

Video Game Livestream Trend Analysis Based on Twitch Livestream Data

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ABSTRACT

With the continuous improvement of the technological level of networks, terminals, and videos, people's demand for entertainment consumption has expanded rapidly, and the country's policy to promote the upgrading of residents' consumption structure has promoted the vigorous development of the e-sports industry. The game live broadcast is an important part of the e-sports industry. Its real-time interactivity and unique display receive many audience's attention and love. Live broadcasting is not only a way of information transmission, but also an entertainment and cultural phenomenon. The theme is favored by venture capital, attracting the participation of many anchors and players, and generating huge traffic and revenue. As competition intensifies, the trends, problems behind this industry are worth digging into.

Using clustering, classification, etc. to analyze the Twitch Livestream data in 2016- 2021, which comes from Kaggle.com, the article would research the audience, earnings, and prospects in the video game livestream industry.

Through the analysis of the article, it is found that the distribution of Twitch users is unbalanced at present and the market competition is becoming intensified. Therefore, some suggestions are given, such as occupying the high user traffic entrance, expanding the industrial chain.

Keywords: *Twitch, video game, livestream, e-sports industry, data analysis, prospect prediction*

1. INTRODUCTION

In general, sales of video games have surged as a result of stay-at-home and lockdown orders due to the pandemic, as people resort to video games as a leisure.

In March 2020, video game sales in North America increased by 34% over March 2019, with video game hardware sales increased by 63%, including more than twice the amount of the Nintendo Switch console. Across the first quarter of 2020, net spending reached US\$10.9 billion in the United States, up 9% in 2020 compared to 2019 [1].

Twitch is an American video live streaming service platform that concentrates on video game live streaming. Twitch was co-founded by Justin Kan, a prominent Silicon Valley Internet entrepreneur and investor who is Chinese-American and graduated from Yale in 2005 with a bachelor's degree in physics and philosophy. In 2007, Kan founded Justin TV. The simple way of broadcasting ordinary people attracted many curious people, and it was almost the inventor of online broadcasting. Justin TV grew rapidly in the following years and became one of

the most famous video websites with content categories including social, technology, sports, entertainment, news, games, etc. Due to the rapid rise of video game, Kan decided to separate the game section and launched Twitch.TV on June 6, 2011.

In August 2014, Amazon officially announced its acquisition of Twitch for about \$970 million in cash [2]. It is also Amazon's largest acquisition ever. Founded in 2011, Twitch has become the fourth largest source of Internet traffic after Netflix, Google and Apple, so \$1 billion is a bargain for Amazon. There are many kinds of research on the game industry. This article mainly analyzes the game live broadcast industry based on twitch live broadcast data. Twitch holds a huge viewers in this field and is a leader in the game livestream industry, so this suitable model would report the target audience, revenue, prospect genre.

2. AUDIENCE ANALYSIS

2.1. Gender

The graph (Figure1) describes the comparison of male and female ratio who like watching game livestream based on the Twitch users' data. Male gamers are the major sector of all online video game players, while female gamers are increasing through the years (Figure 2, Table 1).

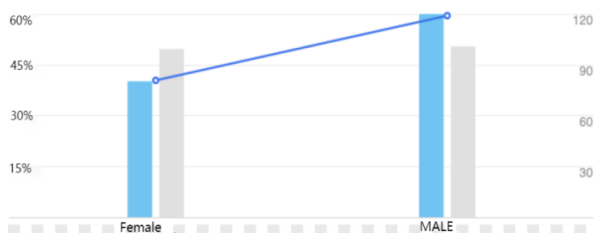


Figure 1 Gender demographics of Twitch users

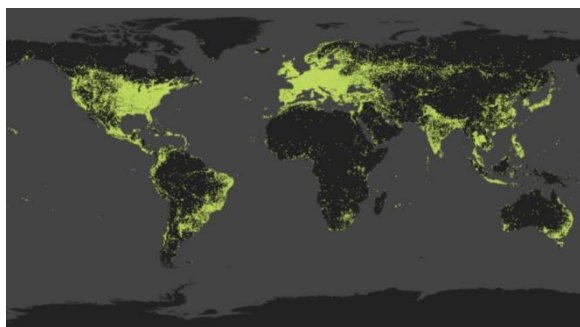


Figure 2 Steam world gamer flow graph by Jul. 2021

Table 1. Demographics of Twitch users

Demographics of Twitch users	
Gender	Percentage of users
Female	35%
Male	65%

The demographics of livestreaming games are still predominantly male, which is similar to the demographics of the overall gaming audience. Moreover, from the perspective of age, the overall game live streaming users are still dominated by users under 34 years old, among which 16-24 years old accounts for the highest proportion 41%. This age bracket corresponds to college students and is also the main audience of games.

Table 2. Demographics of Twitch users

Demographics of Twitch users	
Age bracket	Percentage of users
16-24	41%
25-34	32%
35-44	17%
45-54	7%

55-64	3%
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From the table of demographics of Twitch users, it's clear to find out that most Twitch game livestream viewers are in the age bracket of 16-34, which takes a proportion of 73% in total. The target of Twitch viewers concentrates on the relatively young adult groups, those who are in high schools, universities, and the young workforce.

Young adults are key contributors to the nation's workforce and military services. The reason why young adults become major factor of Twitch users is that they are relatively receptive to new things. As the largest customer base for games, young adults are appealed to combination of the Internet and gaming. Also, they fully take the advantage of internet development and utilize the internet as a stage for social connections, work, entertainment, etc. Thus, Twitch is a convenient platform to share and watch everyone's different life.

2.2. User size keeps growing

In recent years, the overall scale of game livestreaming users has shown explosive growth, and the major growth originates from the transformation of mobile game players. Since the market becomes saturated, the growth rate is expected to be slower in the coming years.

3. TRENDING GAME GENRE ANALYSIS

Table 3 provides statistics on currently popular games based on the data on twitch in May 2021. Among them, League of Legends, Fortnite and CS: GO are the top three in terms of viewership, reaching 38.64 billions, 23.03 billions, and 17.42 billions, respectively.

Table 3. Trending Game Genre Analysis (Twitch tracker by Mar 2021)

Most-viewed games on Twitch [3]	
Name of Game	All-time viewers (billions)
League of Legends	38.64
Fortnite	23.03
CS: GO	17.42
DOTA 2	15.85
Grand Theft Auto V	12.16
Hearthstone	12.09
World of Warcraft	9.2
Overwatch	7.29
Minecraft	6.82
Rainbow Six Siege	3.22

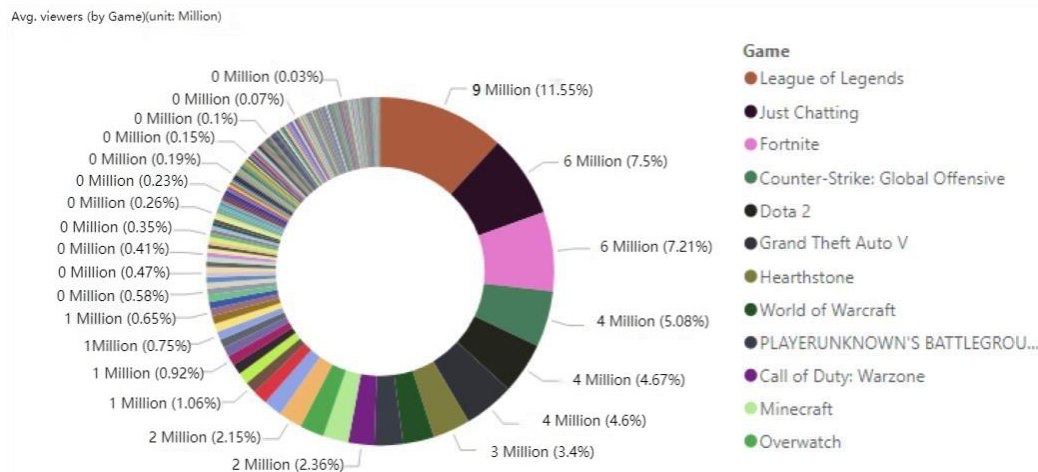


Figure 3. Twitch average viewers by game genre

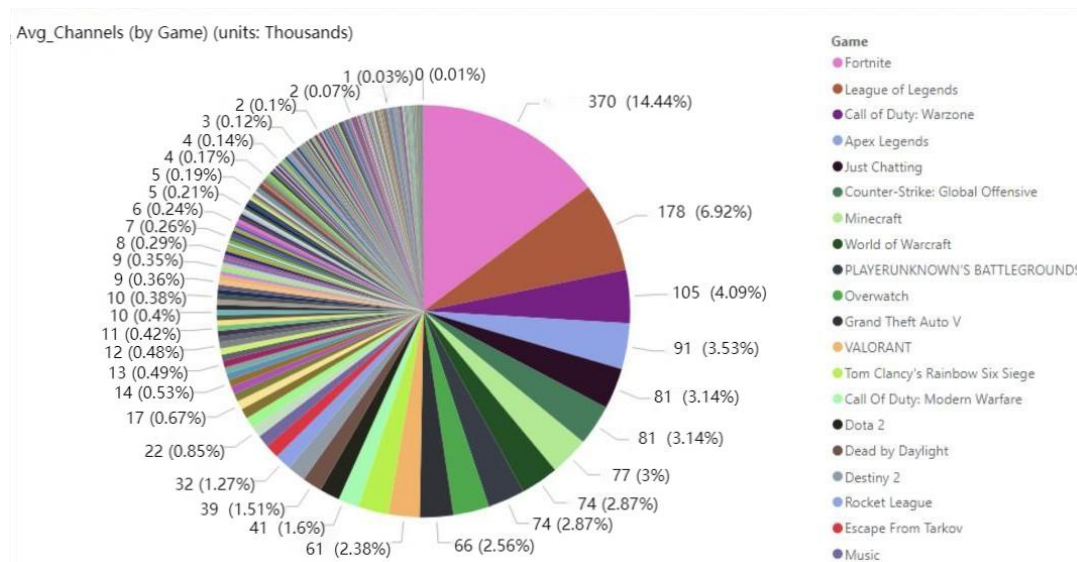


Figure 4. Twitch average channels by game genre

Linked the game genre tags with the popular games [4], the game genre analysis revealed that these games have the following popular game tags:(figure 3, figure 4)

3.1. Moba

Moba game is one of the most popular types of game played in the world today. Representative game works include League of Legends, DOTA, etc. In Moba battle, players are separated into two teams, using money they earned in the game to purchase equipment, and compete against another team across a scattered game map, with each player controlling their selected character through an RTS-style interface.

3.2. FPS

FPS (First-person Shooting) games represented by CSGO and LAYERUNNKOWN'S

BATTLEGROUNDS, is shooting game from the player's subjective point of view. Representative works include CSGO,

PLAYERUNNKOWN'S BATTLEGROUNDS, and etc. Instead of manipulating virtual characters on the screen, as in other games, players are directly exposed to the visual impact of the game, which dramatically enhances the initiative and realism of the game. Initial first-person games were all about the stimulation of light on the screen and the easy, fast pace of play. With the gradual improvement of the hardware equipment, as well as the ongoing blending of various games. The first-person shooter often offers a richer story, along with stunning graphics and vivid sound effects.

3.3. Sandbox

Sandbox Games are a kind of game genre that evolved from Sandbox Games. They are composed of

one or more map areas and frequently contain a variety of game elements, including action, driving, role-playing, shooting, etc. Creativity is at the heart of the Sandbox game. Representative works include Minecraft etc.

There are still more tags including in the results, but all of them almost have one common tag: "Massively Multiplayer Online". This is related to one characteristic of humans: sociality. Sociality refers to the characteristics beneficial to collective and social development displayed by organisms as individuals in collective activities or as members of society. Sociality is the attribute that an individual cannot live in isolation from society. Overall, the games that can connect one person with others are more prevalent on the internet.

4. MARKET REVENUE COMPARISON ANALYSIS

The livestream platform income is gradually diversified as rapid development of new revenue models. Although rewards still accounted for about most of the platform's revenue in the past, in the future, the percentage of rewards will eventually fall on account of the development of advertising and game intermodal business, while the percentage of other income will continue to rise. Among them, game intermodal service may become the next major growth point. The quick expansion of the platform revenue will be attribute to further cooperation between the game broadcasting platform and game companies, as well as the strong stickiness to game of platform users.

Table 4. Twitch Revenue Statistics

Year	Twitch revenue (USD billions)	Total industry revenue (USD billions)
2018	1.6	5.2
2019	1.5	6.5
2020	2	9.3

Twitch generates revenue from two main sources: subscriptions and advertising. Twitch is estimated to earn \$1.54 billion in 2019 [5], compared to \$1.46 billion for YouTube Gaming. Twitch income rose to \$2 billion by 2020, with a comparison of \$1.7 billion for YouTube. Total industry revenues grew from \$6.5 billion in 2019 to \$9.3 billion in 2020.

The proportion of Twitch and YouTube hold in the world livestream market have both reduced in recent years, with Twitch accounting for 22 percent of overall games broadcasting revenue in 2020, compared to 18 percent for YouTube.[6]

The incumbents' share of the market, which is now at 60%, is being eroded by others. Chinese domestic platforms like Huya and Douyu are driving much of this growth.

5. BUSINESS MODEL ANALYSIS

5.1. Livestream services

In the form of selling virtual items to users, the game livestreaming platform will reward the game anchors or exchange the platform's value-added services (such as color bullet screen, room ID prompt, etc.).

5.2. Game operation transformation

The game broadcast platform has great stickiness to game players and the advantage of the accurate user group, so it has great advantages in both coverage and conversion rate.

5.3. Mobile

With the migration of game streaming to mobile, game streaming platforms will become one of the main channels for mobile game promotion, with great potential.

5.4. Advertising

The ads on game live broadcasting platforms are mainly from game manufacturers and hardware manufacturers, etc., mainly through brand advertisement displays to improve the brand awareness of game players.

5.5. Membership subscription

The willingness to subscribe to live games is likely to be higher than that for online video, with 38 percent of users willing to pay for live games, 59 percent willing to pay for higher-definition graphics, and other content as well.

5.6. E-commerce

As a gathering place for fans, game live streaming can move the e-commerce business. According to the data, the proportion of users' purchase types is high in computers, and the proportion of other types, such as snacks and clothing accessories, is also high.

6. CONCLUSION

From the previous analysis, the target audience of game livestream is concentrated in the age bracket of 16-24 with a percentage of 41, and 25-34 with a percentage of 32, and the audience greatly overlaps with the main audience of games. The dominant part among the audience is male with 65%. The industry still has a large market vacancy in the female audience. Mobile game players are made of 49% of female and 51% of male (13-year-old and older). Combining with trending game analysis, it can be found out that female players constitute a large proportion of the mobile gaming market, and thus

female players also need entertainments that are challenging and not exhausting in PC. However, the game genres suitable for female players are not so popular in previous analysis, such as simulation of operation, puzzle game (elimination), music game, and etc. Female players are in favor of games with storytelling, exquisite character, scene construction, and excellent graphics. Twitch can discover more female-oriented games and support anchors who are popular with female users, and proactively push personalized channels and contents to viewers with different ages and genders.

Although the game live broadcast market is popular with investors, and the sales revenue and user scale continue to soar, some problems appear with the aggravation of competition, which should be solved through the development of differentiated innovation.

6.1. The scramble for high-quality content resources

The core of high-quality content resources lies in anchors. Due to the hot market demand, the annual salary of high-quality anchors has reached 10 million yuan. High-quality anchors can bring a large number of high-quality users, but the huge value of anchors has become a huge burden on the platform, which is difficult to sustain. In addition, the anchor has a strong appeal, once the anchor job-hopping, will cause huge traffic loss of the platform.

6.2. Game of content copyright

The copyright of mainstream games is in the hands of game operators, and these operators usually have a wide range of business coverage. In addition to game operation, they also have a large traffic entrance and video broadcasting platform. In the case of unclear game broadcasting rights in China, they have a greater say. Copyright competition is a means to accelerate the survival of the fittest in the industry. It is not ruled out that the first movers use copyright to reshuffle the industry and consolidate their market position.

6.3. Occupy the high user traffic entrance

Game distribution will be the first step in extending the role of game broadcast platforms in the industry chain. In the future, with the development of mobile terminals, the broadcast platform will become a major channel for mobile game distribution, and the match between games and users will be more accurate. Gamers can learn the basics of a game through video content, and it's much easier to find a game that meets their expectations by watching the great players play it directly than by reading about it in text reviews and word-of-mouth recommendations. At present, the game intermodal transportation between the live broadcasting platform and the game operator is one of these methods.

The live broadcasting platform with a large number of vertical user resources controls the high-quality player resources envied by the game manufacturers. Secondly, other platforms such as e-commerce also need a large number of vertical user resources for games, and even different offline manufacturers can acquire their consumers through live streaming platforms.

6.4. Expanding the industrial chain

In the field of e-commerce, the fan effect brought by anchors is the main support for the expansion of the industrial chain. Among them, e-commerce is the easiest channel to realize. Anchors advertise during the live broadcast, snacks, clothing, and game peripherals, and fans follow the call. In the future, a professional e-commerce channel for fans will be formed, similar to the current game live broadcasting platform, which is classified according to the labels of anchors. Users will get to know the anchors through the game live broadcasting platform, have a sense of affinity, and be guided into the e-commerce platform by the anchors. In addition to watching the game live, the e-commerce behavior under the fan economy will drive the market size of ten billion levels. Similar to other sports competitions, e-sports competitions will also generate a variety of guessing demands. In the future, e-sports competitions may be packaged in the form of sports lottery, and game live streaming platforms will become the main betting channels.

6.5. Mobile, HD, and immersive tendency

According to statistics, the mobile game market has surpassed the fixed game market, and several popular mobile games have attracted the attention of the public. The concentration of various resources has contributed to the mobile development of game live streaming to become a major trend in the future. The popularity of high-definition terminals that support 4K capability and the coverage of 4G and 5G high-speed networks have increased the interest in live games. The introduction of new technologies such as VR/AR brings a more immersive experience to video game.

6.6. Expand overseas markets

The fierce competition in the domestic market urges the live broadcasting platform to look at the overseas market.

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