Opportunity and inequality in the emerging esports labor market

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Abstract

Esports is often described as a growing industry ripe with financial opportunities for young professional, competitive gamers. However, these claims rarely consider how income is distributed amongst players. This study uses prize earnings data from 2005 to 2019 to examine labor market inequality and related social inequalities and social stratifications. Lorenz curves and Gini coefficients show that inequality has increased in the labor market overall and the labor markets for the five top games based on total prizes awarded (*Dota 2*, *Counter-Strike: Global Offensive*, *Fortnite*, *League of Legends*, *StarCraft II*). Competitors can expect to earn more today than in 2005, but median incomes have shown sporadic and inconsistent growth compared with top incomes. Moreover, most competitors earn less than the US poverty threshold. Comparing the earnings of the top female players to the whole labor market shows that gender inequalities exist in median incomes and the likelihood of earning more than the poverty threshold. The esports labor market is an engine of inequality that provides opportunities for a few (primarily male) competitors while building a growing class of lowly paid players who support the interests of game designers and event organizers.

Keywords

competitive gaming, income inequality, gender inequality, gini coefficient, poverty threshold

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Commentators often describe esports as a burgeoning field of opportunity for gamers by focusing on top earners, prize pools of the largest tournaments, and industry growth (O'Connell, 2020; Higgins-Dunn, 2019; Todorov, 2021). Major international video game tournaments have received considerable attention for the staggering prize pools offered to winners in recent years. In 2019, Valve Corporation's annual world championship for their popular game *Dota 2*, 'The International 9,' featured a prize pool of over $34 million. That same year, Epic Games' first *Fortnite* World Cup Finals featured a prize pool of over $30 million. Amidst an increasingly pervasive, or 'viral,' media narrative linking esports to financial opportunities for various stakeholders (Newman et al., 2020), there is a case being made that competitive video gamers are now benefiting from industry growth.

However, most competitive gamers, even those who identify as 'professionals,' are not top prize earners. Stories that focus on the top earners in sports and esports give aspiring competitors unrealistic career expectations, discourage critical discussion around the structure and governance of the industry, and further obscure the pervasively uneven distribution of resources (Holden and Baker, 2019; Roderick, 2006). Moreover, narratives around the 'prize pool,' as an aggregation of possible income to be earned, are likely to serve the interests of game designers and event organizers. Large prize pools add significance to a game's marquee tournament for marketing and promotional purposes while obscuring the distributive imbalances that make gaming unsustainable for players.

Therefore, the purpose of this study is to call into question prevailing 'opportunity' narratives by examining how incomes are distributed unequally across the esports labor market—and specifically within tournament prize pool schemes. Prize pools are one of the main sources of income for competitors, especially in tournament-based esports competitions such as 'The International' for *Dota 2* or the 'Global Series' for EA Sports' *FIFA*. However, it should be noted that game developers such as Activision and Riot Games have also created franchise-based competitions in recent years that mimic the structure of closed professional sports leagues in North America, provide base salaries to competitors, and, thus, have different inequality dynamics.

Inequality trends are not unique to esports. Income inequality has grown across the world (Alvaredo et al., 2018). Growing inequality polarizes people and concentrates power, threatening social stability and democracy (Piketty, 2014). Less equal societies also have more social and health problems, regardless of how wealthy they are overall (Wilkinson and Pickett, 2010). Such inequality trends are undoubtedly familiar to readers of the *International Review for the Sociology of Sport*. Indeed, many contributors to this and similar journals have studied how sport has played a significant role in contributing to local, national, and global inequality. As Donnelly (1996) explained, sport is often considered the great social leveler while being accepted as an exercise that reveals and rewards inequalities through athletic performance. If, as Amis et al. (2018) argued, scholars must understand the complex role of organizations and institutions in normalizing inequities, sport is one of the most influential institutions because people accept unequal rewards distributed to athletic competitors as if they were natural and right.

Researchers have found unequal pay and employment opportunities in sport (Flake et al., 2013; Dubrow and adams, 2012). Preliminary research has suggested that

esports is generally consistent with the rest of the sport industry and likely produces extreme inequalities between gamers by instituting unequal reward structures (Coates and Parshakov, 2016; Ward and Harmon, 2019). However, it is unclear how income distribution changes over time in esports; and how such distributional dynamics might work for top earners, game designers, and event promoters, but against the interests of most competitors. We are not aware of any sport research that has examined changes in distributional outcomes over time.

This study analyzes trends in prize pool distribution across major esports events from 2005 to 2019. Using data published by the world's leading esports prize pool database, *Esports Earnings*, we consider inequality trends in the industry overall and within the top five games measured by total prize money awarded. We also evaluate narratives of growth and opportunity by examining earnings stratification, with a specific focus on the proportion of players that earned more than poverty wages each year. Lastly, we consider whether the esports industry reinforces social inequalities by examining earnings inequality based on gender, focusing on the earnings of competitors identified as female compared with the overall esports labor market. We show that the esports industry has extreme and growing inequality overall and between genders. Collectively, the findings show that subsectors of the sport industry, such as esports, are likely to produce greater earnings inequality over time and reproduce a growing class of lowly paid competitors.

The esports industry

Scholarly definitions of esports are contested, although they typically reference competitive gaming, computer-mediated sports, or mass entertainment (Reitman et al., 2020). Sociologists often define esports in relation to sport while recognizing that a simple conflation of sport and esports also conceals many vital issues (Newman et al., 2020; Thiel and John, 2018). For example, Thiel and John (2018) note that esports share many features that characterize sports. However, they explain that game designers and technology conglomerates, such as Activision-Blizzard, Tencent, and Electronic Arts, have inordinate power over the industry (Holden and Baker, 2019; Thiel and John, 2018), leaving little room for federations or autonomous associations to govern, and ensuring that esports have a distinct commercial focus. Moreover, the roles of producer, consumer, mediator, and commodity are much blurrier in the esports environment (Andrews and Ritzer, 2018), which have important implications for studying inequality. Here we describe how the esports field has evolved into a unique set of professional and commercialized activities, driven by a market-oriented ethos, and organized using professional esports event organizations, leagues, and teams that mimic the traditional sport industry.

The professional esports field emerged in the 1990s as various event organizers arranged and hosted prize-based events and tournaments featuring multiple video games. These organizations—such as the World Cyber Games (WCG), DreamHack, Electronic Sports World Cup (ESWC), Professional Gamers League (PGL), Championship Gaming Series (CGS), and Cyberathlete Professional League (CPL)—borrowed the format of major sporting events and combined them with media technologies to create the first professional structures for esports (Hutchins, 2008).

Whereas event organizers have had inconsistent success in esports, video game developers and publishers—such as Activision Blizzard, Valve Corporation, and Riot Games—became significant players in steering the industry. Game developers have unique influence over esports because they own the games' intellectual property rights (whereas traditional sports leagues and governing bodies do not own the sports they market and govern). Recently, game developers have used their ownership position to create recurring annual world championship tournaments. World championships have an additional benefit for game designers because they drive awareness and interest in their games.

Championship tournaments typically consist of multiple professional esports teams across the globe competing through tournament formats (e.g. 'The International' for *Dota 2* by Valve) or franchised systems (e.g. 'League of Legends Championship Series' by Riot Games). For example, Valve's 'The International' championship adopts an open-system tournament structure that consists of 18 teams, with 12 gaining admission by ranking top at the Dota Pro Circuit (pre-qualifying tournaments) and six other teams earning eligibility through regional playoffs. The final 18 teams compete in round-robin group stages, the main event, and the Grand Finals. Prize pools for tournament-based championships are typically built using multiple financing mechanisms, with one unique strategy being crowdfunding from gamers. For example, Valve generated the $40 million prize pool for 'The International I0' by selling "battle passes" to gamers in 2020, which provide unique in-game content and access to a tiered competition system (Daniels, 2021).

In contrast, franchise systems are city-based closed-league structures mimicking North American major leagues. Franchised competitions include a regular season and playoff format, assured minimum salaries and benefits for players on the roster, and revenue-sharing for teams. An example is Activision's Overwatch League (OWL) that had an inaugural season in 2018 with 12 teams (Wolf, 2018). Similarly, Riot Games reconfigured its League of Legends Championship Series (LCS) into a franchise structure in 2017 (Miceli, 2019).

Event organizers and game designers have created an emerging labor market for esports players by creating coordinated and formalized competition formats. Professional players who sign contracts with top-tier esports teams in franchise systems earn income from base salaries, tournament prize money, and streaming earnings (Todorov, 2021). Much less is known about the income of aspiring professionals who cannot sign contracts with top-tier esports teams. However, in a study of Hungarian gamers, Bányai et al. (2020) found that 10% of their sample were attempting to join a professional team, and a further 26% were planning a career in esports, whereas only 1.6% were already members of a professional team. Therefore, it seems as though aspiring professionals far outweigh established players in the labor market. In their study of esports careers in China, Meng-Lewis et al. (2021) noted that recruits must perform at a high level, be identified by management, and succeed in trail training before joining a club. Therefore, many aspiring professionals will rely on prize money and streaming income instead of team salaries. However, they may get support from families, other jobs, or university scholarships, which are starting to be offered in North America. It should be noted that esports tournaments and teams claim to be open to both male and female players, although many

structural inequalities create informal barriers to female competitors (Rogstad, 2021; Xue, Newman, and Du, 2019). A few women-only esports tournaments have been introduced to combat these gender inequalities.

Aspirational gamers also incur costs while attempting to become professionals. However, researchers have not provided a detailed account of the costs of esports training. Meng-Lewis et al. (2021) implied that the costs were low, consisting of internet access and a console or personal computer. However, this simplistic account neglects inequalities in access to internet services ("the digital divide"), which have become critical sources of global and regional inequality (Ball and Fordham, 2020; Exley and Bertram, 2021). An industry report also noted that the cost of competition is much higher than playing for leisure, as it requires special gaming setups that quickly become obsolete (Exley and Bertram, 2021). Added to the costs of entering competitions and traveling for offline tournaments, a unique cost in the gaming industry is that participants must also purchase games and stay up to date with game changes and new releases.

Scholars have also identified the lack of regulations, protections, and agency held by competitive gamers. Esports teams have employed competitors as independent contractors to justify a lack of protection and avoid collective bargaining (Holden and Baker, 2019). Esports competitors work long hours, with training lasting 10 to 17 h a day (Holden and Baker, 2019; Meng-Lewis et al., 2021). Intense competition for team positions and tournament earnings has led to job instability and short careers, with many players retiring by their mid-twenties (Holden and Baker, 2019; Meng-Lewis et al., 2021). Overall, professional esports competitors share many of the occupational hazards that plague professional sport, but they have yet to secure any benefits of union membership or legal regulation that have helped some athletes in North America and Europe.

Literature review

Inequality refers to the uneven distribution of opportunities or resources among a population. Researchers have noted widespread international trends toward greater income inequality (Alvaredo et al., 2018; Piketty, 2014). Sociologists have discovered that income differences are becoming ever greater predictors of life outcomes, political beliefs, and lifestyles (Weeden and Grusky, 2012). Earnings inequality refers to the uneven distribution of monetary earnings and is the largest component of overall income inequality (McCall and Percheski, 2010). Although we should not simplify social stratification and inequalities as being solely determined by earnings, much insight into the stratifying role of sport can be gained by examining earnings distributions (Savage et al., 2013; Weeden et al., 2007; Weeden and Grusky, 2012).

Sociologists have traditionally conceived earnings inequality as caused by social relations between sets of actors, especially class relations caused by the division of labor (Myles, 2003; Wright and Perrone, 1977). Theorists argued that social resources (such as wealth, power, life chances, and authority) were attached to positions in the social structure (Wright and Perrone, 1977). Myles (2003) referred to this as the "structure of empty places" model of inequality. He noted that, although there are disagreements

about how to theorize empty places in the class structure, most sociological theories assume that inequality is due to how class positions are organized rather than how people are organized. However, current income and earnings inequality trends are difficult to explain through a class-based framework (Myles, 2003). Most inequality is due to unequal earnings distributions *within occupations* rather than between classes, and the growth of inequality is disproportionality due to earnings growth among top earners (McCall and Percheski, 2010; Myles, 2003; Weeden et al., 2007).

A complementary sociological theory that explains some within-occupation inequality growth is Sørensen's (2000) theory of "rent destruction." According to Sørensen (2000), inequality has increased because workers at the bottom and middle of the income distribution have lost the ability to generate rents, whereas people at the top have increased their ability to capture rents. Rents refer to excess returns above what would be earned in an idealized competitive market. A decline in labor market institutions, such as unions and full-time employment contracts, has led to reductions in low- and middle-income workers' power and, thereby, rents (Kalleberg et al., 2000). The financialization of businesses, with a new focus on cost-cutting, profit maximization, shareholder interests, profit sharing, and stock ownership plans, have also increased the income dispersion (Lin and Tomaskovic-Devy, 2013). Supporting the conclusions of Sørensen's (2000) theory, researchers have found declining rents among low-wage workers while upper-tier managers and capitalists have gained wealth (Morgan and Cha, 2007).

Theorizing earnings inequality in esports

The esports industry is subject to many of the same inequality forces identified by sociologists studying other sectors. Publicly-traded corporations such as Activision-Blizzard, Tencent, and Electronic Arts design and own the games and exert considerable control over the industry. Similarly, Newman et al. (2020) explain how narratives of financial returns to shareholders drive investment across the esports industry. When coupled with the total lack of labor market institutions protecting workers (Holden and Baker, 2019), the esports industry should evidence the most extreme inequalities associated with rent destruction for workers and redistribution to managers and capitalists. However, we believe that esports might also reveal other trends in within-occupation inequality that are crucial to sociological research on inequality and sport.

As already noted, game designers and event organizers are interested in growing the total population of players. The esports ecosystem is different from many industries in that players are the primary consumers and source of labor (Andrews and Ritzer, 2018). Therefore, capitalists and managers need to balance rent destruction against the need to motivate play. We argue that the best way to do this from the perspective of capitalists and managers is to provide high earnings opportunities to a few players, which motivates the whole player class while keeping overall costs low.

The reproductive role of extreme inequality can be elucidated by drawing on concepts such as aspirational labor (Duffy, 2016) and hope labor (Kuehn and Corrigan, 2013). Aspirational labor and hope labor were created by sociologists who observed people working for little or no pay in the hope that they would be rewarded by stable employment, social mobility, or rewards in the long term. Kuehn and Corrigan (2013) defined

hope labor as "un- or under-compensated work carried out in the present, often for experience or exposure, in the hope that future employment opportunities may follow" (p. 9). Duffy (2016) explained that aspirational laborers work for the promise of social and economic returns in the future, but the reward system is highly uneven and ensures that only a few receive rewards commensurate with their work. The few aspirational laborers who succeed serve to maintain the ideology of being paid to do what one loves, which obscures exploitative economic structures and problematic gender and class subjectivities. Overall, aspirational labor and hope labor shift costs and risks from organizations onto people (Kuehn and Corrigan, 2013) and can be seen as complementary to rent destruction processes.

Therefore, it is likely that esports earnings inequality will increase over time as game designers and event organizers publicize and leverage ever-larger prizes with higher top-end potential earnings, using aspirational and hope-based ideas to attract more competitors while keeping pay consistently low for the majority. One interesting implication of this theorization is the idea that within-occupation inequality might play a role in reproducing class structures by offering a few opportunities for social mobility that motivate a large population of workers to persist in low-wage industries. This implication is also relevant to the sociology of sport, as the promise of social mobility has been identified as a critical feature of elite-level sport (Conzelmann and Nagel, 2003; Eisen and Turner, 1992).

Sociologists have also discovered persistent gender inequalities in the sport industry that are likely to exist in esports (Fink, 2015). Flake et al. (2013) found that the median earnings of the top male tennis players were higher than the median earnings of women tennis players. Flake et al. (2013) explain that the prize money was lower for women than men at less publicized tournaments and attribute this difference and the resulting earnings differences to institutional discrimination. Although researchers have not examined gender-based earnings inequalities in esports contexts, they have identified persistent social inequalities based on gender. Bryce and Rutter (2005) identified how gamers, researchers, and game designers rendered female gamers 'invisible.' Taylor et al. (2009) examined how women negotiated their role within the gaming community when female involvement was sexualized. They demonstrated that women faced constrained opportunities to participate in professional gaming tournaments. Therefore, it is likely that the persistent social inequalities observed in esports might also affect earnings inequalities between male and female players.

Based on the preceding review of the literature, we asked the following research questions:

RQ1: How has prize-based earnings inequality for the esports labor market changed over time in ways that reflect rent redistribution, aspirational labor, and hope labor?
RQ2: How has earnings inequality contributed to the reproduction of class status for gamers in the emerging esports labor market?
RQ3: How are social inequalities based on gender observed in the esports labor market, and how has this changed over time?

Method

Data collection

Data were collected from the online database *Esports Earnings* (esportsearnings.com), "a community driven competitive gaming resource based on freely available public information" (n.d. para. 1). The website includes data on players, tournaments, games, and prize money from 1998. Users enter information on web forms, and the website uses inbuilt algorithms to rank players by prize earnings, calculate total prize money, and create other information. The website also notes that it cannot guarantee total accuracy since the data is crowdsourced. For example, the site might not include newer tournaments that award smaller prizes, influencing inequality calculations. Nevertheless, other researchers have used the website as the best source of public information on esports (Ward and Harmon, 2019).

   Esports Earnings only collects information on prize-based earnings. Therefore, our analysis does not account for other types of earnings such as streaming, sponsorships, or team salaries. However, sponsorships, team contracts, and streaming popularity are partly determined by players' performance, and since prize money is correlated with performance, other sources of income are also likely to be correlated with prizes in some games. Therefore, prize data should provide a foundational, if incomplete, analysis of inequality in esports (we included prize data from all offline/LAN and online tournaments).

   Three datasets were created by scraping data on esportsearnings.com using *R* statistical software version 4.0.2. The first dataset is called the *professionals* dataset and consists of players earning more than USD 3000 (in 2019 dollars) each year across all games from 2005 to 2019 ($n = 19{,}033$). The *professionals* dataset was collected by scraping the top earners for each month, consolidating the monthly earnings into a yearly total, and omitting athletes earning less than $3000 for the year (adjusted to 2019 dollars). We chose a threshold of $3000 to exclude the substantial number of amateur or leisure gamers who play non-professional games because they would skew the labor market to seem more unequal than it was. A threshold of $3000 is consistent with minimum salaries in National Pro Fastpitch ($3000) and minor league baseball ($3480). We chose professional softball and baseball for thresholds because the seasons require athletes to sacrifice other opportunities for training and competition and should represent the minimum that athletes need to commit to a professional career. Therefore, we decided to use the minimum salaries of $3000 as a similar benchmark for esports competitors, enabling us to focus on those committed to a professional esports career. Although prize pool sports such as golf might be better comparisons for esports, minimum salaries do not exist in golf or other prize pool sports. A limitation of using a threshold is that we excluded competitive gamers who committed to a professional career but had not earned much money yet. For example, thousands of players unsuccessfully attempt to qualify for prize-earning tournaments each year and are excluded from this dataset, even though they might see themselves as part of the esports labor market. Therefore, the *professionals* dataset almost certainly underestimates inequality in the labor market as a whole and should be seen as a conservative estimate of inequality.

To address this limitation, we also examined inequality within the top five games, assuming that competitors with rankings in these games will have professional aspirations even if they have not earned much money. The *top games* dataset consisted of players' yearly earnings from 2005 to 2019 for the top five games measured by total prize money awarded: Dota 2 (*n* = 6866), Counter-Strike: Global Offensive (*n* = 23,393), Fortnite (*n* = 3747), League of Legends (*n* = 13,237), and StarCraft II (*n* = 4667) (see Table 1). The *top games* dataset was collected using Application Programming Interface (API) function calls. First, we returned a complete list of player IDs for players with at least one tournament ranking in the top five games. Next, we used the player IDs to collect the earnings history for each player (excluding money earned in other games). For tournaments where players won non-USD-denominated currency, the prize amount was converted into USD using a conversion rate dating from the last day of the tournament. The *top games* dataset is less conservative than the *professionals* dataset because it does not have an earnings floor. However, it only includes tournament rankings and neglects competitive gamers who labor to make it but never rank in a tournament.

The third dataset was the *top female players* dataset and consisted of the yearly earnings of the top 500 female players across all games from 2005 to 2019 (*n* = 926). The *female players* dataset was collected by scraping the top 500 identified female players listed on the site in October 2020 and using player IDs to collect players' earnings history. Earnings were also converted to USD.

Data analysis

Descriptive statistics were calculated for each year, including the number of players earning money, total prize money earned, total prize money earned by the top player, and median income. All money values were converted to the value of US currency in 2019 to adjust for inflation. For the *female players* dataset, the number of competitors earning more than $3000 (2019 adj.) and their median income was also calculated. The US poverty thresholds from 2005 to 2019 were used to determine how many players were earning greater than poverty wages from prizes. Poverty thresholds serve as proxies to estimate how many players earn prizes that assist social mobility versus reproducing class standing. We assume that players earning less than the poverty threshold cannot use earnings to gain social mobility and are likely to need other incomes to sustain their livelihoods or to gain social mobility. Additionally, a ratio of competitors

Table 1. Total prize money awarded for the top five games.

	Game data begin	Total Prizes Awarded	Tournaments
Dota 2	2011	$233,739,771.24	1513
Counter-Strike: Global Offensive	2012	$114,284,429.77	5703
Fortnite	2018	$102,636,019.15	709
League of Legends	2010	$84,131,312.50	2594
StarCraft II	2010	$34,739,474.78	6067

to those earning above poverty wages was calculated to show the proportion who earned above poverty wages each year.

Income inequality was measured using Lorenz curves and Gini coefficients calculated using the "ineq" package in *R* for each year. Lorenz curves represent income distribution in a population (such as a labor market or country) by graphing percentiles of the population against the cumulative wealth of people at or below each percentile. The further the curve is from the line of equality, the greater the inequality in the population. We produced a Lorenz curve for each year to show how inequality changed in the esports labor market from 2005 to 2019. Gini coefficients represent inequality in a population as a single value (rather than a curve). Gini coefficients are scale-invariant and meet the principle of transfers, making them a good measure of inequality (Allison, 1978). A Gini coefficient of zero describes a labor market where everyone earns the same income or perfect equality. A Gini coefficient of one describes a labor market where one person earns all the income or perfect inequality.

Results

The esports labor market has shown simultaneous growth in earnings and inequality. As shown in Figure 1, total earnings accruing to players earning $3000 or more (adj. 2019) have grown an average of 36% each year since 2005. Similar trends exist in the five top games, with most games showing consistent earnings growth (Figure 1). However, the results also reveal increasing inequality over time. Increasing inequality measures
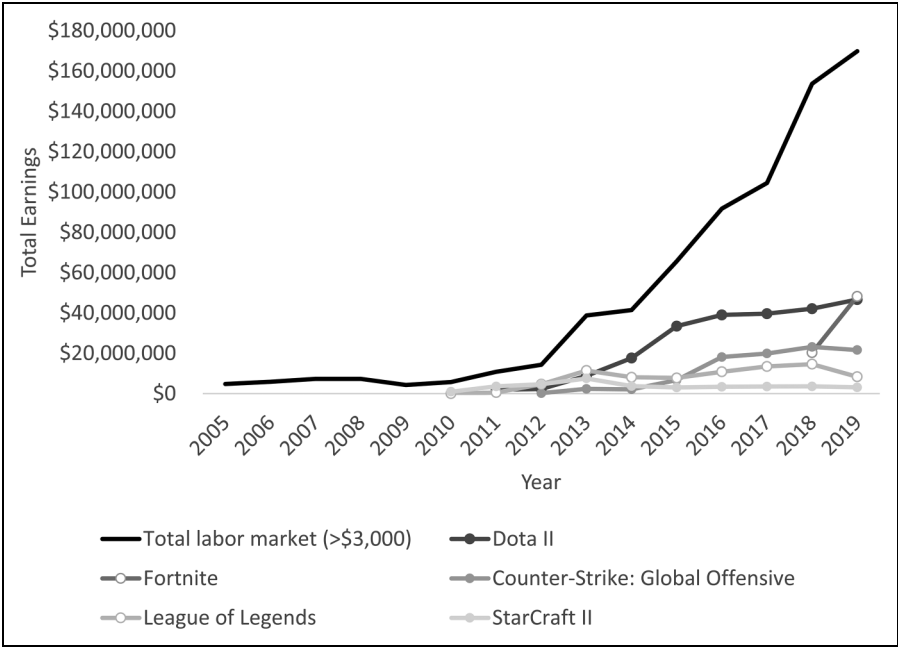

Figure 1. Total earnings in the esports labor market, 2005–2019.

suggest that the high earners are capturing more of the earnings growth than low earners so that the difference in earnings between low earners and high earners is increasing over time.

Earnings inequality

Figure 2 charts the Lorenz curve for players earning more than $3000 (adj. 2019) in the esports labor market from 2005 to 2019. Figure 2 depicts three periods with different inequality trends. From 2005 to 2009, inequality fluctuated, likely due to the volatility of the esports industry as it emerged and began providing professional competition for gamers. From 2009 to 2014, inequality increased as the Lorenz curves moved consistently away from equality. From 2015 to 2019, the distribution of earnings to esports players seems to have stabilized.

Figure 3 charts the Gini coefficient for the total labor market represented by players earning more than $3000 (adj. 2019) alongside the Gini coefficients for all players
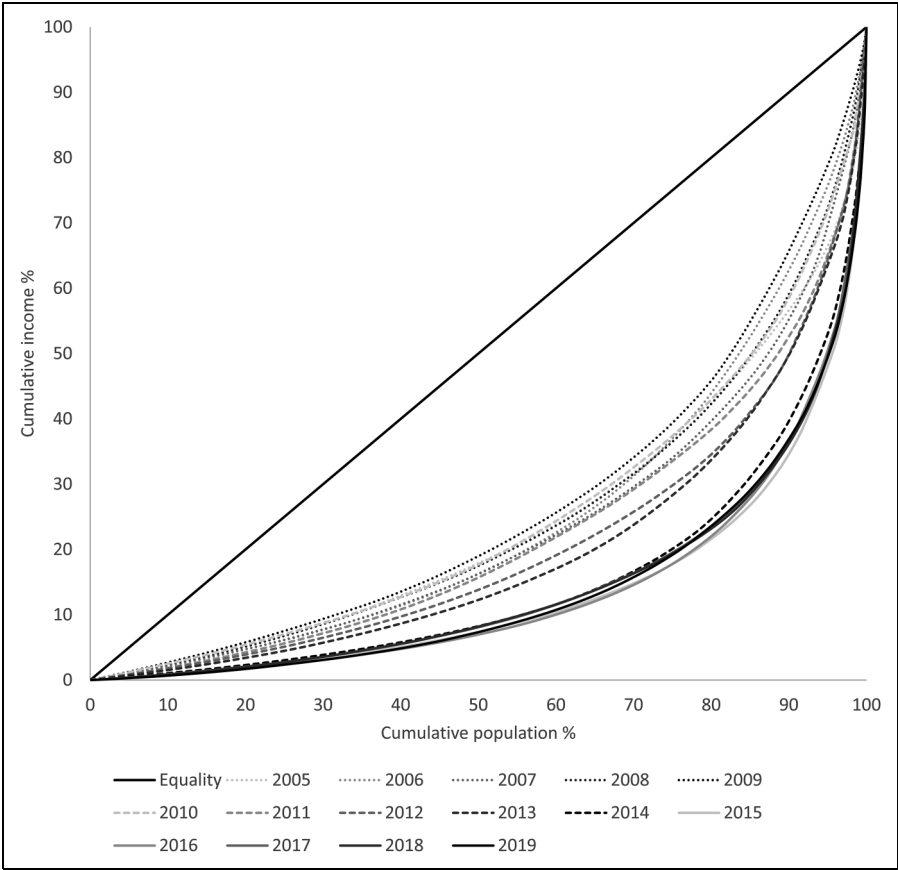

Figure 2. Lorenz curves for players earning more than $3000 (2019 adj.) in the esports industry, 2005–2019.

who earned a tournament ranking in the top five games. Recall that the Gini coefficient for the total labor market represents our conservative estimate of inequality, whereas the coefficients for the top five games represent more inclusive inequality measures. ~~The Gini~~ coefficients for all games have increased since data reporting began, suggesting an increase in inequality in the labor market. However, although inequality has grown overall, *League of Legends* and *Counter-Strike: Global Offensive* saw peaks in 2016 and 2017, followed by downward trends since. Inequality peaks in these games might explain the trend observed in the overall esports market, where inequality increased initially and then stabilized. On the other hand, *Dota 2* is the highest-ranking game in terms of prize money awarded, and it has seen consistent inequality growth since 2011. Therefore, an upper limit to inequality is not evidenced in *Dota 2* (or *Counter-Strike: Global Offensive* and *StarCraft II*).

Overall, these trends are consistent with our theorization based on rent destruction, aspirational labor, and hope labor, that game designers and event organizers used increasingly unequal prize structures to market their games and attract more gamers. Indeed, Figure 4 shows trends in the number of earners for each game and the overall labor market. More competitors are earning prize money in each game since data reporting began, although downward movements have been seen recently in *StarCraft II*, *League of Legends*, and, *Counter-Strike: Global Offensive*. More players are also attaining "professional" status in the overall esports labor market, defined by more than $3000 (2019 adj.) earnings per year. These trends suggest that more players attempted to become professionals as the labor market evolved, earnings increased, and inequality
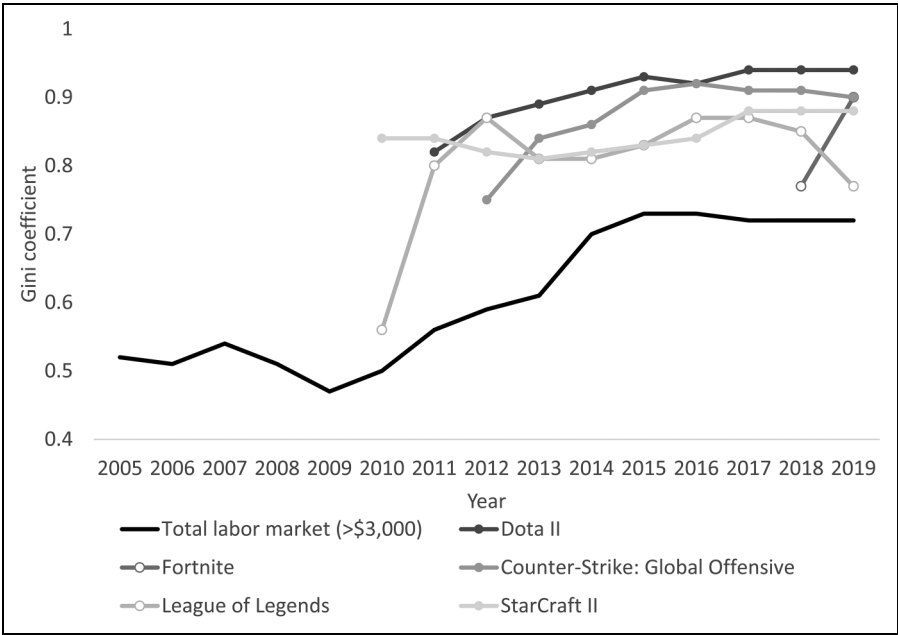

Figure 3. Gini coefficients of prize earnings in the esports labor market, 2005–2019.

became more extreme. However, we caution against inferring causality from this data because earnings, population, and inequality data are interdependent—for example, an increase in players at the lower end of the earnings spectrum will increase inequality measures.

Earnings inequality and reproduction

We also theorized that earnings inequality would lead to reproductive earnings levels for most competitors. Figure 5 shows that the median earnings were meager across all five games for all years observed, only occasionally breaking $1000. Low median earnings mean an esports player competing at the highest levels of these games should expect to earn less than $1000 from prizes and expect to earn as little as $354 in games like *Counter-Strike: Global Offensive*. It also appears that median earnings are stagnant in some games and shrinking in others, such as *Fortnite*, where median earnings dropped by 49% from 2018 to 2019. In games where median earnings have grown, such as *League of Legends*, growth is modest compared with the changes in top earnings and overall earnings, which means that income growth is not shared evenly among players. Therefore, although esports labor markets provide opportunities for some players to earn socially mobile earnings and rents, the average player should expect earnings of less than $1000 from prizes, and there is no evidence to suggest that this will increase in the future.
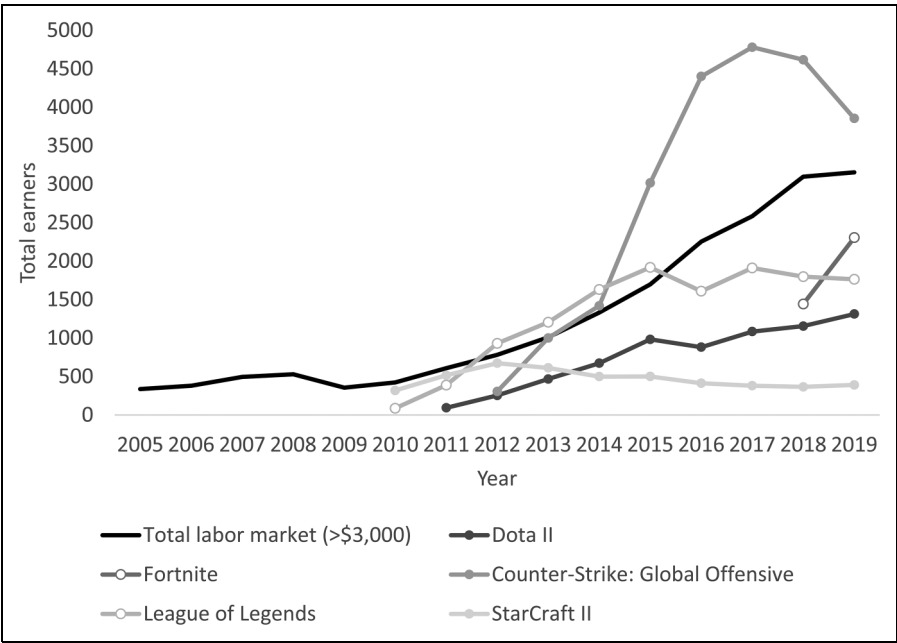

Figure 4. Total professional esports competitors and total earners in top five games, 2005–2019.
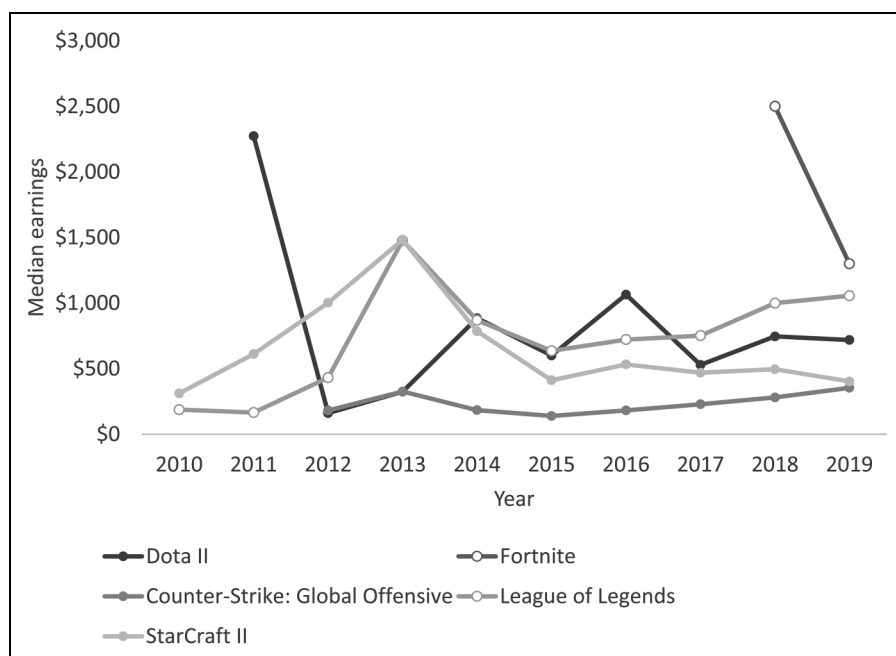
Figure 5. Median earnings in top five games, 2010–2019.

The reproductive role of earnings inequality can also be seen in the proportion of competitors who earn more than the poverty threshold across the five top games, as shown in Figure 6. It appears that many games have an upper limit to how many competitors can make a living off prizes alone. *Starcraft II*, *Dota2*, and *Fortnite* have around 15% of their players earning above the poverty threshold from prizes, whereas *League of Legends* typically has fewer than 10% of competitive gamers earning the poverty minimum. In *Counter-Strike: Global Offensive*, the percentage of competitors earning poverty wages rose steadily from 2% in 2010 to a high of 7% in 2019. These figures suggest that a small minority of competitors can secure prize earnings to help them be socially mobile.

In summary, although the esports tournament labor market provides livelihoods for some, stagnant median earnings and low proportions of competitors earning more than the poverty threshold suggest that the esports labor market provides reproductive rather than socially mobile earnings for all but the top earners. Most competitors need other incomes to sustain themselves. They might earn additional income in the esports industry from streaming, sponsorships, or team salaries, but it is important to note that additional income will necessitate extra work that further benefits game designers, media platforms, or professional teams. Moreover, since fewer than 15% of competitors earn more than the poverty threshold in the top five games, and since earnings growth seems to attract more competitors, the emerging esports industry has created a growing class of competitive gamers earning unsustainable earnings from prizes.
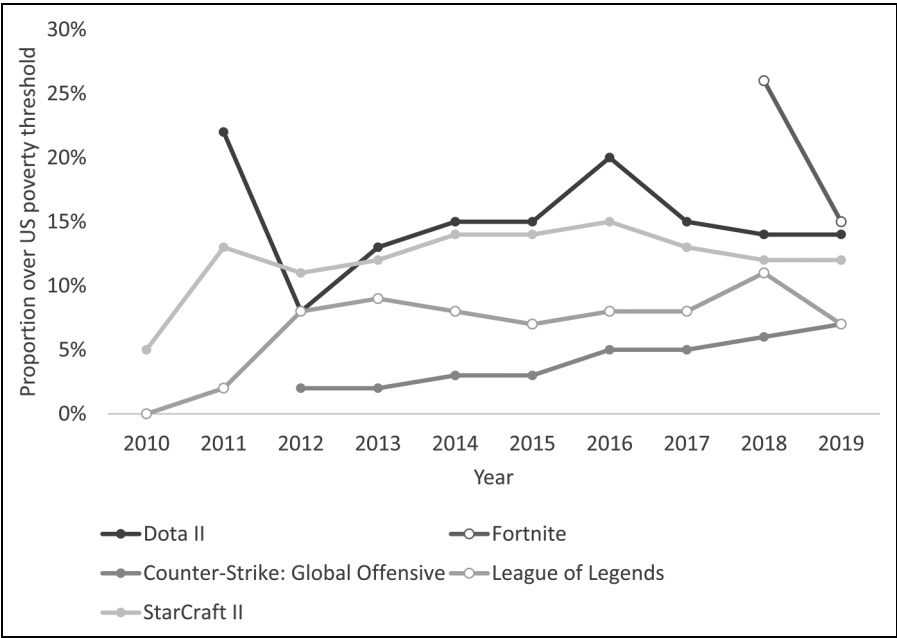
Figure 6. The proportion of earners above the poverty threshold in esports prizes for top five games, 2005–2019.

Earnings inequality and gender

Table 2 shows that the number of female players earning prize money each year has increased since 2005, with an average year-to-year growth of 35%. The total earnings accruing to female players each year have increased an average of 170%, reaching a high of $1,329,166 in 2019. The top female earner also earned substantially more in 2019 than any year prior. The labor market has also seen increases in the total number of female players earning $3000 or more (2019 adj.) and those who earned above poverty wages. The median income for women earning $3000 (2019 adj.) or more has also increased.

However, despite the recent improvements in the esports labor market for female players, they earn far less from prizes than men, and the data is ambiguous as to whether female players are closing the gap. Female players' total prize earnings expressed as a ratio of earnings in the overall esports labor market dropped from a high of 2% in 2007 and 2008 to less than 1% in the years following. In 2019, female players earned around 0.78% of total earnings reported in the *professionals* dataset, suggesting that earnings are unequal when it comes to gender. The top-earning female player earned 6% of the top male's earnings in 2019, down from a high of 51% in 2010. The median incomes of female players earning $3000 or more (2019 adj.) are less than men's median.

Only recently has the esports labor market shown any evidence of socially mobile earnings for women. The number of competitors earning above $3000 (2019 adj.) was

Table 2. Earnings of top female players, 2005–2019.

Year	Number of earners	Total earnings	Income of top earner	Earners $3000 or more (2019 adj.)	Median income for earners $3000 or more (2019 adj.)	Number over poverty	Percent of earners $3000 or more over poverty
2005	19	$73,989	$19,635	5	$6545	2	40%
2006	40	$68,677	$6340	8	$3297	0	0%
2007	25	$151,227	$61,650	12	$3699	2	17%
2008	31	$166,946	$59,350	13	$4273	3	23%
2009	13	$8785	$0	0	$0	0	NA
2010	31	$177,707	$117,200	10	$5626	1	10%
2011	23	$39,285	$5685	2	$4576	0	0%
2012	29	$82,676	$42,642	3	$9469	1	33%
2013	21	$120,007	$83,579	2	$46,839	1	50%
2014	45	$95,997	$33,228	7	$3008	2	29%
2015	98	$171,429	$10,790	17	$3939	0	0%
2016	59	$235,756	$67,874	15	$5755	3	20%
2017	102	$250,568	$39,530	13	$8687	4	31%
2018	172	$1,030,587	$102,782	75	$8488	24	32%
2019	191	$1,329,166	$200,000	89	$8301	32	36%
Average year-to-year change	35%	170%	NA	63%	NA	32%	NA

inconsistent until 2015, when it jumped to 17 (growing to 89 by 2019). A handful of female players supported themselves on esports prize earnings until 2018 and 2019 when the number of women earning above the poverty threshold rose to 24 and 32. However, when the number of women earning above the poverty threshold is reported as a percentage of women earning more than $3000 (adj.), a smaller percentage of women can turn their profession into a living compared with the overall labor market (36% compared with 56% in 2019). Thus, the esports prize pool labor market appears to support more male competitive gamers and provides men with a greater overall chance of earning more than poverty wages.

Discussion

Commentators often describe the emerging esports industry as a growing opportunity for young gamers to win large prizes. At the top end, there is some evidence to support this narrative. However, our findings show that this narrative ignores how income is distributed in the labor market. A few top earners receive substantial rewards from esports, but income is not shared with most competitors, and the labor market has become more unequal over time. Inequality appears to have real consequences for competitive

gamers because a growing number of competitors are entering the esports labor market and earning less than the US poverty threshold from prizes. More competitive gamers in the labor market—producing value for game designers and event organizers while not receiving income in return—results in even greater income inequality and stratification. This trend is exacerbated for female gamers, where there are persistent and even growing inequalities between female players' earnings and the overall labor market.

This study is one of the first to examine inequality trends for workers in a subsector of the sport industry. As a new and emerging market, the esports industry provides an excellent context to examine inequality trends that might apply to the sport industry. The results show that income inequality growth has accompanied the growing labor market. Inequality has risen in the esports labor market as a whole and the labor markets of the five top games. Although inequality seems to have reached an upper limit in the overall labor market, there is also evidence that inequality can continue to grow in games like *Dota 2*.

The Gini coefficients observed in the esports labor market are higher than coefficients commonly observed in other populations, such as nations, although esports inequality may be typical of the sport industry. Gini coefficients in the overall labor market fluctuated from .47 to .72, with individual games reaching as high as 0.94 for *Dota 2*. It is helpful to consider other prize pool sports such as golf to put esports inequality into perspective. Scully (2002) reported Gini coefficients for Professional Golfers Association (PGA) earners to be .63 in 1990 and .57 in 2000, with similar inequality for the Ladies' Professional Golfers Association (.64 in 1990), which is consistent with our findings for the overall esports labor market. It should be noted that Scully (2002) excluded golfers who had not reached the top professional levels, which introduced a floor in the labor market similar to our *professionals* dataset. We expect that if aspiring golf professionals were also included in earnings inequality calculations, inequality measures in golf would be higher and closer to the inequality we observed in top esports games like *Dota 2*. Indeed, one of the critical contributions of this study is providing a more inclusive analysis of the esports labor market, which reveals inequality trends and the aspirational nature of the sport industry more generally.

The findings also add to our theoretical understanding of inequality in the sport industry. Our findings are consistent with perspectives on rent destruction and financialization, which predict a trend toward subsistence pay and within-occupation inequality for low-wage workers without labor market protections (Lin and Tomaskovic-Devy, 2013; Morgan and Cha, 2007; Sørensen, 2000). Our findings also add to the broader inequality literature by providing a sociological explanation for how within-occupational inequality might reproduce class structures. Drawing on aspirational labor (Duffy, 2016) and hope labor (Kuehn and Corrigan, 2013), we argued that managers and capitalists might use increasingly unequal rewards to market their games and attract competitors. Consistent with this theorization, our findings show complementary growth in earnings, inequality, and the number of gamers. Moreover, our findings show stagnation in median earnings and very little growth in the proportion of competitors who can earn more than the poverty threshold from prizes, which should also be viewed considering the costs of attempting to become a professional gamer. Therefore, although unequal rewards

provide an opportunity for a few to better their livelihoods, most competitors will find that they need other income to sustain themselves. As noted by Duffy (2016), the success stories of a few aspirational laborers play an important role in obscuring the economic realities for most competitors. Consequently, inequality in esports prize earnings seems to play an overall reproductive function—by reproducing the labor market for esports, reproducing interest in games and tournaments, and reproducing a growing class of low-earning workers.

Esports is also a valuable context to examine gender inequalities because men and women can compete in the same tournaments. Our findings show that, although the esports labor market provides more opportunities for female competitive gamers in 2019 than it did in 2005, the top female competitors still experience worse outcomes when compared to the whole labor market. Female professionals who earn more than $3000 (adj. 2019) have lower median earnings and are less likely to earn more than the poverty threshold. These findings are important because prior research on pay differences has focused on institutional differences that arise from men and women playing in different competitions, belonging to different associations, and playing different versions of the same sports (Flake et al., 2013). This study builds on institutional explanations for pay inequality by showing that persistent social inequalities can be observed in esports, even when men and women can compete in the same competitions and belong to the same institutions.

This study also extends our understanding of gender inequality by showing that, even among female competitive gamers who attain professional status (defined as earning $3000 or more in a season adjusted to 2019 dollars), labor market outcomes are unequal because they should expect to earn less than their male counterparts in terms of median earnings. Collectively, these findings support the observations of many researchers who have discovered persistent inequalities in esports sub-cultures (Bryce and Rutter, 2005; Taylor et al., 2009; Xue, Newman, and Du, 2019) by showing that these inequalities can also be observed in earnings differences among top competitive gamers.

We recommend using this study in three ways to foster social change in the esports and sport industries. First, these results should be added to any discussion of esports as an opportunity for gamers. We have shown that narratives focusing on top earners obscure the reality of low prize earnings for most players. A more realistic picture of the esports labor market will help policymakers and activists fight for needed changes in the esports industry, especially regarding labor protections that are currently lacking (Holden and Baker, 2019). Second, this study can show that more initiatives are needed to improve gender equality at the top level of the esports industry. More women-only tournaments with prizes will help balance some of the inequality observed in this study, making it possible for more women competitors to succeed. Third, researchers, activists, and policymakers must turn attention toward aspirational-level athletes across the sport industry, such as athletes seeking membership in esports teams, developmental leagues, and academies. Movements that improve work conditions for top-level professionals are important, but this study shows that the most extreme inequalities can be seen by recognizing aspirational and hope laborers as parts of the overall labor market.

Limitations and future research

The main limitation of this study is that we used one source of earnings to examine inequality in the esports labor market. Esports players can also earn incomes from other sources such as streaming, team salaries, and sponsorships. Additional income sources might decrease inequality if they are distributed inversely to prize money (thereby raising the incomes of the lowest earners closer to the top earners) or if they are distributed evenly to all players (thereby raising the incomes of everyone and helping the lowest earners attain a living wage). Future research is needed to evaluate different income streams.

Another limitation of this study is that we used arbitrary measures to determine whom to include and exclude from the labor market. Our threshold of $3000 (adj. 2019) likely excluded many people who think of themselves as aspiring professionals. We attempted to address this limitation by examining the top games without a threshold of earnings. However, it is possible that we inadvertently included some players who consider themselves amateur or leisurely. We hope that we have identified upper and lower estimates of what inequality truly is in the esports labor market by presenting results from both measures. Similarly, we used the US poverty threshold to estimate how many competitors earned prizes that would assist with social mobility. The main limitation of this measure is that many players do not reside in the US and might be able to do more (or less) with their prize earnings depending on their home nation's economic circumstances. Future research should examine consumption inequality rather than earnings inequality because consumption inequalities are important components of social stratification that vary based on competitors' home countries. Related to cross-country differences is the necessary future research topic of how income inequalities connect to global inequalities, especially regarding internet and technology access. A cursory analysis of top earners suggests they come from Global North countries, especially China, South Korea, and the United States. Therefore, future research will benefit from situating individual inequalities within global inequalities.

A third limitation is that we did not include variations in how esports teams distribute prize money (many esports events like *Dota 2* and *League of Legends* are team-based tournaments). For example, some teams take a percentage (e.g. 50%) of the winning award and give players a bonus on top of their salary. Others pay taxes before splitting the prize money among players (e.g. teams pay 30% tax on their prize earnings in China). Inconsistency across teams and countries in terms of prize-winning distribution will affect the dynamics of income dispersion.

Esports Earnings might also have errors that entered our datasets. For example, there might be self-identified women players not included in the top 500 female players list Therefore, we might have excluded female players earning higher incomes and leading to different conclusions about gender inequality. Lastly, future researchers could collect additional data on the industry and use regression techniques to identify variables associated with inequality in the esports industry. These findings will help consolidate social scientists' understanding of the sport industry as an engine of inequality in increasingly unequal times.

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Supplemental material

Supplemental material for this article is available online.

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