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Digital entertainment in the face of COVID-19

Rozrywka cyfrowa w obliczu COVID-19

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Abstract
The work analyzed the impact of the Covid-19 pandemic on digital entertainment. The focus is on three types of digital entertainment: computer games, virtual reality and streaming, respectively. The first two types of entertainment were analyzed based on data from the Steam platform, while streaming was analyzed based on Twitch. Data were collected from 2019, i.e. the period before the pandemic, and 2020, i.e. the time of the pandemic. Then the data from both of these years were compiled for analysis. The study particularly focused on events related to the pandemic, such as the March declaration of the Covid-19 virus as a pandemic by the WHO or the holiday period in which the restrictions were reduced.

Keywords: digital entertainment; covid-19

Streszczenie
Praca zajęła się analizą wpływu pandemii Covid-19 na rozrywkę cyfrową. Skupiono się na trzech rodzajach rozrywki cyfrowej są nimi kolejno gry komputerowe, wirtualna rzeczywistość oraz streaming. Dwa pierwsze rodzaje rozrywki zostały przeanalizowane na podstawie danych z platformy Steam, natomiast streaming poddano analizie na podstawie Twitcha. Pobrano dane z lat 2019 czyli okres przed pandemią oraz 2020 czyli czas panowania pandemii. Następnie dane z obu tych lat zostały zestawione do analizy. W pracy w szczególności zwrócono uwagę na wydarzenia związane z pandemią, były to między innymi marcowe ogłoszenie wirusa Covid-19 jako pandemie przez WHO lub też okres wakacyjny w którym zmniejszone zostały obostrzenia.

Słowa kluczowe: rozrywka cyfrowa; covid-19

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1. Introduction

From year to year, more and more people choose digital entertainment as their leisure method. So it's also not surprising that during the COVID-19 pandemic, people are turning to this type of entertainment to a much greater extent. Public places at which you can spend free time are getting closed all over the world. Every person is looking for ways to spend their free time safely. They are trying to find a replacement for the old ways of spending free time, i.e. as mentioned in the first two references in the article [1, 2].

For example, cinemas and theaters are getting replaced by platforms like: Twitch, Youtube or Netflix [1]. Another activity that got replaced is spending time outside alone or with friends. It got replaced by video games which allow you to spend time alone and in company, they enable interaction with other users, even with those living on the other side of the globe [3, 4, 5]. Video games are a great way to spend free time and deal with the stress caused by Covid-19 as mentioned in references four and five [4, 5].

The whole situation in the world offers great growth opportunities for all kinds of digital entertainment. And if it continues, it will probably change the world of digital entertainment to a great extent, but only time will tell and we need to wait for the aftereffects of the pandemic as mentioned in the first reference of the article [1].

2. Hypotheses

There are three hypotheses for the article:

a) The pandemic contributed to the increase in popularity of computer games.
b) Virtual Reality has experienced the largest percentage increase in the number of users among the types of digital entertainment studied.
c) Watch time on Twitch increased significantly during the reign of the Covid-19 virus.

3. Materials and methods

The author's work analyzes three types of digital entertainment on the global market and compares their results before and during the pandemic, i.e. year 2019 and 2020.

The first of them, which is also the main focus of work, i.e. computer games. The analysis of computer games was performed on the basis of the most popular digital video game distribution service on personal computers created by Valve, ie Steam [6]. This platform was chosen because it is the only one to keep its current results available. The statistical data was collected from two websites, ie SteamCharts [7] and SteamDB [8]. These pages were selected because Steam only provides up-to-date data, but does not save past results anywhere. However, both of these sites collect and save the results from the Steam platform, with the difference that the

SteamDB site additionally compares the results of the Steam platform with the Twitch platform [9].

The work focuses not only on ordinary computer games, it also analyzes the popularity of virtual reality, i.e. VR. It allows you to experience more than a simple video call. The user feels as if he is in the same room as other users, this gives vr a tremendous opportunity to grow during a pandemic reign [10]. In this case, as before, the analysis was performed on the basis of the Steam platform. However, this time, we have not found any website that would collect historical data from the steam platform on virtual reality. The Internet Archive [11] website was used to obtain statistical data, which allows you to view archival versions of selected websites, which allowed to download the results of virtual reality at the turn of 2019 and 2020.

The last type of digital entertainment analyzed are streaming platforms. The results from the Twitch platform were analyzed [9]. The data was collected from two pages, the first of which is TwitchTracker [12], which contains data only about Twitch. The second page, the same as in the case of Steam, i.e. SteamDB, contains a summary of Steam and Twitch data.

In addition to analyzing the results obtained directly from both of the above platforms, the analysis also included the results of the Google Trends website [13], which, as the name suggests, provides information on search trends in the Google search engine.

Short few days deviations were ignored during the analysis, but they are still present in tables and figures. This decision was made because in most cases these were regular tournaments, events or updates that only attracted users for a short time and were not caused by a pandemic.

4. Results

Results are divided into three subsections each corresponding to one of the types of analyzed digital entertainment.

4.1. Computer games

In the first subsection, the first type of analyzed digital entertainment, i.e. computer games, was analyzed. As mentioned before, the focus here is on the Steam platform because it makes most of its data available to the public.

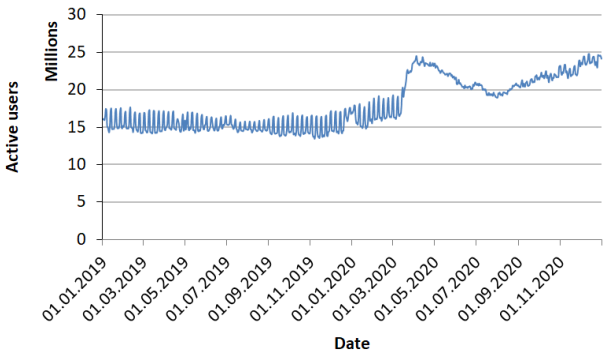

Figure 1: Active Steam Users.

Figure 1 shows two spikes in player numbers during the reign of the pandemic.

The first of them, namely the period from February to May 2020. During this period restrictions related to COVID-19 began to appear mainly in Asia. Slow growth at first, followed by a drastic spike due to WHO's declaration of COVID-19 as a pandemic. The announcement was made on March 11 [14]. This resulted in the emergence of new, more drastic restrictions around the world. The period from May to September saw a decline, it was caused by the removal and the reduction of many restrictions, which made many people go on vacation or return to work. Then, from September to December 2020, the restrictions began to return because after the holidays and after returning to school, the number of infections increased rapidly.

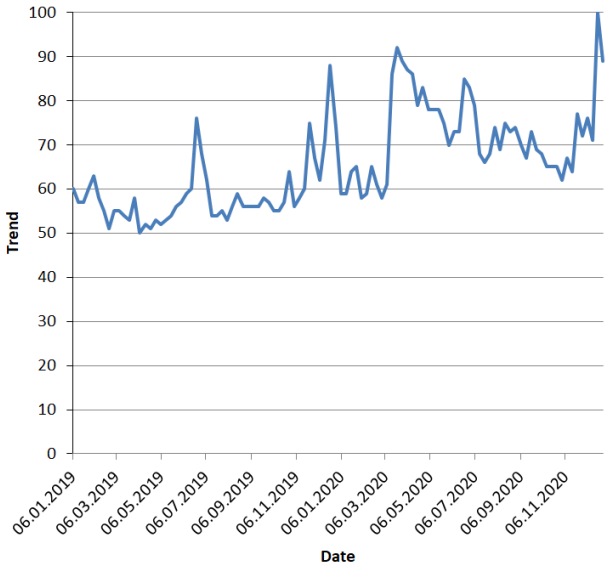

Figure 2: The trend of searching for "Steam" in the Google search engine.

Figure 2 shows the trend of searching for "Steam" in the Google search engine. The data was obtained from the Google Trends website. As with Figure 1, there are several spikes related to the pandemic. First in March, when the WHO announced the virus, followed by a downward trend until December. Besides the first there are two more jumps, one in June and one in December. Both of these months have jumps every year because the school year ends in June and many children then get a gift. Increasingly, parents choose various types of electronics, including consoles and computers. In addition, the end of the school year means holidays for young people, thanks to which they have more time to spend in front of the computer. The same applies to December because then it is Christmas, but in this case almost everyone has days off and gets gifts not only children. Therefore, the December jump is greater than the June jump.

4.2. Virtual reality

The second subsection is intended for virtual reality which is part of computer games. We also use the Steam platform to obtain the data here.

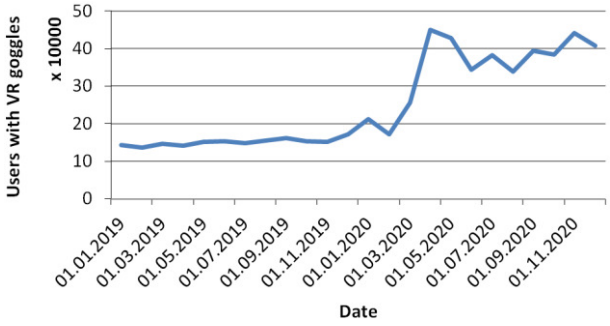

Figure 3: Estimated number of users with VR goggles.

Figure 3 shows the estimated number of Steam users with VR headsets. It was calculated by adding up the percentage of individual goggle models and then the percentage of the total number of platform users was calculated. It is estimated because Steam publishes only the percentage of users with goggles who took part in its regular monthly survey on computer hardware [15, 16].

On Figure 3 you can see one significant jump in the estimated number of users with VR goggles on Steam - March 2020. This jump is threefold, but in this case, unlike the previous figures, it is caused not only by the declaration of the Covid-19 virus as a pandemic by WHO, but also with the premiere of the long-awaited game Half-Life: Alyx exclusive for VR [16, 17]. The jump was followed by a slight decline until December. It is caused by the lack of availability of virtual reality goggles and the general decrease in the number of active players on Steam during this period, which is visible in Chart 1. At the end of 2020, a second, but much smaller, jump is visible. It was caused by the return of the availability of the goggles at the end of 2020. It could have been much larger because on October 13, 2020, new goggles from Oculus, namely Oculus Quest 2, were released for sale, which were a great success. Unfortunately, Valve began to count the number of Quest 2 goggles only from January 2021, so they were not included in the work.

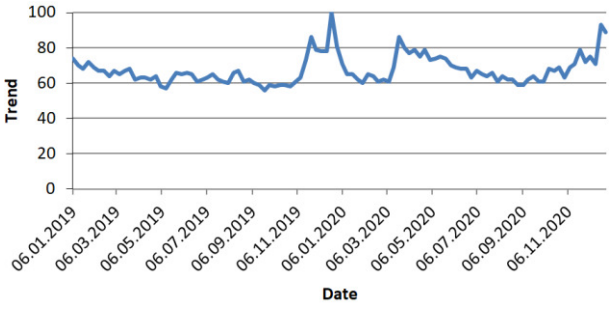

Figure 4: The trend of searching for the term "Virtual Reality" in the Google search engine.

Chart 4 shows the trend of searching for the term "Virtual reality". 3 big jumps can be noticed. The first is in November and December. It was caused by the announcement of the previously mentioned Half-Life: Alyx [16]. It is a continuation of one of the largest series in the history of computer games. The second jump took place in March then the aforementioned game was released and then there was an announcement from WHO. Then, from March to October, there was a decline and at the end of October the trend began to increase again. The re-growth was caused by the previously mentioned launch of the Quest 2 goggles. These goggles were not included in the analysis for the aforementioned reason, namely Steam did not collect data on new goggles until early 2021.

4.3. Streaming

The last subsection contains Streaming analysis.

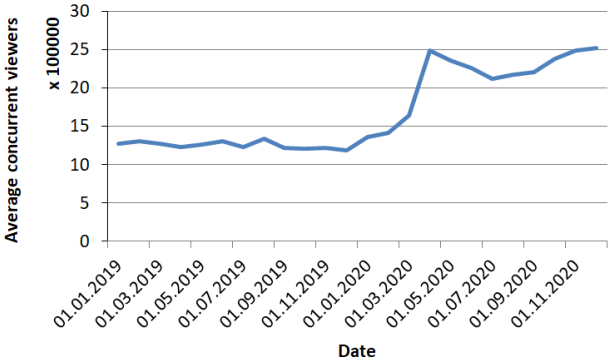

Figure 5: Average concurrent viewers for the entire Twitch platform.

The first figure in the Streaming chapter, i.e. Figure 5, contains information on the average number of simultaneous viewers on the Twitch platform. The entire year 2019 was around 1,300,000 viewers, after which in March 2020 there was a giant leap almost doubling this number. This jump, as already mentioned in many other figures, was caused by the declaration of a Pandemic by the WHO and the resulting restrictions and isolations. Then you can see a slight decrease during the holiday season. On the other hand, an upward trend has been visible since September.

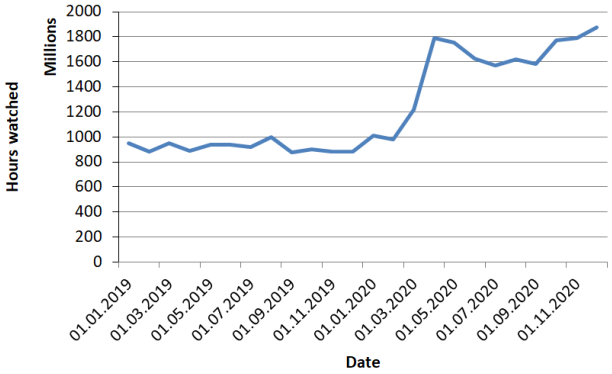

Figure 6: Twitch watch time.

Figure 6 shows Twitch watch time and is almost identical to Figure 5. In both charts we see a constant value in 2019. Then a big jump in September followed by a drop during the holiday season and a re-increase from around September.

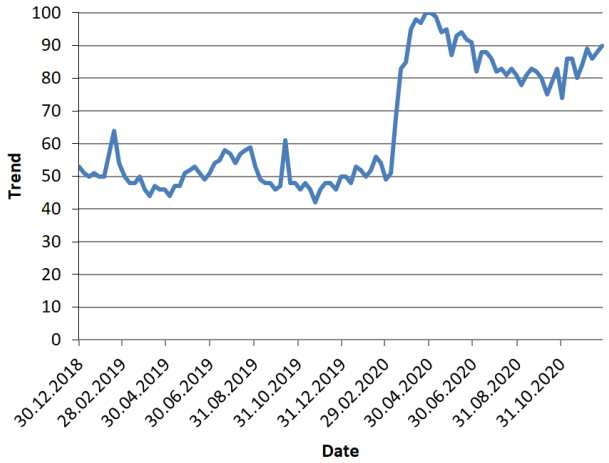

Figure 7: It shows the trend of searching for the term "Twitch" in the Google search engine.

Figure 7 is very similar to figures 5 and 6. Likewise, 2019 had a steady trend of around 50 with a sudden jump to 100 in March. Then you can see a decline during the holiday season, followed by an increase from September 2020.

The reason why the search trend figure is similar to the number of viewers and viewing hours is that Twitch is a website, so each time a user wants to watch something, they must enter this term into the browser. Of course, there are applications that allow you to watch Twitch without using a browser, but most users use the browser version.

5. Conclusions

The analysis of both computer games, virtual reality and streaming highlighted three events that had the greatest impact on digital entertainment. All these events are related to the pandemic namely the first was March 11, 2020 and this is the announcement of the Covid-19 virus as a pandemic by the World Health Organization, WHO. After this announcement, isolation began in many countries and numerous restrictions were imposed, leaving many people locked up in their homes with too much free time. As you can see in almost every chart, there was a huge jump for each of the analyzed types of entertainment during this time, during this time there was an upward trend.

After the March announcement, during the holiday season, ie from June to August, the results were in a horizontal or slightly downward trend.

This was due to the lifting of many restrictions or their reduction after the first wave of the pandemic in March, which meant that many people decided to go on vacation despite the pandemic still prevailing.

Another event that significantly influenced the analyzed data was the turn of September and October, i.e. the return to school and universities. This moment is important because it changes the trend for many charts from a horizontal or downtrend to an uptrend. The reason for such a change is that after the return of schoolchildren and students around the world, the number of infected people increased rapidly, which was not helped by the fact that during this period many people returned from holidays during which they had contact with many people from many parts of the world. Following the increase in infections, most countries have returned to remote teaching and the restoration of pre-vacation restrictions. Which positively influenced digital entertainment. The upward trend continued until the end of 2020.

As mentioned earlier, when analyzing in the case of virtual reality, you need to take into account the margin of error resulting from the fact that the data was collected only from users who participated in the survey and that Steam did not take into account the results of the Oculus Quest 2 goggles until 2021.

The analysis of search trends showed the same changes as described above, i.e. those with three significant events related to the pandemic. Likewise, a big jump in September with a horizontal or a downtrend in the holiday season and a renewed upward trend towards the end of 2020.

Summing up the period of the pandemic, it turned out to be very beneficial and important for the development of every type of analyzed digital entertainment, it allowed to achieve twice as much results compared to 2019 and even more. For example, in the figure of the number of users with VR goggles, the result is around 300% of the one from 2019 which is the highest percentage increase out of all analyzed data. The pandemic continues to extend, which will likely allow digital entertainment to reach even higher records in 2021.

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