Digital Transformations in a Platform Society: A Comparative Analysis of European Football Leagues as YouTube Complementors

Abstract: The prevalence of digital technologies and emerging social media platforms in the twenty-first century has altered the ways in which individuals and groups produce and consume elite football (soccer). Elite football is no longer consumed merely through "traditional" media as television or radio. By comparing the "big five" football leagues (the first divisions in England, France, Germany, Italy, and Spain), this article examines how these leagues have adapted to an algorithm logic (monetization strategies/content strategies) on YouTube. Drawing from data collected (64,247 YouTube videos) using YouTube Data Tools, we argue that the "big five's" content creation on YouTube work in a complementary manner to "traditional" platforms, allowing for the testing and adaption of their content practices based on instant consumer feedback. This article makes a contribution to the literature on the symbiotic media/sport relationship with its analysis and insights into the digital transformations occurring in a "platform society".

Keywords: YouTube, football, digital transformations, platform society, social media, platform complementor, sport, cultural industries

The ubiquity of digital technologies has altered the way individuals and groups *produce* and *consume* popular cultural manifestations (Arvidsson, 2019). Amongst those global cultural manifestations transformed by digitalization are media and sport, where the traditionally historical symbiotic relationship between those two *separate* entities (Rowe, 2004) gives way to a digital condition of sport *as* media (Hutchins and Rowe, 2012). Therefore, instead of interrogating the prosumption of sport through distinct media channels, it is important to understand how sport is prosumed *in* this diverse digital media ecosystem (Deuze, 2011). This digital condition is further complicated by the emergence and consolidation during the last two decades of the big five platforms – namely Alphabet, Amazon, Apple, Meta, and Microsoft (van Dijck et al., 2018) – that have reshaped the prosumption of popular cultural manifestations as sport in their different media products such as YouTube (Alphabet), Twitch (Amazon), Instagram and Facebook (Meta) (Duffy et al., 2019; Poell et al., 2022). By *agreeing* to join this new platform economy dynamic as content creators – or platform complementors – sport agents such as athletes, brands, clubs, leagues, national and international governing bodies

enter a new symbiotic relationship that, instead of being governed by the editorial logic of traditional media, is now determined by algorithm logic of platforms (Poell et al., 2022). Against this backdrop, the purpose of this article is therefore to examine this continuum further, in the context of elite European football (soccer).

It remains clear that football is one of most global popular cultural manifestations (Giulianotti and Robertson, 2009). However, as with most of the other popular cultural manifestations (Duffy et al., 2018), the media-*packaged* football has also undergone profound changes to *conform* to the digital transformations. Whereas the "traditional" media product of football was largely synonymous with the unconditional attention for 90 minutes on live television or radio (Galily and Tamir, 2014; Rowe, 2015), with the emergence of new digital media platforms its content scarcity and total attention is substituted for content abundance and attention scarcity (Hutchins and Rowe, 2012). In order to examine these adaptions further, this study subscribes to the key premises offered by digital sociology (Marres, 2017) as it employs YouTube Data Tools (Rieder, 2015) and seeks to answer the following research question through a comparative analysis of the YouTube channels of the "big five" football leagues in Europe (England, Spain, Italy, France and Germany): How was the symbiotic relationship transformed in the algorithm logic in one specific platform?

By throwing a light on how YouTube, in European football's context, may be seriously considered an *alternative* and *complementary* medium in comparison to traditional media, such as television, this article makes an original contribution to the existing literature on the nexus between sport and YouTube (McCarthy, 2021a, 2021b; Checchinato et al., 2015; Gil-Lopez et al., 2017) whilst our findings concurrently tie into, and push the boundaries of the wider and evolving digital football studies field (Lawrence and Crawford, 2022). We also extend the

existing scholarship on the "big five" leagues (e.g., Sanchez et al., 2021) through our analysis of their adaption to YouTube. To clarify, our chosen focus on what is often characterized as the "big five" leagues (Deloitte, 2022) is justified for a series of reasons. Yet, most notably, the English Premier League (EPL), La Liga (Spain), the Bundesliga (Germany), Ligue 1 (France) and Serie A (Italy) have, in comparison to other elite leagues, undergone more intense processes of commercialization with "very strong increase of revenues" (Sanchez et al., 2021: 355; see also Kennedy and Kennedy, 2012). In 2021/22, the "big five" clubs dominated UEFA's (2022) Club Coefficients ranking. The leagues also generate the most revenue from broadcasting rights in Europe (Statista, 2022). They are also generally considered the most popular leagues in terms of TV viewers. Moreover, many of its clubs are considered global brands entangled in global marketplaces. This, specifically, remains important for contextual purposes, given that a number of "super clubs" (co-)exist within every "big five" league possessing distinct capabilities (Andrews, 2015; Millward, 2006). These clubs' revenue and engagement maximization strategies are not necessarily synonymous or in harmony with those adapted by their respective national leagues as seen in the case of the proposed European Super League (The Guardian, 2022). Concurrently, their brands may reinforce their league's brand or significance (see also Author A2). To be sure, however, in this article we examine how the *leagues* these clubs operate and compete within have adapted to YouTube.

In terms of our platform selection – YouTube – we first contend that, because of its affordances and historical focus on horizontal videos (not vertical as on TikTok or Instagram), it can be considered as the platform that is the most appropriate *alternative* to the arguably most important medium in sport: TV (Author BA1; BA2). Second, and relatedly, the selection of YouTube must also be viewed in context of the platform's position as a distribution channel for existing assemblages of television-formatted material, thus rendering it a valuable platform

of inquiry for our investigation of the "big five" whom all have a presence on YouTube. Whilst the article's platform-specific analysis and the "big five's" presence on other platforms (beyond YouTube) remain important to highlight as existing limitations of the current paper, the article also emphasizes that further work in this area is necessary to holistically capture the platform eco-system in football and how specific European "super clubs" separately have adapted to platforms like YouTube.

Literature review

Sport and media: The new media ecology

The once sedimented symbiotic relationship between sport and media (Rowe, 2004) has been transformed by the so-called *digital revolution* (Negroponte, 1995), and especially by the emergence of new powerful players in the ecology of media (Hutchins and Rowe, 2012). During the 1990s and early 2000s, the media environment saw the consolidation of the big five infrastructural platforms – Alphabet, Amazon, Apple, Meta, and Microsoft – who became influential by acting as central nodes to the entire platform economy (van Dijck et al., 2018). Nevertheless, the emergence and consolidation of the big five platforms did not mean the complete dismissal and disappearance of older media formats or media organisations controlling them, but a readjustment in the power asymmetries through a new form of convergent coexistence (Thorburn and Jenkins, 2004; Jenkins, 2006; Jenkins et al., 2013). In this new media ecology, the fight for attention becomes even more important to all *players* as content is now abundant and widely available through distinct media channels (Hutchins and Rowe, 2012).

Notwithstanding, while the convergent accommodations mean that both *new* and *old* media coexist, it does not equate to a balanced power symmetry between all players. Infrastructural

platforms by controlling the flow of data, deciding the monetization strategies, and the selection of content through their secretive algorithms (van Dijck et al., 2018) can be considered central to the ecology of media while other players such as traditional media organizations, sport clubs, athletes, and brands act as complementors by providing the much-needed content. By acting as sole matchmakers between content, audience, and advertisers, infrastructural platforms create a *new* dependency on content creators that is anchored on the algorithm logic of winner-takes-all (Bärtl, 2018; Duffy et al., 2019; Srnicek, 2017; Poell et al., 2022). The impacts of this new logic on the creation and curation of content are far fetching for the cultural industries, and specifically to sport, as complementors are encouraged to adapt to the always evolving platform affordances such as in the case of YouTube and its video length changes over the years (Poell et al., 2022). Moreover, other platform affordances such as capacity for interactivity, and mix of on-demand and real-time streaming (McQuail and Deuze, 2020) can have a direct effect on content curation as complementors are compelled to use those to satisfy *algorithm gatekeepers*, such as the engineers at YouTube and the users who feed it through their engagement in the platform.

Sport on YouTube

YouTube was first launched in 2005 and acquired by Google (renamed as Alphabet in 2015 to reflect its restructuring) for $1.65 billion less than two years later (Arthurs et al., 2018; Burgess and Green, 2018). Currently, YouTube is considered the most popular and famous video sharing platform globally (Bärtl, 2018; Checchinato et al., 2015), with over 100 localized versions of the platform in 80 different languages (YouTube, 2022a).

Whilst YouTube has been instrumental in the wider trend speaking to participatory culture, it has also been (pro-)actively deployed by official/verified companies, organizations and brands

which strategically utilize to share content and reach new consumer bases (Burgess and Green, 2018). The multi-sided market nature of YouTube as a platform means that it must coordinate the interests of multiple stakeholders such as amateur content creators, professional creators, media partners, advertisers, and other intermediaries such as multi-channel networks, while still accommodating its own monetisation strategy that is based on the scalability of content and user base, attention economy, and monetisation model that predominantly rests on advertisement (Burgess and Green, 2018; Srnicek, 2017). For instance, YouTube advertisement alone corresponds to roughly 11% of Alphabet's annual revenue and has seen an increase of around 45% year-on-year between 2020 and 2021 (Alphabet, 2021), and this can be considered as an outcome of the 2 billion monthly logged-in users (YouTube, 2022a); whereas other revenues such as YouTube Premium and YouTube TV subscriptions are still accounted together with other revenue streams such as Google Play app purchases (Alphabet, 2021). For scholars of media, communication and sociology, this renders YouTube an extremely important and multifaceted platform because it can yield insights into the convergence of technological and sociocultural practices in the twenty-first century (see Arthurs et al., 2015), and its development as a platform is "tied to the story of the changing digital media environment, and to much older debates about the role of media and popular culture in society" (Burgess and Green, 2018: 1).

Situated in the sporting world, YouTube, in a similar way to other social media platforms, provides new avenues for sports organizations and brands to "drive revenue, promote athletes and teams, increase fan engagement and reach a global audience" (McCarthy, 2021a: 364). The strategic efforts of sporting organizations and brands to do this, via YouTube, has recently been recognized by researchers (Tang and Cooper, 2018; Billings et al., 2018). Scholars have across various sporting contexts examined, *inter alia*, misogyny and online abuse across YouTube

comments (McCarthy, 2021a), the emergence of football Fan TV channels (Rivers and Ross, 2021) and the content generated by sports clubs, international federations, *brands*, and fans (Checchinato et al., 2015; McCarthy, 2021b; Author A1; Zimmermann et al., 2011). Meanwhile, other relevant areas that have been covered relate to YouTube and sports fandom and fan practices. Gil-Lopez et al. (2017), for example, examine fans' commenting behaviour on YouTube during the "*El Clasico*" (Real Madrid versus Barcelona) and demonstrate how YouTube provides key insights into how sports fandom has developed in a Web 2.0 era. Moreover, Author AB1 have looked at fan behaviour during the 2018 FIFA Men's World Cup and how those fans have received the introduction of the Video Assistant Referee (VAR) in this tournament. Hinck (2018) also examined YouTube's impact on patterns of football fandom, focusing particularly on fans as vloggers.

Despite this, it can still be contended that there is very limited research on how sports organizations and clubs have adapted to YouTube's emergence and, more specifically, scant research explores how exactly the "big five" have adapted to the platform algorithm logic. Thus, little is known overall about how this has reconfigured the leagues' content, engagement, and reach, as derived from the opportunities afforded by YouTube's enormous and global reach (second only to other of Alphabet's media product: the Google search engine). However, this remains especially important, not only since the mentioned leagues (and the specific clubs within those leagues) are deploying various strategies in actively seeking to capture new audiences to build or enhance their global brands (Millward, 2011; Author A2; Author B1; Kennedy and Kennedy, 2012) but because YouTube, fundamentally, has altered the socio-cultural practice of watching sport, as suggested above.

Methods

To examine the adaptions to algorithm logic by the "big five" leagues, we subscribed to the key premises of digital sociology and this, subsequently, influenced our methodological choices. On a basic level, digital sociology proceeds on the basis that that the undeniable prominence of digital technologies in the present-day societies has profound implications on the discipline of sociology (Marres, 2017). Yet, this does not merely render "the digital" (i.e., technology, social media platforms) an important area of study for social researchers; it has also transformed and continues to transform the practices of doing social research and its methodological options or opportunities (ibid.). Indeed, as Arthurs et al. (2018) point out, the use of YouTube (and YouTube Data Tools), which we explain below, may be situated at the frontiers of digital research methods.

It can reasonably be argued that the sociology of sport, to date, has been responsive to the technological and digital shifts that are captured more generally by Marres (2017) and Lupton (2014) (see Author A1; Lawrence and Crawford, 2022; Millward, 2016). This has, for example, seen the rise of digital football studies, in which one key strand of research has remained particularly concerned with football-related communications on social media platforms (Lawrence and Crawford, 2022). However, on a methodological level, there is still scope for social researchers to remain innovative, versatile, and adaptable in their use of social media data for analysis of football or sport (Millward, 2016). In this respect, our approach meant that we sought to reflect both (1) "the digital" as socially important by itself *and* (2) the digital's transformative impact on social research methods more widely (cf. Marres, 2017). Thus, we employed YouTube Data Tools (see Rieder, 2015) to connect to YouTube's Application Programming Interface (API) v3 (YouTube, 2022b) to automatically extract data from all the "big five" leagues' official channels. By using the video list module with the channel ID

information (Rieder, 2015), we were able to collect, at the end of January 2022, *all*[1] uploaded videos' data such as posting date, video category, tags, video description, duration in ISO8061 format, and engagement metrics such as views, likes, and comments.

With a data set containing 64,247 videos we then manipulated the data in Excel (Microsoft, 2022) to create further variables such as total duration in seconds, age of post in days, active engagement (sum of likes and comments), ratio of active (likes and comments) and passive (views), all engagement per day, and views per day. Statistical analyses such as descriptive, correlations and non-parametric tests (Kruskal-Wallis) were performed using SPSS v27 for Mac (IBM, 2021). In the next sections, we seek to unpack the results and discuss them in relation to the wider literature.

Results

Whilst YouTube was created in 2005 and FIFA and UEFA were clearly early adopters of the platform with official channels from 2006 (Author A1), the "big five" leagues had different trajectories. There were some early adopters like La Liga (in 2006) and Bundesliga (in 2006) whereas Ligue 1 adopted YouTube in 2011 and Serie a in 2012. The EPL, meanwhile, may be understood as what Rogers (1983) considered 'laggards', adopting YouTube as recent as in 2019. Meanwhile, while the leagues had different trajectories in terms of adopting YouTube this does not translate directly with the *adoption* by fans as Serie A (7,870,000) and La Liga (7,510,000) have the most subscribers to the channel, followed by Bundesliga (3,090,000), EPL (2,170,000), and Ligue 1 (761,000). Moreover, the adoption of the platform as an alternative medium for TV also does not directly relate to the revenue from the sale of

[1] Due to limitation of YouTube Data Tools, we were only able to collect the last 20,000 videos' data from La Liga and Serie A. The former had 37,942 videos uploaded on the day of collection, while the latter had 21,724 videos uploaded

broadcasting rights, as the levels of income by “big five” are also distinct. Indeed, this reflects the distinct strategic interests of each league, which have impacted their ability to capture emerging football markets (e.g., East Asia and North America) and the number of countries that receive broadcasting of live matches whereby the EPL have dominated since the 2000s (Millward, 2011; Kennedy and Kennedy, 2012). Whilst the “big five”, in the 2018/19 season, collectively generated €3,450 billion in broadcasting revenue (Statista, 2022), the EPL with €3,459 million was ahead the other leagues – reflecting the league’s hegemonic commercial activities and status as the "global football league" (Millward, 2011) – with La Liga (€1,831 million), Bundesliga (€1,483 million), and Serie A (€1,460) at similar levels, and, finally, Ligue 1 (€901 million) (ibid.). The distinctiveness of approach in terms of media ecology by the “big five” can be further evidenced in Tables 1 and 2 below.

Table 1 – Descriptive Analyses

[Insert Table 1 here]

Table 2 – Descriptive Analyses (less than 365 days)

[Insert Table 2 here]

As it is possible to see, the leagues have approached their content creation on YouTube differently, with La Liga and Serie A producing the most content, followed by Ligue 1 and Bundesliga, and the laggard EPL with the least. The “big five” predominantly produce and share content in the “Sports” category on YouTube as exemplified by Ligue 1 and Serie A having all its content in that category (100% in “Sports”), meanwhile other leagues have a small content library under other categories such as the Premier League with two (99.8% in “Sports”) and La Liga with 74 videos in “Entertainment” (99.6% in “Sports”), and Bundesliga

with 93 in “Entertainment” and five in “Gaming” (98.7% in “Sports”). Not only historically – with the full data set – the leagues have approached their content curation distinctively, but also in the past year they have produced and shared a different number of videos (see Table 2 above). Results of non-parametric tests (Kruskal-Wallis) on both full data set and less than one-year sub-sample were to reject the null hypotheses, meaning that the channels and leagues are distinct between themselves. In terms of the length of content, all leagues use the latest YouTube affordance of sharing over 15 minutes of content (900s) (YouTube, 2022c), and especially other affordances such as streaming entire events of up to 12 hours (43,200s). Despite this, the most distinctive feature in terms of content between the “big five” is that the EPL does not have any match highlights in its library, since these are merely available on the official broadcasters’ YouTube channels, or within the different clubs’ official channels that can be accessed through a curated playlist on EPL’s channel. Notwithstanding, the EPL still has the longest mean for duration in seconds (929s), further indicating that its *original* content on YouTube might be used to complement TV rather than substitute it. The distinctiveness between the five leagues was also apparent when we plotted the most viewed videos in relation to their age (see Figures 1 to 5 below) and compared what *type* of video that received the most views. As it is possible to see from the figures below, Serie A, Ligue 1, and Bundesliga have a *stronger* star player/manager and team *quality* effect that is congruent to what was found by Wills et al. (2020) in terms of UEFA Champions League TV audience broadcasting demand, while both La Liga and Premier League do have a mix of star player and team *quality*, and important moments in the leagues being more sober or funnier.

[Insert Figures 1 – 5]

The distinctiveness between the "big five" is further exacerbated when correlations between the different YouTube metrics are performed. Because of the platform scalability and its algorithm logic, newer videos tend to have better metrics such as views, likes and comments for most of the "big five" leagues (see Table 3 below for full correlation analyses). While social media platforms, and specifically to our case YouTube, are the medium of choice for Generation Z and Millennials (see Statista, 2020, 2021a, 2021b) and it is commonly argued within media circles that there is a preference for shorter video formats due to an alleged shorter attention span (see Newman, 2010), what we have encountered when analysing the full data set is that longer videos tend to have better metrics in terms of views, likes, and comments for all leagues apart from the EPL. Nevertheless, when factoring for the scalability of the platform and analysing only videos shared during the last 365 days what we have encountered is somehow different as shorter videos have better metrics for Bundesliga (views, likes, and comments), La Liga (views and comments), while at the same time longer videos perform better for Ligue 1 (views, likes, and comments), Premier League (comments), and Serie A (views, likes, and comments) (see Table 4 below). It is important to acknowledge that the mean length of Bundesliga (222s to 1,253s), La Liga (458s to 818s), Ligue 1 (129s to 132s), and Serie A (137s to 253s) have increased between newer and older videos (less than 365 days and more than 365 days), while for the EPL (1,253s to 617s) it has decreased (see Table 2 above). In a way, it is possible to assume that the different leagues are still trying to find the right balance in terms of length of video by using the analytics affordances of the platform (see van Dijck et al., 2018).

Table 3 – Correlations (full data set)

[Insert Table 3 here]

Table 4 – Correlations (less than 365 days)

[Insert Table 4 here]

Nevertheless, while views might give an indication that users are clicking on the content it does not provide *evidence* that they are engaging with it, or even fully watching it. Without access to analytical data that the leagues possess through the platform, it is only possible to use active engagement metrics as *proxies*. Thus, in terms of active engagement such as likes and comments, all leagues apart from EPL have negative correlations in relation to age of the video indicating a possible shift in audiences' cultural practices of consuming content in this specific platform (see Table 3). In a way, audiences are not anymore merely passively consuming the content such as what is commonly done on TV (*watching*) but are now actively engaging with the content by way of likes and comments. Moreover, it can also indicate that the content shared by those leagues are now taking better advantage of the platform affordances by incorporating elements that create more active engagement such as call to actions, by for example encouraging specific emotional reactions and click-based interactions such as "(dis)liking", "sharing" or commenting. To further investigate this possible shift in audiences' cultural practices we have correlated the age of video with the relative active/passive ratio as seen in Table 5 below. All statistically significant negative correlations might provide further evidence that users – both leagues and audiences – are utilising *better* the affordances of the platform. Just to put into perspective, the ratio varied between 0.014 for Ligue 1 to 0.028 for Bundesliga (for all data set), while for the last 365 days it varied between 0.028 for Ligue 1 to 0.047 for La Liga; meaning that for every 100 to 20 views there was an active engagement.

Table 5 – Active/Passive ratio and Age correlations

[Insert Table 3 here]

Overall, what our comparative analyses showed is that the *live* nature of digital platforms (see also Partin, 2020) with its changing technological affordances (e.g., longer video formats) and scalability (e.g., larger user base) translate into an environment that requires constant adaptation by complementors. If newer videos have better engagement in terms of views, likes and comments, and user engagement is at the core of YouTube's algorithm (see YouTube, 2022d) then complementors *necessarily* must constantly produce newer content to *satisfy* the algorithm to still be relevant in the platform. Moreover, because of its *newness* in comparison to more established media such as TV, and its changing technological affordances, the "big five" have not only approached their content library distinctively but have adapted it over the years in order to find the best fit.

Discussion

YouTube as a distinctive digital platform, that can be considered as an *alternative* to the more traditional medium of TV (see Author BA1; BA2), provides further space for brands such as football leagues to connect with their audiences. As we have showed in the data analyses above, the "big five" are constantly exploring the different platform affordances by constantly curating distinct types of content. Because of its newness in relation to the more established medium of TV, its constantly changing affordances, and distinct cultural practices of *prosuming* in it, it was possible to recognise how the "big five" are still navigating its idiosyncrasies. Furthermore, what is important to emphasise is that their mere presence on this particular digital platform reinforces the position that digital video is the new frontier in the digital transformation of business and society (Cisco, 2020; Forbes, 2021), and thus YouTube amongst other platforms such as Instagram and TikTok becomes a place to be. Nevertheless, a

mere presence does not fully clarify the *new digitally transformed symbiotic relationship* between sport and digital platforms, which is what we seek to unpack below.

In a more basic level, by entering this new algorithm logic as complementors the football leagues supply the much-needed content for the platform to continue to scale its advertising business model (Burgess and Green, 2018). Despite of the content's nonrival characteristic and its low marginal extra cost to digitally distribute through YouTube (see Poell et al., 2022), and the appetite for continuous content by the platform – entailing a *more* symmetric relationship – the reality is that the leagues are entering into a new asymmetric arrangement. When entering this new algorithm logic, the leagues we have investigated enter a new *iron cage*, transforming their symbiotic relationship that was based on the editorial logic of traditional media outlets, to one that is depended on platform engineers and users who feed the algorithm (Nieborg and Poell, 2018; Poell et al., 2022; Duffy et al., 2019). Their initiatives to *please* the algorithm can be exemplified by the changes that the "big five" underwent in terms of length of video during the past year, but also in terms of the constant creation of content as with La Liga who has uploaded on average almost seven videos per day since 2006. As such, it is possible to argue that the "big five" are now in an algorithm-dependent relationship.

On a deeper level, while the *raison d'être* of traditional media symbiotic relationship was the selling of profitable exclusive broadcasting rights by sport organisations (see Hutchins and Rowe, 2012) and subsequent media's subscription and advertising monetisation strategies, in the algorithm logic there are transformations to the purposes of this relationship. Whilst YouTube like their traditional media counterparts primarily relies on advertising and to a minor extent on subscriptions (Premium and YouTube TV) for monetisation (Alphabet, 2021), complementors instead of limiting themselves to selling rights can monetise their content by

various other means such as display, overlay, and video advertisings, channel membership, sale of merchandise, super chat and super stickers, and receive part of Premium revenues (YouTube, 2022e). Even with that being the case, the leagues we have investigated mostly rely on paid product placement or the different forms of advertising on the content they shared on the platform. In a way, those leagues are not utilising all the platform affordances to fully monetise their content as seen on other video platforms and cultural industries loosely related to sport (see Johnson and Woodcock, 2019; Partin, 2020).

Therefore, if the "big five" are not fully monetising their content on YouTube, and when they do, the revenues are not yet comparable to what is achieved through TV broadcasting deals; then what would be the reason for understanding this algorithm-dependent relationship as symbiotic? As we have contented above, for the platform the leagues provide the much-needed content based on one of the most important cultural manifestations worldwide (see Giulianotti and Robertson, 2009) in order to scale their advertising business. For the leagues themselves their presence on YouTube provide not only a direct access to fans across the world that bypass the editorial logic, but most importantly provide a direct measurement of what is valued or not by those fans. Consequently, what keeps this relationship alive – and thus symbiotic – is the exchange of content for a small proportion of the user generated data. As Sadowski (2019) and Srnicek (2017) show, contemporary (platform) capitalism is centred around the constant accumulation of data, and while YouTube – or Alphabet -–as infrastructure platform controls the flow and extracts most of the data for itself, the "big five" as complementors have access to a share of this. Therefore, as complementors the *raison d'être* for keeping this relationship alive is essentially the access to data from the second most accessed digital space in the world.

In sum, while in traditional media the symbiotic relationship was governed by the editorial logic – or editorial-dependent – in this digitally transformed media ecosystem the algorithm logic creates a new asymmetric dependency in where the "big five" trades its content for access to a share of user generated data from one of the most accessed platforms in the world.

Conclusions

The prevalence of digital technologies and platforms has transformed the ways in which individuals and groups produce and consume specific manifestations of popular culture (Arvidsson, 2019) This includes football, as one paradigmatic and highly global exemplar of popular culture in the twenty-first century (Giulianotti and Robertson, 2009). Against this backdrop, this article's purpose was to explore how the "big five" leagues have adapted to the algorithm logic on YouTube. This was situated within the context of the broader symbiotic relationship between sport and media which remains highly complex (Rowe, 2004) and continues to experience transformations in the present-day. Ultimately, as situated within the "platform society" (van Dijck et al., 2018), the emergence of new key players has reconfigured the ecology of the media (Hutchins and Rowe, 2012) and thus, understanding how the "big five" leagues have adapted to YouTube – as the platform we focused on – remains important, because this provides insights into the broader trends speaking to exactly how new media platforms provide sports organizations digital spaces for content creation that is *complementary* to the more conventional means of football broadcasting, namely television. Overall, we argue that YouTube, for the "big five", offers one medium through which they can act as complementors, receive user data, and test/adapt their content strategies to please the algorithm gatekeepers. However, whereas YouTube, in economic terms, remains the key profiteer of this, the "big five" can simultaneously gain knowledge from the testing of content strategies and

especially the instant consumer feedback that again might inform their strategies on other or novel platforms in an ever-changing digital world.

We contend that this argument and our findings remain particularly significant for at least two principal reasons. First, scholars of sport and communication have, increasingly, recognized YouTube as a key space for fandom, content generation and vlogging (Hinck, 2018; Checchinato et al., 2015). However, scant research explores, in a comparative manner, how the "big five" have adapted to YouTube, despite the platform's global user base, enormous popularity and its general importance within digital societies (Marres, 2017; Arthurs et al., 2018). Second, our findings remain particularly significant when considering the strategic efforts of the "big five" leagues (and associated clubs) to constantly reach out to new global audiences, engage in commercial activities and enhance their global brand values and popularity (Kennedy and Kennedy, 2012; Millward, 2011).

To summarize, this article has not only attached a new layer to the existing literature on the relationship between sport and YouTube (Checchinato et al., 2015; McCarthy, 2021a, 2021b) and the wider digital football studies project (Lawrence and Crawford, 2022), because we also make an original and timely contribution to the body of literature on the symbiotic media/sport relationship (Rowe, 2004, 2015; Hutchins and Rowe, 2012) in a digital sociological age, which has seen the rise of new platforms, such as YouTube. This area, and sports media more widely, remain key cornerstones of the continually developing academic field revolving around the nexus between sport and communication (see Billings et al., 2018). Finally, this article has also added to available research on the "big five" leagues (Sanchez et al., 2021) in a time where a number of key clubs competing in these leagues have been criticized by athletes, fans, sports officials, commentators and academics for establishing a European Super League. Whilst the

Super League plans announced in April 2021 were quickly abandoned by the 12 relevant clubs, the *timing* of this remains important, because the enormous public interest in this proposal serves as a reflector and reminder of the current sociological importance of European football, its ownership and marketing efforts in the present-day societies.

It remains necessary to acknowledge, as one limitation, that there are also some key players in the article's context that our study does not account for specifically. That is the individual clubs of the "big five" national leagues, some of which may be deemed European "super clubs" (see Millward, 2006; Andrews, 2015), who possess distinct YouTube channels, subscriber bases and content strategies. We also acknowledge that there are certain limitations attached to our findings, stemming from our methodological approach and our platform-specific focus (YouTube), yet we concurrently contend that our findings remain significant and can serve to open up for and invite future research on the relationship between YouTube and sport and specific club's strategies. Moreover, researchers may also look towards other digital platforms, such as the video game streaming site Twitch (Qian, 2022), where sport media products and eSports competitions are live and co-streamed, whereas the platform has been utilized by sports organizations and athletes. Lastly, the topic of active/passive participation – the acts of "liking" or "sharing" content – warrant qualitative exploration with regards to specific groups' digital consumption and the meanings of being "active" and "passive" in such contexts.

References

Alphabet (2021) *Q4 & Fiscal Year*. Available at: https://abc.xyz/investor/static/pdf/20210203_alphabet_10K.pdf?cache=b44182d (Accessed 05/03/2021).

Andrews M (2015) Being special: The rise of super clubs in European football. CID Working Paper Series 299, 1-43.

Arthurs J, Drakopoulou S and Gandini A (2018) Researching YouTube. *Convergence: The International Journal of Research into New Media Technologies* 24(1): 3-15.

Arvidsson A (2019) *Changemakers: The Industrious Future of the Digital Economy.* Cambridge: Polity Press.

Bärtl M (2018) YouTube channels, uploads and views: a statistical analysis of the past 10 years. *Convergence: The International Journal of Research into New Media Technologies* 24(1): 16-32.

Billings A, Butterworth ML and Turman PD (2018) *Communication and Sport: Surveying the Field.* Thousand Oaks: Sage.

Burgess J and Green J (2018) *YouTube: Online Video and Participatory Culture*. Cambridge: Polity Press.

Checchinato F, Disegna M and Gazzola P (2015) Content and feedback analysis of YouTube videos: football clubs and fans as brand communities. *Journal of Creative Communications* 10(1): 71-88.

Cisco (2020) *Cisco Annual Internet Report (2018-2023) White Paper*. Available at: https://www.cisco.com/c/en/us/solutions/collateral/executive-perspectives/annual-internet-report/white-paper-c11-741490.html

Deloitte (2022) *Deloitte Football Money League 2022*. Available at: https://www2.deloitte.com/uk/en/pages/sports-business-group/articles/deloitte-football-money-league.html

Deuze M (2011) Media life. *Media, Culture & Society* 33(1): 137-148.

Duffy BE, Poell T and Nieborg D (2019) Platform practices in the cultural industries: creativity, labor, and citizenship. *Social Media+Society* 5(4): 1-8.

Forbes (2021) *How the pandemic has changed video content and consumption*. Available at: https://www.forbes.com/sites/falonfatemi/2021/02/01/how-the-pandemic-has-changed-video-content-and-consumption/?sh=53a3ef6f6ec0 (Accessed 03/05/2022).

Galily Y and Tamir I (2014) A match made in heaven?! Sport, television, and new media in the beginning of the third Millenia. *Television & New Media* 15(8): 699-702.

Gil-Lopez T, Ahmed S and Taylor LD (2017) Understanding fandom in the multilingual internet: a study of "el clásico" fans' commenting behavior on YouTube. *International Journal of Sport Communication* 10(1): 17-33.

Giulianotti R and Robertson R (2009) *Globalization & Football*. London: Sage.

Hinck A (2018) Shifting patterns of football fandom and digital media cultures: YouTube, FIFA videogames, and AFC Wimbledon. In: Lawrence S and Crawford G (eds) *Digital Football Cultures*. Abingdon: Routledge, pp. 104–121.

Hutchins B and Rowe D (2012) *Sport beyond Television: The Internet, Digital Media and the Rise of Networked Media Sport*. New York: Routledge.

IBM (2021) *IBM SPSS Statistics*. In (Version 27) https://www.ibm.com/support/pages/downloading-ibm-spss-statistics-27010

Jenkins H (2006) *Convergence Culture: Where Old and New Media Collide* (1st ed.). New York: New York University Press.

Jenkins H, Ford S and Green J (2013) *Spreadable Media: Creating value and meaning in a networked culture*. New York: New York University Press.

Johnson M and Woodcock J (2019) "And Today's Top Donator is": how live streamers on Twitch.tv monetize and gamify their broadcasts. *Social Media + Society*: 1-11.

Kennedy P and Kennedy D (2012) Football supporters and the commercialisation of football: comparative responses across Europe. *Soccer & Society* 13(3): 327-340.

Lawrence S and Crawford G (2022) Towards a digital football studies: current trends and future directions for football cultures research in the post-Covid-19 moment. *Leisure Studies*, 1-14.

Lupton D (2014) *Digital Sociology*. London: Routledge.

Marres N (2017) *Digital Sociology: The Reinvention of Social Research*. Cambridge: Polity.

McCarthy B (2021a) 'Who unlocked the kitchen?': online misogyny, YouTube comments and women's professional street skateboarding. *International Review for the Sociology of Sport*, p.10126902211021509.

McCarthy B (2021b) Reinvention through CrossFit: branded transformation documentaries. *Communication & Sport* 9(1): 150-165.

McQuail D and Deuze, M (2020) *McQuail's Media and Mass Communication Theory* (7th ed.). Sage.

Microsoft (2022) *Excel*. In (Version 16.59) https://www.microsoft.com/en-us/microsoft-365/excel

Millward P (2006) Networks, power and revenue in contemporary football: An analysis of the G14. *International Review of Modern Sociology* 32(2): 199-216.

Millward P (2011) *The Global Football League: Transnational networks, social movements and sport in the new media age*. Basingstoke: Springer.

Millward P (2016) Football and social media. Fanzines, fan scenes and supporter protest movements in elite English football. In: Hughson J, Moore K, Spaaij R and Maguire J (Eds) *Routledge Handbook of Football Studies*. New York: Routledge, pp. 189-199.

Negroponte N (1995) *Being Digital* (1st ed.). London: Hodder & Stoughton.

Newman M (2010) New media, young audiences and discourses of attention: from *Sesame Street* to 'snack culture'. *Media, Culture & Society* 32(4): 581-596.

Nieborg D and Poell T (2018) The platformization of cultural production: theorizing the contingent cultural commodity. *New Media & Society* 20(11): 4275-4292.

Partin W (2020) Bit by (Twitch) bit: "platform capture" and the evolution of digital platforms. *Social Media + Society*: 1-12.

Poell T, Nieborg D and Duffy BE (2022) *Platforms and Cultural Production*. Cambridge: Polity Press.

Qian TY (2022) Watching sports on Twitch? A study of factors influencing continuance intentions to watch Thursday Night Football co-streaming. *Sport Management Review* 25(1): 59-80.

Rieder B (2015) *YouTube Data Tools*. In (Version 1.22) https://tools.digitalmethods.net/netvizz/youtube/

Rivers DJ and Ross AS (2021) "This channel has more subs from rival fans than Arsenal fans": Arsenal Fan TV, football fandom and banter in the new media era. *Sport in Society* 24(6): 867-885.

Rogers E (1983) *Diffusion of Innovations* (3rd ed.). London: The Free Press.

Rowe D (2004) *Sport, culture and the media: The unruly trinity* (2nd ed.). Buckingham: Open University Press.

Rowe D (2015) Cultural forms of television: Sport. In: Alvarado S and Buonanno M, Gray H and Miller T (Eds) *The SAGE Handbook of Television Studies.* London: Sage, pp. 225-244.

Sadowski J (2019) When data is capital: Datafication, accumulation, and extraction. *Big Data & Society* 6(1): 1-12.

Sanchez LC, Barajas A and Sanchez-Fernandez P (2021) Fans in the ownership of big five leagues: lessons for better football governance. *Soccer & Society* 22(4): 355-371.

Srnicek N (2017) *Platform Capitalism*. Cambridge Malden, MA: Polity Press.

Statista (2020) *Breakdown of main sources of news in Australia in 2020, by generation*. Available at: https://www.statista.com/statistics/1111914/australia-generational-breakdown-main-sources-of-news/ (Accessed 13/04/2022).

Statista (2021a) *Hours of video content viewed each week in Australia in 2021, by generation and programming method*. Available at: https://www.statista.com/statistics/1271884/australia-weekly-video-consumption-by-generation-and-method/ (Accessed 13/04/2022).

Statista (2021b) *Main news sources used by Gen Z or Millennials vs. total consumers worldwide as of February 2021*. Available at: https://www.statista.com/statistics/281915/main-news-sources-millennials/ (Accessed 13/04/2022).

Statista (2022) Revenue from broadcasting rights of European soccer leagues from in 2018/19. Available at: https://www.statista.com/statistics/627306/broadcasting-big-five-european-football-league-revenues/#professional (Accessed 13/04/2022)

Tang T and Cooper R (2018) The most social games: predictors of social media uses during the 2016 Rio Olympics. *Communication & Sport* 6(3): 308-330.

The Guardian (2022) *European Super League*. Available at: https://www.theguardian.com/football/european-super-league (accessed 13/07/2022).

Thorburn D and Jenkins H (Eds) (2004) *Rethinking Media Change: The Aesthetics of Transition.* Cambridge, MA: MIT Press.

UEFA (2022) Club coefficients. Available at: https://www.uefa.com/nationalassociations/uefarankings/club/#/yr/2022

van Dijck J, Poell T and de Waal M (2018) *The Platform Society: Public Values in a Connective World*. New York: Oxford University Press.

Wills G, Tacon R and Addesa F (2020) Uncertainty of outcome, team quality or star players? What drives TV audience demand for UEFA Champions League football? *European Sport Management Quarterly* OnlineFirst: 1-19.

YouTube (2022a) *YouTube for Press*. Available at: https://blog.youtube/press/ (Accessed 12/04/2022).

YouTube (2022b) *Data API*. Available at: https://developers.google.com/youtube/v3 (Accessed 12/04/2022).

YouTube (2022c) *Upload videos longer than 15 minutes*. Available from: https://support.google.com/youtube/answer/71673?co=GENIE.Platform%3DAndroid&hl=en (Accessed 12/04/2022).

YouTube (2022d) *Growing your channel*. Available from: https://www.youtube.com/intl/en_uk/creators/how-things-work/content-creation-strategy/ (Accessed 14/04/2022).

YouTube (2022e) *How to earn money on YouTube*. Available from: https://support.google.com/youtube/answer/72857?hl=en-GB&ref_topic=9257988 (Accessed 15/04/2022).

Zimmerman MH, Clavio GE and Lim CH (2011) Set the agenda like Beckham: a professional sports league's use of YouTube to disseminate messages to its users. *International Journal of Sport Management and Marketing* 10(3-4): 180-195.

Tables

Table 1 – Descriptive Analyses (full data set)

League		N	Minimum	Maximum	Mean	Std. Deviation
Bundesliga	Age	7284	1	3,086	1,502	938
	Seconds	7284	4	36,000	388	1,449
	Views	7284	416	19,195,336	143,903	472,467
	Likes	7284	4	295,577	2,428	6,639
	Comments	7284	0	13,328	176	494
	Valid N (listwise)	7284				
La Liga	Age	20000	1	2313	1437	720
	Seconds	20000	4	42,900	501	1,368
	Views	20000	0	16,864,292	80,831	369,017
	Likes	18173	0	133,140	1,022	4,435
	Comments	18155	0	4,570	53	207
	Valid N (listwise)	18151				
Ligue 1	Age	16118	1	3,458	1,731	996
	Seconds	16118	30	3,662	130	118
	Views	16118	10	8,138,948	10,949	115,862
	Likes	16118	0	108,865	114	1368
	Comments	16117	0	4,929	6	67
	Valid N (listwise)	16117				
Premier League	Age	931	0	904	398	281
	Seconds	931	4	22,324	929	1,996
	Views	931	2690	14,493,213	386,640	1,133,491

	Likes	931	41	102,728	5,205	10,239
	Comments	929	0	3,810	304	444
	Valid N (listwise)	929				
Serie A	Age	19914	0	2,281	1,509	626
	Seconds	19914	4	11,041	148	255
	Views	19914	10	20,089,457	133,464	565,612
	Likes	19914	0	288,550	2,046	8,081
	Comments	19914	0	15,412	99	404
	Valid N (listwise)	19914				

Table 2 – Descriptive Analyses (less than 365 days)

League		N	Minimum	Maximum	Mean	Std. Deviation
Bundesliga	Seconds	1,174	4	10,236	1,253	2,660
	Views	1,174	674	8,180,467	133,255	337,034
	Likes	1,174	8	194,859	3,220	7,260
	Comments	1,174	0	10,420	198	608
	Age	1,174	1	365	166	109
	Views per Subscriber	1,174	.0002	3	.0431	.1091
	Active Engagement per Subscriber	1,174	.0000	.0635	.0011	.0024
	Valid N (listwise)	1,174				
La Liga	Seconds	2,393	20	21,856	818	1,254
	Views	2,393	38	6,057,694	135,057	446,997
	Likes	2,393	1	87,612	2,441	7,771
	Comments	2,390	0	3,821	108	308
	Age	2,393	1	365	183	114
	Views per Subscriber	2,393	.0000	.8066	.0180	.0595
	Active Engagement per Subscriber	2,393	.0000	.0121	.0003	.0011
	Valid N (listwise)	2,390				
Ligue 1	Seconds	1,847	60	665	133	97
	Views	1,847	55	8,138,948	36,804	272,121
	Likes	1,847	0	108,865	514	3,703
	Comments	1,847	0	4,929	24	168
	Age	1,847	1	363	185	116
	Views per Subscriber	1,847	.0001	11	.0484	.3576

	Active Engagement per Subscriber	1,847	.0000	.1467	.0007	.0051
	Valid N (listwise)	1,847				
Premier League	Seconds	475	4	22,324	617	1,685
	Views	475	3110	8,346,128	246,738	620,742
	Likes	475	225	102,728	4,550	8,777
	Comments	474	9	2,858	243	319
	Age	475	0	365	157	108
	Views per Subscriber	475	.0014	4	.1137	.2861
	Active Engagement per Subscriber	475	.0001	.0487	.0022	.0042
	Valid N (listwise)	474				
Serie A	Seconds	1,835	8	11,041	254	435
	Views	1,835	1178	7,352,643	325,584	634,587
	Likes	1,835	54	150,343	6,244	11,486
	Comments	1,835	1	8,213	307	610
	Age	1,835	0	365	150	113
	Views per Subscriber	1,835	.0001	.9343	.0414	.0806
	Active Engagement per Subscriber	1,835	.0000	.0201	.0008	.0015
	Valid N (listwise)	1,835				

Table 3 – Correlations (full data set)

League				Seconds	Views	Likes	Comments
Bundesliga	Spearman's rho	Views	Correlation Coefficient	.185**			
			Sig. (2-tailed)	.000			
			N	7284			
		Likes	Correlation Coefficient	.260**	.911**		
			Sig. (2-tailed)	.000	.000		
			N	7284	7284		
		Comments	Correlation Coefficient	.289**	.725**	.819**	
			Sig. (2-tailed)	.000	.000	.000	
			N	7284	7284	7284	
		Age	Correlation Coefficient	-.204**	-.088**	-.291**	-.164**
			Sig. (2-tailed)	.000	.000	.000	.000
			N	7284	7284	7284	7284
La Liga	Spearman's rho	Views	Correlation Coefficient	.275**			

			Sig. (2-tailed)	.000			
			N	20000			
		Likes	Correlation Coefficient	.342**	.943**		
			Sig. (2-tailed)	.000	.000		
			N	18173	18173		
		Comments	Correlation Coefficient	.304**	.875**	.914**	
			Sig. (2-tailed)	.000	.000	.000	
			N	18155	18155	18151	
		Age	Correlation Coefficient	-.381**	-.449**	-.613**	-.569**
			Sig. (2-tailed)	.000	.000	.000	.000
			N	20000	20000	18173	18155
Ligue 1	Spearman's rho	Views	Correlation Coefficient	.460**			
			Sig. (2-tailed)	.000			
			N	16118			
		Likes	Correlation Coefficient	.481**	.833**		
			Sig. (2-tailed)	.000	.000		
			N	16118	16118		
		Comments	Correlation Coefficient	.362**	.688**	.725**	
			Sig. (2-tailed)	.000	.000	.000	
			N	16117	16117	16117	
		Age	Correlation Coefficient	-.005	.039**	-.322**	-.143**
			Sig. (2-tailed)	.516	.000	.000	.000
			N	16118	16118	16118	16117
Premier League	Spearman's rho	Views	Correlation Coefficient	-.081*			
			Sig. (2-tailed)	.014			
			N	931			
		Likes	Correlation Coefficient	-.194**	.947**		
			Sig. (2-tailed)	.000	.000		
			N	931	931		
		Comments	Correlation Coefficient	.061	.796**	.819**	
			Sig. (2-tailed)	.061	.000	.000	
			N	929	929	929	
		Age	Correlation Coefficient	.484**	.148**	-.020	.150**
			Sig. (2-tailed)	.000	.000	.535	.000
			N	931	931	931	929
Serie A	Spearman's rho	Views	Correlation Coefficient	.607**			
			Sig. (2-tailed)	.000			
			N	19914			
		Likes	Correlation Coefficient	.628**	.952**		
			Sig. (2-tailed)	.000	.000		
			N	19914	19914		

		Comments	Correlation Coefficient	.639**	.855**	.851**	
			Sig. (2-tailed)	.000	.000	.000	
			N	19914	19914	19914	
		Age	Correlation Coefficient	-.400**	-.609**	-.653**	-.653**
			Sig. (2-tailed)	.000	.000	.000	.000
			N	19914	19914	19914	19914

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 4 – Correlations (less than 365 days)

Leagues				Seconds	Views	Likes	Comments
Bundesliga	Spearman's rho	Views	Correlation Coefficient	-.371**			
			Sig. (2-tailed)	.000			
			N	1174			
		Likes	Correlation Coefficient	-.290**	.964**		
			Sig. (2-tailed)	.000	.000		
			N	1174	1174		
		Comments	Correlation Coefficient	-.147**	.803**	.880**	
			Sig. (2-tailed)	.000	.000	.000	
			N	1174	1174	1174	
		Age	Correlation Coefficient	-.063*	.255**	.249**	.352**
			Sig. (2-tailed)	.032	.000	.000	.000
			N	1174	1174	1174	1174
La Liga	Spearman's rho	Views	Correlation Coefficient	-.050*			
			Sig. (2-tailed)	.015			
			N	2393			
		Likes	Correlation Coefficient	-.035	.964**		
			Sig. (2-tailed)	.083	.000		
			N	2393	2393		
		Comments	Correlation Coefficient	-.262**	.838**	.842**	
			Sig. (2-tailed)	.000	.000	.000	
			N	2390	2390	2390	
		Age	Correlation Coefficient	-.041*	.180**	.133**	.078**
			Sig. (2-tailed)	.043	.000	.000	.000
			N	2393	2393	2393	2390
Ligue 1	Spearman's rho	Views	Correlation Coefficient	.614**			
			Sig. (2-tailed)	.000			

			N	1847			
		Likes	Correlation Coefficient	.614**	.948**		
			Sig. (2-tailed)	.000	.000		
			N	1847	1847		
		Comments	Correlation Coefficient	.556**	.857**	.861**	
			Sig. (2-tailed)	.000	.000	.000	
			N	1847	1847	1847	
		Age	Correlation Coefficient	-.042	-.008	-.090**	-.055*
			Sig. (2-tailed)	.074	.732	.000	.018
			N	1847	1847	1847	1847
Premier League	Spearman's rho	Views	Correlation Coefficient	.017			
			Sig. (2-tailed)	.707			
			N	475			
		Likes	Correlation Coefficient	-.025	.968**		
			Sig. (2-tailed)	.584	.000		
			N	475	475		
		Comments	Correlation Coefficient	.304**	.788**	.792**	
			Sig. (2-tailed)	.000	.000	.000	
			N	474	474	474	
		Age	Correlation Coefficient	.288**	.163**	.128**	.373**
			Sig. (2-tailed)	.000	.000	.005	.000
			N	475	475	475	474
Serie A	Spearman's rho	Views	Correlation Coefficient	.106**			
			Sig. (2-tailed)	.000			
			N	1835			
		Likes	Correlation Coefficient	.086**	.983**		
			Sig. (2-tailed)	.000	.000		
			N	1835	1835		
		Comments	Correlation Coefficient	.165**	.930**	.939**	
			Sig. (2-tailed)	.000	.000	.000	
			N	1835	1835	1835	
		Age	Correlation Coefficient	.276**	.266**	.252**	.362**
			Sig. (2-tailed)	.000	.000	.000	.000
			N	1835	1835	1835	1835

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 5 – Active/Passive Engagement (full data set)

League				Age
Bundesliga	Spearman's rho	Active/Passive	Correlation Coefficient	-.381**
			Sig. (2-tailed)	.000
			N	7284
La Liga	Spearman's rho	Active/Passive	Correlation Coefficient	-.445**
			Sig. (2-tailed)	.000
			N	19992
Ligue 1	Spearman's rho	Active/Passive	Correlation Coefficient	-.649**
			Sig. (2-tailed)	.000
			N	16118
Premier League	Spearman's rho	Active/Passive	Correlation Coefficient	-.470**
			Sig. (2-tailed)	.000
			N	931
Serie A	Spearman's rho	Active/Passive	Correlation Coefficient	-.085**
			Sig. (2-tailed)	.000
			N	19914

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 1

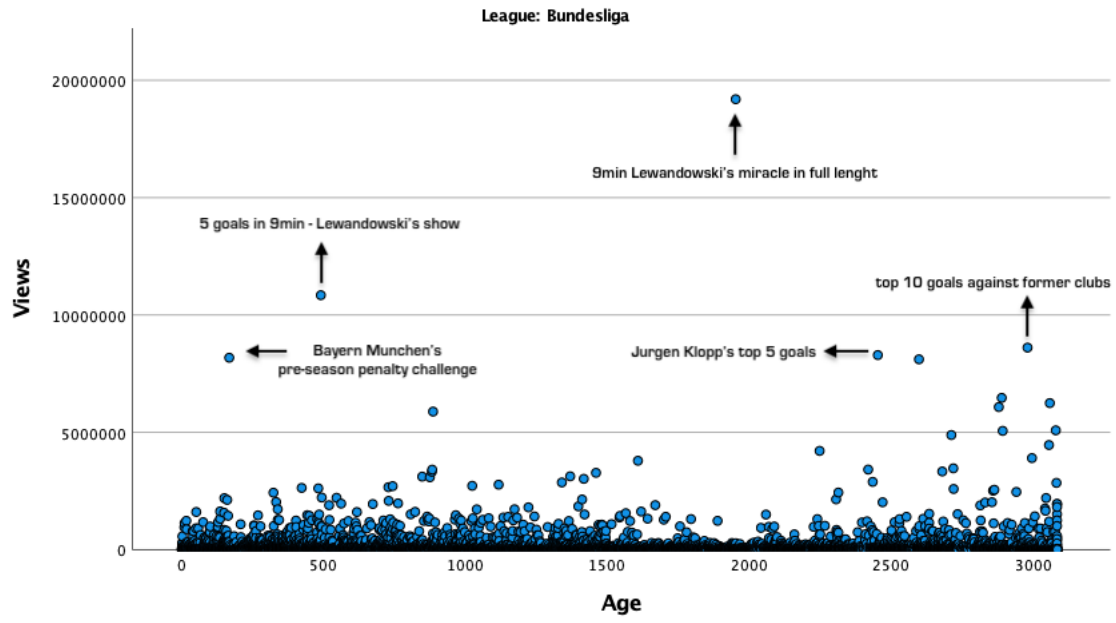


Figure 2

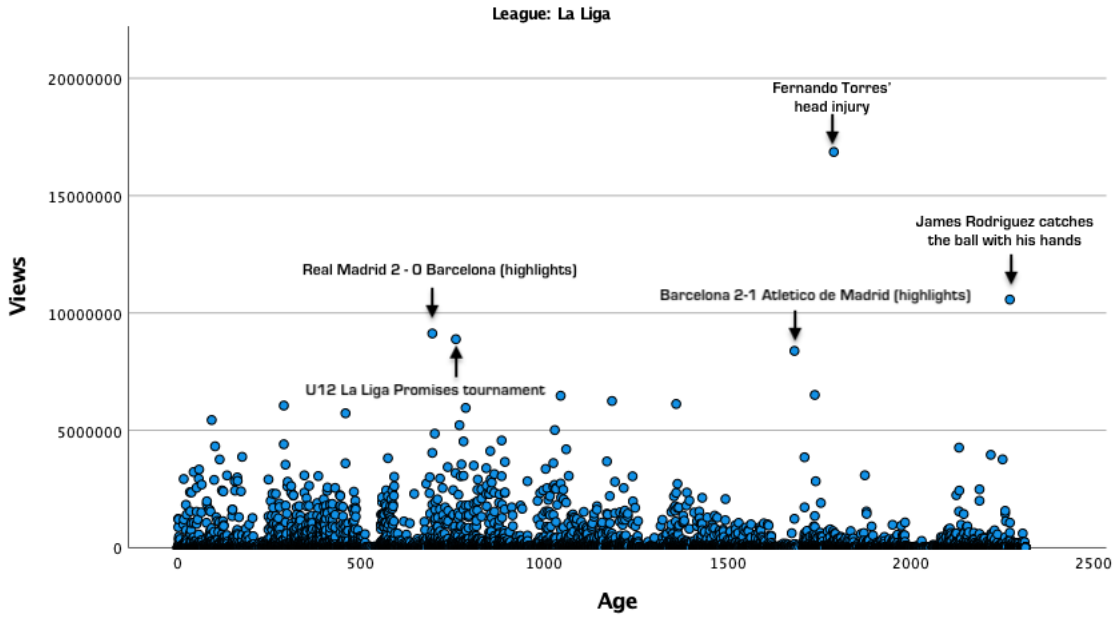


Figure 3

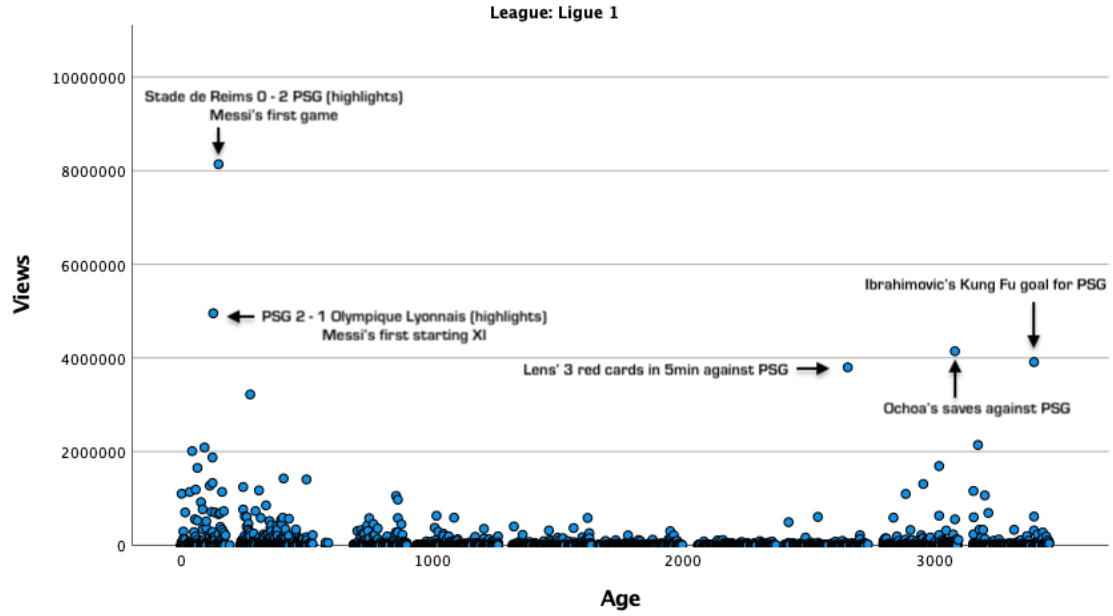

League: Ligue 1
Views
Age
10000000
8000000
6000000
4000000
2000000
0
0
1000
2000
3000
Stade de Reims 0 - 2 PSG (highlights)
Messi's first game
PSG 2 - 1 Olympique Lyonnais (highlights)
Messi's first starting XI
Lens' 3 red cards in 5min against PSG
Ibrahimovic's Kung Fu goal for PSG
Ochoa's saves against PSG

Figure 4

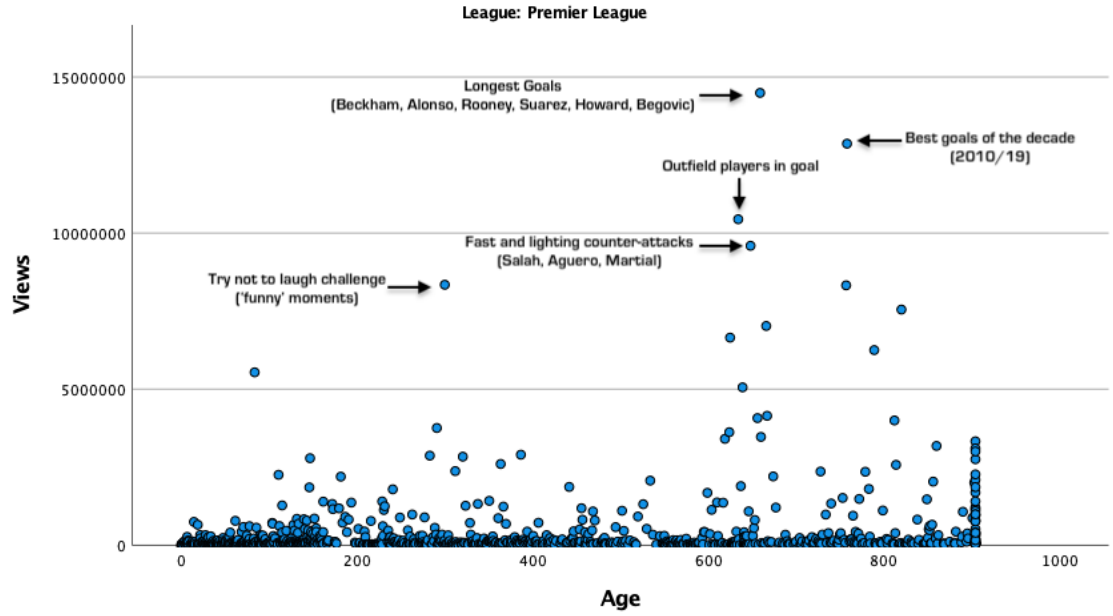
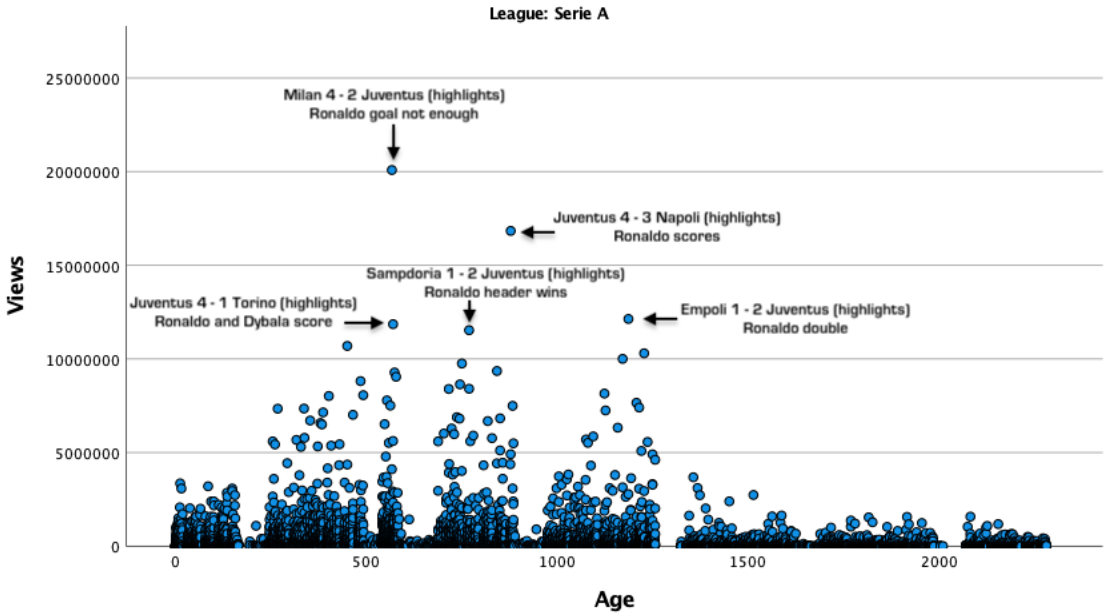

League: Premier League
Views
Age
15000000
10000000
5000000
0
0
200
400
600
800
1000
Longest Goals
(Beckham, Alonso, Rooney, Suarez, Howard, Begovic)
Best goals of the decade
(2010/19)
Outfield players in goal
Fast and lighting counter-attacks
(Salah, Aguero, Martial)
Try not to laugh challenge
('funny' moments)

Figure 5


League: Serie A
Views
25000000
20000000
15000000
10000000
5000000
0
Milan 4 - 2 Juventus (highlights)
Ronaldo goal not enough
Juventus 4 - 3 Napoli (highlights)
Ronaldo scores
Sampdoria 1 - 2 Juventus (highlights)
Ronaldo header wins
Juventus 4 - 1 Torino (highlights)
Ronaldo and Dybala score
Empoli 1 - 2 Juventus (highlights)
Ronaldo double
0
500
1000
1500
2000
Age