cases, from the success of their favourite team. Thus, one argument is that

for player and viewer retention to be positive, the effects of the game's randomness have to be taken into account and analysed. Furthermore, any negative effects of said randomness could be toned down if retention and motivation for players and viewers are the goal. Lastly, we can also venture that for a game to be successful in the esports industry, its players have to have a plausible ascension path to success through the design of the game and its competitions, which have to present fair and competitive designs, minimally influenced by chance.

While this ascension path characterizes players, it can also be applied to the evolution of some games into the fully-fledged esports they are today. When the movie Battle Royale was released in the year 2000, there was no indication that its core action setting of last-man standing will evolve into a complete genre of games with an esports scene 20 years later. A *battle royale* game (BR) is defined as a game mode that uses last-man-standing elements along with survival in order to determine the sole winner alive at the end (Sato et al., 2000). As the concept of a BR game involves a set of number of players starting on a large map, they can find gear and weapons in order to improve their chances of winning and can do so all throughout the game. After set periods of time, the playable area shrinks more and more, forcing players to take fights and survive while repositioning. In the end, the last player or team alive wins the game (Fernandez de Henestrosa et al., 2022). The concept has changed little over the years since the original release of the movie, signalling part of why it is successful today as a stand-alone genre.

In the evolution of the battle royale genre, early mentions include survival and scavenging games and their mods such as the Hunger Games mod for Minecraft (Tecca, 2012) or DayZ, a mod for Arma 2 (Hall, 2017). This DayZ mod was further modified by Brendan Greene, known by his alias "PlayerUnknown". Greene recreated it for Arma 3 in 2014, which he later developed into the standalone game PUBG: Battlegrounds from Bluehole, his inspiration being directly taken from the Battle Royale movie (Greene, 2017). From there on, a plethora of BR games have been released, with some of the most popular being Epic Games' Fortnite in 2018, Electronic Arts (EA)'s Apex Legends in 2019 and Call of Duty Warzone in 2020. This genre of shooters can arguably be considered to have the fastest developing environment on PC with many design innovations coming from the strict competitiveness of the field (Livingston, 2019). Thus, we've witnessed the cultural impact the movie Battle Royale has had on video games and esports, with the genre of action ascending to its own industry of games and esports. With such a fast-developing industry, the success of these games is easily supported.

Part of this success is also played by the marketing aspect of the game, before and after release. While marketing isn't directly related to the design of the game and therefore outside the main scope of this paper, it is worth nothing that Jimenez-Marin et al. (2021) found that for the marketing of Apex Legends in Spain, the most susceptible public for the digital marketing were young players, highlighting the effects and ability of the digital aspect to reach more people easily, using the internet and social media. This is an important change from the traditional marketing strategies and one that involves the younger public more. This also highlights the bigger impact proper streaming and broadcast strategies that are taking game mechanics such as randomness into account can have, for both players and viewers. Furthermore, the influencer market for Apex also counts efficiently to communicate with the players. Jimenez-Marin et al. (2021) classify the influencer marketing as a one-way communication with the user-base. However, they also introduce the organization of events as "a more persuasive and effective form of two-way communication than traditional advertising campaigns", with two-way communication being the exchange of information and communication between the developers of a game and the player base (Jimenez-Marin et al., 2021, p. 1). Thus, while the game design origins of BR games and their current game mechanics matter more, the digital and event marketing strategies for the games also have their place, at least in creating a desire to try the game out or keep playing and therefore engaging in using the design and mechanics.

The last component that has an effect on game and esports success, prior to getting into the analysis of the design, player and viewer experience themselves, is the player motivation. Using Saiger & Khaleque (2022), the player retention and motivation themes for BR games are: new content, mechanics and action, and reward systems. These themes are directly part of the design of the game and its evolution and can be linked to the esports success and retention arguments in this paper. For example, the mechanics and action part is an element used in the gameplay observations done on Apex Legends. It is also natural to think that mechanics and action are an intrinsic part of a game's competitive success, as it will also be shown later. Furthermore, de Henestrosa et al. (2022) and Narinen (2014) highlight that there are psychological needs to player retention and motivation as well. In BR games, de Henestrosa et al. (2022) determined that player preference for the battle royale was related to their need of competence and autonomy. Using mobile games, Narinen (2014) highlights that retention is based on game mechanics and concepts that create anticipation and motivation which is then translated into user retention. Incentives are created through these psychological aspects, leading to success through the user's satisfaction.

This is, in part, directly used in the retention and randomness analysis, as it is important to showcase these psychological needs related to player motivation that could ultimately be used in the competitive games' design. Lastly, Rehman et al. (2022) found that factors such as "escapism, emotional involvement, sensory experience, enjoyment, and arousal, significantly influenced the behavioural intentions to play PUBG" (Rehman et al., 2022, p.1). Additionally, "role-projection and fantasy failed to impact consumers", which is an important finding in the context or players' motivation to take part in the competitive aspect of the game. This could enforce the argument that PUBG players specifically, and potentially BR players in general along with Apex Legends, are more interested in the competitive and mechanical aspect of these games and less in story, roleplaying and immersion. On the other hand, from the experiences gathered during the data collection for this paper, it was clearer that Apex had a more fantasy-like approach, with abilities, voice lines, movies and overall personalities for each game character. This is something that could help player retention through the role-projection and fantasy mentioned by Rehman et al. (2022), which is lacking in other BR games. PUBG as a game was observed to be more realistic when it comes to characters, fights and actions, emulating real world gun-fights and movements more significantly (KRAFTON, 2023). The lack of character abilities for example would be one of the biggest differences to Apex. However, it is important to note that the retention through fantasy and role-projection could help mostly in keeping the players motivated to play. In terms of competitive progress and esports development, these elements seem to have little impact.

The terms *casual* or *casual player* are used in this paper defining a non-professional player playing the game in a normal way without participating in competitions or playing at an esports level. This is opposed to *professional player* or *esports player*, which are players that do participate in competitions at an esports level and that get paid to do so (Hamari & Sjöblom, 2017); the Apex Legends Global Series (ALGS) tournament players seen on the broadcast studied are a perfect example of that. Regarding Apex's professional players and their playing equipment, also called peripherals, a mention is needed for keyboards, mice and gaming controllers.

While for the currently studied ALGS championship exact data on peripherals is missing, previous ALGS statistics show that there were 75 players using mouse & keyboard and 46 players using controllers (/_sinxl_, 2023). While this difference is no source of randomness, it does make for an interesting distinction in approaching the game and, at the same time, it has been the spark of countless discussion on the forums and in the press on

whether controllers even belong in Apex Legends, given the support they have from the game's own mechanics (McKeand, 2023; Patterson, 2023; Papacastoro, 2023; Richman, 2021; u/S0gGy_, 2023).

Lastly, a crucial aspect of the finals of the ALGS is the *match point* winning condition. One game represents one map played. In contrast to the other match days where there are 6 games played in every round, on match point finals, there is a very high limit as to how many games can be played. Teams can acquire various amounts of points depending on their placement and number of eliminations in a game, with 20 points for a victory including eliminations being fairly normal; once a team in the finals reaches 50 points, the match point winning condition is enabled. Teams with at least 50 points have to win another game in order to become champions (EA Games, 2024). There is also logically no limit to how many teams can reach match point, other than the total of 20 teams present in the final. Needless to say, the more teams reach match point, the higher the chances of someone becoming champion. For example, in the 2023 ALGS finals, there were a total of 8 games played, with 7 teams being on match point at the start of the last game, with 2 more added afterwards (PlayApex, 2023). Knowing this, and taking into account that Apex is the only battle royale game with this finals format, the match point winning condition creates excitement and adds to the viewer satisfaction and retention.

2.2 Randomness and its importance

Looking at and taking part in the community of Apex Legends before this research was started was one of the catalysts for the randomness being brought into question. The core randomness present in game was always discussed in one way or another, always questioned and blamed, always a focus of the Apex community. However, it seemed it has always been taken for granted as an agent of chaos in game, always as a negative force that players have to fight. Yet never looked into its actual effects and what it does for Apex Legends' user retention and quality of gameplay. Thus started the journey of looking into randomness in more depth to see its actual implications.

Randomness in video games, or *random number generator* (RNG) mechanics, seems to have been around ever since the first games became popular. For the purposes of this paper, randomness and RNG will be used interchangeably. RNG in games is based on the random number generation for different processes at the coding level that then get translated to what we see on screen; these number generations have to be unpredictable in order to be true RNG (Lugrin, 2023). Just a cursory look at the original Asteroids game on the Atari 1979

(Collins et al., 2010) shows that the order and position of the asteroids appearing on screen was, at least to the player, random and never had a predictable pattern. The gaming and esports industry evolved with this randomness as a core part of many games in different forms, and even traditional sports have had to integrate it, even if it is not obvious at first (Lopez et al., 2018). With the advent of digital card games, randomness became even a more hotly-contested topic. For example, the digital card game Hearthstone was arguably an important catalyst for the RNG discussions and future implementation of said RNG in games. Hearthstone as a digital card game not only has the natural randomness of drawing different cards at different times, but also the randomness created by the cards themselves, such as one card creating different effects when it is removed from the board (Gallant, 2016). This mechanic has been debated intensely over the years on whether it is useful, fun, competitive and good for the esports scene in general (Demonxz95, 2019 & Gallant, 2016). In the game, this randomness has produced memorable moments, has been the basis of many video content creators and YouTube channels, such as the popular funny moments channel Trolden, based entirely around the RNG in Hearthstone, and in general, has given the game a hard-to-forget aura. One might argue that this RNG usually caters more to the casual side of the player base, since it adds more fun and less competitiveness. The main argument against it is that you cannot plan properly and compete at an esports level if everything is random, as seen for example the 2018 World Championship Finals of Hearthstone where the winner was decided by randomness (Wood, 2018). Thus, the importance given here is that it can create almost its own genre of games and content as well as its own memorable moments, for better or worse.

The RNG has also been used in many other games, including in battle royale games. Going directly to Apex Legends, the randomness can come from many places, such as the final ring positions, guns you find throughout a game and teams you encounter. The ring can be defined as a circular zone, sometimes referred to as the *circle,* that shrinks at set time intervals during the game and that deals increasing damage to players standing outside of it (Apex Legends Community, 2024). Furthermore, there is an argument to be made about different levels of randomness based on its number of possibilities which can also be applied to other games. For example, in Apex Legends, the total number of teams you can encounter at the beginning of a game is 19, while the total number of items you can find in the game while searching is more than 200 (EA Games, 2024). This total number of possibilities can be looked at as on different levels because while still being random, there is still a finite number of possible outcomes (EA Games, 2024). Therefore, every possibility can still theoretically be planned for, with the mechanics with more outcomes, such as the final ring and loot drops,

involving more complexity. In Apex Legends, this complexity through randomness has very much become part of the strategies and gameplay of players and teams, thus becoming very important for any esports competitor. The implications of this will be approached in the results and discussions sections in more depth.

Following on that, randomness in Apex Legends can be defined through the different gameplay and viewer mechanics present. As a player, the sources of randomness are always the same, regardless of the level you play at. For one, the ring positions are one of the biggest sources. They have a finite number of possibilities, with EA changing, removing and adding new ones every major update (EA Games, 2024). In May 2023, for the two maps played in the ALGS, one map had around 85 possible ending locations, while the other map had around 35 possible ending locations (u/OGNatan, 2023). All of these circle permutations have been mapped and studied by players, to the point that some players can predict fairly accurately where the ring will end in any given match, while others that haven't studied it as much cannot. Thus, the circle is not truly random and still presents the possibility to predict it. This is different from the next important source of randomness which is the drop ship's flying line.

The *drop ship* is the flying ship that appears at the beginning of the game and from which every team jumps to land at their spot. From observed patterns, most of the times, the ship flies through or close to the middle of the map, however sometimes it flies more towards one edge or another. In this situation, teams that have their landing spots on the far side of the map relative to the ship's flying pattern will land there later in the game than the other teams that have to land closer. It can also happen that they have to land closer than intended, as their own spot is too far and cannot be reached just by flying. When players jump, they can control their flying direction and speed, however they are always losing altitude and cannot stay in the air forever, thus making some spots more difficult to access. This can significantly alter their gameplay and rotations, which are the movements of teams around the map, as well as the outcome if they do not manage to recover their game plan properly and quickly. Often at times, this will also lead to them encountering or fighting other teams that have landed properly, which adds to the randomness. Additionally, teams landing later have less time to find gear before having to move due to the circle shrinking. This happens very rarely in non-professional games, as in casual and normal competitive play in Apex, there are no set landing spots and teams and players will choose to land where it's closest or more convenient relative to the ship.

Which teams are encountered provides more randomness, more in non-esports Apex games rather than at an esports level, however that randomness is still there for professional

players. In non-esports games, players can encounter any number of teams at any time while rotating and moving towards the final rings. At esports levels, as it will be discussed later, this possibility of encountering random teams is lower, as teams know where the other teams will land and can somewhat accurately predict their rotation based on the ring pattern that game (PlayApex, 2023). However, sometimes it can happen that a team changes their landing spot or decides to use a different rotation strategy and surprise other teams around them. This leads to a very important part of the game mechanics as intended randomness, which are *the ring consoles, survey beacons* and *replicators* tied to crafting.

Figure 1. Map with the effects of using a survey beacon revealing the enemies (red triangles) of the team using the console and their location (PlayApex, 2023)

These three elements can make or break a team's game. A survey beacon is a device that once used shows the location of all the enemies alive for a few seconds as seen in figure 1 above; the beacons appear in different locations on the game map which are randomized each match and only certain game characters can interact with them; each beacon can also be used only once by a team (Apex Legends Community, 2024). Likewise, ring consoles have their locations randomized each game and only certain characters can use them to permanently show on the map the location of the next circle as seen in figure 2 below (Apex

Legends Community, 2024). The replicator is tied to the crafting mechanic of the game and also has its locations randomized each game; players can use in order to craft healing or survival items (Apex Legends Community, 2024). As it will be discussed later, these three intended random elements of the game also have an effect on the viewer experience.

Figure 2. Map after a ring console was used; the large white circle shows the position of the current ring, the green circle shows the position of the next one, which only teams using consoles can see; in this image the team also used a survey beacon revealing enemies (PlayApex, 2023)

Furthermore, another large source of randomness that counts more in the beginning of the game is the loot found. In Apex, this ranges from weapons and armour to grenades and healing items, all of which can be found in set spots and in *loot bins*. Loot bins are the containers found in an Apex Legends game that provide you with loot, besides finding it on the ground at certain locations (EA Games, 2024). This is very important in the beginning for players and teams that have to fight as soon as they land, an event called *a contest* or *contesting another team,* since the quality of the loot and weapons will most likely determine

the outcome of that fight. This applies to both esports and non-esports games. Towards the end of a game, the loot found on the ground and in bins is not so important anymore, as by that point, most teams and players have already acquired good equipment. However, there are still *care packages* to take into account. Care packages are loot containers that drop at fixed intervals on random spots of the playable map, which among other items, can contain more powerful versions of a few selected weapons (EA Games, 2024). These powerful weapon versions can give firepower advantages to the player that uses them, ranging from a powerful sniper weapon to a pistol that can knock down another player in 3 shots. Thus, the randomness here comes from these package drops and what they contain. Additionally, random disconnects of players from the game, random malfunctions of keyboards and controllers or other outside factors that influence the game might still make part of the randomness aspect of such competitions, however these are not specifically part of the game and intended to be so. Therefore, they will not be taken into account if they happen during the viewing experience unless they significantly influence it, in which case they will be mentioned.

Lastly, more randomness comes from the *third-party* possibilities when fighting another enemy team. A third-party situation is when two teams are fighting and a third one joins, expectedly or unexpectedly (PlayApex, 2023). This usually results in the third team winning, as the first two are already weak from the fighting. It is a circumstance highly avoided by most teams as it can result in bad games and very few advantages from such a situation, unless the team is the third party itself. While teams have come to expect a third party when they fight, it still represents more randomness for them as it is not clear from where and who will be the third. This also applies to the casual players of the game outside of the esports scene, perhaps even more so with the more chaotic nature present for them.

2.3 Theoretical Framework

The work of Tyrväinen in his master's thesis "Influence of esports spectating on customer retention in freemium video games" (Tyrväinen, 2018) regarding esports customer retention is very relevant for this paper. Applied to it, said customers are the viewers of the ALGS, while Apex itself is a freemium game. Some of the statistical significance in Tyrväinen's research can also be used for Apex – "89 percent of the respondents answered that they are both watching esports broadcasts and playing the same video games" (Tyrväinen, 2018, p. 41). This could be applied to Apex as well and gives a dimension that most viewers understand the action on the screen to a certain degree, thus leaving space to analyse the

influence of randomness on them. If for example, a viewer would not play the game and wouldn't know what is really happening, randomness would be just another added element to the confusion and lack of understanding, thus not being able to measure its effect. In the same way, the discussion on the difficulty of forming a team bond through geographical and historical reasons (Tyrväinen, 2018) is also relevant. When it comes to motivation, Tyrväinen introduces and defines the concept of *drama* as "the uncertainty and dramatic turns in the outcomes of the media content, such as sports (Tyrväinen, 2018, p. 24). Furthermore, Cheung & Huang (2011) describe how certain game producers intentionally add randomness and RNG in order to increase the chances of more drama and exciting events. Looking at Apex Legends' core random mechanics, we could postulate the same argument of those elements being intended.

Tyrväinen's theoretical conclusion is that drama was a "non-significant construct for the watching intention" (Tyrväinen, 2018, p. 42). This serves as a good point opposed to Apex's situation where drama plays an important role, as extracted from the viewer data. This opposition also showcases that not all esports are and have to be the same to achieve success, and it will be approached in the discussion along with the viewer data. While Narinen's work "How Player Retention Works in Free-to-Play Mobile Games: A Study of Player Retention Methods" (Narinen, 2014) is focused on mobile games, some of the retention methods described can be applied to Apex Legends as well. For example, the advanced retention method of social interaction is not always tied to gameplay but utilizes gameplay mechanics to create retention in the long term (Narinen, 2014). This social interaction, when applied to Apex's scene could also be applied to its esports viewers. Since the broadcast of Apex esports has a very active Twitch chat with tens of thousands of viewers for the ALGS, there is a lot of online social interaction going on. Another retention method described by Narinen is the social competition – competitive elements "create unlimited never-ending challenges for the players competing against each other (Narinen, 2014, p. 66). Apex's multiplayer and competitive nature also fits this aspect very well.

Along with the social aspects for retention, there are psychological concepts at play. From Narinen, "player retention methods are based on psychological concepts and game mechanics which create anticipation and feed motivation translated into retention" (Narinen, 2014, p. 2) – this will be tied later on into motivation to play and watch for the users. Part of these psychological concepts are the incentive mechanisms mentioned by Aseriskis & Damaseivicius (2017). One of their starting premises is that players are incentivized and influenced by leaderboards; in Apex this could be replaced by the statistics banner for each

game character. These leaderboards "help motivate players extend their game playing time" (Aseriskis & Damaseivicius, 2017, p. 432), which is also important when tied into the viewer experiences. Furthermore, another theoretical concept found by them is the conclusion that some players are motivated by leaderboards where progress is visible, while others are motivated by achievement leaderboards (Aseriskis & Damaseivicius, 2017). This again has implications not just for the player, but also for the viewer of Apex esports.

Lastly, Huang et al.'s (2023) paper on the effect of esports livestreaming for viewer satisfaction can be used to shed some more light on the viewer retention processes for Apex Legends esports.

> …esports involvement was found to moderate the effect of each attribute on user experiences in different directions. That is, viewers evaluated their experiences by weighing different informational cues depending on their perceived importance of esports. (Huang et al., 2023, p. 31)

Furthermore, Huang et al. (2023) also deducted that informativeness through visual cues, for example leaderboards, significantly influenced viewer satisfaction. The idea of interactivity being more important for more involved viewers, while informativeness is more important for less involved viewers (Huang et al., 2023) working this way can also be tied to Narinen's (2014) and Aseriskis & Damaseivicius' (2017) work about psychological motivations, incentives and retention through leaderboards. Kim & Ko (2019) describe highly involved users as users that put more value on the quality of what they are watching, while less involved users are more focused on the distinctness and amount of action.

These four papers approach the retention aspect through motivational, psychological and visual cues and apply very well to the makeup of Apex Legends' player and viewer environment. Furthermore, through this current research, they also help show that different esports audiences have several common elements, while when diving deeper into the details, certain things are different or completely opposite, such as the drama being non-significant for viewers, as described by Tyrväinen (2018), opposed to Apex's viewer environment where drama is beneficial most of the time for the viewers, and even sought out. Thus, using these papers the theoretical context and research dimension can be better understood and analysed, tow which this thesis will contribute and fill the gaps.

3 METHODOLOGY

3.1 On Ethnography, Autoethnography & Observations

As a larger methodology, ethnography applies to this paper well. This wider methodological frame serves as a good starting point that then gets narrowed down to online ethnography and autoethnography. For the purposes of the research question, the applied method for data collection are the observations of the player gameplay and viewer experiences. These observations are directly part of the online autoethnography frame and they are most fitting, being able to capture the significance of the player and viewer experiences the researcher goes through during the study.

Perhaps among the more fitting descriptions of ethnography that functions here is seen in Hammersley (2018) where the method is described as having "relatively long-term data collection, taking place in naturally occurring settings, relying on participant observation or personal engagement, employing a range of types of data" (Hammersley, 2018, p. 4) and perhaps most applicable, it "emphasises the significance of the meanings of people give to objects … in the course of their activities" (Hammersley, 2018, p. 4). Within the Apex research on randomness, while the data collection may not have been relatively long, it did take place in natural settings, such as the occurring of games as a player and as a viewer watching an esports competition. These rely on the participant's observations and personal engagement as a player playing the game and viewer watching. During these activities, there are different levels of significance for different aspects of the game. One of these aspects is the randomness appearing in the game, observed as significant to the players and viewers before the research was started. As a subset of this research and applicable to Apex Legends is the online ethnography. Garcia et al. (2009) argue that online ethnography focuses on settings "which contain both traditional and technologically advanced modes of communication and sites of social activity" (Garcia, et al., 2009, p. 54). Apex Legends clearly fits this description, with voice communication in an online medium and with a fully digitalized environment, e.g. the game itself. Taking it further to a more specific method is the autoethnography which involves the experiences of the researcher directly.

Autoethnography is a research method that "uses a researcher's personal experience to describe and critique cultural beliefs, practices and experiences" (Adams, et al., 2015, p. 1). Specifically applied to this paper, Sparkes' (2000) description for autoethnography as it being the researcher's experience used to extend sociological knowledge fits better, with the researcher taking part in the player and viewer data collection and using that for conclusions

about the state of things related to Apex Legends. One advantage of this is that the researcher is right in the middle of the data collection field, such as Apex's games and esports broadcasts. Along with the diary notes taken, this provides an immersive and extensive account of the processes that take place. Furthermore, there can be a degree of personal experiences present that adds to the authenticity of the experiences gathered, especially when, like in this paper's case, the researcher can be considered just another normal player and viewer of the game, without having any special status.

On the other hand, one downside is that it can become too personal if not paid attention to. Denshire (2014) also describes autoethnography as a less popular, or at least more contested, method due to its more personal aspects. Autoethnography is, inevitably, a more subjective method of approach which can raise questions about the validity and value of the results from such a method (Denshire, 2014). For example, if not careful, when collecting player data, a too high involvement from the researcher as a player, drawing from an increased desire for competitiveness, could influence the results and highlights this risk of too much personal involvement. Nevertheless, this could be a good thing if it can be applied to a larger amount of the community and players; however, that is beyond the scope of this paper and should be studied in future research using more suitable methods. Thus, such risks that could affect the data were carefully observed and made sure they do not damage the conclusions.

Observations as a method are also very useful here as means of extracting the important behaviour and effects related to the randomness in Apex Legends. The observations employed here are specifically participant observations where the researcher takes part in the phenomena and environment studied in order to get a more accurate look at it (Beckher et al., 1978). Thus, playing and watching Apex Legends as part of the observation method gives a precise look into how randomness affects the playing and viewing experiences and doesn't rely just on the outside impressions of other players and viewers. Naturally, there are potential sources of bias introduced through this approach which are taken into account, as well as possible situations where data is missed or misinterpreted due to the lapses in the researcher's technique.

3.2 Player Observations

For the purpose of this paper, the game updates played on and observed were the ones up to August 2023 when the ALGS 2023 season ended, as after that point, some changes to certain

levels of randomness were introduced. The player part of the research uses observations of player experiences in order to determine the effect of randomness on the game experience as well as on the retention of players and, connected to it, the viewers of the esports broadcasts. The observations done here are part of qualitative observational research and data collection. Generally, observations involve "collecting impressions of the world using all of one's senses, especially looking and listening, in a systematic and purposeful way to learn about a phenomenon of interest" (Given, 2008, p. 573). The gameplay data was be collected by playing Apex Legends' battle royale mode for 2 hours daily for a week, during the 19:00 – 21:00 Eastern European Time zone (EET) interval or during the prime-time interval, which is predicted to be the hours with the most activity from players in the region. The region here being the European servers of the game, available in Europe.

At first glance, the 2 hours of gameplay might have been a short time for collecting observations. However, according to the *Apex* wiki, a match lasts around 21 minutes (Apex Legends Community, 2024). After doing the player observations this duration was usually towards the maximum length of a game. This meant that in an observation interval of 2 hours, there was a minimum of 6 games played and used to collect data, with a grand total of at least 42 games observed for *Apex Legends* over the course of a week. However, as seen in the results section, the number of observed games was more than double for the time period, since this number is the minimum of games played if they all reach full length. Due to the more random nature of the game when it comes to the initial phases of a match (Rosenbuch et al., 2020), as well as the lower competitiveness of non-esports matches, games can end very quickly, thus increasing the number of games observed dramatically. Furthermore, randomness also comes from the game's mechanics of playable area shrinking at set intervals but towards different parts of the map each game. For the purposes of this research, in-game eliminations of players by other players will also be referred to as *kills*, as that is the most common term used within the Apex Legends community.

Within the observations of player experiences, a set of elements determined to revolve around randomness and competitiveness used to showcase retention were observed. For the gameplay elements the ones collected were:

1) Queue waiting times – how long it took to be matched with other players
2) Competitiveness – used in this paper as the perceived level of skill of the players in the current game; games that had easy fights or easy victories had a low level of competitiveness, while games that were very difficult or where the player had to work for the victory had a high level of competitiveness

3) Game length – the duration of one game; longer games meant more reliable observations; however shorter games also provided valuable information

4) Perceived randomness – luck tends to determine who gets a better start, by finding better items or getting a better location (Pommerenke, 2019); moreover, randomness can also come in the form of encountering enemies in unfavourable locations, too early or too late into the game; this theme was observed once again using the perceived level of randomness from the player

5) Amount of action – gathered as number of fights the player took part in

6) Final placement in each game

7) Number of kills for each game – only the player's kills were counted

Additionally, the time and duration of each fight for each game was recorded, to be used if necessary for context during analysis of competitiveness and amount of action. Lastly, a small diary was used to take and keep notes of the player experience during these games, as well as notes on each individual games with the type, quality and general aspect of each fight written down. It was mostly used to describe the fights and level of perceived randomness and competitiveness in each game that then give more context for the data interpretation.

These elements have been extracted from the player experiences during the data collection period, as well as from literature. The queue waiting times and game length's relation to randomness is important because when taking into account the player retention aspect of this paper, players experiencing high randomness with short games might be more motivated to stop playing and have a similar attitude towards watching or not watching the game's esports competitions. The perceived randomness theme was extracted and noted as an element in Hammes (2022), Livingston (2022) and de Henestrosa (2022). Competitiveness is one that finds itself in the gameplay as well as in literature, with a starting point from Larch (2022) and Hamari & Sjöblom (2017).

One major strength of doing observations in this manner is that it tends to generate trustworthy data through its unobtrusive and nonreactive aspect (Given, 2008, p. 575). The observations done in Apex are indeed unobtrusive and only involving the player playing the game and the viewer watching it. It is also worth mentioning that the observations done in game are not in danger of being affected by the observed parties knowing they are being studied. On the other hand, the observer bias can be present here and can result in a weakness of the study - throughout the observations period, the researcher can develop a higher liking towards the game, or a higher dislike, thus enjoying it more and playing differently, in a more

engaging way or not concentrating as much. This is something that was kept track of during the observations and was mentioned in the diary whenever it was perceived as happening. While this can be a source of unreliability, it can also signify that the games are good at capturing the player in their gameplay and therefore it was included in the discussion as well if it happened. Finally, prior experience and knowledge of the game from the researcher can affect the observation or possibly facilitate the omission of important elements if they are perceived as normal or unconsciously dismissed, despite them possibly being interesting or significant to a newer player.

3.3 Viewer Observations

After playing the game and observing the gameplay, the viewer observations followed, done on the crown jewel of the Apex Legends esports scene, its world championship, the Apex Legends Global Series. For this, the 2023 championship was used, with a focus on the final day of the global finals, which contained 8 games involving the best 20 teams that have reached that point. It is important to mention that the build up to the final phase of the world championship is a year-long process that involves numerous steps and qualification phases for the players wanting to reach the finals (EA Games, 2024). Therefore, the viewer observations were done on the ALGS final tournament phase, taking place live and in a physical setting. Since this competition had already happened, it could be more thoroughly observed with replays as well. This guaranteed a better quality of the observations, without the potential missing of action from a live stream, additionally being able to skip ad breaks and commentary sections.

For the viewer part of the data collection, two methods were involved. First were the observations of the game design and stream interface during the finals of the ALGS as well as the number of fights shown and missed on stream and general amount of action. This was followed by a diary study of the researcher's thoughts gathered from watching the broadcast for the day. Firstly, the observation method focused on viewer elements as seen on stream. The amount of action was described here as the number of fights shown on stream versus not shown on stream and this was the main quantifiable data gathered. These team fights are seen through the action of in-game observing, which is done by a dedicated person joining the game as a spectator called an *observer*, present in the game lobby watching the fights and switching between teams and players; often, there are multiple observers doing this. (PlayApex, 2023). Game duration and viewer interface information, as the usefulness of the information appearing on screen that the viewer sees and that aides them in following the

game, were constant elements and were used against the variable data from the number of team fights. In relation to randomness, observing and taking notes of the interface that the viewer sees on stream has been chosen because this adds or subtracts from the effect of a lack of clarity in game (e.g. missed fights) and it can be used further to analyse whether it creates more randomness or not. Said gameplay clarity was an element strongly present during the observation data collection period.

The amount of action was determined by how many fights between two or more teams took place during the game. It should be noted that in the last 5 to 7 minutes of the game, often there were few to no one-versus-one team fights and the whole map, which becomes very small due to the circle, was comprised of multiple larger fights involving 3 or more teams. This included fights shown on stream, as well as fights not shown on stream and only visible in the kill feed in the top right corner. The *kill feed* is defined as the elimination information that appears on screen for players and viewer in the top right corner, showing which player killed which player, along with the gun's icon or ability's name (PlayApex, 2023). Long-distance shots, such as with snipers, that did not result in direct engagements between the teams were not counted.

It is worth mentioning the game duration, which was intended to be its own observable category at first. However, after looking at each game in a day and averaging their duration, the duration result was 20 minutes on average, with a deviation of +/- 15 seconds for each game of the final day. Therefore, game duration was only used as a general factor for all games against which the other observable elements were based on. Likewise, viewer interface usefulness was intended to be its own category up to the point of realizing that the interface didn't change from game to game and was always a constant.

Secondly, a diary study is a "self-reporting UX method, where customers record entries into a diary about how they are interacting with the product" (Sullivan, 2012). Applied to this research, the customer is the viewer and the product is the game Apex Legends and more specifically the ALGS stream. The diary study was be composed during the watching session of the game day, writing down important moments, thoughts and impressions. During the diary, the numbers from the amount of action data were also be used to write down conclusions and get a general impression from the games. To add to this, the effects of gameplay clarity, perceived randomness and general chaotic aspects of the viewing experience could be recorded more clearly with a diary, since they are observable dimensions that can always vary from game to game and in-game fight to in-game fight. The randomness could then be extracted from this diary and correlated with the amount of action data.

Randomness, can also be observed independently in the diary as a viewer, while watching a game, as things not happening as expected. According to Heinzman (2019), as a concept, RNG produces random numbers as an algorithm; applied in video games, the random numbers are perceived as random events, such as finding more powerful loot in Apex Legends bins or having the survey beacon spawn on your landing location. The survey beacon, ring console and replicator spawn mechanics are something less obvious to viewers, but their chances of appearing on teams' locations have an indirect effect on the viewing experience, as it will be discussed later.

The diary also contained the effects of commentators giving out information, if that was noticed during the watching period. The game commentary is critically important in adding clarity, or subtracting from it, during a game and can influence the viewers experience greatly. The diary took account of these occurrences during the commentary as they were noticed while watching and also took note of their absence if confusion or lack of information was present. To this it could be added the viewer interface effects, if there were any as well as potential links to the gameplay data. Doing the viewer observations second, after the player observations, was chosen because it is a more natural progression from a player interested in playing the game to a viewer watching professional players. Additionally, playing the game first involved a more direct experience and provided more data and elements than can then be observed as a viewer.

Lastly, extracting randomness from the player and viewer data is one the most important mechanics of this study. Through the data collected and helped by the diary notes, the randomness is placed into context and used for conclusions. The diary notes are especially important, as otherwise the story of the data would not be obvious. This is also a reality for the players and viewers of Apex, as the effect of this core aspect of a battle royale, and specifically Apex, is not immediately obvious.

4 RESULTS

4.1 Player Data

Observations by playing the game were done over 7 days, playing 2 hours each day in the evening or during prime time, predicted to be the hours with most activity during the day. In total, 90 games were played and observed, which is a larger sample than expected initially. In the table 1 below, the time of day for each observation period is outlined. This is usually called the prime-time, where the most activity in the European region is seen, and therefore presented the best data collection opportunity. In two of the cases, 21st and 22nd of January, observations were started earlier due to the weekend where the prime-time is also extended earlier into the day. Nevertheless, the aim to have two hours of observations was achieved. Over the 7 days, 13 games (rounded up from 12.8) were played and observed on average every day, which was almost double the sample expected before the beginning of the data collection process. The shorter duration on the 20th was made up for by extending the collection period on the next day, thus still achieving 2 hours.

Table 1. Date, number of games and time of day for the player data collection

Date	# of Games	Time of Day (EET)
2023-01-17	11	19:05 – 21:01
2023-01-18	14	18:38 – 20:38
2023-01-19	14	19:12 – 21:12
2023-01-20	13	18:33 – 19:07 / 20:42 – 21:46
2023-01-21	18	13:32 – 13:42 / 14:25 – 16:42
2023-01-22	10	14:20 – 16:22
2023-01-23	10	16:49 – 19:00

As seen in table 2 below, the total of 90 games played were split into 4 duration intervals, ordered by game length: 1-5 minutes, 6-10 minutes, 11-15 minutes and 16-20 minutes or more. There was only one game above 20 minutes, with a length of 22 minutes, thus it is included in the 4th duration interval. For each of these categories, averages of final placement, number of kills and number of fights were calculated and attached as seen in the

table. To note is also the number of games for each interval, with it decreasing from 36 for the first duration interval, to 24 and to 15 for the last 2 intervals.

Table 2. Game duration intervals with number of games and averages of placement, number of kills and number of fights for each of them

Game duration (minutes)	Total # of Games	Average Placement out of 20	Average # of Kills	Average # of Fights
1 to 5	36	15.7	0.4	1
6 to 10	24	8	0.8	1.5
11 to 15	15	3.8	2	2.1
15 to 20+	15	2	3	3

When it comes to game length, the duration in minutes varied from game to game and generally, games with a longer duration provided more success to the player as well as more data, however shorter games have their own value in the data interpretation process. The average game length for all 90 games was of 8 minutes and 43 seconds. The average placement per game over the 7 days was 9.4, with kills averaging 1.2 per game and number of fights 1.6 per game.

Regarding the queue time for finding a game, the times in seconds were low and very close, most being within 5-10 seconds of each other, with the exception of a couple of outliers due to the changing to a different map in game. The average over all 7 days for the queue was 7.7 seconds for finding a game, which is very short. The differences in queue times have been categorized as insignificant in terms of influence over the player as they are short enough not to affect the perception of the player in terms of satisfaction and motivation to keep playing.

Figure 3. Placement and number of kills in relation to game length in minutes

Within figure number 3, placement and number of kills in each game have been plotted against game length in minutes, with each game corresponding to one marker on the graph. From both the data measurements on the graph, it can be noticed a downward trend for the placement the longer a game is, with an upward trend for kills for the game length condition, or at least with higher maximums. This will be a crucial point later in the discussion of the results. Regarding kills, the number for the player ranged from 0 to 8 eliminations over the 90 games, with the 1.2 average per game mentioned before. Games from the 16 to 20 minutes interval had on average more kills, with 3 per game, and this is where the highest kill games were also present with 7 and 8 respectively.

The number of fights per game ranged from 0 to 4, which when taking into account game length, it is within the expected range and seems like a normal amount. Looking at table 2, the average number of fights increases as well, however by a lower margin, from 1 to 1.5 to 2.1 to 3 fights per interval of time, which while playing the game is not a significant change. For example, going from 15 games of roughly 13 minutes each, where most of them had 2 to 4 fights into another 15 games of around 18 minutes each, having one more fight per game is noticeable, but not considered unusual for a 5-minute increase. Only two games out of the 90 had 0 fights, which were also almost polar opposites, according to the notes taken.

The first game manifested as an instant elimination without having time to pick up a weapon, while the second game with 0 fights finished with a 5th place after not encountering enemies all game, playing only with 2 total players due to a disconnection from the third player, and then being eliminated because of long-distance sniper hits without being able to retaliate.

The diary notes taken have proven useful for most other games played during data collection as well. The perceived difficulty of the fight was noted, along with how many teams were involved as well as other specific elements. Looking at the notes, a lot of the fights were noted as having medium difficulty, while most of the fights taking place at the beginning right after landing were also noted as chaotic. Besides the consistent chaos that fighting in the beginning of a game brought, the final placement and game length didn't seem to influence the way fights and games played out even towards the end. For example, the same medium difficulty fights were present throughout both short and long games. As recorded, the length of the fights was between a few seconds and 4 minutes, with varying degrees of action during those minutes.

The number of kills can also be correlated with the amount of action, resulting in effects on the satisfaction of the player. While the average number of fights per game was determined to be 1.6, the games with higher number of kills tended to have a higher amount of action as well. From the diary, games with higher number of kills and action resulted in a more satisfactory experience, thus showing the importance of the amount of action tied to the number of kills for the player. Table 2 and figure 3 graph can be correlated to notice the trend of game placement improving with longer game lengths, as well as the number of kills relatively increasing with the same higher game length from figure 3, although not as clear. At longer game lengths, the occurrence of games with more kills was higher, however the lows were relatively similar to shorter game lengths. Therefore, we should note the higher variance of number of kills at longer length intervals. This variance of kills is also a sign of the random nature of the battle royale and the game's core mechanics around randomness, which makes it very difficult to have high kill and longer games back-to-back.

4.2 Viewer Data

The average duration of all the 8 games observed during the ALGS finals was 20 minutes, with a deviation of +/-15 seconds, thus giving a very precise and almost fixed game duration. User and viewer interface usefulness was also determined to show all the information the viewer needed and this will also be discussed more in the diary analysis. The observations of the games in the final yielded 130 total observed fights, with 71 shown fights on stream and

59 missed. The average number of fights shown on stream per game was 8.8, while the average for missed fights was just under half of the total at 7.3, with a total average of 16.2 fights per game, as seen in table 3 below. A fight missed is defined as a player killing another player followed by a team elimination message. This is visible on the top right corner of the screen where the killing player, player killed, the weapon used and the team eliminated messages are shown. Therefore, if kills appeared in the top right corner of the screen without being seen on screen followed by that elimination message, the fight was classed as missed. On the other hand, some missed fights didn't result in a team elimination, but instead were deemed as missed by the same players from the same team killing 2 players from the opposing team in a very fast sequence, as appearing in the top right corner of the screen. Game 8 saw an increased number of fights which is correlated to the increased tension between the teams in regards to who was about to win the championship. By that point, 7 teams were on match point, thus prompting them to play more aggressively in order to eliminate each other and increase their chances. On top of that, teams outside of the match point were even more eager to have a good game and reach it, thus also motivating them to play more aggressively.

Table 3. Number of shown and missed fights, total fights for each game, with totals and averages for each category

	Shown	**Missed**	**Total**
Game 1	11	5	16
Game 2	8	7	15
Game 3	8	9	17
Game 4	7	10	17
Game 5	10	5	15
Game 6	8	7	15
Game 7	8	6	14
Game 8	11	10	21
Totals	**71**	**59**	**130**
Averages	**8.8**	**7.3**	**16.2**

Using the diary to analyse the viewing quality, the number of missed fights wasn't detrimental however there were moments that could have been improved on, from a viewer perspective. With how fast and dynamic the end of a professional game in Apex game can become, this is rather understandable, however sometimes, as also concluded from the diary, a team was shown on screen doing nothing or watching a close-quarters fight from a distance. That time could have been used by the stream observer to be near that specific fight rather than watch it from a distance. At times, we were shown the current champion team, Team SoloMid (TSM), look in the direction of a missed fight, while the casters were talking about them (TSM). This seemed coordinated in order to give the casters a visual context for their discussion, however that resulted in another missed fight.

Figure 4. Digital Threat weapon attachment highlighting an enemy through a smoke screen (Apex Legends Community, 2024)

While Apex is a fast-paced, chaotic game by nature when the fights start, and therefore gameplay clarity has to suffer slightly, there are few excuses for not being involved in the action as a viewer. Sometimes, the switch to a fight was in the middle of the said fight, after having missed the start of it. This happened several times during the games and rendered a bit of confusion on the viewer until the realization of what was happening and who was fighting. To add to that confusion, often at times the player we were watching was shooting another player through a smoke screen ability from one of the game characters. There was no indication on screen as to why that was possible, as the idea of that smoke screen the viewer

gets is that it is specifically intended to block vision. From playing the game, most players will know this is due to a weapon attachment called *digital threat*, which highlights the enemies through smoke screens in a red colour (EA Games, 2023), as seen in figure 4 above. To the viewer, that red highlight was not visible on stream, potentially causing confusion.

However, the interpretation is that most of the stream viewers have more than cursory knowledge of the game, therefore, to the average viewer and player, these things are known and understood. It is also more likely that there were very few viewers that didn't know the game at all tunning in during the final day, since they had more time in the previous days of the tournament to get accustomed to the viewer experience. Overall, a game of Apex is relatively easy to follow with even some amount of knowledge from playing it. This is emphasized by the impression that, even if half the fights during games were not shown on stream, due to the dynamic and chaotic nature of the game towards the end, it felt somewhat natural to Apex Legends. While the end of the game was sometimes reached abruptly, jumping from watching more than 5 teams alive to just 2 for the last fights was a common trend for most games in the final. This gives an understanding that would be very difficult for the observers of the game to be able to watch all fights in the end, with sometimes three fights taking place at the same time (figures 5 & 6).

Figure 5. Final circle moments just before a chaotic game ending; 9 teams are present in a small area (2 are not shown) and will end up fighting very soon (PlayApex, 2023)

Figure 6. Follow up end-game from figure 5, with a chaotic and hard to follow situation due to many players in a small circle and lots of visual effects (PlayApex, 2023)

Figure 7. Last fight of the last game of the finals, with TSM (bottom) and SAF (top) preparing to fight each other; between the two teams, a dark wall ability from Catalyst, one of the characters, can be seen (PlayApex, 2023)

However, some games, such as the last fight of game 8 that determined the champion, was nicely highlighted and observed, also in part to its longer duration and structured approach, where both teams had time to prepare their attack and the viewer received aerial and first-person camera shots from the player point-of-view (figure 7).

Among the most impactful viewer interface elements that are not part of the game itself were the current team we are seeing and their rankings in the leaderboard for the final, the ability to see all players through walls as a viewer and the team ranking live ticker at the top of the screen which updated in real time with points and positions for each team when the game progressed. Likewise, at the start of the game, the full-screen map of the game with each team's position was shown along with the current ring and the next ring's position, giving more context to the game and helping the viewer get a spatial idea for the teams, such as seen in figure 8 below, taken from game 2. On the side of that image, the additional interface of the ALGS stream would be present, with the current leaderboard at the top and teams on the side.

Figure 8. Game 2 current circle (solid line) and next circle (dotted line), along with each team's position on the map, as seen on the ALGS stream *(PlayApex, 2023)*

Viewer satisfaction and experience is also improved through interaction and flow. According to Huang et al. (2023, p.1), "interactivity was found to be a more important attribute for viewer satisfaction and flow experience among highly involved viewers while informativeness was an important attribute for less involved viewers". This can be applied to the viewer experience of ALGS as well. The possibility of confusion and lower satisfaction is higher for less involved viewers of Apex games, due to the lack of information. While the stream wasn't lacking in informativeness, it could be improved upon. Once that information is provided and understood, the more involved viewers can then be retained through interactivity. This interactivity, which is the interaction between the broadcaster and casters of the game and the viewers of the stream (Huang et al., 2023), was observed as slightly lacking from the ALGS stream. However, this interactivity potentially only improves the viewing quality and is not a hard requirement for viewer satisfaction and retention. Rather helpful for this interactivity were also the casters that, during the finals, mentioned the importance of the crafters, beacons and consoles and their higher or lower chances to appear in different locations. Occasionally, they were also providing information about the leaderboard and explaining why one team needs to take a fight or what an elimination of another team meant (PlayApex, 2023). Another unique aspect of the Apex esports scene observed is the split between players using a mouse and keyboard and players using controllers. As noted by Reddit user _sinxl_ (2023), in this ALGS championship there were 75 players with mouse and keyboard and 46 with controllers. This has had a slight effect during the viewer data collection, with the controller players' aim being smoother and being able to more easily track enemies on screen when fighting. However, this might not be obvious or even noticed by less experienced viewers. It also isn't tied directly to any randomness and RNG mechanics, as even a fight between a mouse & keyboard and a controller player didn't seem to have visibly different outcomes over the course of the finals compared to mouse & keyboard versus mouse & keyboard or controller versus controller fights.

The downsides of this research approach are also present. Firstly, a source of bias is the fact that only the researcher participated in the study, and specifically in the diary writing. On top of that, the result of the final game and who the champion would be was already known, therefore the impressions can be diluted because of that. Secondly, having played Apex extensively before the start of the research also results in a more informed viewing experience of the stream, with fewer points of confusion that the rest of the viewers might have if they haven't played the game as much. However, based on the nature of the ALGS competition, which is the flagship tournament for Apex Legends (EA Games, 2023), it can

also be deduced that most viewers do not merely stumble upon it from nowhere and have had prior knowledge and interest of it, with newer viewers being more easily helped into understanding what is happening due to the large scope of the competition. Therefore, the assumption is that most viewers have played the game long enough to understand the gameplay and lower the confusion. Future research can take these aspects into account and incorporate a more informative viewer interface along with potentially a dashboard for the live stream. Viewer interaction through the stream chat and casters can also boost the satisfaction and retention. A more immediate study can also be done on the game design itself, looking at the game design elements that facilitate or impede a good viewing experience.

The format of the finals in ALGS also has a rather unique, key element which is the match point. Contrary to the previous match days, each having 6 games, the final can technically have a maximum of 21 games. This is due to the match point winning condition, which is activated after a team reaches 50 points in the match leaderboard. Once a team accumulates 50 points, they will then have to win another game in order to become champions (PlayApex, 2023). Any number of the 20 teams can reach match point, however, naturally, the more teams reach match point, the higher the chances are the for the finals to end by having one of the teams win. While technically, there can be 20 teams on match point, historically, and also looking at the finals of the 2023 ALGS, once there are 5 to 6 teams on match point, there are high chances the match will end right there. For example, in the 2023 finals observed in this paper, there were a total of 8 final games played, which tends to be on the higher and unusual amount, with the 7 teams being on match point at the start of the final game (PlayApex, 2023).

Putting this match point element into the viewer and player perspective, it naturally adds another degree of randomness. While having one or two teams on match points means the chances are low for the finals to end that game, having more and more teams on match point adds uncertainty about who is going to win. At the basis of it, the winning team and players are still most likely using their skill and preparation to win, however for a viewer, it might look less certain. This can add negative effects to the viewing experience, but can also add to the excitement and drama, as this is again not purely RNG but rather winning chances based on what team is performing the best. Using this analysis and looking at the outcomes, I would classify this match point element as a net positive for the Apex esports scene, as well as for the viewers. The fact that it is the only battle royale game, and possibly the only currently successful esports game using it, adds to its credibility.

4.3 Common elements & observations

From both player and viewer observations, the chaos at the start of the game was very similar in both situations, the difference being the player experiencing it himself against the viewer experiencing it through the esports players on screen. Since that chaos comes from the same sources in the beginning, those being the occurring fights and initial circle phases, it is natural to have the same effect on players. However, esports players want to avoid said fights as much as possible, since they are the biggest source of uncontrollable randomness and unpredictability, thus leading to the viewer seeing less randomness but more high-level gameplay. When it comes to game length, it was measured to be the same for casual and esports-level players. With the kills and fight distributions done in a similar way for both categories, most of the kills and fights happen towards and at the end of the game. The only difference here being for the player data where due to the increased number of fights and chaos at the beginning of the game, there were also more kills to be had compared to what the esports viewer sees. This once again comes down to professional players wanting to avoid beginning of the game fights, therefore reducing the number of kills as well.

5 DISCUSSION

5.1 Effects of randomness from data

5.1.1 Randomness for the player

As we've seen from the results, both players and viewers experience a higher randomness in the beginning through the chaotic nature of the game and its fights, with the difference that the viewers are usually spared the chaos by the esports players willingly avoiding it. Game length and kill distribution having been found to be the same for both user categories, with higher amounts of kills towards the end of the game, shows that there is still a larger foundation that applies to all players of Apex Legends. This aspect will be approached and analysed in this discussion part, first starting with the player randomness and then moving on to the randomness that the viewer experiences. Due to the lack of purely academic resources studying the randomness in Apex Legends, and battle royale games in general, prior to the start of this research, the callbacks to previous, directly-related, research are going to be fewer in numbers, instead attempting to use more of the theoretical framework sources from the 2.3 section. Thus, starting with the randomness effects for the players, there are key analysis points to discuss.

In esports, teams can plan more accurately around the randomness. As every team in ALGS for example lands in the same spot on the map every game, they can somewhat predict where the other teams will rotate later in the game, while the randomness from loot affects everyone and its impact is not high in order to influence the outcomes of a game. However, sometimes there are some exceptions with fights happening immediately after two teams land at the start of the game, with one team finding worse or even no weapons at all and therefore being eliminated (PlayApex, 2023). This applies to casual play experiences as well. The starting premise here would be that more fights and higher levels of action create more randomness.

From the gameplay data gathered, the randomness for players is present in game through circles permutations, loot randomly found around the map, teams encountered around the map, and for casual players to a lesser extent, the beacon, console and replicator appearance rates. This can often result in frustration, even for pro players who can plan more accurately around it. The locations and appearance rates of beacons, consoles and replicators can also influence levels of satisfaction as mentioned, less for casual players, however especially more for professional players, whose game plans and chances of achieving success

can be highly influenced by the appearance chances of these in-game devices (PlayApex, 2023). For viewers of the esports scene, randomness elements that they see on screen are composed of the ship trajectory, locations of beacons, replicators and consoles, on-the-moment change in teams' strategy, ring permutations and equipment found by teams. These elements are perceived as such by the viewers, however not experienced directly, a point that will be more thoroughly explained later in this discussion. Looking at gameplay data from the player collection, satisfaction and retention can be analysed, as well as the occurrence of randomness.

As a casual player, the queue waiting times and game length's relation to randomness are important since when taking into account the player retention aspect, players experiencing high randomness with short games might be more motivated to stop playing and have a similar attitude towards watching or not watching the game's esports competitions. With the queue times being very short, 7.7 seconds on average over the 90 games, the dangers of the queue itself affecting motivation and retention are greatly reduced. Furthermore, this should help retention, as being eliminated unfairly or randomly in a game doesn't mean a long wait to find another game is expected. However, it is important to emphasize that this is valid for casual play, which might have more players queuing at any time, as well as a more relaxed match-making system that doesn't take into account as many factors as the ranked mode (EA Games, 2023). Furthermore, Narinen's (2014) arguments about incentives and anticipation can be applied here. For a casual player, the beginning of the game's starting fights are indeed a large source of randomness, yet satisfaction can also be derived from them. For a player, that looks for fights to have fun, the anticipation of the inevitable fights at the start can result in more motivation to play the game, even more so when coupled with the short queue times.

Looking at the placement graph in figure 3, it can be argued that placement data is more reliable due to its direct link to the game length. For example, the longer the game goes with the player surviving, the better the placement is generally expected to be, regardless of the amount of action or kills. On the other hand, kills tend to be less reliably represented, as they are subject to more random elements such as encountering different teams at different spots on the map, landing spot and third parties. Reaching later into the game doesn't automatically mean the player will have more kills, as he can play more defensively or simply not encounter any enemies. Sometimes acquiring or missing kills is also influenced by other players and the number of them still alive in the game. If more players are still alive in the game, it can lead to a low-kill outcome if playing more defensively, or simply not aggressively looking for fights, as the other players will fight each other more, reducing the

possible number of kills. On the other hand, if playing aggressively, more players alive means the player can also increase their kill number. This can also explain the high variance in the number of kills in figure 3, with an apparent increase towards longer games. All of this represents once again the randomness of battle royale with a more random number of kills and action in the game, which if playing more aggressively, can be substituted slightly by skill and aggressiveness. Higher-skilled players know they can take more fights and play in a more aggressive way, since they can use their expertise to navigate difficult situations in game better. Having a high-risk, high-reward approach such as this uses the player's skill to replace and reduce the randomness.

  With the number of games in each interval decreasing from 36 for the first 0 to 5 minutes interval, to 24 for the 6 to 10 minutes and then to 15 for the last 2 intervals up to 20 minutes, a point can be made that the higher number of games in the first two duration intervals can add to the player satisfaction and retention, but it can also take away from it. Using the diary notes, a sense of zero progress and having to repeat the same pattern in the game over and over again was present. Landing and being eliminated so early also felt subject to randomness, as sometimes multiple teams would land near the player's team and the RNG for who would find the first or better gun started taking effect. Moreover, sometimes, even if individual progress was made in the first fight, teammates would not have the odds in their favour and the fight would be lost regardless. Therefore, the randomness was perceived as having a significant effect in the games that ended early and with fights right after landing; this chaotic start is rarely present when watching ALGS at an esports level. There is also a psychological dimension to this that Narinen (2014) mentions, which when applied to Apex is about the repetition of being eliminated over and over in the same manner, resulting in poor motivation to keep playing. From the diary notes, the short queue times were significantly pulling their weight in terms of maintaining motivation in these situations.

  When it came to longer games, that usually meant surviving the first fight after landing, if landing near other teams and winning the opening engagement, or landing somewhere where there were no other teams, usually on the farther side of the map. As noticed during the gameplay data collection, players and teams tended to land in the first locations on the ship's trajectory. The second approach of landing on the farther side of the trajectory involved higher chances of having an eventless game, as most teams and players were on the other side of the playing area and would most likely only be encountered towards the final stages of the circle; thus, trading amount of action for a higher placement towards the end. This is another approach that players not willing to fight or lacking skill use to get

longer games. Regardless of the approach of the player through skill or delaying the fights, because of the core nature of the game which houses certain levels of randomness, having high-kill, high-placement games one after the other was very difficult, as observed as a player but also at the esports level as a viewer. Without the short queue times to find a game and ability to find fights quickly once getting into that game, the player satisfaction might be detrimentally affected because of the inconsistency of games. As it stands, the short queue times and occasional game with higher kills can make up for that erratic nature of the games played. As a brief contrast, in the professional player observations from the ALGS stream, the randomness from enemy positioning and enemy kills in their games seems to be significantly reduced, as everyone is spaced out evenly on the map in the beginning and therefore there is less randomness in who you are going to encounter and how many enemies you are going to fight (PlayApex, 2023). However, as mentioned before, kills and amount of action along with player satisfaction through these elements are not the goal of the professional players, but rather good placement and consistency, usually avoiding unnecessary fights.

From the player observations, 1.2 kills per game is around the expected amount for these kinds of games, with the average brought down by the shorter games. This seemed fairly normal to the player, when also taking into account the direct result of high randomness in the beginning of the games. This also goes together with the gameplay type, mostly neutral with a few aggressive games, where seeking kills is not the main goal but rather surviving towards later into the game and being exposed to more chances of enjoying the game. For context, a defensive playstyle would be one where the player or team stay mostly in one place or actively avoid fights and run away from enemies if they see them, with aggressive playstyles being actively running towards fights and gun sounds. This is a trade-off that many players go for when they play: taking constant fights opens the player to a lot of chances of being eliminated and thus having to start over and go through the high-randomness beginning again. However, fights are deemed as naturally fun, even slightly aided by their unpredictability. Therefore, players willing to withstand and go through the chaos and randomness of fights, even when they don't have to, are looking for more enjoyment through those fights, despite the increased risk of being eliminated. This risk is also mitigated by the short queue times and generally no consequences for having to start over.

The two games out of 90 with 0 fights were a good example of randomness within the gameplay. During the first game, due to the random nature of how weapons appear in loot bins and on the ground in game, no weapon could be found after landing, therefore falling to one of the 3 other teams landing in the same place. The second game, randomness outside of

the game caused a disconnect for our third player, thus leaving us to play only as two. Further on, no enemies were encountered until very late in the game when the team was eliminated by taking hits from a long distance without being able to defend ourselves. The final placement was 5th. Once again, the cause of this uneventful game ending in such an abrupt way was highly influenced by the random nature of the events happening in the game.

Comparing this to the viewer experience, the randomness of the loot, survey beacons, replicators and ring consoles can directly affect the viewing experience. If the team that is being spectated does not get a good location where they are landing, with for example a replicator to improve their gear or a beacon to briefly show them where the other teams are, their game plan is going to be affected to the point of being eliminated early. Thus, giving the viewer a worse viewing experience, especially if they were rooting for that team. Tyrväinen (2018) also describes situations where a viewer's favourite team being eliminated affects the quality of the stream perceived by the viewer, along with their motivation to watch. Additionally, this kind of randomness can sometimes go unobserved by the viewer, especially if they do not know the game very well or don't know what to look at or if the casters do not draw attention to it. Looking for survey beacons or ring console spawn rates is something of very low importance in the moment of watching your favourite team on stream, but something that can affect them hugely later in the game. Therefore, the RNG tied to these spawn locations for beacons, survey and replicators have a difficult-to-detect effect, yet still an important one, showing that randomness can indirectly affect the viewing experience.

This was noticeably important for game 4 of the ALGS finals where the team NRG's landing spot lacked a ring console for the only time in the whole finals, which resulted in them failing to predict the ending location of the circle and being eliminated early. This in turn also meant they missed reaching match point that game, significantly reducing their winning chances. (PlayApex, 2023). NRG's situation was not immediately noticed by the viewers, since the broadcast failed to mention or realize it themselves. This plays against Aseriskis & Damaseivicius (2017) arguments about incentives through leaderboards and informativeness boosting retention. However, this was more of an isolated case and the viewer satisfaction was maintained.

On the other hand, as a player from the gameplay experience recorded, the effect of the built-in randomness of survey beacons, ring consoles and replicators was minimal, as their usage by the players was also minimal. Their use has more tactical and strategical reasons, which in casual games are less important. Instead, players directly look for fights, run towards the nearest gun fire sound or prefer to only follow the circle reducing in size.

This lack of tactical and strategic use of map devices is replaced instead by randomness in the way all games play out, since a player not using the tools available to better navigate the game might have their movements difficult to predict for other players.

Looking at the diary notes for the player data and going through them from game to game, the randomness in the results and the games' nature is already obvious. Most games starting with fights after landing were noted as chaotic, which makes sense when taking into account the higher randomness present at the start, through who finds the better weapons and equipment and how many teams have landed nearby. This, on one hand, gives a sense of consistence in the presence of these chaotic fights. On the other hand, beyond expecting chaos, the player is left not knowing what is going to happen. This one-sided consistence is continued further on, however this time in the way games have played out. Most fights were noted as medium difficulty, the idea being that not a lot of time and effort was put into them, but a medium amount was still needed. These fights were present both after the start of the game and in the end of it, regardless of placement and length. The presence of fights throughout the game was to be expected, however besides their difficulty, which can also depend on the player's skill, most other elements seemed to appear at random. For example, some fights had a third or fourth team joining in the middle of them, fighting for 10th place, while sometimes teams fighting for top 5 were left alone despite enemies being nearby. Therefore, what is to be expected is a certain level of chaos at the start of the game, as well as consistency in the presence of fights later on. Besides that, the future of the game is left to the fate of the existent randomness.

5.1.2 Randomness for the viewer

Looking at the shown versus missed fights data in table 3, viewer retention and motivation could be affected negatively, given the almost 50 percent split between missed and shown fights. However, from the diary notes taken during the final, most of the important fights were shown when needed and when they mattered, especially towards the end of the game. Arguably for the viewers not supporting a specific team, the conclusion of a game is the most important and it is also when the most action tends to happen. It can also be argued that some of the shown fights create more confusion through the chaotic, and therefore random, nature they had, however this can also add to the viewer satisfaction overall, rather than take away from it if the viewer is able to follow the fights reasonably well. The assertion here is that seeing a higher amount of chaotic action is more beneficial for the viewer retention than

missing the action altogether. Tyrväinen's (2018) and Hamari & Lehdonvirta's (2010) arguments about spectating esports also tend to support this by drawing a parallel between the excitement of watching and amount of action seen on screen, which is also a core part of the success of esports so far. However, there is a fine line between constant exciting action from fights and too many fights cluttering the screen with ability effects and players running in every direction.

From the beginning of the watching session, the casters mentioned and talked briefly about rivalries for landing spots through the contests, which is also extra information for the viewers that can boost retention and reduce confusion, going along with Huang et al.'s (2023) and Tyrväinen's (2018) arguments about interactivity. Thus, some actions from one of the rival teams can be explained through that rivalry, instead of looking completely random to the viewer. From discussions in the Apex Legends Community (2023), these rivalries are usually formed during the event or even before it during the official training days with the same teams playing. The most important elements in these rivalries are the landing locations for each team, which are claimed by teams and agreed upon with a gentleman's agreement. Some of these landing locations are more useful than others, with more or less valuable loot. According to AyeJHawk (2023), there are significant differences in team win percentages depending on the landing location on the two maps played, sometimes even as much as 10 percent (figure 9). A 10 percent win rate for one location, as seen in AyeJHawk's statistics, means that the team landing there wins one in ten games played. This higher percentage can come from the location itself as well as the better equipment that can be found there on average (Apex Legends Community, 2024). For context, over the course of a season, a team plays upwards of 50 games, including the finals. Consequently, using the same statistics, the team will get at least 5 wins over the course of the season, which will then be supplemented by additional wins they might achieve through their own skill and effect of randomness. This is in addition to other top 5 placements for each game facilitated by their landing location, which will furthermore add to their ranking, making it a very successful season.

With these extremely valuable results just from landing on a single location on the map, it is easy to see the reasons why teams would fight for such a location as well as how rivalries form over time if the fighting continues. To add to this, sometimes it happened that a team suddenly changed their landing location prior to the start of the match day or even during it, in order to surprise the other team or try to get better chances at a higher placement, such as in game 3 and 4 of the finals (PlayApex, 2023). This can immediately result in a short-lived rivalry based on that specific event, which also adds to the randomness perceived by the

viewer, as well as possibly by the team that is now being contested. As importantly, this also adds to the viewer's satisfaction since it gives an extra fight to watch at the start and potentially creates more fights to look forward to for the rest of the competition.
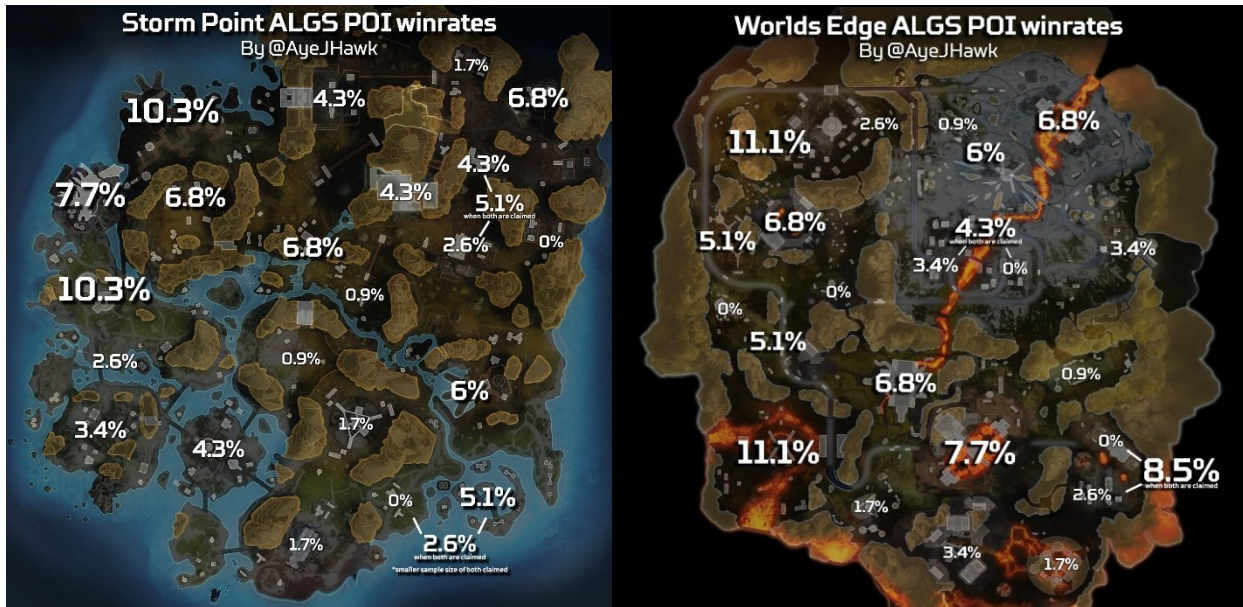

Figure 9. Win rates for teams in each landing location on the Storm Point and Worlds Edge maps (AyeJHawk, 2023)

Regarding rivalries, Tyrväinen's argument in his paper is that "drama turned out to be another non-significant construct for the watching intention." (Tyrväinen, 2018, p.42). However, in Apex Legends' ALGS, given the rivalries that form throughout the competitive season, as well as the on-the-spot tensions created by teams suddenly changing landing locations, drama plays an important role for the player and especially for the viewer. This drama can maintain and increase viewer retention by providing enjoyment and satisfaction while watching. While the drama itself does not have a high relation to the randomness of the game, it could be argued that a lot of it stems from the core randomness present in the game through higher or lower chances for good equipment on different locations, as well as through the consoles and beacons. These circumstances subject to randomness might give teams ideas of changing locations and contesting other teams, creating drama. This reasoning is also supported by Cheng & Huang's (2011) argument that game companies adding randomness to their games creates more drama, which is something certainly observable in Apex.

To add to this, certain player actions in game can create more drama, and therefore more enjoyment for the viewer. For example, the controversial concept of *teabagging* in

games is also present in Apex. Teabagging in video games is the action where the player's character repeatedly crouches over the defeated player's body, or death box in Apex's case, simulating a certain sexual act (Myers, 2019), an action that is also visible to the enemy. This can signify a joking attitude or even closeness between the players (Myers, 2019). However, in Apex as seen on the ALGS stream, this teabagging is used to taunt the other player and team with different intentions, such as lowering their confidence or making them play more aggressively and with fewer considerations in future contests. Another meaning is also that the teabagging player is simply showcasing his skill superiority through the action by having eliminated the enemy. This teabagging usually creates more drama within the present rivalries, something that viewers also enjoying seeing.

Alongside the drama from teabagging, the match point finals aspect also adds potential for drama and dramatic events along with its randomness. With the high number of games the final can have, at least until all 20 teams reach match point, viewers' attention and motivation to watch are kept. However, 20 teams reaching match point is something extremely improbable, with the 2023 finals reaching 8 games and 9 match points teams already being considered quite rare (PlayApex, 2023). Likewise, viewers experience the drama from the action through the players, who are also feeling the pressure of increasingly higher chances for the final to end. Sometimes, as seen in the finals, teams were taking increasing risks in order to get a chance at winning or stopping another team from doing so. This is another facet of the match point that can create dramatic events. Regarding randomness, we can also argue that once enough teams reach match point, there is an element of randomness that will decide, or at least influence the winner, an element that is derived from the small random elements part of the game mentioned before.

Another important context for the drama here is the rivalry between the two and only ALGS champion teams at the time, TSM and DarkZero. This rivalry was extensively mentioned by the casters during all the games, with good reasoning – they were the only two teams to have won an on-location tournament over the 4 years history of ALGS. At the point of this 2023 ALGS finals, TSM and DZ were both on 2 championship wins each. While there was always a chance for neither team to win this final, the fact that TSM has won it, settled the rivalry in their favour, at least for the time being. On top of the drama created by this rivalry, randomness might have an important part in DZ's failure of not winning the championship, and also in even qualifying for the finals. They were eliminated during the group stage playing phase, which was considered an immense failure by the whole community. While their elimination is attributed to their poor performance during the

championship, a part of that poor performance are the randomness elements of the game that have influenced it, such as beacon spawn rates and unexpected fights with other teams, which they might have failed to prepare for properly.

When looking at the aspect of mouse and keyboard versus controller in ALGS, there is no randomness influence from this difference of peripherals used. Arguably, the individual skill in this aspect is what matters the most, as even fights between mouse and keyboard and controller players went both ways many times, thus not giving a visible advantage to any side, as it is just individual skill involved and there are no randomness effects. However, related to the viewer experience quality, watching controller players might be slightly more fun and exciting to watch, as well as more distinctive, due to the visible ways the player's aim tracks the enemy more smoothly. Nevertheless, this is only easily noticeable to more experienced viewers and it didn't seem to render an advantage to the player.

Looking at the shown versus missed fights data in table 3, these can both add and take away from the effect of randomness on the viewer. Showing more fights can potentially make the state of the game clearer, however it can also create more confusion from the chaotic nature of said fights, along with the other sources of RNG, with the possible positive effect of maintaining viewer retention. With just above half of the total 130 fights in the finals shown on stream, at 54.6%, that might seem like a low percentage for a fast-paced, high-action game such as Apex Legends. However, when using the diary notes along with the context of the game, the number of fights seen on stream makes more sense and didn't take away from the overall story of the game. In some games, while it might have been possible for the observers to switch between two fights happening on different sides of the map, that would have created more confusion and would have made the viewer miss important elements from both, thus focusing on only one being the better approach. To be noted is also the fact that a large part of the missed fights were taking place in the final part of the game, where observing them all was much more difficult and even more detrimental to viewer clarity. At 16.2 total fights per game, that is one fight taking place every 1 minute and 12 seconds, which makes for a very fast-paced game. However, the fight distribution during a game was quite end-game heavy, meaning more of the fights took place towards the end.

Nonetheless, with 8.8 average fights shown on stream every game and a game duration of 20 minutes, the viewer would watch a fight take place every 2 minutes and 12 seconds, which could be said is not too fast or too slow and leaves room for breathing, given that most fights do not end instantly. Once again, with most fights happening towards the end of the game, the rate of fights per minute would increase, leading to more randomness and

potential confusion from the randomness sources. Still, it should be implied that most viewers would want to see more action, not less, regardless of how cluttered the fights might be. This is also supported by how the game itself functions, with the implied idea that the players and viewers accept, to a certain degree, the chaos present in these games. It can also be argued that not showing fights will almost certainly take away from the viewer satisfaction, despite reducing the risk of randomness transferring to the watching experience. To this, we can add Kim & Ko's (2019) arguments about spectator involvement: their conclusions applied here being that involved viewers of the stream appreciate quality more, while less involved viewers prefer a higher action amount. Quality of an ALGS broadcast interpreted here as less confusion with more full-length fights shown and more information. While the involvement level of the Apex viewers is not known in this specific research, looking at the data collected shows that the ALGS streams had both quality and amount of action, thus catering to both types of viewers, despite the more erratic situations that the game's randomness may cause.

That erratic nature is also aided by the ring's randomness and hard to predict nature, which makes getting consistent wins in ALGS very difficult. No ALGS team had this consistency in wins, with the best noted in ALGS for one team being consistent top 5 placements for a few games in a row, sometimes interrupted by a bad game or ended by an failure to predict the circle; however, most teams seemed to get at least a top 5 result at least once, with the top teams getting a top 2 or a win also several times (Liquipedia, Apex Legends Global Series: 2023 Championship, 2023). This somewhat random nature of placement can also affect the viewer, but it also adds to the drama and excitement of watching knowing that almost any team can win at any point, turning the tables.

The landing spots for teams are pre-decided and amiably agreed upon by all teams with only relatively few times there being 2 teams landing in the same place. Thus, using the idea that an Apex Legends viewer experiences randomness through the teams they are watching on screen, this element of randomness present at the start of the game is affecting casual players more than professional players and viewers of the competitions. What's more, Tyrväinen argues that "without the geographical link and historical reasons to root for own team, majority of the spectators do not form strong enough relationships towards any esports team, or at least forming the bond is more difficult" (Tyrväinen, 2018, p. 42). While this couldn't be determined just from the viewing of the ALGS stream and requires a more in-depth look into the Apex esports scene, it does provide a useful starting point. If rooting for a team and forming a bond with them as an esports viewer is difficult, the motivation and retention catalysts might be tipped more towards the enjoyment of watching the ALGS and

away from rooting for a specific team. Therefore, randomness becomes even more important as a core part of the game, with more influence over the viewer.

5.1.3 Prevailing retention & randomness elements

There is always the argument that games with RNG are not competitive because of randomness, especially at a high level and that said randomness ruins the outcome or thwarts good game planning. A lot of the time, the main culprit for these discussions in Apex are the ring zones and its final areas possibilities. Firstly, that argument can be countered with the fact that Apex Legends's RNG only has a finite number of outcomes for all of its randomness sources, and this is no less true for the final circle positions (EA Games, 2024). This was also talked about by the 3-time world champion team TSM's coach, Raven, in a recent discussion:

> …games like Apex are pseudo-RNG, meaning there's only a finite amount of possible events that can exist. They are not actually truly random. … It's best to think of pseudo-RNG in games as who can do their best to deal with complexity and various game states, much like Poker, rather than mechanics that mean your fate is entirely subject to the will of randomness. (TSM Raven, 2023)

This reality of finite possibilities for the randomness in a game can force teams to plan for it, with the better teams being more prepared than others. Certainly, as we have seen already from the ALGS finals in 2023 (PlayApex, 2023), the various degrees of which the teams have studied the final ring positions in game, and then planned accordingly, almost surely determined their level of success in those games. This finite randomness state adds intricacies and variance to the teams' plan and gameplay for the duration of a single game, thus making it look less like RNG and more like extremely high complexity for which skill and preparation of competitors can account for. This is opposed to truly infinite possibilities where planning for any number of events will not do much good, since the number is infinite and therefore the outcome is always subjected to random interventions of RNG not accounted for. Therefore, the main idea here is that, in games like Apex Legends, where the RNG outcomes are always finite, even with a very high number of possibilities, that randomness becomes a realm of skill and preparation to be conquered by the best and most adapted teams.

Following on that, the effect of this aspect on the player at a non-esports level can still be perceived as truly random, as, at least from the experiences gathered as a player for this paper, preparation for said events isn't a main concern of the player. On the other hand, as a viewer, the experience of watching the competition on a stream largely depends on how the

teams on screen approach these numerous finite outcomes, and on their skill to navigate them. If a team understands the possibilities poorly and is badly prepared, their game might end quickly. Add in enough teams to this proposition and the game will end very fast, thus resulting in a poor viewer experience. Even more importantly, if a viewer roots for a team that is not well prepared, their viewing experience will also suffer. Additionally, this can lead to decreased retention of viewers on a larger scale and from larger fanbases of teams that are not well prepared or incapable of taking into account the possibilities of the RNG.

However, low levels of preparations for these outcomes from teams can also lead to higher levels of randomness. For example, if a team hasn't managed to properly identify the final position of the ring in their game and have planned for a different position, as soon as they realise their mistake, they will be forced to adapt and improvise a plan for the new reality. This can lead to a random rotation that the other teams might not expect, leading to more chaos and possibly more enjoyable action and more fights seen by the viewer. This will also benefit more neutral viewers that are not rooting for any team, as they arguably want to see more action and no specific team win.

Something to draw from this is that all experiences the viewers go through while watching the players are indirect, as they are not involved directly in the game. The randomness is still experienced by the players which is then translated into different outcomes in the game; this in turn is translated into a viewer experience leading to satisfaction or dissatisfaction, which lastly affects retention. Thus, randomness introduces a fun element that can go both ways. On one hand, eliminating or reducing the random factors is a key part for high-level play. On the other hand, when those random factors can be prepared for and approached skilfully, removing them might make the whole process more boring for a viewer and also lower competitiveness. For a casual player as defined in this paper, the main part of fun comes from looking for fights and taking on that uncertainty of randomness. Fights are fun in Apex Legends and therefore it is natural to look for them, especially when aided by the very short queue times which means after being eliminated, 20 seconds later the player is back in another game. Removing the randomness from fights through whatever means will certainly affect the satisfaction of the casual players and possibly the viewers as well.

Another main argument to conclude from this is that with the finite outcomes of Apex randomness, skill is brought more into question and used more rather than just purely reacting to truly random events, as well as the preparation before game. With finite possibilities, even with a high number of outcomes, being subject to the will of randomness

can hardly be a convincing argument when the other side, with examples of success as seen in ALGS, can show their preparation that led to their success.

As stated, this randomness is ever-present through the fights to be had in game. More fights can add more randomness due to the unpredictable nature of the players and their in-game equipment, however looking at averages and the graph number 1, we can see that despite the higher randomness due to more fights, the placement and results of the player were getting better. At the same time, it would only seem natural that the longer the game goes, the higher the number of fights would be, although with the chances of being eliminated also being higher due to the said added randomness from the fights. One last counterpoint to the higher randomness from the increased number of fights is that, while the fights are increasing, the number of teams is decreasing towards the end of game, taking away from the potency of a randomness source.

Looking at the ALGS finals, a similar trend could be implied for the players and teams. While randomness is high in the beginning of the game due to the loot drop chances and higher number of teams, even though the fights might increase towards the end of the game, the number of enemies is also decreasing, making it easier for the teams to predict and plan for that. However, from the diary study of the ALGS broadcast, the beginning of each game was marked by periods of calm and most teams assessing their position and waiting out circle movements, not taking many fights, thus decreasing randomness. The fights' number would increase as the game progressed and as the play area would get smaller, forcing teams to take those fights. Therefore, as opposed to the player experience where most of the games were marked by players looking for fights and thus increasing the chances of something random happening, the esports players are avoiding this by waiting until the last possible moments, while they create a plan.

Despite painting randomness as a negative factor in this argument, casual players looking for fights throughout the whole game goes against that negative aspect. This may be due to the fact that fun and enjoyment is more important than higher chances of being eliminated, while ALGS players are playing for significant prizes and prestige, thus enjoyment arguably coming later in their priorities. At the same time, despite ALGS teams being able to prepare for the higher, finite possibilities, as noted in the Raven (2023) discussion before, avoiding randomness still seems to be the better play as it simplifies outcomes and makes it easier to build a gameplan, thus more reasons for trying to avoid RNG. Casual players are also helped by the fact that finding games takes a relatively short time, as also seen by the very short queue times, therefore being eliminated quickly from a

match doesn't affect their satisfaction of playing the game, which is also something that Saiger & Khaleque (2022) mention in their paper.

Overall, it would seem that randomness creates the same negative consequences for players, regardless of their level of skill and play. On one hand, casual players do not mind the randomness and even use it to extract more satisfaction from their gameplay, boosting the player retention, as it has been seen previously in other games (Gallant, 2016) and which seems to be accepted as a fact of the game by the community. On the other hand, esports-level players try to avoid randomness as much as possible in order to maximise their chances of a better result. This also translates to Apex viewers, through the broadcast of players and teams, who get to watch more of their favourite teams and see more action on the screen, consequently boosting retention. For instance, if two ALGS teams land in the same location at the beginning of the game and chance makes it happen that one of them finds weaker or no equipment and weapons, the fight will end very fast and will result in less satisfaction for most of the viewers.

However, the period of calm that most esports teams choose in the beginning of a game can also result in less retention, as there is less to no action happening on screen for the viewers to enjoy. Throughout the diary study, looking forward to any contests happening at the beginning of an ALGS game was a common element, in order to alleviate some of the lack of action. That expectation was sometimes diluted if, as mentioned, one of the teams found weak equipment and the fight ended very fast or they had to run away. On the other hand, that waiting period can build up expectations for the action that should increase in intensity the more the game progresses.

On the whole, randomness for casual players seems to be a good thing, as it lets them enjoy more of the game through fights and some unexpected moments without having to wait a long time to be in similar situations. For professional players, randomness seems to be a negative aspect, as it creates complexity harder or impossible to plan for, which can be also be avoided, which then translates to the viewer experiences. Randomness makes the results of any action in-game less predictable on one hand but potentially more fun to watch for viewers; on the other hand, randomness can also help the underdogs win or have better chances, since more randomness means a lesser effect of pre-game preparation. Underdogs winning can also mean more satisfaction for the viewers.

After looking at the stream observations, randomness is such a core part of the gameplay that the outcome of a game is categorically influenced by one or more random events taking place during a game, whether it is a mechanic of the game itself, or the

rotations of a team that had to randomly change due to game circumstances or because of the circle position. However, what ultimately determines the result is the level of preparation the teams had for those seemingly randomly occurring situations. Listening to the player communications on stream during ALGS (PlayApex, 2023), most of the time the discussion after an elimination was about what they could have done better and how they could have approached it differently. It was rarely or never blaming the random nature of the game events.

Using Narinen's (2014) described social interaction and competition retention methods, and taking into account the diary notes from the player and viewer observations, it can be deduced that social competition in Apex is also a fairly important concept. As a player, even if you are not teaming up with someone else to play, you are still competing against other players for good placements and wins. Additionally, there is still social interaction going on with the teammates randomly found during matchmaking or with the friends that the player is teaming up with. What's more, while Apex doesn't have leaderboards, it does have the ability for a player to show off their number of kills, number of wins and other statistics through character badges and banners, at the beginning of the game. This is exactly a type of incentivizing that Aseriskis & Damaseivicius (2017) mentioned and it could be classified as social competition as well, as those statistics on the player's banner can also be used to show their superiority to the players around and brag about the player's in-game achievements.

As a viewer, social interaction comes into play through the stream chat of the broadcasting platform, in this case Twitch. Some might argue that the Twitch chat social interaction is as important as the action on the screen, and for some viewers it might be, however it is difficult to argue with the reality described in this paper about viewer satisfaction coming from the clarity and amount of action on screen. Viewers of the broadcast will be turned away from the stream if the action on screen is chaotic, unclear or purely affected by randomness regardless of the chat social interaction. However, as a method of boosting retention, the chat definitely functions as a beneficial one. Likewise, extrapolated with the help of Aseriskis & Damseivicius' (2017) research about leaderboards, the view time could be extended if done right. Leaderboards could be assessed as a clarity-provider for the viewer, providing information and constant updates; from the viewer data collection, leaderboards were presented after each game, however viewer retention might be boosted if this is done properly during the game as well. The live scrolling ticker at the top of the screen was already a very useful element on the screen, a leaderboard shown from time to time might add to that usefulness. However, this should be done carefully, as too much

information can lead to information saturation and viewers not paying attention or leaving altogether. In the same manner, too much information shown on screen could block the action happening, especially in a game such as Apex where lots of events are taking place on large amounts of the visible screen.

These elements like the leaderboards essentially help reduce the potential confusion caused by randomness through gameplay clarity and supporting information for the viewer. Additionally, if viewers are supporting a specific team, they might be more likely to be motivated to keep watching if they can see more information about their favourite team. On the more neutral side of watching motivations, more information and statistics can point out story lines about how a team is progressing through the tournament, therefore making viewers possibly want to watch that team more and wanting to witness their journey. Thus, retention and motivation can also be boosted this way, while the negative effects of randomness are attenuated.

The leaderboards can also be linked to the informativeness talked about by Huang et al. (2023), as they found that viewer satisfaction was significantly influenced by it. For Apex esports broadcast, this informativeness can be done through the leaderboards on screen, but also through the casters giving more information, as was noted in the diary a few times as well as through more stream graphics about the teams. This can once again reduce the negative effects of the chaos and randomness part of the game, however with the amount of screen space the action in Apex needs, there is a fine margin for the success of it. Arguably more important from Huang et al.'s study (2023) was their finding that interactivity worked better with higher involvement viewers while informativeness worked better with less involved viewers. Regarding Apex, we can argue that highly involved viewers can go through confusing stream experiences and through randomness more easily, as they have more knowledge and can extract quality from the higher number of cues they see on screen. On the other hand, more involved viewers might also have a favourite team they are rooting for and therefore might be more affected by the negative effects of randomness towards that team. On the opposite side of the spectrum, less involved viewers would need more information to combat the negative effects of randomness, since a broadcast with little information and lots of RNG-related action would make the experience of lower quality.

This is also related to the psychology aspects of retention through playing and watching. It should be of no surprise that psychology is involved to some degree into keeping the motivation and retention of users as Narinen (2014) and de Henestrosa et al. (2022) point out. Players should have a reason to keep playing, like social mechanics along with the

enjoyment aspect and increasing personal stats of their account and their rank, while viewers should have reasons to keep watching and come back next day to do it again. This is done again through the enjoyment aspect, this time more indirectly through the players and actions on screen, as well as through the social mechanics of the stream chat. When it came to data collection, looking back and analysing it, these psychological concepts were present and it is fairly easy to imagine the opposite of these results leading to a lack of motivation and retention - high pure randomness and unexpected events in game as a player, complete chaos, fights not shown and teams being eliminated without being able to put up a fight on stream as a viewer.

This is all part of a successful strategy of game building as well as esports scene building, at least at this time. "The findings indicate that creating a game with solid core gameplay while offering competitive and social endgame on top of it leads to successful player retention." (Narinen, 2014, p. 2) – while the game is missing a pure endgame like other games have, looking at player numbers and opinions (SteamCharts, 2024), as well as extracted from this research, Apex Legends has qualitative gameplay. For viewers, as argued, randomness might add a lot more value to the viewer experience when approached well by the broadcast. Showing fights and the right teams, as well as when the teams themselves play skilfully, through proper preparation and game planning, will certainly boost that value. For players at a casual level, despite increased levels of RNG being present, they are mitigated by a higher level of skill, the short queues and ability to play in a more aggressive way without lasting effects. For players at an esports level, randomness does have a major effect, which can be in part prepared for, however players know this, with their goal being placement and a good overall result rather than short term fun. This results in more enjoyment for the viewer with longer games and more retention around the esports scene, with the added bonus of their favourite team potentially succeeding. Thus, it can be said that Apex offers the whole package through gameplay, social interaction and competition when it comes to user retention, despite or even thanks to its randomness elements.

5.2 Study limitations & future research

Due to how Apex Legends' matchmaking system works, these results and interpretations might differ from player to player. In general, differences will occur depending on the skill level of the player that is being observed, which can be measured as current rank in game, number of hours played or number of matches played, for example. Likewise, playing with

one or two other players in your group might yield different results. This is due to the way the match system works in Apex, which considers elements of your account statistics and gameplay history when placing you in a match with other players. Unfortunately, these details are not public, and therefore we are left speculating as to how it exactly works and how it might affect studies such as this one (EA Games, 2023; Banik, 2022). To this, the difference between playing with a mouse and keyboard or a controller can be added, and the arguably different performance levels that it renders.

Another limitation might be the fact that playing the ranked mode of the game adds a new dimension to the paper, one that can be studied in further research. This paper solely focuses on the casual approach to the game, where fun and maybe increasing total number of kills or matches on a game character are the main goals of the player, which can still result in retention and interest in the more competitive side of the game. Furthermore, a different study would be needed to determine if over a session of playing Apex Legends, it is natural for the number of short games to be higher than the number of longer games. An argument could be that these numbers of short versus long games are different depending on the player skill level, as according to the diary, beginning of the games always felt more chaotic. This might also be different for the ranked mode of the game, where tactics and more planning take precedence over directly looking for fights all the time. Likewise, the same logic could be applied to the esports level players, where, as seen on the ALGS stream, teams play a lot more conservatively and carefully in order to have higher chances at a better placement. Finally, it might be possible to apply these finding to other battle royale games, as well as potentially other esports games to a lower degree. While Apex is rather unique in its fast-paced style of movement and fighting, there are still many similarities to other battle royales, which when adjusted for differences, can render similar results.

6 CONCLUSION

At the beginning of this research, the idea of randomness affecting the gameplay in Apex
Legends was prevalent and important, however not looked at in depth. The natural follow up
was that the randomness might affect the viewers of esports competitions as well, mainly the
ALGS. Certainly, after going through community discussions on the competitive scene of
Apex along with the casual playing scene, unfairness through randomness sources always
came up one way or another. These sources, a core part of Apex, have been shown to have
different effects and configurations. For example, the different spawn rates for beacons,
circles and replicators certainly represent randomness in one way, while the amount of quality
loot found in different locations on the map represents another way. Perhaps among the most
impactful randomness sources described was the shrinking circle and its ending location,
which is very difficult to predict, however still allowing to be prepared for by a good team.

Another impactful randomness source observed were the players and teams
themselves. This source is not by default part of the game design, but inevitably comes up
from the mechanics encountered in the game, such as the circle, which ultimately might lead
to teams making unpredictable decisions and surprising other teams. Using the data gathered
as a player combined with the data extracted as a viewer, the fights in the game were
definitely experienced as chaotic and as another large source of unpredictability. While as a
player, there were a lot more fights at the start of the game, which was seen as almost
inevitable, as a viewer watching professional players, the beginning of the game fights were
almost entirely avoided. The fights in this fast-paced game tend to be quite chaotic and
therefore hard to navigate, especially if players want to maximize their staying-alive chances.
On one hand, for casual players, while the beginning-of-the-game fights were almost always
up to chance on who was going to come out alive, avoiding them also meant that there was
less fun to be had in game. As a casual player, fights seemed to always be the main source of
satisfaction and motivation to keep playing, despite the increased chances of being
eliminated. This was countered by the short waiting time to find another game, which means
that around 20 seconds after being eliminated, a player can be in another game, ready to fight
again.

This in stark contrast to the situation in professional play and esports, where
beginning-of-the-game fights are highly avoided, because of their chaotic nature along with
the uncertainty of quality loot you can find in a location while fighting another team. In the
ALGS, the main goal of the teams is to finish as high in placements as possible, something

which is aided by avoiding as much randomness as feasible. Thus, satisfaction through the fun of the fights has much lower priority with the larger goal of a good final placement in the tournament being number one. For the viewers this also has a beneficial effect; while fights are fun to watch, viewers generally want to see a high level of gameplay which is implied for professional players at ALGS level. A chaotic game is difficult to follow and lowers the level of play significantly. Therefore, for a competitive and high-level game, esports teams avoid randomness when they can. However, there is a caveat here, especially when it comes to circle randomness along with unpredictability of encountering other teams in game.

Despite having many ending possibilities, the circle location can be prepared for in advance, with the optimally prepared teams performing the best. This also applies to encountering other teams while they rotate, which can be predicted if prepared for properly. Thus, this skilled team preparation visible on screen is part of the satisfaction a viewer extracts from watching Apex Legends esports, keeping up the retention and motivation. Furthermore, as observed from the viewer data, most of the times when teams were eliminated, the blame would be put on poor preparation and strategy, by both the community and the players, rather than the chaotic and random nature of the game mechanics. This was similarly observed in the player data collection, however there the chaos and uncertainty mattered more and was accepted as a natural occurrence while playing. Instead, it was preferred to focus on getting into the next game as fast as possible rather than analyse what went wrong.

This ultimately leads to the finding that randomness, while a core part of Apex Legends, it is approached and used differently by the players and viewers. Casual players use it to extract fun from the random and chaotic nature of the fights throughout a game, with the negative aspects mitigated by the ability to find a new game quickly. Esports-level players put that aside and instead focus on the long-term success approaches that net them the best chances to finish higher in the placements. This translates well to the viewers watching them, as they also prefer to see high-level gameplay and well-prepared teams succeeding at their game. The viewer satisfaction is also aided by the stream casters giving information while commentating, as well as by the drama created by the teams themselves through rivalries and comeback stories. These elements keep the viewers further engaged and reduce the negative effects of randomness. The findings also raise questions between randomness and fun. While as a casual player, looking for fights is always a priority, since fights are deemed as fun, as a professional player, fights are generally avoided unless they are necessary. This also leaves room for further research on the fun aspects of esports, while also expanding on the

limitations of this paper related to studying the ranked mode of the game and the different skill levels of the players.

We can therefore also extrapolate this conclusion to a higher level of game design and user experiences when trying to incorporate RNG elements into a game. While the randomness in game is in many cases contested, questioned and taken for granted as a negative force pushing back against the players, players can always derive satisfaction and motivation from randomness if it can be used towards that goal. Accordingly, as seen in Apex Legends, uncertainty in most situations might be better approached trying to adapt to it and use it in different ways for your success, instead of trying to fight it. Professional players in ALGS have been clearly showing that adapting and using the randomness as best possible is the way to go instead of fighting against it. Whether it's short-term fun or long-term success that is desired, after all it's about the satisfaction received while achieving your goals.

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