



A MARKET ANALYSIS OF E-SPORTS IN FEDERAL WAY

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E-Sports Market Analysis

Overview

Who would have thought that people organizing and playing in video game tournaments would grow into a billion-dollar industry and establish a new segment of sports? Whether you consider playing video games in competitions an actual sport or not, Electronic Sports, otherwise known as e-Sports, are here to stay. With beginnings in small video game shops, warehouses, and peoples' basements, the industry is projected to hit over \$1 Billion in revenue in 2021 (e-Sports.net, 2021), and tournaments for popular games are selling out large arenas in the United States, including the Staples Center in Los Angeles and the Barclays Center in New York. This is a testament to how popular e-Sports has become. The City of Federal Way is looking at a proposal to remodel one of its existing buildings and transform it into a first-class e-Sports event facility. This is a significant undertaking that, if done properly, could position the FWPAC as a premier e-Sports facility in the Pacific Northwest. This analysis, performed by students in the University of Washington Tacoma MBA, and their instructors Michael Turek and Dr. Margo Bergman, is to assist Tim Johnson, the economic development director for Federal Way and his team in their decision on how to proceed with the opportunity to supplement event, attendance, and potential revenue levels at a City of Federal Way owned building at Town Center in downtown by incorporating an e-Sports venue.

Introduction

Industry preferences have been evolving and changing the demand prospects. For example, Twitch, with e-Sports, has created a set of e-Sport athletes that carry their own fan base and sponsorship deals. Fans want to watch their favorite players live and cheer them on with their friends, much like we go to football games, for a team, or wrestling match, for an individual, to enjoy the fast-paced atmosphere and feel the adrenaline of competition.

As children grow up with this industry that can be accomplished while isolated in their home, they are still craving the chance to socialize and hang out with their friends. On Bainbridge Island, instead of children going home to play games alone, they have the option to congregate at a community center and socialize with other kids that have the same passion for gaming and e-Sports as them.

The demand demographics of this industry have been rapidly increasing. Currently, in the United States, e-Sports has more viewers than all professional sports except the NFL, at 141 million viewers. E-Sports currently had 84

million viewers, followed by MLB at 79 million and NBA at 63 million. The average age of an e-Sports fan is 26 years old, compared to the average age of 50 for a traditional sports fan. This shows that traditional sports are not as popular in the younger population, and they are more dedicated to the digital network. Gen Z is typically more interested in nontraditional sports, with millennials comprising most e-Sports fans currently.

Internationally, we see the same trends. In Europe, e-Sports viewership grew 7.4% to 92 million viewers, out of 445 million, in a \$950 million market. Over ¼ of China's internet users watch e-Sports at least once a month on mediums such as Twitch at 65% or YouTube at 40%. India has hosted international and national e-Sports events since 2018, with prices now exceeding \$1 million, showing a 180% increase since 2017.

The industry expectation of e-Sports internationally is a 59% increase over the next five years. In addition, Investors are expecting to see viewership increasing to over 644 million consumers, with 54% being occasional viewers and 46% being enthusiast viewers by 2022.

Juniper Research, an analytics firm, has estimated that the international e-Sports business will grow 67%, and viewership will increase by 25% from 2021 to 2025. This increased engagement will result in more revenue in the e-Sports market.

Scope of Analysis

A community focused e-Sports venue will have different priorities than a professional competitive venue. It should be an environment that is:

- An environment where they can connect with others and be entertained.
- That can be programmed to daily and even weekly broadcast ready events.
- Flexible to accommodate varying audience sizes
- Flexible to support different gaming titles with diverse equipment set- ups and competitors.
- A space with fast, consistent Wi-Fi
- A venue accessible through public transportation and ridesharing services.
- Able to consistently hosts mid-size events for 2,000 to 5,000 fans.

Section 1 – e-Sports Industry Trends Review

Competitor Analysis

e-Sports facilities are classified as either dedicated spaces or multi-use facilities.

Dedicated spaces

- o e-Sports Arena Orange County, Capacity 800
- o e-Sports Stadium, Arlington Texas, Capacity 2,500
- o Full Sail University Orlando Health Fortress, Winter Park FL, Capacity 500
- o Fusion Arena, Philadelphia PA, Capacity 3,500
- o HyperX e-Sports Arena Las Vegas, Las Vegas NV, Capacity 1,000
- o OGN Super Arena, Las Angeles CA, Capacity 500

Multi-purpose spaces

- o Anaheim Convention Center, Anaheim CA, Capacity 7,500
- o Arthur Ashe Stadium, Queens NY, Capacity 23,771
- o Barclays Center, NY City NY, Capacity 17,000
- o Benaroya Hall, Seattle Washington, Capacity 2,500
- o Climate Pledge Arena, Seattle Washington, Capacity 17,200
- o Los Angeles Convention Center, LA CA, Capacity 22,870
- o Nationwide Arena, Columbus OH, Capacity 20,000
- o Oakland Arena, Oakland CA, Capacity 19,596
- o SAP Center, San Jose CA, Capacity 19,000
- o Staples Center, LA CA, Capacity 13,000

Local e-Sports Venues:

- o Benaroya Hall, Seattle Washington, Capacity 2,500
- o Washington State Convention Center
- o Climate Pledge Arena, Seattle Washington, Capacity 17,200
- o UW Hub e-Sports and Gaming Lounge

Federal Way Demographics

A population's demographic composition will drive an understanding of the addressable market for e-Sports and e-Sport compatible events. According to e-Sports Entry Advisory (2020) and a sample size of 1,300 gamers, 69%-76% of those 34 and under responded positively to attending an in-person e-Sports event. With Federal Way in focus, the city estimates approximately 50% of the population is 34 years of age or younger equating to an estimated addressable market of 50,000 in the city alone (City of Federal Way, 2021).

Additionally, with e-Sports and e-Sports compatible events appealing to a global audience, other demographic information about a population should also be considered. According to the 2019 U.S. Census, Federal Way features a diverse demographic make-up with their top six ethnic categories as follows:

- · 44% White
- · 18.7% Hispanic or Latino
- · 12.7% Asian
- · 8.3% Two or More Races
- · 2.6% Native Hawaiian or Other Pacific Islander
- · 0.9% American Indian and Alaska Native

Further, 34% of Federal Way households speak a language other than English (Census, 2019). To maximize the addressable market for e-Sports and e-Sport compatible events a diverse offering of event types should be considered when determining demand.

Age

As of the most recent census, there are approximately 96,500 residents residing within Federal Way, with over 50% of its population being under the age of 34, making Federal Way's average population age lower than both Seattle and Tacoma's populations.

Ethnicity

White - 57%

Asian - 14%

Black/African - 10%

"Other" - 8%

Two or More Races - 7%

Native Hawaiian/Pacific Islander - 3%

Native Indian or Alaskan Native - 1%

Gender

50.43% Female

49.57% Male (Demographics, n.d.)

Deep Comparison with Arlington, TX

The city of Arlington, Texas opened an e-Sports stadium in November 2018. Although Arlington is not within the PNW region, there are several similarities between Arlington and Federal Way that we can look at. Esports Stadium Arlington (ESA) is the largest dedicated e-Sports facility in North America. It is operated by e-Sports venues LLC, and the 100,000 square foot venue has around 30,000 square feet dedicated to e-Sports, and seats 2,500. This is comparable to the 25,000 to 30,000 square feet proposed for the Federal Way e-Sports location. The facility serves as an answer for e-Sports events and productions. At the heart of the stadium, ESA houses the broadcast production facility that powers the Texas e-Sports Network, a multi-genre e-Sports

channel that covers multiple competitive games, events, news, and more. It was determined that Federal Way has a smaller population, their household income is higher, and their poverty level is lower. According to data on census.gov, as of 2019, Arlington, TX, has a population of 394,266, while Federal Way is much smaller with a population of 101,030. Arlington has a median income of \$60,571, with approximately 14% of the population living below the poverty level, which is a higher percentage than Federal Way. If we also compare the two cities' income per capita over twelve-months, Arlington is \$28,484, and Federal Way comes in at \$31,744. The average income for Federal Way in 2019 was \$67,347, with 12% of the population being below poverty level, and almost 8% of those under 65 are on disability. If we zoom out a bit further and compare Washington to Texas, we see that as of 2019, Washington's median household income was \$73,775. Texas was close behind at \$61,874. Poverty rates in Texas are also nearly 4% higher than in Washington. In this demographic we find that 33.9% have viewed or attended an e-Sports event in 2020 and according to the Interactive Advertising Bureau (IAB), 49% of these fans spend most of their free time and expendable income on e-Sports. The city of Federal Way is within 35 miles of over 10 independent cities with median household incomes over \$100K and this represents 30% of all e-Sports fans. 32.8% of this population has viewed or attended an e-Sports event in 2020 and according to the IAB 67% of e-Sports fans in this demographic spend most of their free time and expendable income on e-Sports.

We believe Federal Way, WA is in an area that provides them access to varied revenue demographics in a centralized area. The Puget Sound region is a densely populated area with many tech industries to provide the fan base for e-Sports.

National Demographic Analysis

Interest in e-Sports continues to rise among several different demographics. Of a poll conducted it was reported that 25% of white individuals, 42% of Hispanics, 41% black, and 33% of other ethnicities were either casual or avid fans of e-Sports. (Gough, 2021)

Research conducted by NewZoo suggests that North America makes up only 8% of players in the world, with 210 million gamers. Asia Pacific comprises much of the gaming world with 54% (1.4 billion gamers). Suggesting a less pervasive gaming culture in North America when compared to Asia Pacific and Europe and the Middle East/Africa, with both regions contributing 14%.

Little data has been collected on the breakdown of ethnicity/race of gamers within North America.

As of August 2021, it is reported that 45% of gamers are female with 55% being male (Chang, 2021). Research suggests that there is a greater participation of female gamers in 2021 than there has been in years prior.

Income Analysis

e-Sports audience members tend to be young, affluent, and multicultural, with a median age of 33 years, are employed and have a median household income of \$85k. According to Sports Business Research Network, 32.8% of e-Sports fans with a household income of \$100,000+ viewed and/or attended e-Sports games in 2020. Similarly, that same year, 33.9% of e-Sports fans with a household income of \$50,000-\$99,999 viewed and/or attended e-Sports games. Only 19% of e-Sports fans with a household income of \$25,000-\$49,000 viewed and/or attended e-Sports games in 2020. Data may slightly differ as we look at 2016 - 2021, but audience members tend to be young, affluent, and multicultural, with a median age of 33 years. 74% of whom are employed and have a median household income of \$85k. Even before the impact of COVID-19, a quarterly survey from Interpret, a global consumer insights agency, of 9,000 consumers shows 30% of e-Sports fans have an annual income greater than \$100,000. Similarly, 25% of more casual e-Sports viewers also reported incomes of more than \$100,000. According to an article titled The New Frontier of e-Sports Sponsorship in July 2020, The Interactive Advertising Bureau (IAB) found that 43% of US e-Sports enthusiasts have an annual household income of \$75,000, and approximately 31% have an annual household income of \$90,000 or more. Esports fans tend to be higher-than-average earners, which typically comes with more discretionary spending power. 49% of e-Sports fans with household incomes between \$50,000 and \$99,000 spend most of their free time around e-Sports. This increases to 67% of e-Sports fans with \$100,000 or more household incomes.

International comparisons

The most popular professional e-Sports events are held in arenas, convention centers, and hotels on the West Coast and Southeast Asia. Cosmopolitan cities like Los Angeles, Las Vegas, San Francisco, Seoul, Busan, Tokyo, Mumbai, Delhi, Bangkok, Shanghai, Singapore, Hong Kong, and Sydney host the most prominent e-Sports tournaments every year. According to Senet, in 2021, of the top 12 dedicated e-Sports arenas, six are in the US, and none are currently in Washington (Senet). According to a BARC study on Indian Sports Leagues, the bulk of viewers for the most popular Indian leagues are between the ages of 31-50. The next significant demographic for traditional sports is between the ages of 15 and 30.

European e-Sports Demographics

- o Viewership grew 7.4% between 2019 and 2020 6% in the US
- o 92 million viewers in a \$950.3 million market
- o 59% of viewers said engagement increased due to pandemic and will continue
- o 58% of European e-Sports enthusiasts spent money on e-Sports in the past year
- o 44% of spenders are between the ages of 21 and 30, with ½ having a full-time job

- and ½ having a partner and kids
- o In 2020, 48% of the female e-Sports audience made a purchase, vs. 46% of men
- o Spain (56%), Italy (53%) and France (51%) have the largest female e-Sports audience spending
- o 26% of China's internet users are watching e-Sports at least once a month
- o 9% in Denmark
- o Viewership in the UK, France, and Sweden all marginally exceed the US
- o India has held massive international and national e-Sports events since 2018, the most notable of which being DreamHack Delhi, ESL One: Mumbai, COBX Masters, and PUBG Mobile Indian Series. The overall prize pool increased by 180 percent to \$1.5 million in 2019, up from \$288.3K in 2017. (2019, e-Sports Observer)

Local Competitors

Benaroya Hall Tournaments:

Dota 2: The International 2012, 2013

Washington State Convention Center:

Penny Arcade Expo and other conventions hold e-Sports events.

Climate Pledge Arena, Seattle Washington, Capacity 17,200 Tournaments:

Dota 2: The International 2014, 2015, 2016, 2017, 2018

UW Hub e-Sports and Gaming Lounge:

Holds a variety of e-Sports events

The HUB

The HUB operates at UW Seattle Monday-Saturday from 10 am to 8:30 pm (Hub). This venue offers high-end gaming PCs and is also available for group events. U of WA e-Sports has joined Pac-U, which is a coalition of PAC-12 schools, and some recent matches include Arizona State University vs University of Arizona, Washington State University vs University of Washington, and the University of California vs University of Oregon. However, the HUB is only 1,000 square feet, whereas the Federal Way facility has 110,000 sq. ft to offer with 25,000 to 30,000 sq. ft. for the sports center. The Hub also only has 39

computers and two VR stations available. The Hub is also offering an e-Sports, gaming, and broadcasting camp in the Summer of 2022. What would prevent the Federal Way facility from hosting or producing their event since the space is looking to be a regional space?

Ticket Price Anlysis

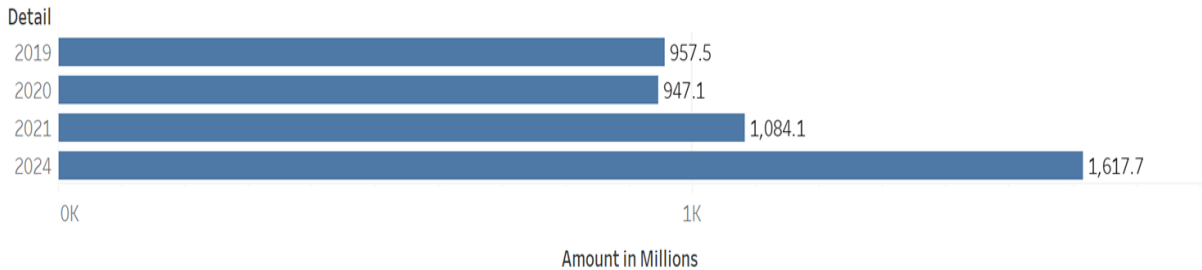
Tickets can cost as little as \$10, but up with more professional events. Some tickets may cost you \$70 (League of Legends World Championships). A study shows that nearly half of people are willing to pay around 49 euros or \$57. There is also money to be made in merchandising, pay to play, meet, and greets.

Demand – Income Annual e-Sports Revenue

Current year growth at 14% with an estimated 49% increase in e-Sports revenue from 2021 to 2024 according to NewZoo.

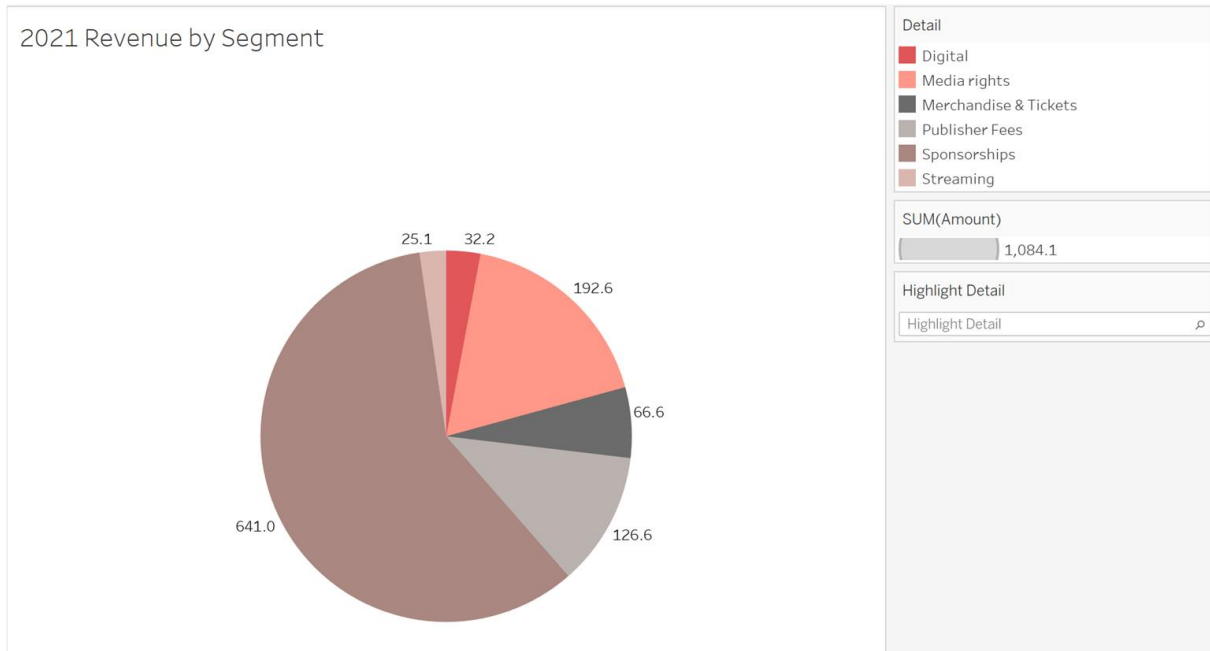
Annual eSports Revenue

*estimated revenue 2024



Demand – Income 2021 Revenue by Segment

2021 revenue broken down by segments shows 59% of revenue coming from Sponsorships and 18% from media.



Demand – Income

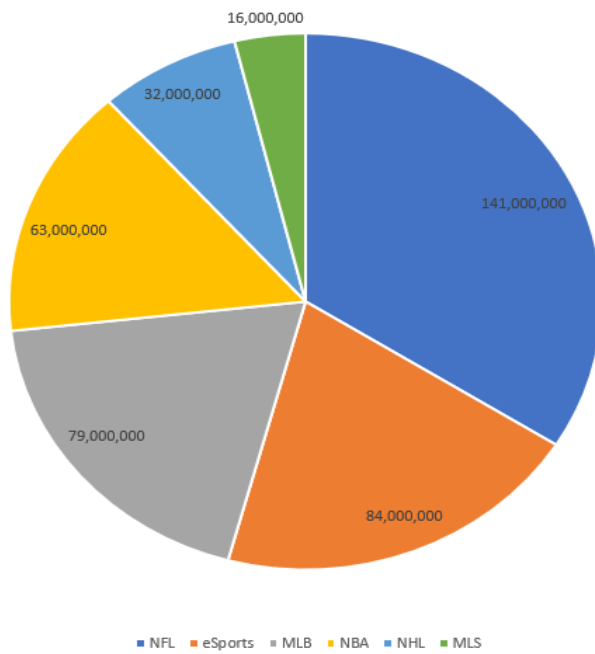
According to Census.gov data 2019, several resources suggest around 30% or greater eSport consumers have an annual income of \$100,000 and around 40% and greater have an average annual income between \$75,000 and 90,000.



Demand – Preferences

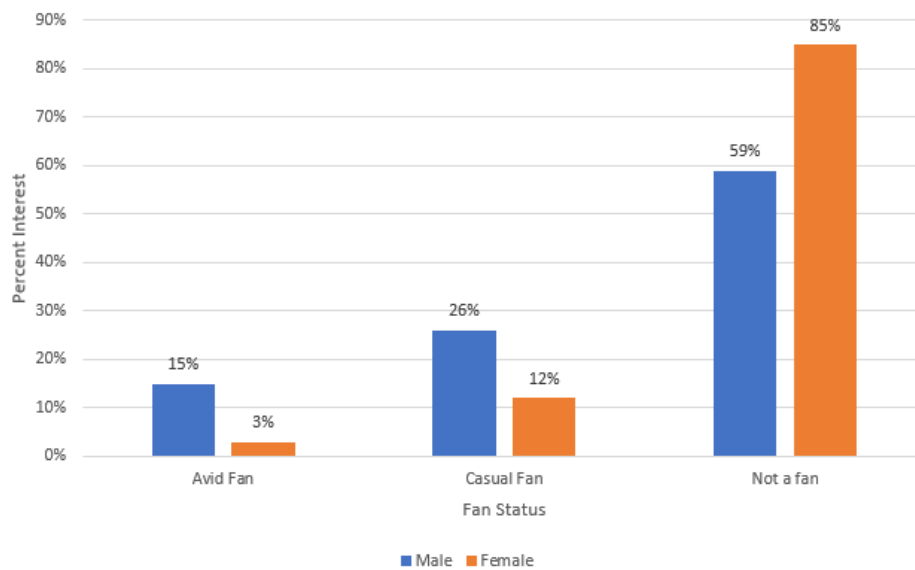
- In the United States, e-Sports is the second most viewed sport behind the NFL
- e-Sports viewership is larger than the MLS and NHL combined
- NFL has significant viewership advantage, but e-Sports has been gaining traction

United States Viewership



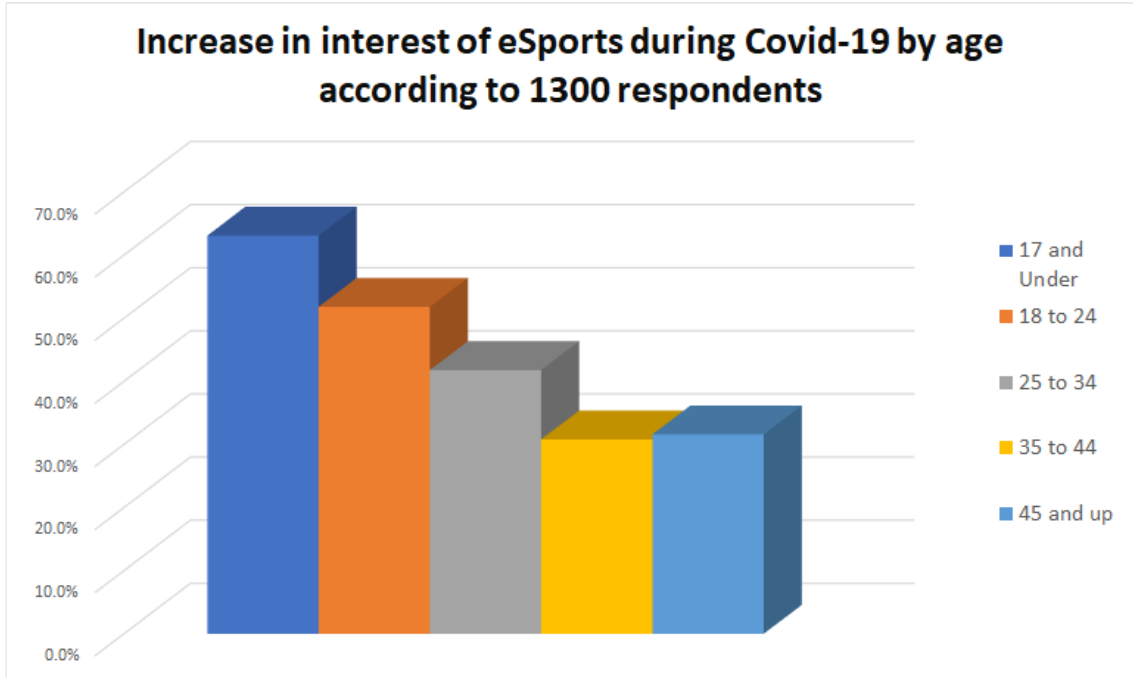
- In the United States, e-Sports is still gaining popularity
- Majority of Americans are ‘not a fan’ of e-Sports
- Low Female representation in ‘Avid Fan’ demographic

United States eSports Interest (September 2021)



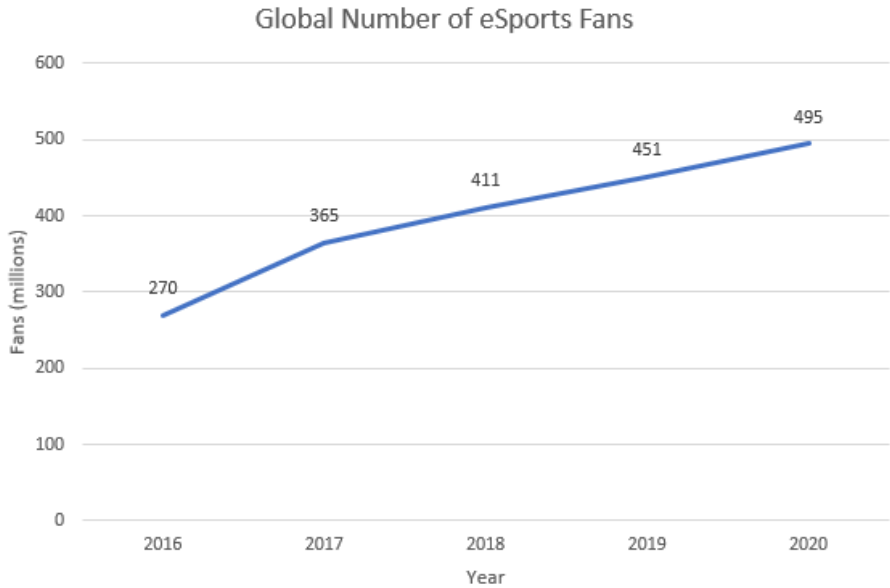
Demand – Preferences: Increase in interest in e-Sports since Covid 19

- COVID-19 has changed consumer behavior towards virtual entertainment
- Interest in e-Sports has grown drastically due to COVID-19 across all age groups
- Younger age demographics have seen largest increase



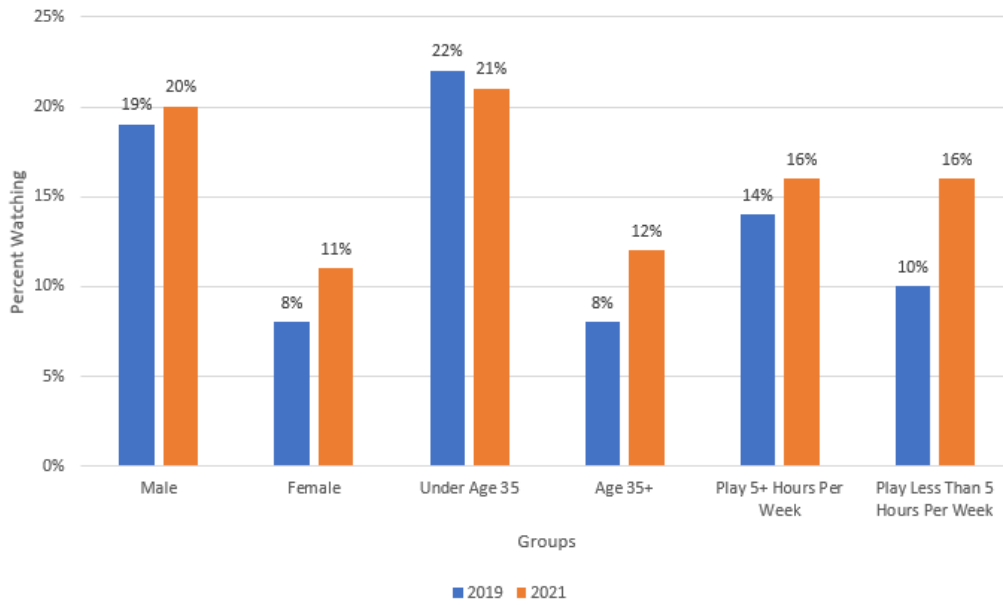
Demand – Characteristics

- There are 495 million Global e-Sports fans
- e-Sports has experienced consistent growth not only in the United States, but around the world



- Age 35+ and Female viewership increasing rapidly
- Large segment of viewers plays less than 5 hours per week
- Large, untapped market to fuel e-Sports growth

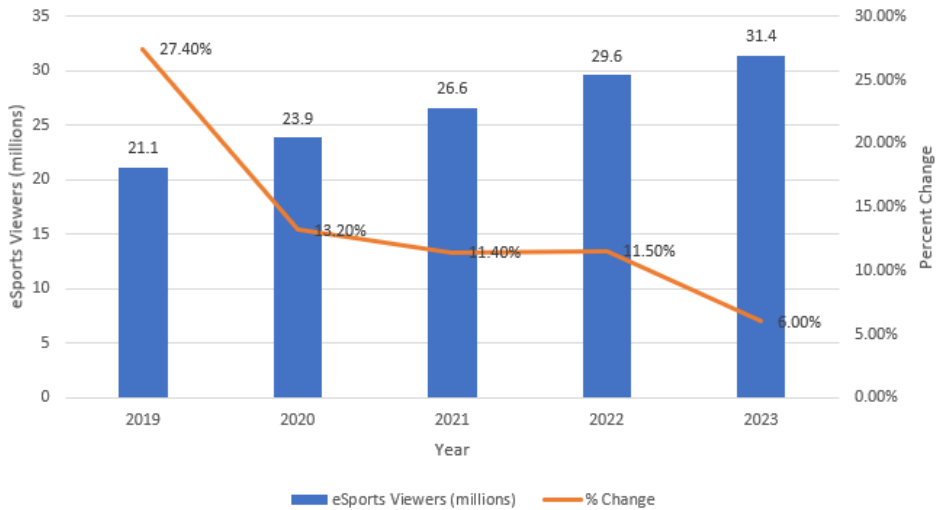
eSports Viewership Demographics



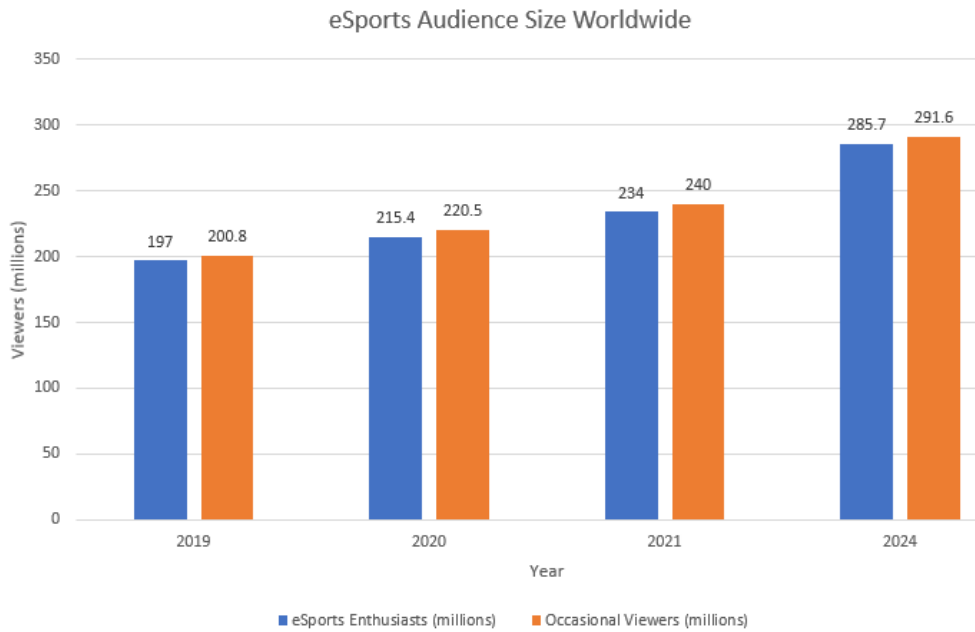
Demand – Expectations

- e-Sports viewership in the United States is increasing rapidly
- Viewership is projected to be ~31.4 million by 2023
- Growth rate expected to diminish by 2023, but still experiencing solid growth

US eSports Viewers

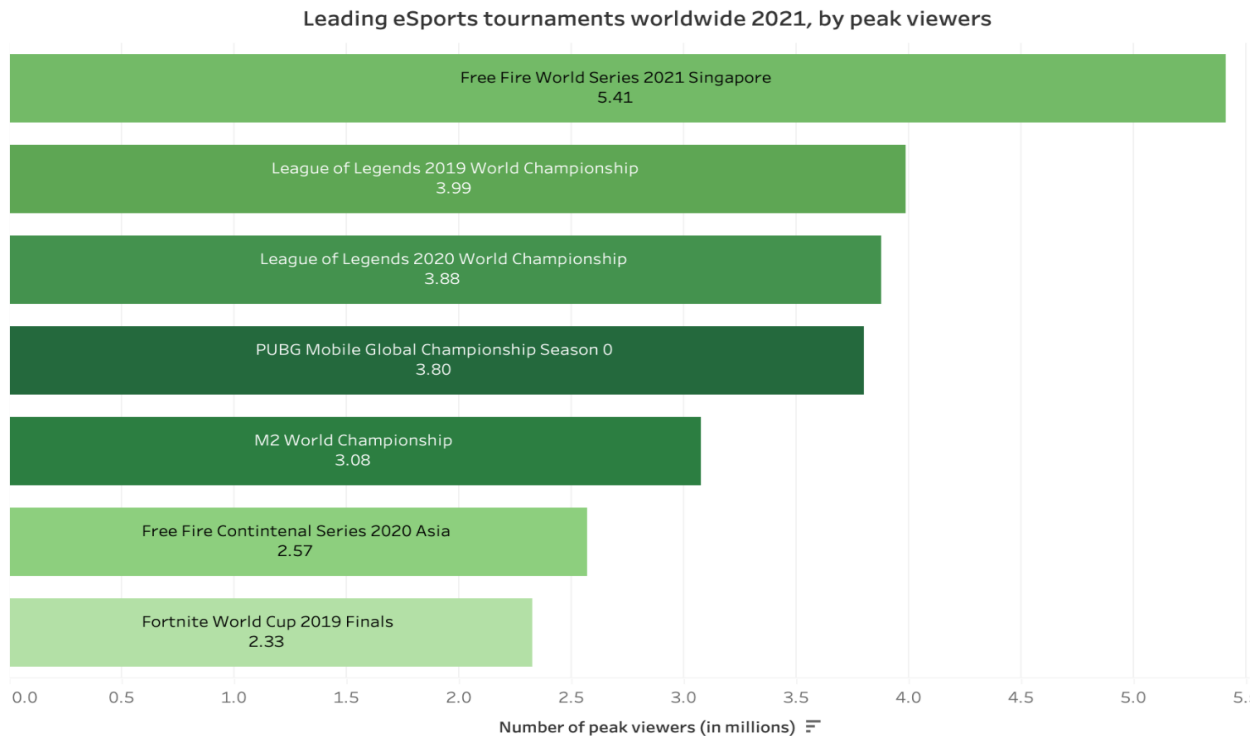


- Global e-Sports audience has larger number of Occasional Viewers than Enthusiasts
- Enthusiasts and Occasional Viewers seeing healthy historical and projected growth



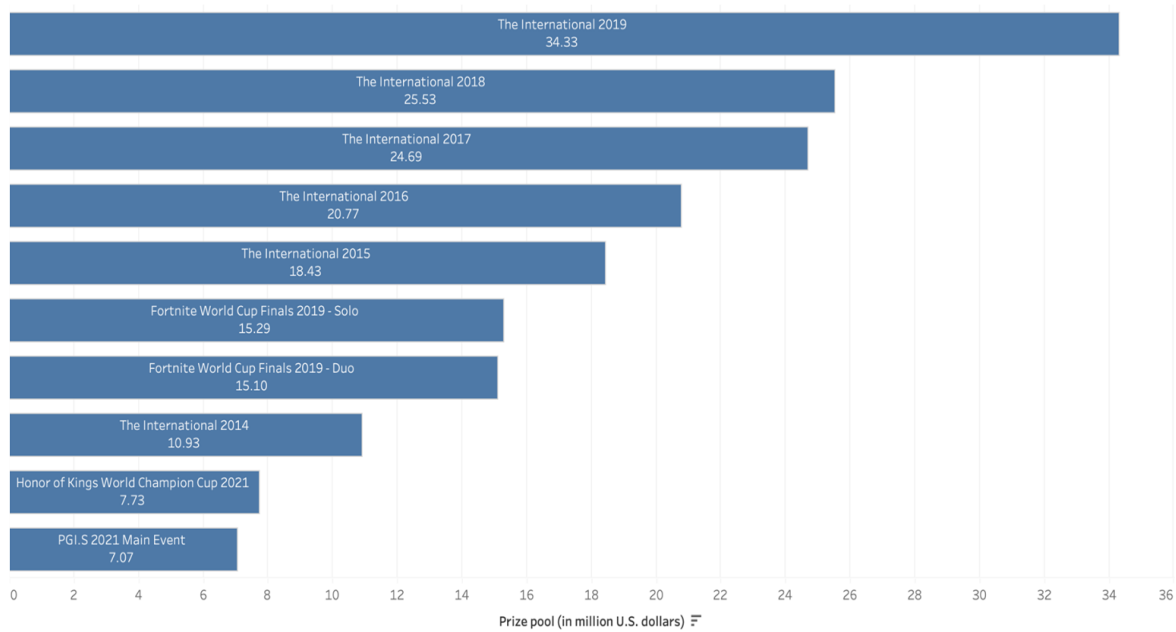
Supply – Seller Expectations

The 2021 Free Fire World Series became the most watched e-Sports event of all time



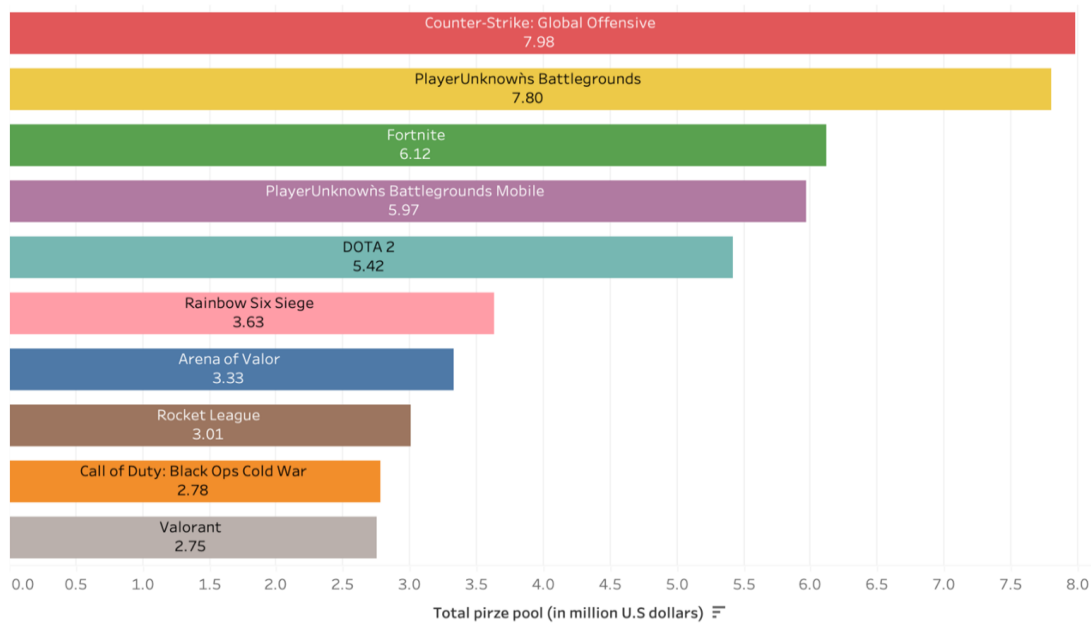
The International 2019 ranked first with a total prize pool of \$34.33 million U.S. dollars

Leading eSports tournaments worldwide 2021, by prize pool



Leading e-Sports games worldwide in first half of 2021

Leading eSports games worldwide H1 2021, by tournament prize pool

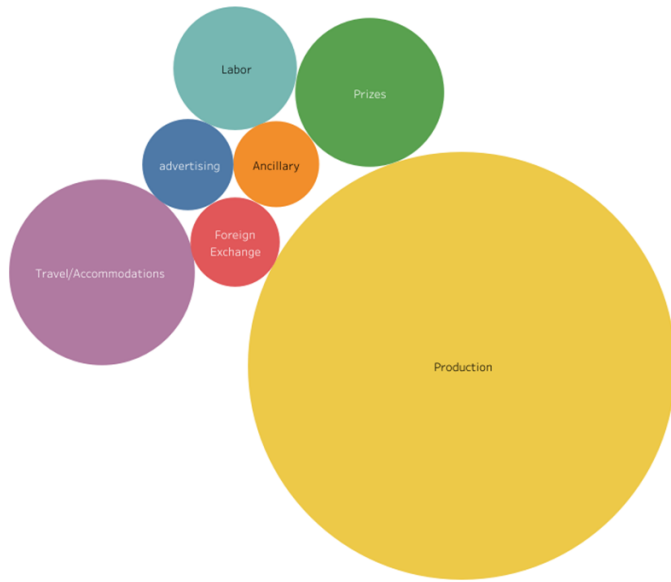


Supply – Factors of Production

Unknown Worlds Tournament Cost Breakdown

- Ancillary-\$928
- Foreign Exchange-\$1,001
- Advertising-\$1,044
- Labor-\$1,915

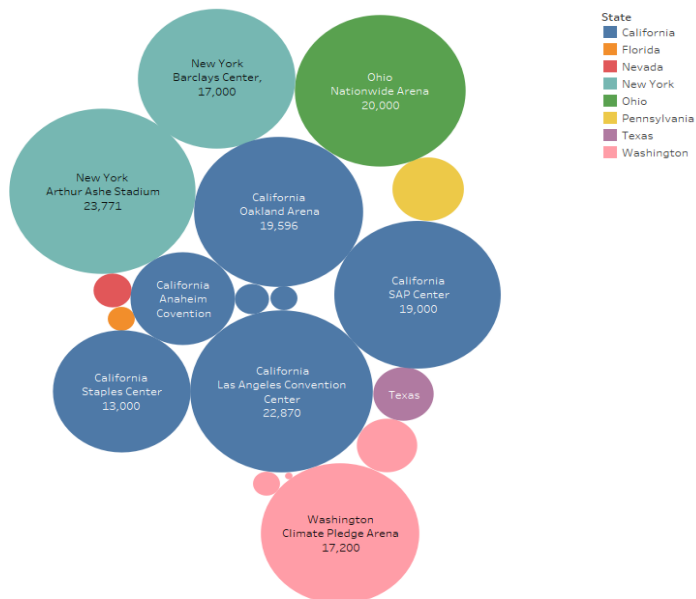
- Prizes-\$2,779
- Travel/Accommodations-\$4,327
- Production-\$22,953
- Total=\$34,947



Supply – Number of Sellers

United States e-Sports Venues by Capacity

Sheet 1

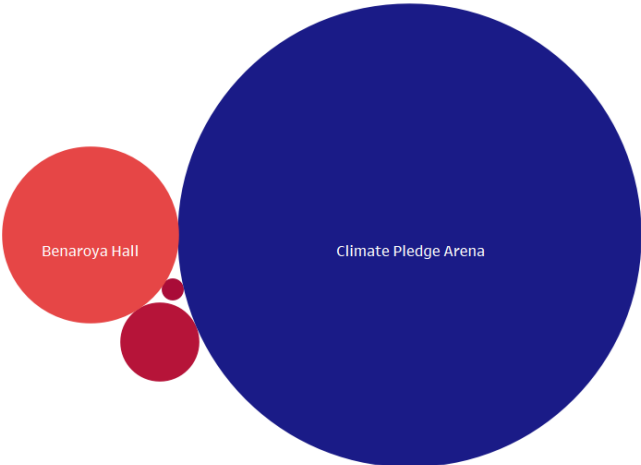


State, Venue Name and sum of Seating Capacity. Color shows details about State. Size shows sum of Seating Capacity. The marks are labeled by State, Venue Name and sum of Seating Capacity.

Washington Venues:

- Climate Pledge Arena
 - 17,200 Seats
- Benaroya Hall
 - 2,500 Seats
- WA State Convention Center
 - 500 Seats
- UW e-Sports Gaming Lounge
 - 39 Seats

Local Venues



Local, State and Venue Name. Color shows sum of Seating Capacity. Size shows sum of Seating Capacity. The marks are labeled by Local, State and Venue Name. The view is filtered on Local, which keeps Y.

Section 2 – Market Overview and Participant Demographic Analysis

Examination of Millennial/Gen Z/Under 18-population consumer trends:

Millennial Trends (aged 26-40):

Unlike the generations preceding them (Gen X, Baby Boomers), Millennials have shifted their consumer preferences to predominantly on-line shopping versus traditional in-store purchases (Alonso, 2021). With the inception and popularization of the internet coinciding with the emergence of this generation, Millennials are accustomed to the digital world and a great portion of e-sport participants/spectators belong to this generation. With greater financial stability and disposable income, Millennials are better equipped to fund extracurricular/leisure activities than their younger contemporaries. It is projected that 77% of Millennials play video games (Weustink, 2021).

Gen Z (aged 18-25):

Gen Z's culture is greatly influenced by social media and short-lived micro-trends that revolve on a limited cycle lasting anywhere from months to as short as several weeks. With the constant introduction of “new” and “trendy” styles, hobbies, etc. this generation is quick to adopt new products-- but the obsolescence of these new offerings happen at unprecedented rates. With their limited financial resources and the quick turnaround of trends, the Gen Z population favor affordability and convenience over sustainability and quality. Gen Z, like their preceding generation make up a great portion of the e-sporting viewership-- it is projected that 80% of those in Gen Z play video games (Weustink, 2021). Factoring in their consumer behavior when determining pricing for events and event offerings would be optimal.

Under 18-population:

Their consumer behavior closely parallels that of Gen Z's (given that many consider Gen Z to extend further than the given 18-25 range) but have greater limitations in terms of financial resources.

What are the determinants of demand of e-sports?

Social Influence

With the e-sporting industry being composed of three generations with high involvement/engagement with social media (Millennials, Gen-Z and 18-Under), it's apparent that social-media and its influence has played a significant role in the popularity of e-Sports. Streaming platforms like Twitch and YouTube Gaming have popularized the consumption of gaming-based media and with the low barriers of entry to this form of entertainment (relatively

low-cost for subscription-based viewing, approx. \$5 per subscription for a single stream on a tier 1 level), the global involvement of e-sporting continues to rise and thus its popularity.

Affordability (Viewing)

While expenditures on gaming equipment are not affordable for those hoping to participate in professional gaming, viewing on-line streams and attending e-Sporting events is relatively affordable when compared to other more price-demanding events such as musical concerts, traditional athletic sporting events (football, baseball, soccer etc.)

Convenience

Due to its predominantly digital/on-line presence, the e-Sporting industry thrives in this digital cultural climate as it is easy to access-- a trademark consumer preference of its participating population (based on generation). (Poelking, 2021)

Game Popularity/ Game Development

New game releases and established games that attract a high volume of viewership are key to the continued popularity of e-sporting. Games such as Overwatch (2016), Apex Legends (2019), Rocket League (2015), Fortnite (2017), DOTA 2 (2013), League of Legends (2009), Counter Strike (2012) New game releases ensure the future of e-Sports and contribute to the ongoing diversification of e-sports as there are nuances and subsections of audiences that are created with each game release. While others enjoy "First Person Shooter" (FPS) gameplay, others may enjoy "Fighting/Combat Games" or "Racing." The sheer diversity in game offerings only work to continually pull the attention of new audiences. (Setupgamers, 2021)

Proximity & Transportation

Federal Way is strategically situated at the midpoint of two of the most populated cities in the state (Tacoma and Seattle) and the extension of the light rail into Federal Way will allow those without a personal mode of transportation (car) or those seeking a more convenient and virtually traffic free alternative, the ability to attend an in-person e-sporting event. Federal Way is also situated a reasonable distance from the SeaTac airport and thus is accessible to out of state audiences.

Age Inclusivity

Like traditional sporting events, e-sporting is generally an age inclusive event that both younger and adult aged audiences can enjoy. This makes e-sporting events an attractive option for families.

COVID-19 Pandemic

While the on-going pandemic has put a strain on in-person events and retail spaces in terms of foot traffic, confinement has turned many towards gaming as a source of entertainment with reports suggesting that average gaming hours have increased during the pandemic as well as e-sporting viewership. In addition to an increase in the involvement within the gaming sphere, confinement has made many eager to return to in-person events due to general social isolation. Live streaming video platform Twitch saw a spike in viewers during the lockdown. Twitch viewers increased from 32.9 million in 2019 to 41.5 million in 2020 or by 23.5%. (eMarketer, 2020) while the US saw the highest increase in gamers who played video games more due to the pandemic at 46%. With COVID-related guidelines becoming more flexible, it is expected that many would be receptive to attending social gatherings.

Local Market Competition

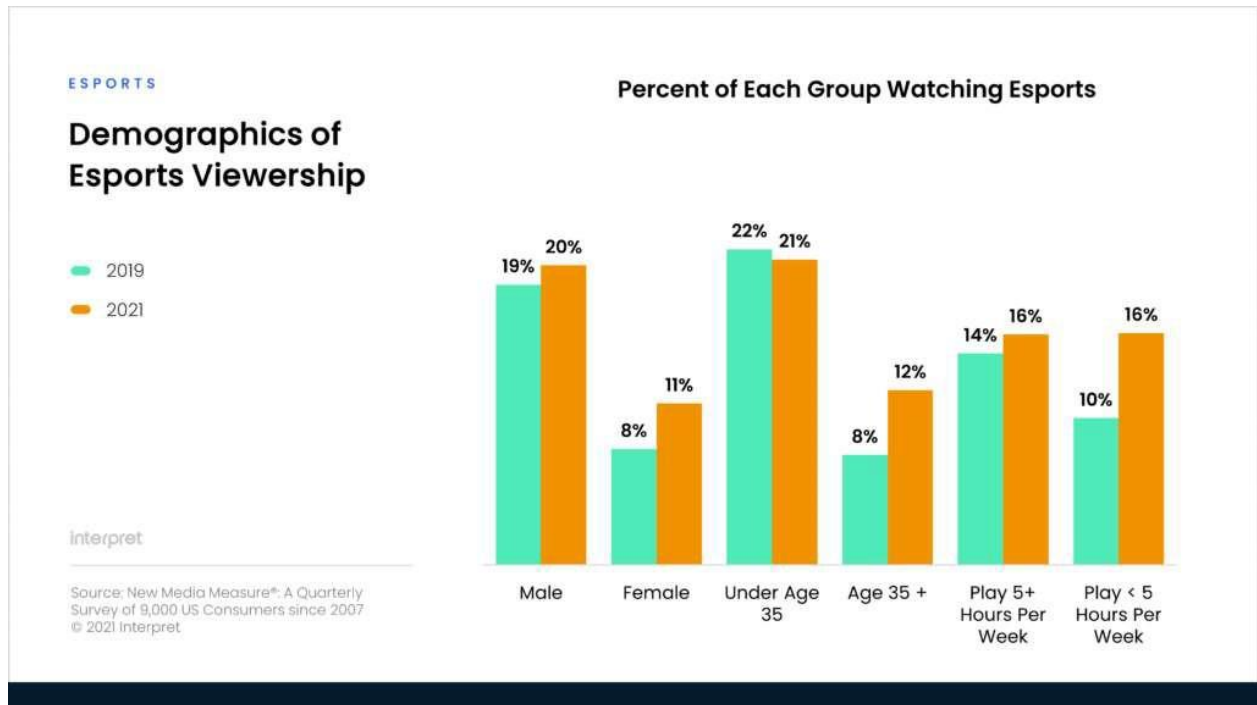
Due to the lack of potential or current competition, the implementation of an in-person e-sports exhibition center will drive much of the current market to this space due to an absence of alternatives/substitutions.

Revenue

We have seen a demand growth for e-Sports during the pandemic, and North America accounts for ¼ of the revenue. "Consumers today buy fewer games than previous decades but spend more time with those games, shifting the business model from single-unit to recurring revenue generated from a base of active users. As a result, the industry is laser-focused on increasing engagement per user (weforum)." A separate part of gaming is e-Sports, which refers to organized, multiplayer video game competitions. This sector is forecast to grow to just over \$1 billion in 2020. Business models in e-Sports closely follow professional sports - though competitions are far more fragmented - with most revenue coming from advertising and broadcasting. Viewership grew 6% between 2019 and 2020.

Preferences

e-Sports fans 'have shown a strong appetite' to attend physical, in-person events. Gamers want to attend live shows to be a part of the gaming community. They want to watch their favorite players and teams and connect with friends they play with online. e-Sports fans are younger and more engaged in digital ecosystems than traditional sports fans. 6 out of 10 internet users watching e-Sports are between the ages of 16 and 35. Average age of traditional sports fans are 50, e-Sports average age is 26.



About half want to meet pro players and to become better players themselves. If one is serious about playing e-Sports in college, watching the best teams in the world can help you fine tune your strategy and skills. It can be beneficial to watch a professional player. It is also good for marketing efforts. 90% of Twitch fans can recall at least one non-gaming e-Sports sponsor and 62% of US e-Sports viewers are aged 18-34, with 58% having positive attitude towards brand involvement in e-Sports.



For a small indie studio, it costs around \$67,443 to host the World Championship tournament (Destructoid). A little over 52% of that was paid by the developers, and the rest was covered between sponsors and voluntary contributors. When a company like Riot Games throws a big League of Legends tournament, you can be sure they're spending millions on it.

Females

- Females consist of 35% of viewers
- 40% of viewers are now over the age of 35
- 33% of viewers have small children
- In China, 43% of viewers are female

Viewership Analysis

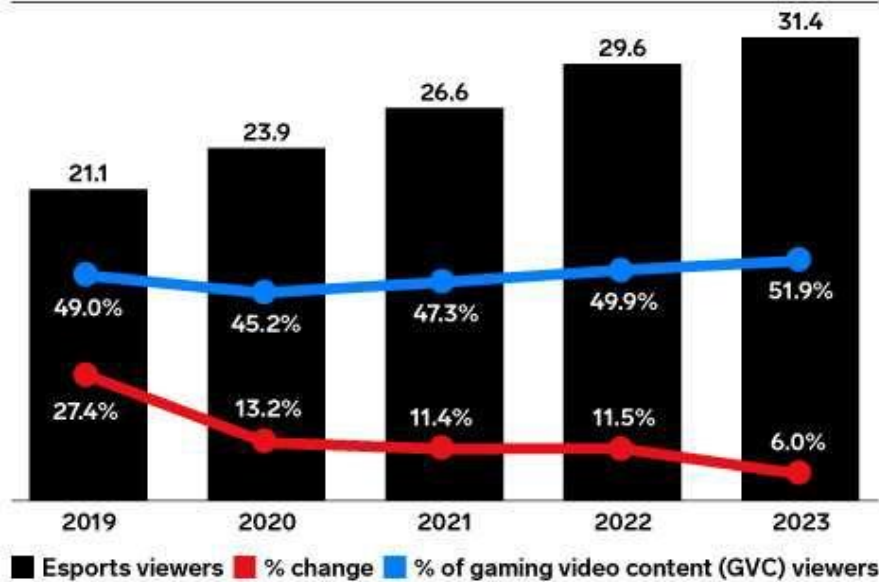
Twitch is the most popular medium to view e-Sports at 65% across North America and Europe. YouTube receives 40% of e-Sports viewers. 1 trillion minutes of content viewed on Twitch in 2020. 2020 League of Legends World exceeded 1,000,000 viewers, with the grand finals drawing over 3.8 million spectators.

Future Expectations of Viewers

The live streaming audience for games will reach 728.8 million by the end of 2021, a ten percent increase over 2020's audience number. Global e-Sports Audience is expected to exceed 575,000,000 viewers by 2024. 600 million consumers of e-Sports are expected globally in 2023. The number of e-Sports fans globally is anticipated to climb 59% over the next 5 years. Expansion is being driven by investment from traditional sports leagues, broadcasting deals, and expansion of mobile e-Sports. E-Sports viewership is expected to increase to 644 million in 2022, with 347 million being occasional viewers and 297 million being frequent or enthusiast viewers. Global e-Sports audience is expected to rise to 646 million in 2023, with 351million being occasional viewers and 295 million being e-Sports enthusiasts. Juniper Research predicted that there will be more than one billion e-Sports and games viewers by 2025, up from 800 million viewers by the end of this year. The Asia Pacific region will represent more than half of the e-Sports and gaming audience. Latin America is also identified as a key region for growth and is projected to have over 130 million e-Sports and games streaming viewers by 2025. The rise in e-Sports' audience represents a year-on-year (YoY) growth of 8.7 percent. Of that 474 million, e-Sports enthusiasts - recorded as those who watch competitive gaming more than once a month-will account for just under half of the overall figure, up 8.7 percent YoY to 234 million.

US Esports Viewers, 2019-2023

millions, % change, and % of gaming video content (GVC) viewers



Note: Internet users of any age who watch organized gaming competitions among professional players and teams (e.g., Evolution Championship Series, League of Legends Championship Series, and Overwatch League) hosted on digital video platforms at least once per month; read as "21.1 million esports viewers is 49.0% of gaming video content viewers"

Source: eMarketer, Feb 2021

263646

eMarketer | Insiderintelligence.com

Key economic indicators

Talent

Like any sport, a key element to the supply of e-sporting are the players who participate in it. Due to the quick cycle of game popularity and relatively short careers of e-sporting professionals, there is a constant circulation of new talent in the industry, though due to the popularity of the industry and the continued and increasing involvement within it, there does not seem to be a short supply of individuals capable and willing to participate. However, research in the surrounding area (King & Pierce County) present complications in developing professional or semi-professional teams as the only locally established team Seattle Surge was effectively disbanded (as of August 20, 2021) due to low performance in previous seasons and the lack of prominent clubs in the area indicates a shallow pool of potential talent. (Wikimedia Foundation, 2021)

Game Development

As mentioned previously, new game developments lend to the supply of e-sports as new games create new opportunities for additional teams to be formed and new tournaments showcasing a multitude of games/players. There are several notable game developers in the area however including Bungie, Amazon (&

Twitch), Valve, Microsoft, 343 Industries etc. (GameJobHunter, 2020)

Sponsorships/Endorsements

Professional e-sporting teams are primarily funded by “big name” brand endorsements from dozens of industries from food/beverage companies, technology companies, fashion brands (Louis Vuitton) and even big-name automobile companies such as Mercedes-Benz. Perhaps the greatest contributor to the abundance and popularization of e-sporting is Amazon, as they had purchased e-sporting streaming platform Twitch in 2014. Due to the area’s general lack of an established team, there is considerably low competition in the procurement of potential local sponsorships. (Chan, 2019)

Physical Equipment

Establishing a high-performing and well-equipped gaming center/gaming set-up requires a great deal of initial capital per player, with a professional (competitive) gaming set-up costing anywhere from \$1800 to \$2500+ for the PC alone. This does not include the cost of a gaming chair, headphones, keyboards, monitors and other necessary accessories. (Non-competitive gamers can invest a great deal less in their equipment as they do not play on a high-performance level.) Facilities that host gaming events must also consider their facilities' internet speed.

Facility Capacity and Government Policies

Aside from physical capacities of venues, COVID guidelines and restrictions may create additional limitations for supply of tickets for an e-sporting event as there may be restrictions in place that limit the number of people allowed to attend the event. (Chan, 2019)

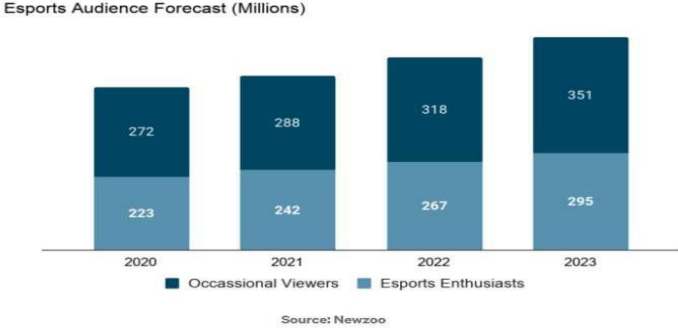
Funding

Like with any project, funding will be a key deciding factor to the scale in which the project can be executed. Since the *Performance Arts and Events Center* was constructed in 2017, little modifications in the space are necessary to accommodate the demands necessary for hosting an e-Sporting event.

Future Expectations of Revenues

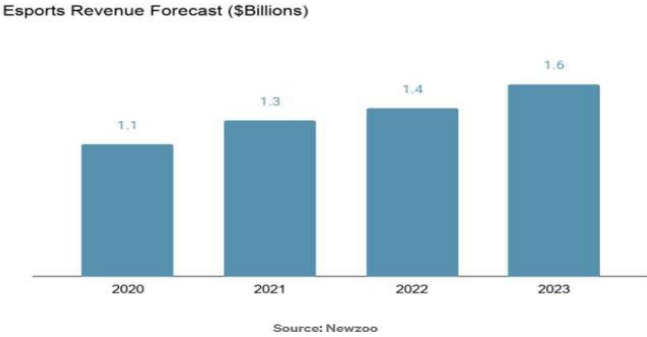
NewZoo anticipates revenues this year to come to just under US\$1.1 billion, a 14.5 percent increase on the US\$947.1 million projected last year. Of this year's US\$1.1 billion revenue figure, US\$833.6 million will come from media rights and sponsorship. The increased engagement will result in more revenue in the e-Sports market. In other e-Sports market news, research, and analytics firm Juniper Research has estimated that the

global e-Sports and games streaming business will be worth more than US\$3.5 billion by 2025, up from US\$2.1 billion in 2021.

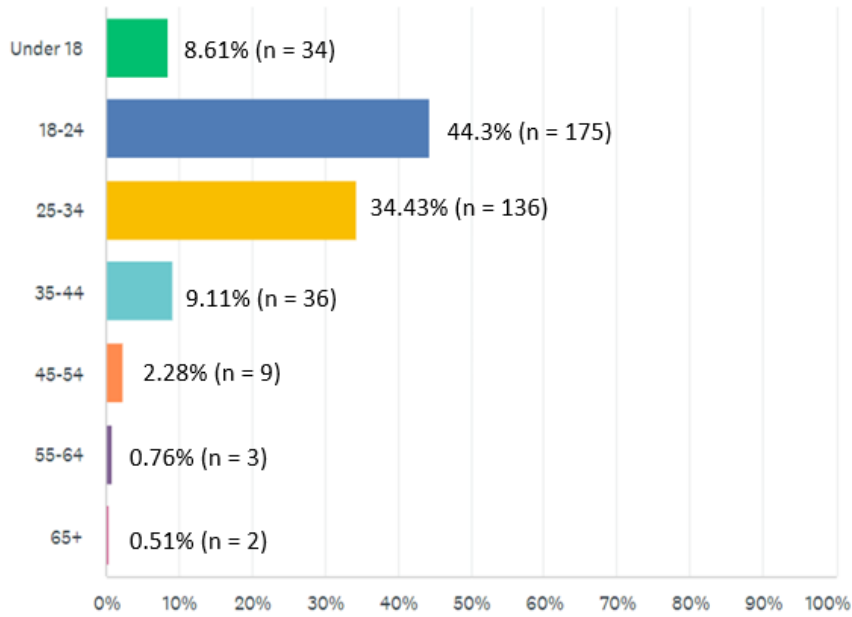


REVENUE FORECAST

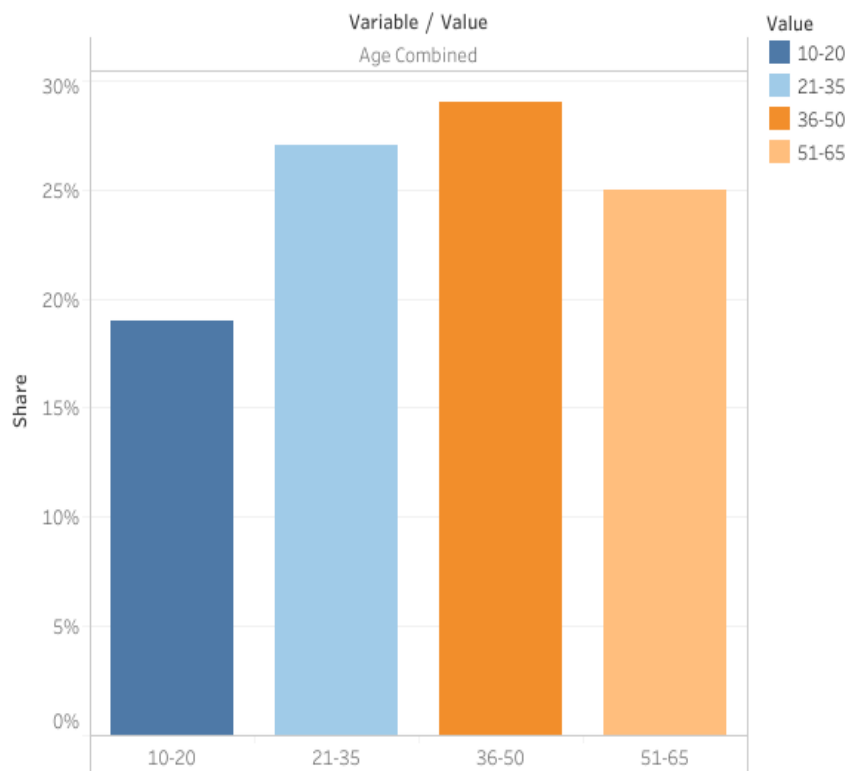
By 2023 Esports revenue is projected to reach over \$1.5 billion with China accounting for the largest proportion. The world’s fastest-growing esports revenue stream is digital revenue with a projected CAGR (2018–2023) of 72.4%. Digital revenue, is the revenue generated from digital sales of in-game items that utilize team IP or signed player likeness.



Survey Results: Age



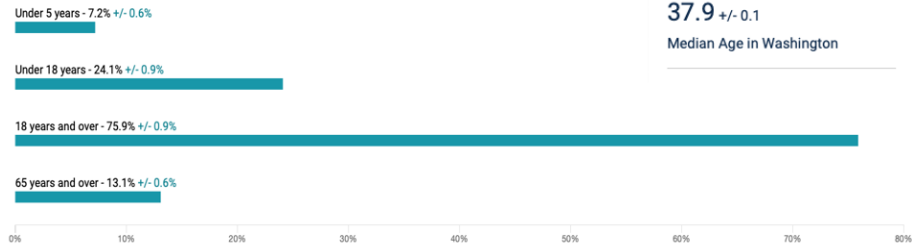
New Zoo: Age



Census: Age

Total Population: 101, 030

Population by Age Range in Federal Way city, Washington



AGE

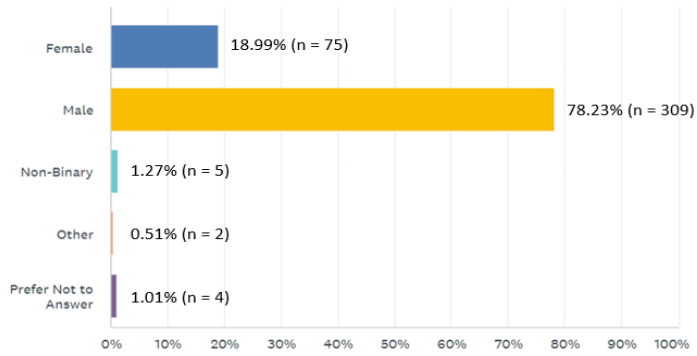
33.5 +/- 3.4

Median Age in Federal Way city, Washington

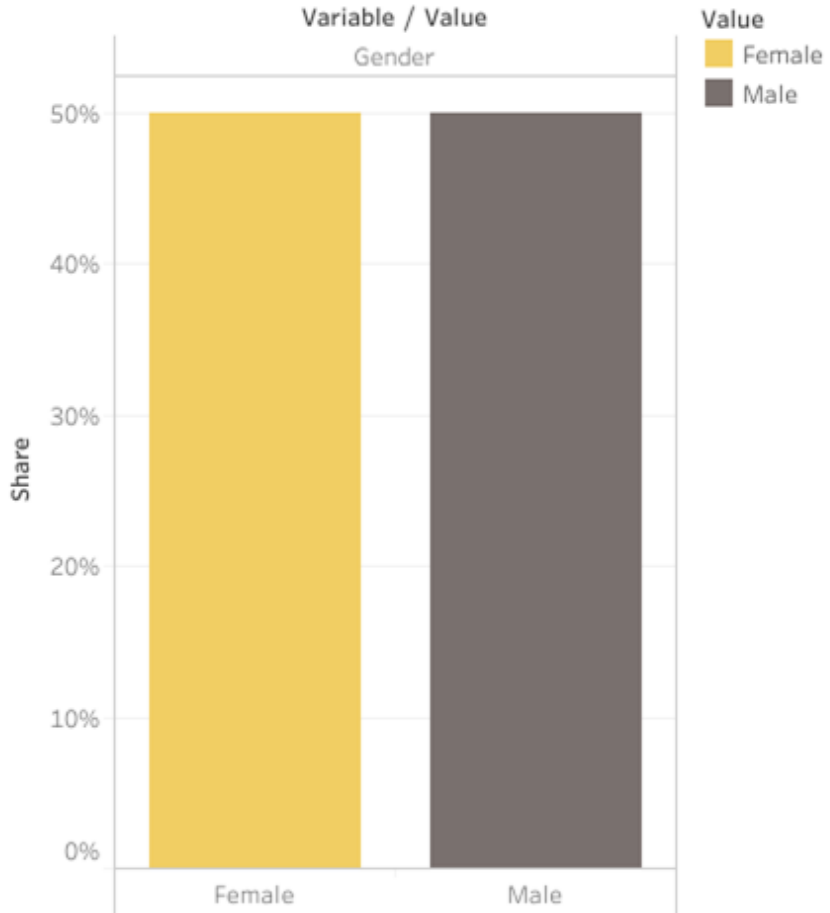
37.9 +/- 0.1

Median Age in Washington

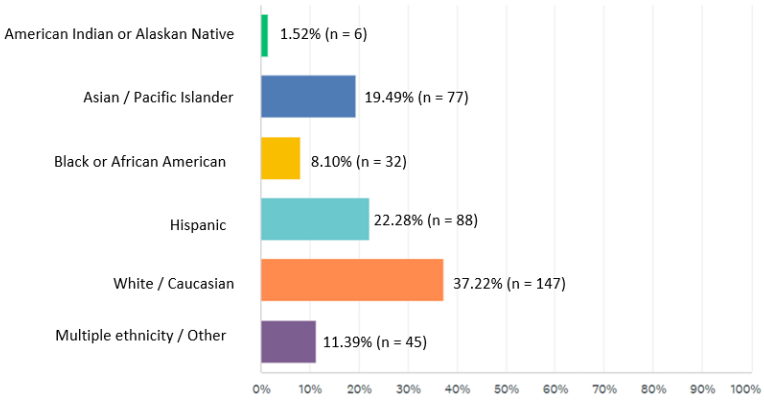
Survey Results: Gender



NewZoo: Gender



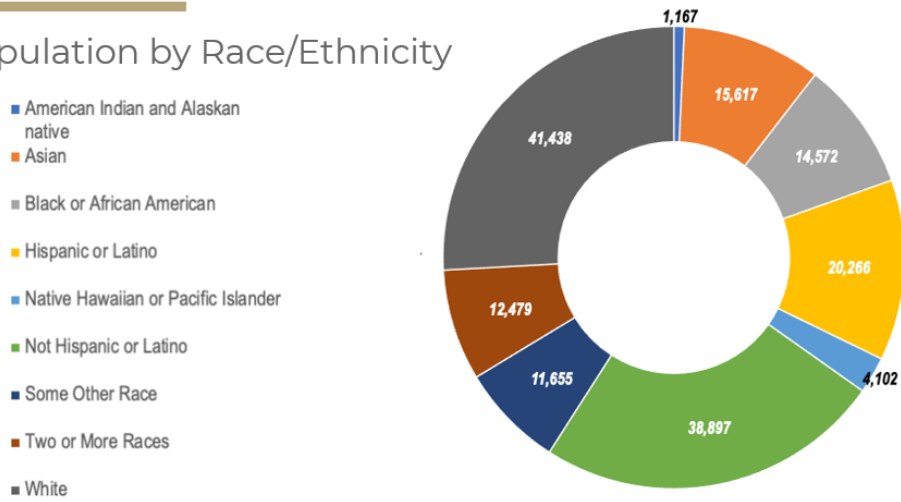
Survey Results: Race/Ethnicity



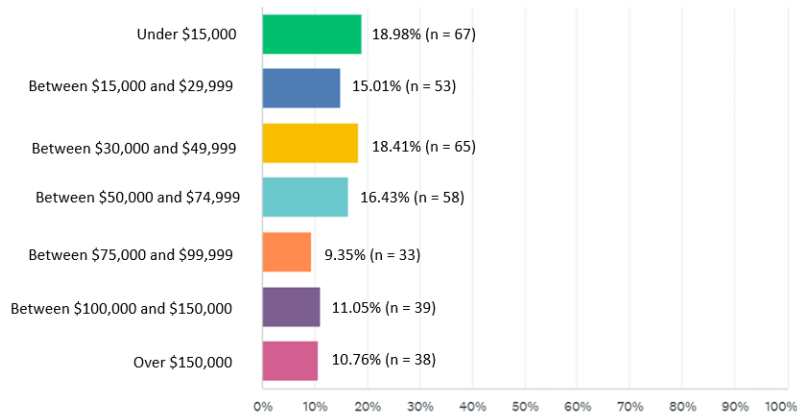
Census: Race/Ethnicity

CENSUS

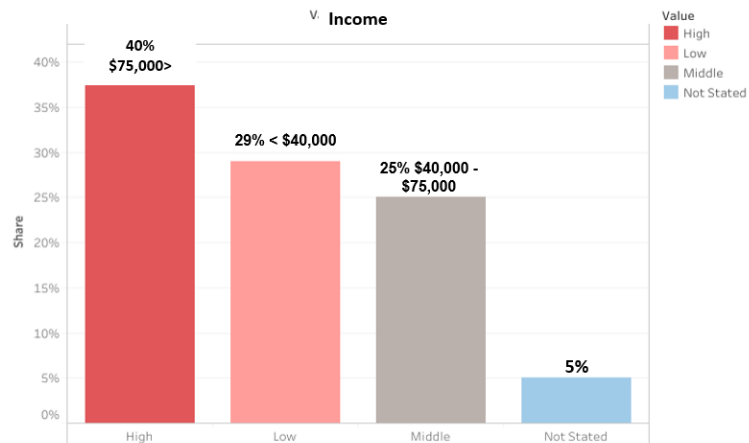
Population by Race/Ethnicity



Survey Results: Annual Household Income



New Zoo: Income



Census: Household and Income



Total Households
34,971

Income and Earnings

\$64,263 +/- \$8,024
Median Household Income in
Federal Way city, Washington

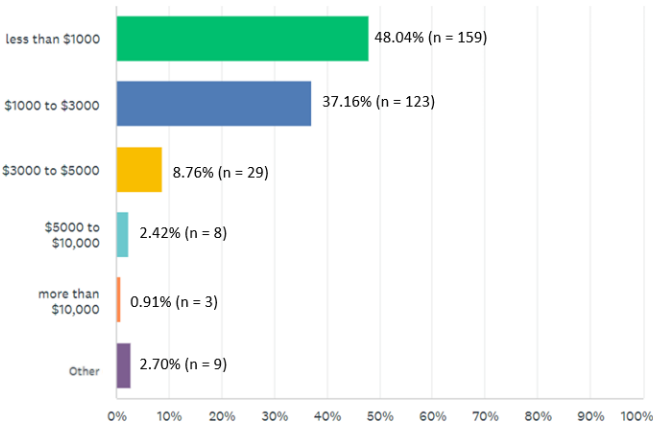
\$78,687 +/- \$923
Median Household Income in
Washington

Educational Attainment

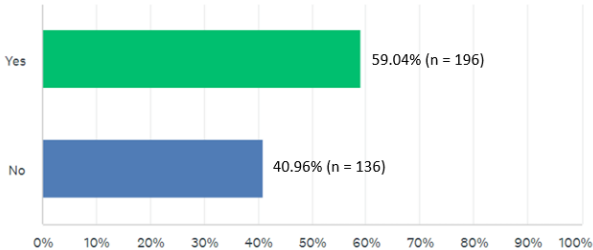
29.0% +/- 3.4%
Bachelor's Degree or Higher in
Federal Way city, Washington

37.0% +/- 0.3%
Bachelor's Degree or Higher in
Washington

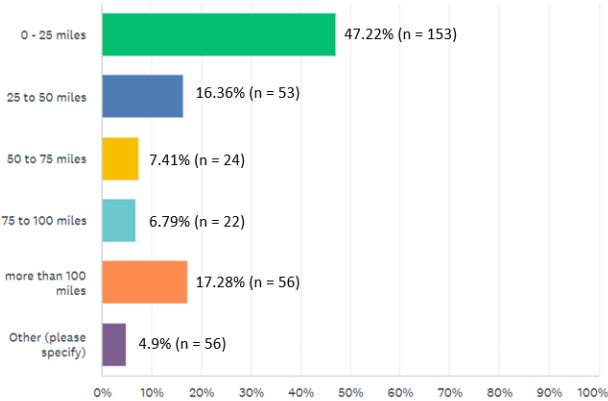
Survey Results: Spending on Personal Equipment



Survey Results: Would Attend E-Sports Event?



Survey Results: How Far Are You Willing to Travel?



Section 3: Local and Regional Esports Review

According to the 2019 census report, the city of Federal Way has a median household income of \$67,347. Of the total population, there are an estimated 67% in the labor force. Each event hosted at the facility would have to consider this income information to determine adequate ticket pricing. Also, it's important to note that it would be important to try and draw consumers from neighboring towns that have higher income and greater population. For example, Seattle has a population of 753,675 with a median household income of \$92,263 (Census, 2019).

The number of sellers in the facility aspect of E-Sports is very limited. Due to the onset of Covid and the amount of time and resources, it takes to build a facility. We looked at a total of eight facilities in the US and 3 of them; Fusion area, Arlington E-Sports Stadium, and the Hyperx E-Sports Arena were the main competitors. They had the biggest facilities and could host multiple different venues. But for smaller venues, such as The HUB at the University of Washington campus, they were forced to be closed until the Autumn 2021 quarter. Building capacity was reduced to support physical social distancing, disallowing full revenue potential (The Hub, 2021).

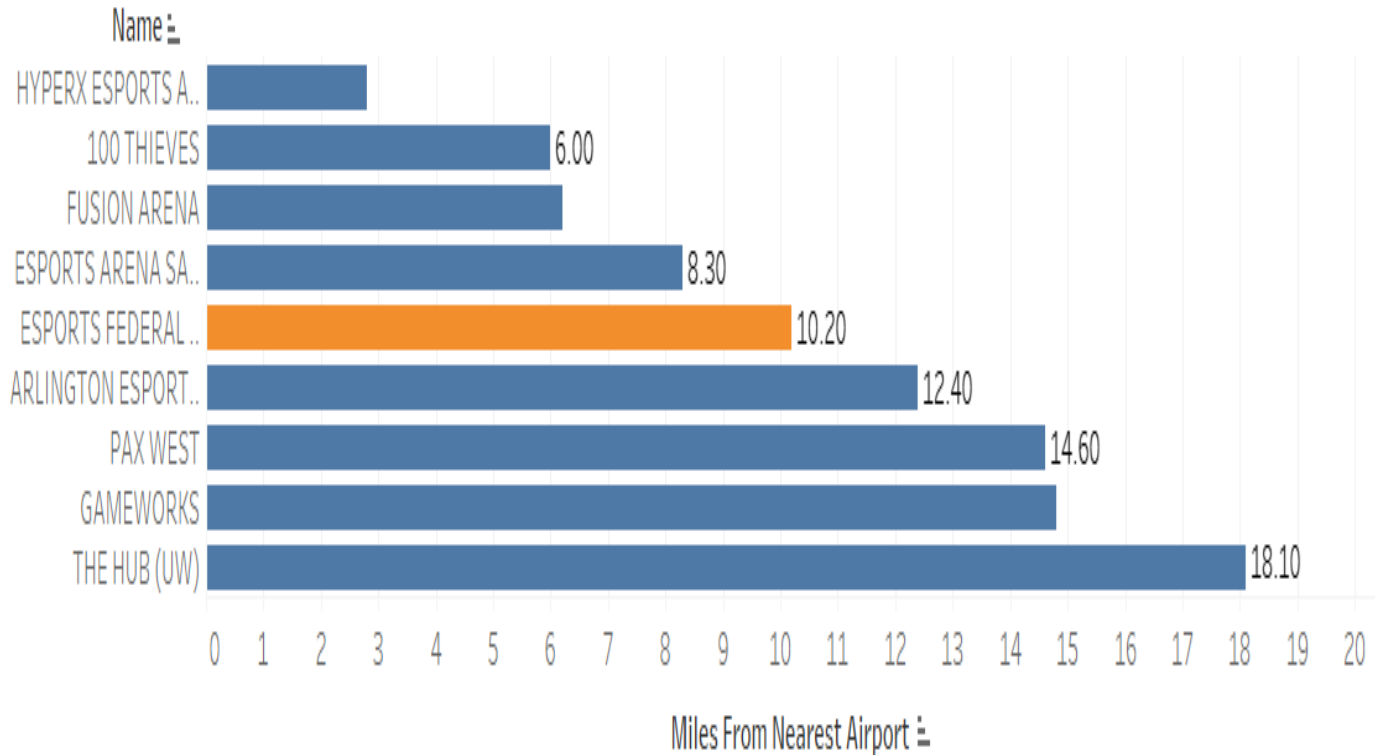
A quick search online yields multiple online gaming events. Federal Way would be competing with online gaming that may be at a lower price point. Federal Way must drive demand away from online gamers to come in-person to play at their facility. A change in pricing for online-gaming also has the potential to increase or decrease demand in Federal Way.

There is an e-Sports lounge in Seattle called "Gameworks" (GameWorks, 2020). This specific location offers reservations for parties, as well as gaming at the facility by the hour. Both categories are also offered at the Arlington, Texas arena. In other words, there is already competition in the more populated neighboring city, Seattle. While the venue would be to a larger scale in Federal Way, it is important to note that substitute venues exist facilitating potential demand issues for the city of Federal Way, Washington. As e-Sports continues to develop and expand in popularity, the city of Federal Way must be cognizant that additional substitute venues will develop and ultimately challenge the demand for e-Sports in Federal Way.

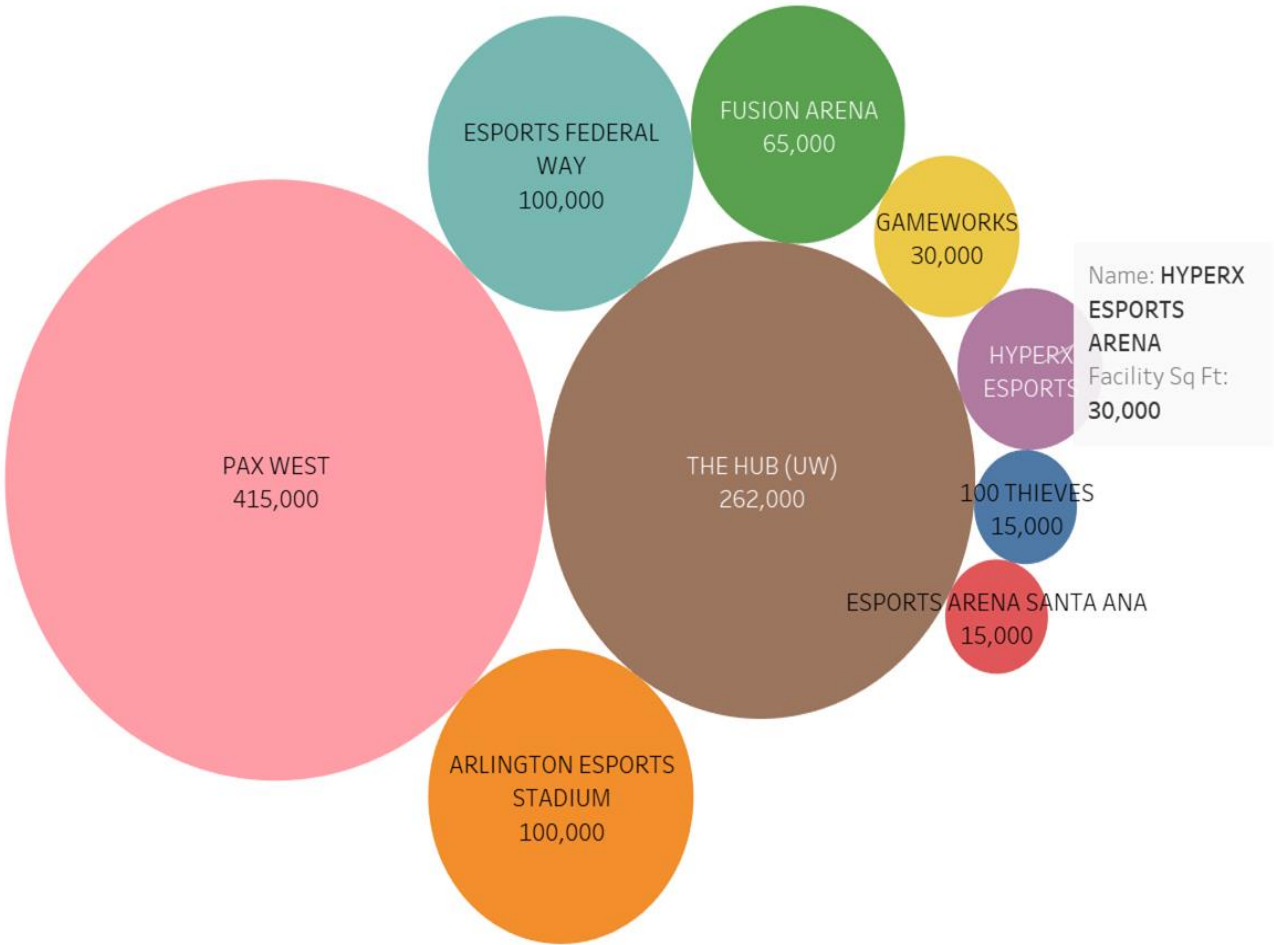
With the onset of Covid, the expectations for E-Sports arenas have dropped dramatically. E-Sports of Arlington laid off all but 2 employees. Live streaming would be an appropriate expectation as all the massive E-Sports facilities have some broadcasting capabilities. Food is a good expectation as in 2019, "the Seattle convention center grossed over 23 million just in food services" (Miller & Miller 2020). Towards the end of 2020, several E-Sports companies had decided to turn to crowd equity funding to increase capital for short and mid-term projects. (Seck, 2020)

The City of Tacoma approved the construction of a small E-Sports arena in the new Tacoma Town Center that is being built across from the University of Washington-Tacoma (NAAM, 1). The original management group included the small E-Sports arena in their proposal to supplement the office, retail, and living spaces that would also be built. North America Asset Management Group-LLC had to renege on their responsibility to complete the construction because of the Covid-19 pandemic and Galena Equity Partners took over the project (Tacoma, 1). Galena decided to cancel the E-Sports arena project in exchange for more office space, in part, because they felt they would not be able to remain profitable due to the high operating costs of an E-Sports arena. For Galena, there were too many unknowns, such as the cost of high-end E-Sports equipment, demand preferences for virtual and in-person experiences, and the uncertainty of being able to find a tenant/operator of the space. Fusion Arena in Philadelphia also paused its construction due to Covid 19. According to a new report by (add source)" the owner of the Overwatch League’s Philadelphia Fusion, still intends to develop a venue that will be used to host “concerts, E-Sports, and much more,” In the E-Sports industry, there are high capital costs when compared to other revenue streams. While it was an ideal location with many amenities nearby that would attract large crowds, the capital investment and uncertainty of the future of the E-Sports industry were too much when compared to their alternatives.

E-Sports Arenas distance from Nearest Airport



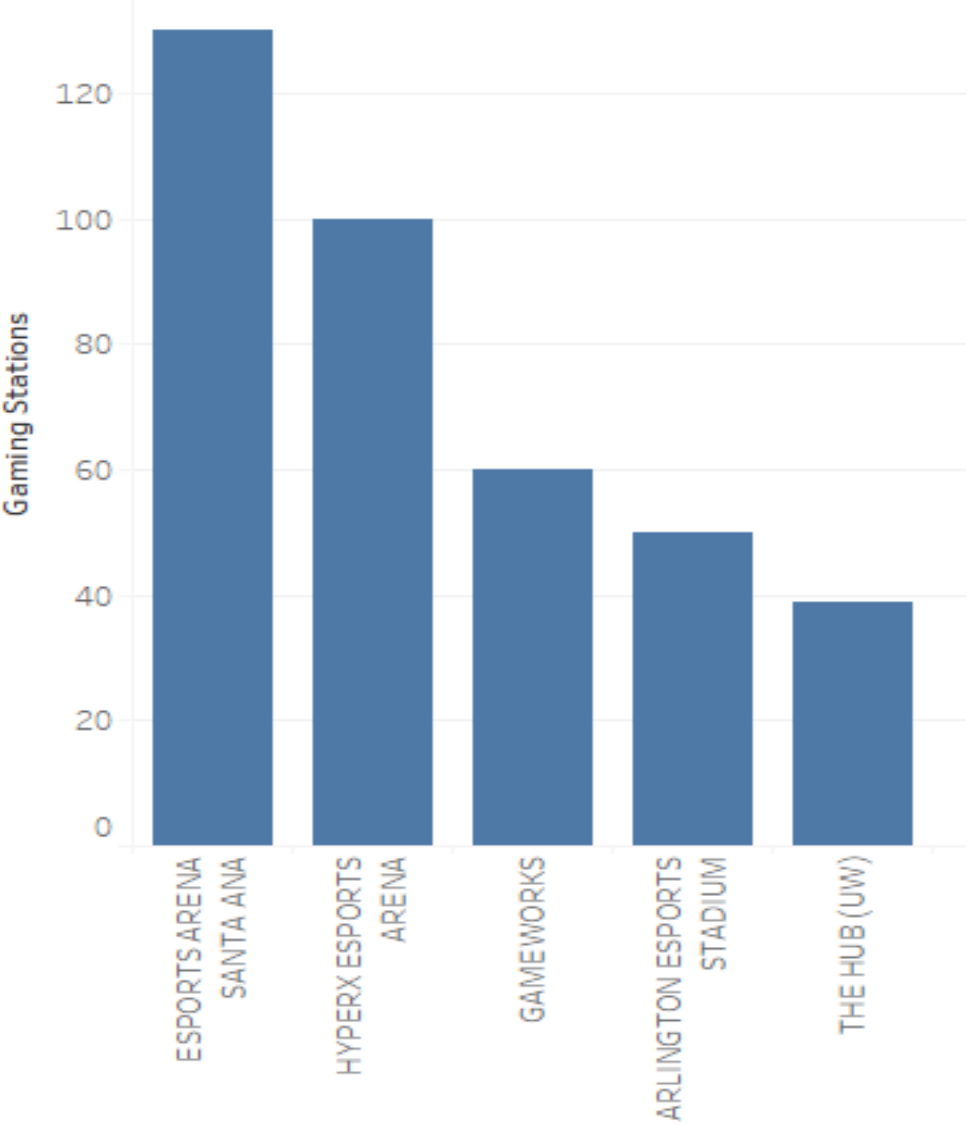
Facility Sizes



E-Sports Size

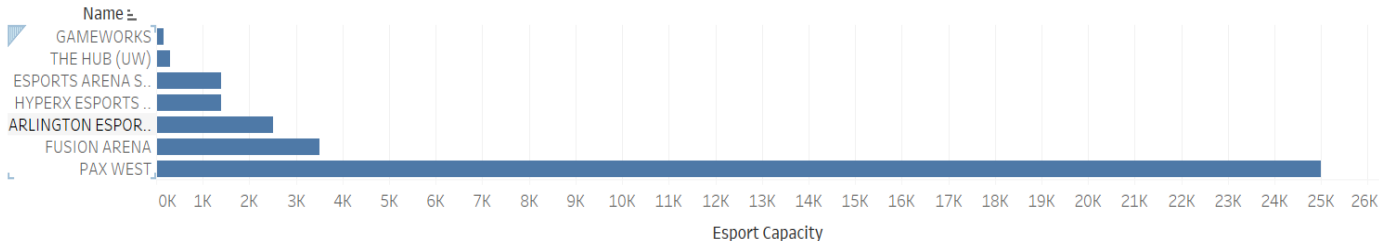


Number of Gaming Stations

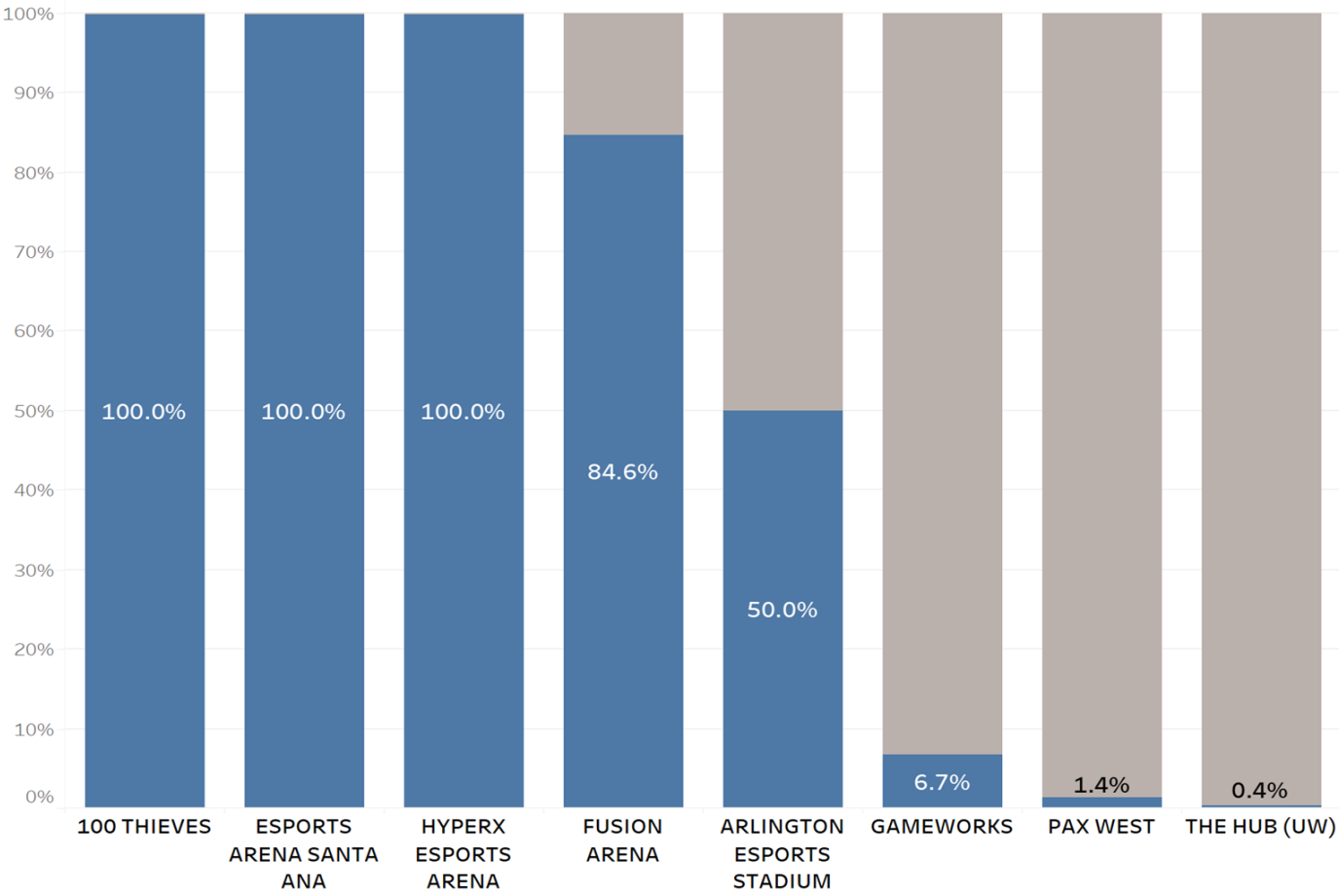


E-Sports Capacity

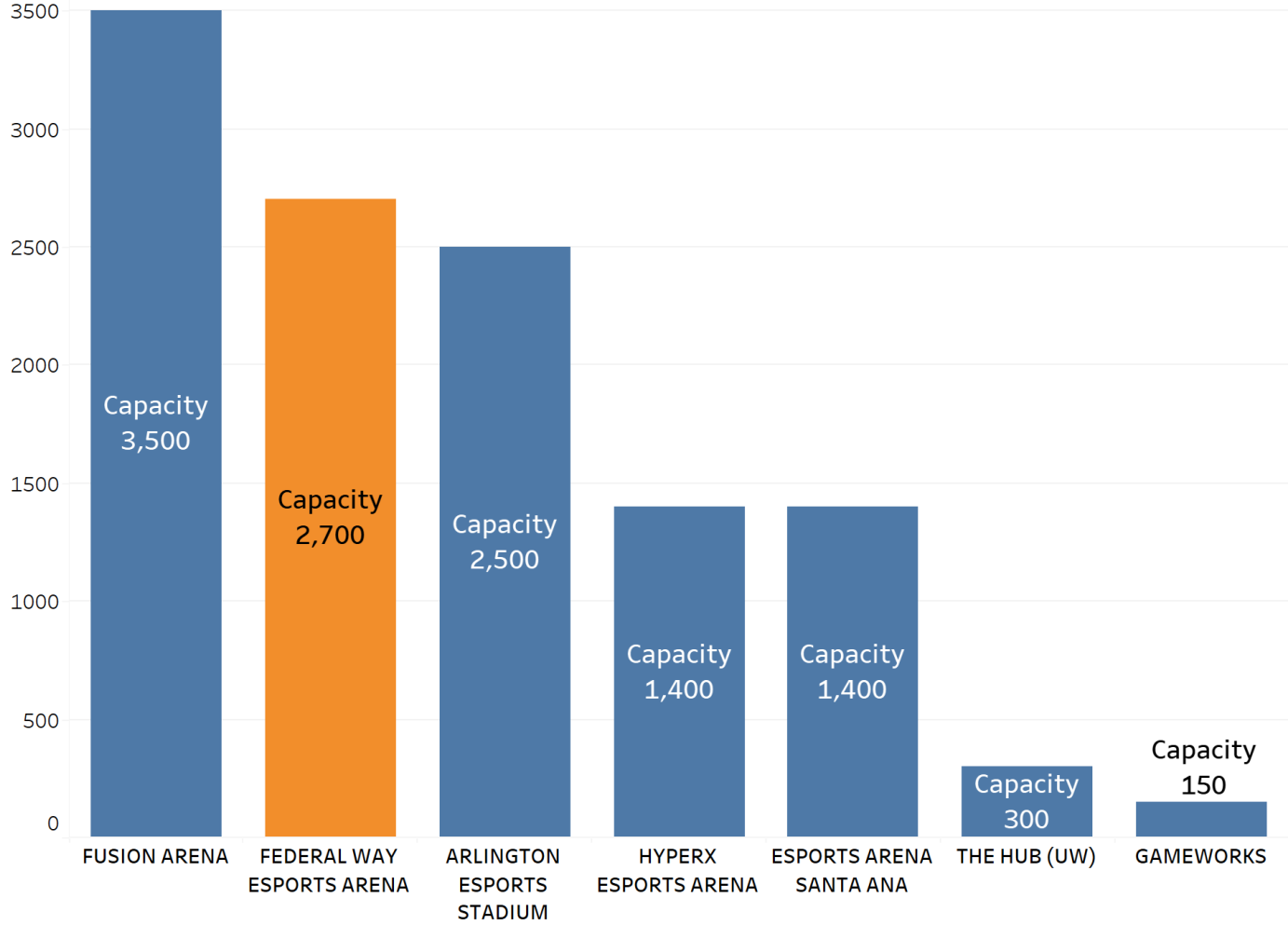
Esports Capacity



Percent of Facility Dedicated to E-Sports



Federal Way E-Sports capacity



Section 4: Competitive/Comparison e-Sports Facility Analysis

The Law of Supply states "...when there are many sellers of a good, an increase in price results in an increase in quantity supplied..." (Bergman, 2020). Esports is a new concept and new industry, currently the market supply for this good is low. There are not many facilities in the area offering the same service, so now is a great time to get into the e-Sports industry because the supply is so low. Frequency of events held in the Federal Way e-Sports center depends on ability to attract vendors and organizations, this will determine supply.

The number of sellers has an impact to determine pricing. An increase in supply changes the output of supply and its equilibrium. "...the greater the number of sellers of a particular good or service, the greater will be the quantity offered at any price per time period." (Bergman, 2020). The number of sellers is one of supply shifters that changes the quantity of goods or services supplied at each price. The local businesses near Federal Way that link to the e-Sports industry are Round One in Tukwila and Dave Buster's in Auburn. The business consists of food and drinks, games, events, and television sponsorships. As a similar industry, those two companies may open viewing events for e-Sports instead of in-person that may affect the pricing.

Online streaming will instigate the pricing that involves the number of sellers as well. Twitch, Discord, YouTube, and other streaming platforms allow gamers to live stream their gaming plays and e-Sports events (Esports.net News., 2021). The viewers must select streaming options if they want to watch specific e-Sports for certain events because some tournaments are partnered with the specific streaming platforms. The partnership between certain platforms will impact the sponsorships and services that relate to the number of sellers for the city of Federal Way, and it is also an opportunity to change the quantity available at each price.

Pricing of participating in e-Sports

With a population of approximately 100,000 citizens, Federal Way is disadvantaged compared to other e-Sports arenas such as the ones in Arlington, Texas. Arlington nearly has four times the population compared to Federal Way (Census, 2019). If Federal Way is to achieve comparable results to Arlington, attracting non-Federal Way citizens is imperative. The increase in prospective e-Sport event attendees is dependent on public transportation bringing people from neighboring cities. There are projects ongoing to build the light-link rail from other locations to Federal Way; this is something to watch as the construction of the light-link rail continues.

Local - Spokane Valley

\$10 entry fee

Online e-Sport events

Free

\$600 1st place prize

\$300 2nd place prize

\$100 3rd place prize

Major Prize Pool

Prize Pool for the PGL Major Stockholm- \$2,000,000

Most are only a few hundred to a few thousand dollars.

Facility Costs

One Time Costs for Space Renovation

Design Costs

Construction Costs

Permits

Ongoing Cost

Facility and Event Staff

Advertising

Equipment

Utilities

Insurance

Prize Pool

Insurance

Equipment

The final determinant of supply analyzed was the number of sellers. In this instance, it is the number of suppliers of e-Sports events. This can be hard to quantify because there are tournaments throughout the country, but local events held in small gaming lounges and cafes are happening weekly. In this case, since the FWPAC is looking at larger events, only events that are similar in scope were considered. With the three premier facilities in the area being Climate Pledge Arena, Benaroya Hall, and the Seattle Convention Center. These could be considered competitors for the FWPAC. However, these three facilities are much larger, so the scope of the events would be larger than what the FWPAC could accommodate. The FWPAC would not be

holding large championship events but regional and smaller events. There are not a lot of venues in the area currently holding events of this size, so we believe FWPAC is positioned to be one of the only venues holding mid-size events. If more venues pop up looking to capture this segment of the market, it will increase the number of sellers, resulting in more competition and an increase in the supply of events. This would shift the supply curve to the right. If the FWPAC establishes themselves as a quality supplier of e-Sports events, this would cause a decrease in other venues hosting events. Therefore, fewer suppliers mean less events, resulting in a shift in the supply curve to the left. Something that still needs to be considered is online tournaments.

Change in expectations of suppliers about the future price of a product or service may affect our current supply. The expectations of supply for what is in an E-Sports facility would be some obvious things such as gaming stations and a stage that showcases the event. According to The Hub at the University of Washington, there is a required infrastructure that needs to be in place to attract and support E-Sports gaming possibilities. Below is a *suggested* list of components needed to host competitive E-Sports tournaments.

<i>Component</i>	<i>Specifications</i>
<i>Processor</i>	<i>Intel Core i7-8700K coffee Lake 6-core 3.7 GHz (4.7 GHz Turbo) LGA 1151 (300 series) 95W BX80684178700K Desktop Processor Intel UHD Graphics 630</i>
<i>Video Card – NVIDIA</i>	<i>MSI GeForce RTX 2080 DirectX 12 RTX 2080 SEA HAWK X 8GB 256-Bit GDDR6 PCI Express 3.0 x16 HDCP Ready SLI Support Video Card</i>
<i>Liquid / Water Cooling</i>	<i>CORSAIR Hydro Series H100i PRO Low Noise 240mm RGB Water/Liquid CPU cooler. 240mm (CW-9060033-WW). Support: Intel 2066, AMD AM4, TR4</i>

Motherboard – Intel	<i>ASUS Prime Z370-P LGA 1151 (300 series) Intel Z370 HDMI SATA 6Gb/s USB 3.1 ATX Intel Motherboard</i>
Memory (Desktop Memory)	<i>CORSAIR Vengeance LPX 32GB (2 x 16GB) 288-Pin DDR4 SDRAM DDR4 2666 (PC4 21300 Me Kit Model CMK32GX4M2A2666C16</i>
Hard Drive	<i>Seagate Barracuda ST2000DM006 2T3 7200 RPM 64MB cache SATA 6.0Gb/s 3.5" Hard Drive Bare Drive</i>
Solid State Disk	<i>Corsair Force MP300 M.2 2280 960GB PCI-Express 3.0 x2</i>
Case Fan	<i>CORSAIR co-9050039-ww 120mm ML120, 120mm premium Magnetic Levitation PWM Fan (2-pack)</i>
Case (Computer Cases ATX Form)	<i>CORSAIR Obsidian 500D CC-9011116-WW Black Aluminum /Tempered Glass ATX Mid Tower Computer Case</i>
Power Supply	<i>CORSAIR CX750M V2 (2017 Edition) CP.9020154-NA 750W ATX12v v2.4 / EPS12v 2.92 80 PLUS BRONZE Certified Semi-Modular Active PFC Power Supply</i>
Software-Operating System	<i>Windows 10 Pro 64-bit – OEM</i>

(The Hub, 2021)

“As new firms enter, they add to the demand for the factors of production used by the industry. If the industry is a significant user of those factors, the increase in demand could push up the market price of factors of production for all firms in the industry” (Bergman, 2020). Being a multipurpose facility an increase in demand for participation

within the facility could drive entry price to be higher and induce entry. That will also increase the demand for workers within the e-Sports part of the facility, expo hall portion, and day care portion as well. Which will additionally result in increased wages driving up costs all around.

Section 5: Usage and Attendance Estimates

The e-Sports community is a younger crowd with a passion for gaming. With this information, Federal Way can utilize the 110,000 square foot facility to offer expos aligned with interest of the gaming community. For example, in Arlington, Texas, there was an anime expedition (Esports Stadium, 2021). The expedition may attract people attending to go experience the gaming side of the Arlington arena and purchase gaming time. Federal Way can exploit a similar strategy. Whether it be laser tag, paintball, anime or a similar expo, Federal Way can bring in more customers for potential gaming services. The pricing of these expos will also play a factor. If the expo price is lowered, the demand for the gaming will in theory increase. Federal Way should conduct an analysis of pricing for optimal demand and utility in this regard.

Identifying the utility for these substitutes as compared to the utility for gaming at the arena will drive further decisions. There is an optimal number of times consumers have a demand to be present at the e-Sports facility. After a certain amount of time, the marginal utility decreases.

Identifying the length of time consumers optimally spend at the gaming facility will help establish pricing and establish benchmarks for hotel and parking demands. We recommend surveying the local populace to better understand the utility and marginal utility for in-person e-games and other substitutes.

Therefore, the median household income, as well as other indicators such as cost of living, must be considered when setting the prices for daily/weekly passes, VR facilities, events, and monthly memberships. The table below shows us these charges in different cities where an E-Sports arena already exists, and this data could prove to be helpful in determining the prices of the activities that the new facility is planning to offer (Census, 2021). It is also important to keep in mind that the consumer price index (market basket) across different regions will result in various degrees of buying power when considering the household incomes below.

Facilities	City Household Income	Events and cost
E-Sports Stadium Arlington, TX	\$60,571 (Arlington, TX)	Day passes: \$19.99 / day Weekly Play Pass \$79.99 Virtual Reality - \$24.99 / Hour
HyperX E-Sports Arena Las Vegas	\$56,354 (Las Vegas, NV)	\$20 per event
E-Sports Arena Santa Ana, CA	\$66,145 (Santa Ana, CA)	\$10 monthly \$5 per game
GameWorks Seattle	\$92,263 (Seattle, WA)	1 - hour = \$8 4 - hours = \$18 All Day Pass = \$25
Hub Game	\$92,263 (Seattle, WA)	E-sports 1 - hour = \$3.5 - \$6 10 - hour = \$30 - \$40 Virtual Reality 1 - hour = \$10 - \$18

As we all know, one must have an income to even sustain such a massive event. Most E-Sports locations have other streams of income to help manifest and maintain an event at this scope. For example, The Hub, at the University of

Washington, sponsors E-Sports tournaments. The Hub is largely sponsored by the Student Union (The Hub, 2021). According to the article 'E-Sports Market Revenue Worldwide 2019- 2024' by Statista, in 2021 the global market for E-Sports was valued to have increased by almost 50% to over 1.08 billion US dollars. Statista also hypothesized that by 2024 revenue should grow to 1.62 billion US dollars (Statista, 2021).

The Law of Demand states "...for virtually all goods and services, a higher price leads to a reduction in quantity demanded and a lower price led to an increase in quantity demanded" (Bergman, 2020). Events in the expo hall should not be in competition with e-Sports but should be complementary. Animeconventions, gaming accessory trade fairs, and gaming industry fairs are all ideas of complementary events. Demand relies heavily on the demographics of the e-Sports fan base, location, and price charged for each event. In a survey by the e-Sports Entry Advisory (2020) it was found that some of the biggest concerns of e-Sports fans preventing them from attending e-Sports events are distance, transportation, and cost. This survey also found the majority, 68.4%, of e-Sports fans would prefer to spend \$60 or less on a ticket to an e-Sports event.

A change in the shift of demand interest in the new e-Sports facility in the City of Federal Way will be influenced by consumer expectations of the satisfaction the e-Sports, exhibition events and experiences will provide. Consumer expectations are also affected by factors such as revenue opportunity that can be made by entering gaming competitions; excitement and attraction to Federal Way's new revitalized downtown city core that includes a Performing Arts Center, the Town Square Park, a future e-Sports competition and training facility, and exhibition hall hosting a variety of different entertainment events for the community; fear of economic uncertainty and low consumer confidence due to the coronavirus pandemic; price elasticity due to consumer's income and demographics, and consumer surplus opportunities, among others.

Thus, to initially attract a large crowd to the e-Sports facility, it is necessary to study the consumer costs associated with the gaming service and accommodations for a similar event to have a better idea of what a reasonable consumer cost would be to be competitive with other e-Sports venues in the Seattle area, Washington and around the world. For example, marketing a future e-Sports event and the new facility in the City of Federal Way, and offering a discount to admission prices at the opening of the facility would help study the demand and gains from this venue. Which would result in understanding what it would take to achieve market equilibrium, where there is a balance between quantity supplied and demanded, while providing the highest possible utility gain to the e-Sports enthusiast community. By measuring the difference between the consumer's desire or maximum value they are willing to pay,

travel to destination and experience the e-Sports event; and the price of the actual event, transportation and lodging package, the ideal consumer surplus would entice an increase in demand.

In a survey by the e-Sports Entry Advisory (2020), the following barriers impact the majority of consumer e-Sports fans interest in attending an e-gaming event:

- Lack of interest due to affordability of costs associated with transportation travel to e-Sports destinations and accommodations for outside players or spectators, make up about 38.3% of the survey respondents.
- The distance consumer fans are willing to travel to an e-Sports event is between 30 minutes to an hour.
- The likelihood of paying to stay in a hotel room for an e-Sports event is about 26% plus a 28.6% “maybe” likelihood.

The rise of E-Sports has led to many audiences with a specific preference on how they want to view E-Sports. The main preference is Live Streaming. In “2016 alone, League of Legends World Championships attracted 21,000 live spectators, was broadcast by over 23 entities in 18 languages and garnered 47.7 million unique viewers with a peak concurrent viewership of 14.7 million people ” (Jenny et al, 2018). From this study, we can see that Live streaming outperforms live viewership out of the water when it comes to people’s preferences on how they would like to watch gaming. This means that the facility in Federal way should incorporate a similar business model Broadcasting service to appeal to those viewers.

“The market for online games is growing at a healthy pace owing to factors such as growing adoption of advanced gaming technologies, changing entertainment preferences among consumers, rising income levels, and growing demand for mobile gaming. The increasing smartphone penetration and better internet connectivity have led to rising in the number of gamers at a rapid pace” (*E-Sports market 2018*).

Based upon our research, we have found that facilities offer a variety of membership options to offset the prices. Arlington had a yearly membership pass as well as a monthly pass. If no membership was offered, then a single day fee had to be paid. To attract more customers, we could have certain events targeting people. A few ideas include Ladies Night, Senior Citizens discounts, military discounts, birthday events, and 21+ events. This could cause an increase in demand and increase the popularity of E-Sports events. All these different types of events can increase the pool of customers, which in return, would generate more revenue.

Demand Demographic characteristics

Female	
Age	Population
16-20 years	4% (0.5M)
21-35 years	17% (2.1M)

35-50 years	10% (1.2M)
Male	
16-20 years	7% (0.9M)
21-35 years	43% (5.4M)
35-50 years	19% (2.4M)

Source (*E-Sports market 2018*)

Event/attendance levels and the demand curve - Events which are not e-Sports related will vary in attendance level by capacity requirements, consumer preference, and prices. If similar events are being held in neighboring cities, then price per ticket will determine if the demand curve would shift to the left or right. The city of Federal Way would want to ensure that the events listed are preferred by consumers to ensure there's enough demand to conduct such events. For example, if there is minimal interest in a rodeo inspired event, then it wouldn't be beneficial to hold such an event. There would be no demand that would justify the cost.

Transportation availability - Each event would need to consider demographics. According to Bergman (2020), the number of buyers affects the total quantity of a good or service that will be bought. Besides a total number of potential buyers, the city of Federal Way would want to consider the ages of potential buyers in relation to proximity. It may be easier for younger people to travel greater distances to attend an e-Sports event versus older attendees of other events. For example, if an RV/Camping event is held at the location, Federal Way may only have local consumers to draw from. This can limit the potential attendees and limit potential revenue compared to events that attract buyers from age groups that are willing to travel further.

The "average gamer is 35 years old with 41 percent of them being female" (Jenny et al, 2018). The facilities need to use the space they have and aim at an older audience while at the same time catering towards the young. Competitive gaming through E-Sports will need to continue to integrate into popular culture, global investors, media outlets, and E-Sports influencers to keep consumers interested and engaged.

Also, it is necessary to consider the online future of E-Sports when we are talking about E-Sports supply in general.

“In response to the difficulties caused by the pandemic, the E-Sports industry, which has continued to develop rapidly since 2011, saw a variety of changes made to maintain its growth. Ranging from switching tournament formats to redesigning whole circuit systems, many of the adjustments are still in effect” (Hyrliková, 2021).

The main factor of production for a facility is going to be the capital investments of the facility. These include creating the spaces to be used for spectators, teams, and production. This also includes purchasing the gaming consoles, screens for viewing, and the production equipment for live streaming E-Sports events. According to Finance Processes’ article “E-Sports: A Guide to Competitive Video Gaming, the largest driver for revenue is 38% sponsorship. Sponsorship is expected to grow to \$655 million in 2020. (Chapman. J 2017). Another factor of supply is labor. Labor will be needed for the construction of the facility and for many positions in the operation of the facility. These could include a building manager, event coordinator, and maintenance positions.

The expectations of the City of Federal Way as the owner of the future e-Sports facility, exhibition hall, boutique hotel and parking structure in the revitalized city core, will be impacted by the demand of interested consumers and vendors in the e-Sports and exhibition facility. Because e-Sports is still a new industry, its demand and supply have not yet reached their full capacity, thus shifting the supply curve to the left, making it harder for the city and e-Sports vendors to initially attract and sustain demand in the short run. However, this also allows the city of Federal Way, e-Sports suppliers and vendors the opportunity to lead the market due to limited availability of competitors and saturation, thus creating a high potential for profits.

The city’s efforts to create a revitalized central tech and entertainment hub with the addition of the new Performing Arts Center, a future light rail station and a branch campus for the University of Washington will all influence a shift in demand and supply to create revenue and investment opportunities for Federal Way to become a premier and tech hub city. This will in turn attract tech enthusiasts, higher income consumers, businesses, and corporations to move to Federal Way, thus increasing employment, education, technological innovations, cultural and performance entertainment opportunities for the community and the city’s long term economic sustainability.

Federal Way’s utility goal is to provide e-Sports services and accommodations at a market price that is higher than the minimum price they are willing to sell for, however price elasticity of consumers, consumer confidence and surpluses also need to be taken into consideration in its efforts to increase demand.

According to Markets and Markets (retrieved November 2021), “the increasing popularity of video games is expected to drive the e-Sports market. The market for online games is growing at a healthy pace owing to factors such as growing adoption of advanced gaming technologies, changing entertainment preferences among consumers, rising income levels, and growing demand for mobile gaming. The increasing smartphone penetration and better internet connectivity have led to rise in the number of gamers at a rapid pace” (para. 2). However, due to limitations from the novel coronavirus, among other factors such as consumer costs, in-person spectator e-Sports ticket sales have accounted for a small percentage of the overall revenue of e-Sports venues, as online platforms such as YouTube and Twitch provide free access for spectators to watch. Thus, strategic marketing and incentive strategies will need to be further investigated to shift the demand of free online gaming services to in-person. For example, by providing a state-of-the-art facility and technology to enhance spectator watching experience of e-Sports competitions will encourage gaming enthusiasts and increase their price elasticity to shift the supply curve to the right.

Alternative uses

“The opportunity cost of any choice is the value of the best alternative forgone in making it” (Bergman, 2020). Choosing to use the space as an e-Sports facility, expo hall and day care changes the ability for the space to be used as something else, therefore, different opportunities are lost. By using the space in this way, the city will lose the possibility of using the space for other purposes, or even if it was to be used solely for e-Sports, expo hall, or daycare. The space also loses capacity when breaking up the available square footage this way and loses potential profit associated with this decision.

Other Space Use Options

The alternative uses for the facility, instead of using it for e-Sports events, represent the opportunity costs of this project. The alternative uses range from utilizing the facility for a daycare, skating rink, bowling alley, leasing to other businesses, and many other options listed above. The main factor that would impact the opportunity cost is if the city can make more profit from alternative uses and satisfy the needs/wants of the city in a better way. For instance, if turning the facility into a daycare brings in more money for the city and satisfies more of the residents of the city's needs, they should opt to turn it into a daycare over an e-Sports facility. However, another option to be considered is to have the facility serve multiple purposes, such as a daycare center on weekdays and an e-Sports facility on the weekend. The optimal solution is one where the facility provides the most utility to the local community and maximizes profits for the city. If after thorough analysis it is found that utilizing the FWPAC as an e-Sports venue will be the most beneficial and profitable use of the facility, then Federal Way should move forward with this plan. If it is determined that an e-Sports facility is

the optimal solution and that is what the city moves forward with then this will increase the supply of e-Sports events. However, if it is determined that another use for the facility is optimal then the supply of e-Sports events will go to zero.

- The City of Federal Way could consider a wide range of options in terms of alternative uses of the space.
 - Roller Arena (skating and roller derby)
 - Bowling Alley
 - Electric Indoor Karting
 - Comedy Club
 - Sublet to Food Franchise's for a minority-owned business food court
 - Lease the entire space to Dave and Busters
 - Utilize for an emergency management satellite center
- Alternative uses of the funding designated for e-Sports could be:
 - Design and Implement a PR campaign designed to improve the reputation of the city
 - Hire and train additional law enforcement personnel to combat crime and increase community policing efforts
 - Enact and enforce stricter ordinances regarding vagrancy/panhandling/homeless camps
 - Prosecute Offenders
 - Purchase Additional Real Estate for future development
 - Establish a redevelopment plan similar to the GasLamp District in San Diego
 - Build an entertainment venue for movies, shows and e-Sports combined

The opportunity cost is very dependent on the revenue vs expense. In the case of the E-Sports arena in Arlington which charged \$250,000 per year. The tenant would at least need to make that much just to cover rent. This does not include the salaries of employees or utilities. "In 2019, the Seattle Expo alone; utilities were \$3,272,140 and salaries were \$9,168,321. The total expenses of the facility were \$130,526,550 while the revenue was \$160,176,840" (Miller & Miller 2020).

The Size of E-Sports facilities is something to look at for opportunity of cost. Most of the facilities are not just dedicated to E-Sports, but to other venues as well. The "E-Sports venue in Arlington is 100,000 square feet" (E-Sports Stadium, 2021), but about half of that is the convention center. The fusion arena in Pennsylvania is 65,000

square feet, yet 35,000 is dedicated to E-Sports. If some part of the facility is dedicated to something other than E-Sports, then it allows the owner of the facility to bring in more revenue and have variety.

Although an e-Sports facility would enhance the Federal Way community by offering a unique opportunity to gamers within the Pacific Northwest, there are other opportunities of converting the Federal Way exhibit hall. The Federal Way exhibit hall is estimated to host between 1,500-3,000 individuals - allowing for hosting mid to large scale events.

Company-Organization lead events such as job fairs, conventions, meetings, and conferences could provide great value to the community. Job fairs arranged by colleges or recruiting companies can average in attendance from 500-1,500 individuals and can last multiple days or full weekends. This is an alternative use for the space that Federal Way can consider as an alternative to e-sporting events/in addition to an e-sporting venue.

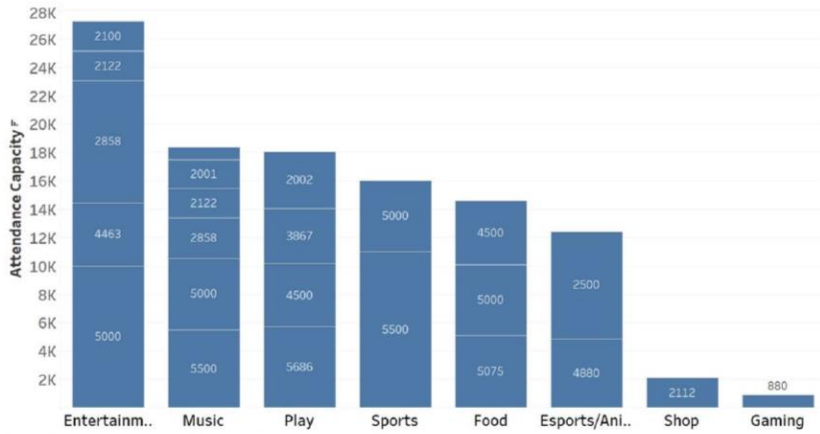
Entertainment events such as seasonal events, farmers markets, food courts, and small concerts could be a driving force to the city of Federal Way. Seasonal events such as indoor holiday lights, haunted houses, kids' activities, and farmers markets can generate great profits as these events can last weeks or even months and are popular among families across the Pacific Northwest.

Additionally, special events such as weddings, birthday parties, and other celebrations could be hosted at the exhibit hall. Although these events typically host anywhere from 50-500 people, it would still be a great alternative to the event halls that are currently offered in Federal Way because there are a limited number. This is especially a popular option for the spring/summer, namely weekends, as this is typically when weddings are scheduled and when tourism to the Federal Way area is dominated by *Wild Waves* and consumers are more likely to partake in outdoor activities rather than indoor.

Last, during smaller scale events when the parking is not fully occupied, or when there are no events being hosted by the venue, the parking lot could be partially used for a Park and Ride service.

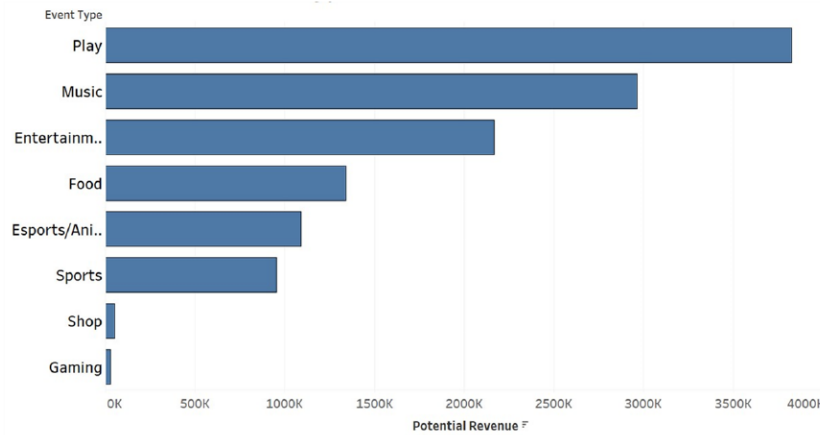
Based upon the research, it would be wise to have the Federal Way facility as something more than an E-Sports facility. Ticket sales should be relatively inexpensive and live streaming needs to be prevalent in the facility. The facility needs to be aimed at young adults as it was found they were the main audience of E-Sports. The facility should provide state-of-the-art gaming equipment to meet the consumers' expectations. In order to be cost-effective, an E-Sports facility needs to be versatile and provide other activities to generate revenue.

Event Type and Attendance Capacity



Sum of Attendance Capacity for each Event Type. The marks are labeled by Attendance Capacity.

Event Type and Potential Revenue



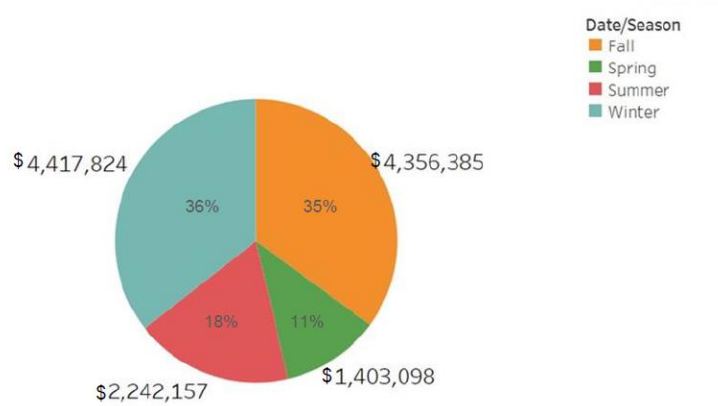
Sum of Potential Revenue for each Event Type.

Location of Event Center by State and Median Household Income

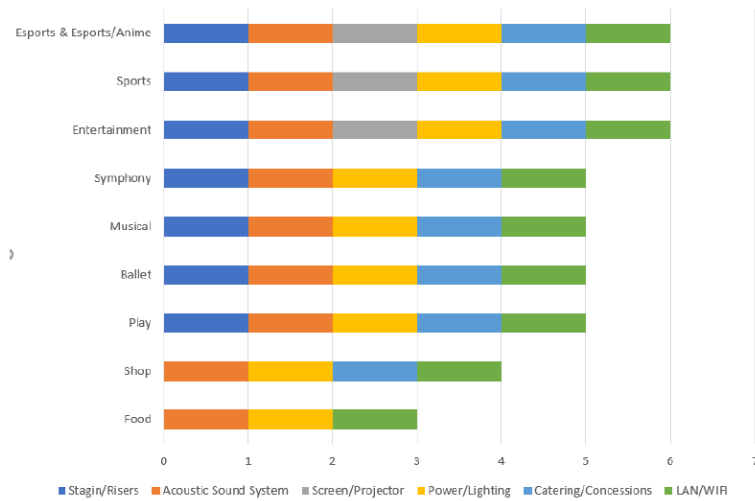


Median Household Income as an attribute for each City broken down by Event Center and State. The marks are labeled by Median Household Income as an attribute.

Potential Revenue by Season



Facility Functional Requirements by Event Type



Existing Nearby Hotels & Distance from Proposed Esports Venue

Existing Hotel Chains in Federal Way	# of Rooms	Total Square Feet	Miles from Esports Venue
Courtyard by Marriot	165	98,529	0.5
Best Western Plus	165	95,183	0.7
Hampton Inn & Suites	142	86,999	0.6
La Quinta Inn & Suites	115	65,629	0.4
Comfort Inn	117	55,147	0.5
Extened Stay America	101	43,620	2
Total	805	445,107	

Existing Parking & Distance from Esports / Exhibition Venue

Available Parking within Downtown Federal Way	Parking Spots	Public Transit Score from parking to Esports Venue	Walk Score from Parking to Esports Venue	Distance from Proposed Esports Venue Location	Free/Pay/Customers Only	Location Address
The Commons at Federal Way	3400	48	68	0.7 miles	Customers Only	1928 S Commons Federal Way, WA 98003
Pavilions II Shopping Center	1000	48	84	0.6 miles	Customers Only	31001 Pacific Hwy Federal Way, WA 98003
Federal Way/S 320th St Park & Ride	877	49	66	0.6 miles	Free	32320 23rd Ave S Federal Way, WA 98003
Federal Way Performing Arts Center	171	50	87	0.2 miles	Customers Only	31510 Pete von Reichbauer Way S, Federal Way, WA 98003
Federal Way Transit Center Park & Ride	1190	50	82	0.3 miles	Customers Only	31621 23rd Ave S Federal Way, WA 98003
South Federal Way Park & Ride	515	26	47	2.9 miles	Free	901 S 348th St Federal Way, WA 98003
Sunset Square	450	47	81	1.1 miles	Customers Only	1207 S 320th St Federal Way, WA 98003
Redondo Heights Park & Ride	697	40	58	3 miles	Free	27454 Pacific Hwy S Federal Way, WA 98003
Twin Lakes Shopping Center	510	34	72	4.1 miles	Customers Only	2109 SW 330th St Federal Way, WA 98023
Courtyard Seattle Federal Way	162	50	70	0.5 miles	Pay, \$8	31910 Gateway Center Blvd South Federal Way, WA 98003
Total # of parking spots available	8,972					

- **Walk Score**

Score	Description
90-100	Walker's Paradise Daily errands do not require a car.
70-89	Very Walkable Most errands can be accomplished on foot.
50-69	Somewhat Walkable Some errands can be accomplished on foot.
25-49	Car-Dependent Most errands require a car.
0-24	Car-Dependent Almost all errands require a car.

- **Public Transit Score**

Score	Description
90-100	Rider's Paradise World-class public transportation.
70-89	Excellent Transit Transit is convenient for most trips.
50-69	Good Transit Many nearby public transportation options.
25-49	Some Transit A few nearby public transportation options.
0-24	Minimal Transit It is possible to get on a bus.

Linear Regression Analysis: Predicting Revenue

Key Data: Results: $F(10,20) = 7.84$, $p < .001$, $R^2 = 0.80$

Variable	VIF	Coefficients
Intercept		-10406962.58
Ease Access to Public Transportation	1.72	10004.25
Facility Sq Ft (Log)	1.96	-102968.83
Origin of Attendees	1.59	-556901.37
Length of Time (Days)	1.84	63190.13
Date Season	5.47	
Date Season Winter		759011.43
Dseason Summer		569465.37
Season Spring		769465.6
Season All Seasons		676606.33
Median Household Income	1.44	25.66
Attendance Capacity (Log)	2.3	1257571.02

Conclusion

Strengths:

Federal Way's Community Performing Arts and Events Center is a modern, stylistic, and large venue that has the visual appeal and functionality to host an event accommodating a larger audience. Because the space intended for use is newly built and upgraded to current standards, very little modifications will need to be made to alter the physical space.

Its proximity to nearby highly populated cities and its accessibility to freeways and public transit (light rail, bus routes) makes it accessible to potential event attendees.

Weaknesses:

Due to the lack of involvement in semi-professional/professional gaming leagues within the area (Washington State, Pierce & King County) there will be difficulties in establishing intrigue in events as those who spectate e-sporting events are accustomed to high-performance teams that they can view virtually with minimal funding. This convenience and quality are aspects that must be considered when establishing this exhibition space. While there is indisputable appeal to an "in-person" event, to ensure continued engagement and interest in this venue there is first a requirement to establish a high-performing team that can capture audiences and secure a "fan-base." Placing an emphasis on marketing, primarily on the digital format (social media) will be key in establishing demand. Without a proper established team or local league, it would be difficult to host recurring events that would garner the community engagement necessary to off-set the costs of initial physical capital procurement.

The scarcity in e-sporting participants in the local area is the primary concern that must be initially addressed. While the demand of e-Sports does not seem to be on the decline in the local community, this is a possible short-term intrigue that may degrade without the establishment of a solid league. Rather than attend an event, given generational consumer trends, it's expected that interest in future attendance or concurrent attendance will suffer amongst those in the e-Sports community.

Opportunities:

Due to the relatively low competition in the area (notable competition being the GameWorks E-sporting Lounge), there is room to establish Federal Way as a hub for large scale e-sporting events. Searches in the local area for e-sports related events in the recent past and near future deliver few results. Local e-Sports communities currently do not have permanent established venues that can house a large number of spectators with the closure of Northwest e-Sports location during COVID-19. This indicates that a greater market share can be secured at this current time with minimal resistance.

Talent acquisition, as emphasized before, will be amongst the first steps necessary to assembling an audience. By leveraging social media and previously established relationships with local businesses for sponsorship opportunities it will be possible to increase community interest in participating in e-sports and attracting a stable viewer base.

As modeled by school districts in other states, creating a local culture within school structures to incentivize students to participate in e-Sports through scholarships and clubs would increase local demand in e-sports. As more districts begin to adopt e-sporting as a legitimized extracurricular activity, this will drive popularity and competition in this sector thus increasing potential sponsors' interest and event offerings. Given that Washington state, more specifically the Greater Seattle Area and territories up North feature over 80 game development and tech-related companies there is a greater immediate pool of sponsorship potential (solely based on locality). (Wingfield, 2019)

Given Federal Way's close proximity to highly populated areas within the state (Seattle (737,015), Tacoma (219,346), Renton (106,785)) there is a sizable pool of potential attendees and talent to pull from. (Washington Outline, 2021)

Threats:

While there are a host of risks associated with leading a (locally) unestablished industry, there is also a significant risk of missing out on the opportunity to distinguish Federal Way as a prominent destination/figure in the industry for large-scale, in-person e-sporting exhibitions.

Given Seattle's tourist popularity, iconicism, its ingrained universal association with all things tech-related and its far reaching network, it would be relatively less difficult for Seattle to spear-head the development of the industry. An opportunity that research would suggest, is an area in which Seattle has not fully capitalized on in recent years. With exception to their GameWorks e-Sports Lounge that hosts regular e-Sports competitions for visitors of the location, Seattle does not have a substantial location for tournaments expecting larger crowds.

Given the underwhelming introduction of Seattle's e-sporting team Seattle Surge and the current state of dormancy of any (publicly shared) future plans to replenish their team's roster, it's possible that there is still an opportunity to introduce a local team within Federal Way to reintroduce a competitive e-Sports team and to establish the PAEC as a dominating e-sporting venue. Postponing development on a team/league/club however may allow larger cities such as Seattle to regroup and establish their own plans to capture the e-sporting market.

The determinants of demand and supply of e-Sports are principal factors that measure availability and maximize the potential in the market. Esports gaming is an industry that seems to be on the rise. There's interest from a younger community who's willing to spend money on weekly activities, tournaments, or conventions. We can perceive the rise in demand creates the opportunities for venues such as the e-Sports Arena in Arlington, Texas, and other platforms to be involved in e-Sports.

As a facility, it'll be essential to consider the demographics and income of local and non-local communities. There are competing venues nearby, and being flexible regarding pricing and types of events, will be beneficial. Having complementary events along with other events will be the key to success for e-Sports in Federal Way.

Establishing a strong focus on attracting individuals from outside of Federal Way play an important role. Reasons being, Federal Way's income is lower than neighboring Seattle. Also, the population in comparison to places such as Arlington, Texas, is significantly lower. As transportation access to Federal Way increases, it'll be important to market the accessibility and affordability to attend e-Sports and other events at the facility.

To keep the interest and sustain the demand, the City of Federal Way will have to keep a pulse on the market and movements in the e-Sports community post-pandemic. The landscape seems to be changing as events are held online. The key point will be essential for Federal Way to keep other events at the forefront if there is a decline in e-Sports revenue.

Lastly, we would recommend focusing on attracting consumers who are willing to travel to Federal Way. It's important to grasp affordability and consumer experience is vital in managing the demand. If consumers must travel distances greater than an hour away, utility will decline. Only about 26% of consumers are willing to spend their income for hotels and therefore limit the number of potential attendees.

Demand and supply are affected by a series of factors, ranging from consumer's income level, price elasticity and utility; producers' expectations such as cost of production and desired profit; technological innovations, natural disasters, and government regulations, among others, all are factors that affect the shift in supply and demand. The research we conducted enables identifying the appropriate offerings for the City of Federal Way to provide to the community.

With a rise in online tournaments during the pandemic is there still a need for a mid-size venue like the FWPAC? Are online tournaments overtaking in-person tournaments? If these events can be held online then this would result in an increase of suppliers of events, increasing competition, and shifting the supply curve to the right. Either way, the more e-Sports event suppliers, and sellers there are, there will be an increase in events, resulting in increased competition and less profitability for tournament organizers.

Most projections put the e-Sports industry on track to surpass \$1 billion in revenue for the first time in 2021, with a pre-pandemic report from Goldman-Sachs estimating that e-Sports revenue could reach upwards of \$3

billion in 2022 (e-Sports.net, 2021). However, due to the pandemic, NewZoo, an analytics and market research firm that focuses explicitly on e-Sports, has adjusted the projected revenue of e-Sports to hit \$1.8 billion in 2022 (Insider Intelligence, 2021). Thus, the industry is experiencing monstrous growth. The research shows a steady growth of demand for e-Sports, driven mainly by the younger generations who have grown up with video gaming and non-traditional sports. This has been obvious with the increased popularity of streaming platforms such as Twitch and YouTube, showing live content and viewership of over 1 trillion minutes of content in 2020, over 9 million unique creators, and over 15 million daily viewers (earthweb, 2021).

With increasing industry growth, the demand for e-Sports events will continue to increase. As demand for events grows, so will the supply of events and competition among tournament organizers. E-Sport event organizers and facilities that break onto the scene on the ground level and establish quality events that become popular with participants and spectators will be those that last and grow with the industry. FWPAC has a significant opportunity to get in on the groundfloor of a growing billion-dollar industry and position itself as a premier e-Sports facility in the Pacific Northwest.

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