

A Calendar Heatmap Data Visualization for Video Game Release Dates

Abstract

This paper outlines the importance of careful consideration when choosing a release date for a video game. Furthermore it presents the usage of an interactive heat map data visualization for identifying potential release dates, market trends and key insights in the industry. These interactivity features include video game genre selection, release platform selection, and video game release counts for user selected days.

Overview Video Link - [Click Here](#)

Introduction

Analysis of video game sales can provide key insights into the current state of the market. These insights are vital for identifying trends, gauging actual and potential sales performance, forecasting future sales or importantly deciding a release date.

The choice of a release date is an extremely important factor in the success of a game. A poorly chosen date can ultimately doom a video game to failure, despite it's quality. When choosing a release date it's important to consider a number of factors. These factors are both related and unrelated to the video game industry[1].

Game	Factor	Reason
The Getaway[2]	Similar releases in the same period	Competition overshadowed the release
Monster Hunter: World[3]	No similar releases in the same period	Limited Competition allowed the game to gain media coverage
Pokemon Sword and Shield[4]	Black Friday followed	The new release had to compete against all prior on sale games
State of Decay 2[5]	Summer Period	Student gamers have more time

Figure 1.1 - Game Release Factors

As seen in Figure 1.1 a game's successful release can be determined by internal and external factors. Such as similar games releasing during a similar period, Black Friday or similar sales prompting expenditure, releases time during the summer or exam season will receive good and poor reception respectively due to the status of students. [6, 13]

This list is by no means exhaustive but shows the variety in factors to consider when releasing a game.

Typically video game releases are visualized using a bar chart, where the x axis consists of months, or years, and the y axis represents the number of games released as seen in Figure 2.1. This approach is sufficient for demonstrating the total games released over a period. Additionally showing the growth between time intervals, which is adequate for an overview of the industry. However from a developer's standpoint it's vital to have a granular view of the months, weeks and even days leading up and after the release date. Hence this paper proposes a heatmap style visualization of the past and future release dates. Enabling a detailed view of the selected release period. This heatmap includes interactivity features such as genre selection, platform selection and granular release counts.

Related Work

This section outlines state of the art visualizations displaying key metrics of the video game industry, in a comparative capacity.

A. Statista - Number of games released on Steam[7]

As previously stated a bar chart can provide a valuable high level overview of the video games releases over time, which can be seen in Figure 2.1. From this visualization an overall trend can be determined which shows the growth of the PC gaming market, specifically an increase in games sold from the Steam distribution platform[8].

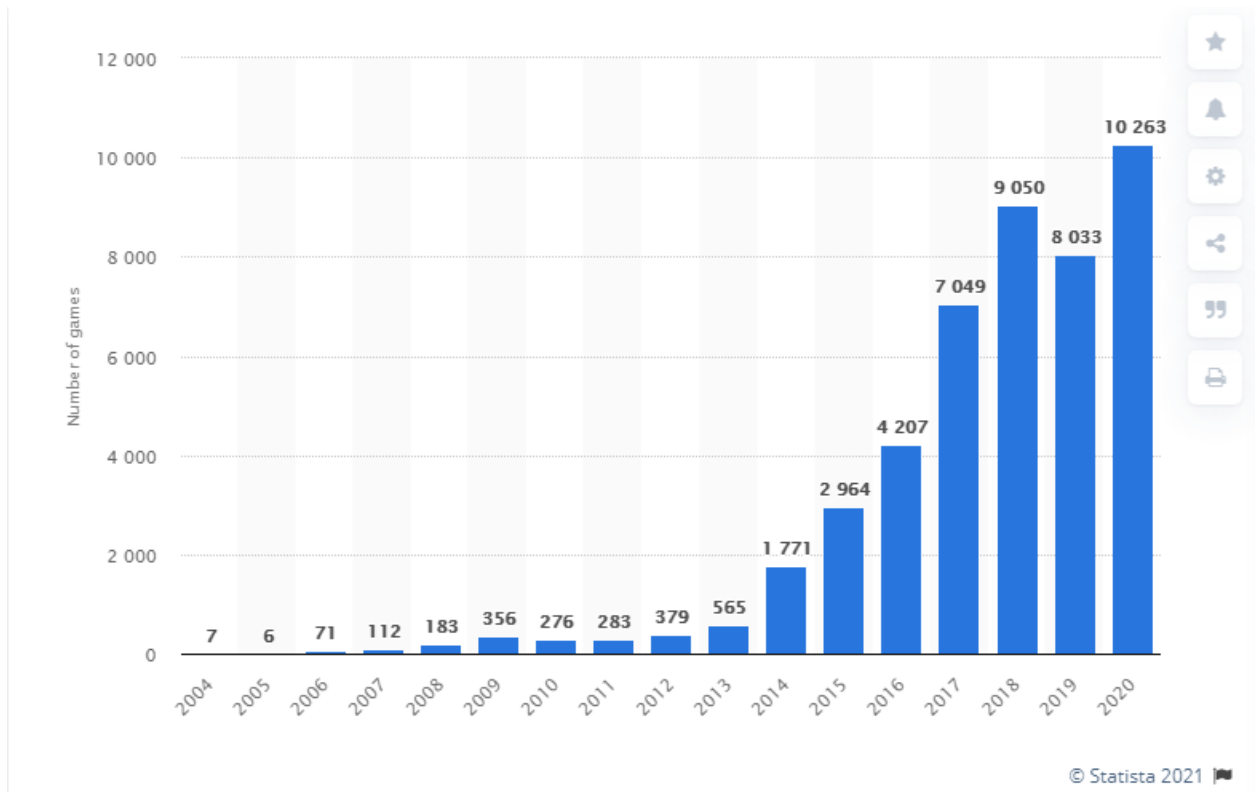


Figure 2.1 - Number of games released on Steam worldwide from 2004 to 2020 Statista

However this visualization lacks granularity and details which could be pertinent to developers planning a release date. Such as “release density”, the amount of releases in a given time (Month, Week, Day).

B. Statista - Monthly Video Game Sales in the US [9]

A small independent game developer may desire to choose a month with relatively few other releases. The granularity of showing months in Figure 2.2 is a valuable visualization for planning the release date. This bar chart depicts the sales in dollars over each month from 2015 to 2020. The sales figures do not directly correlate to releases. However the structure of the graph can be adapted to release date data resulting in a monthly view of the distribution of video game releases.

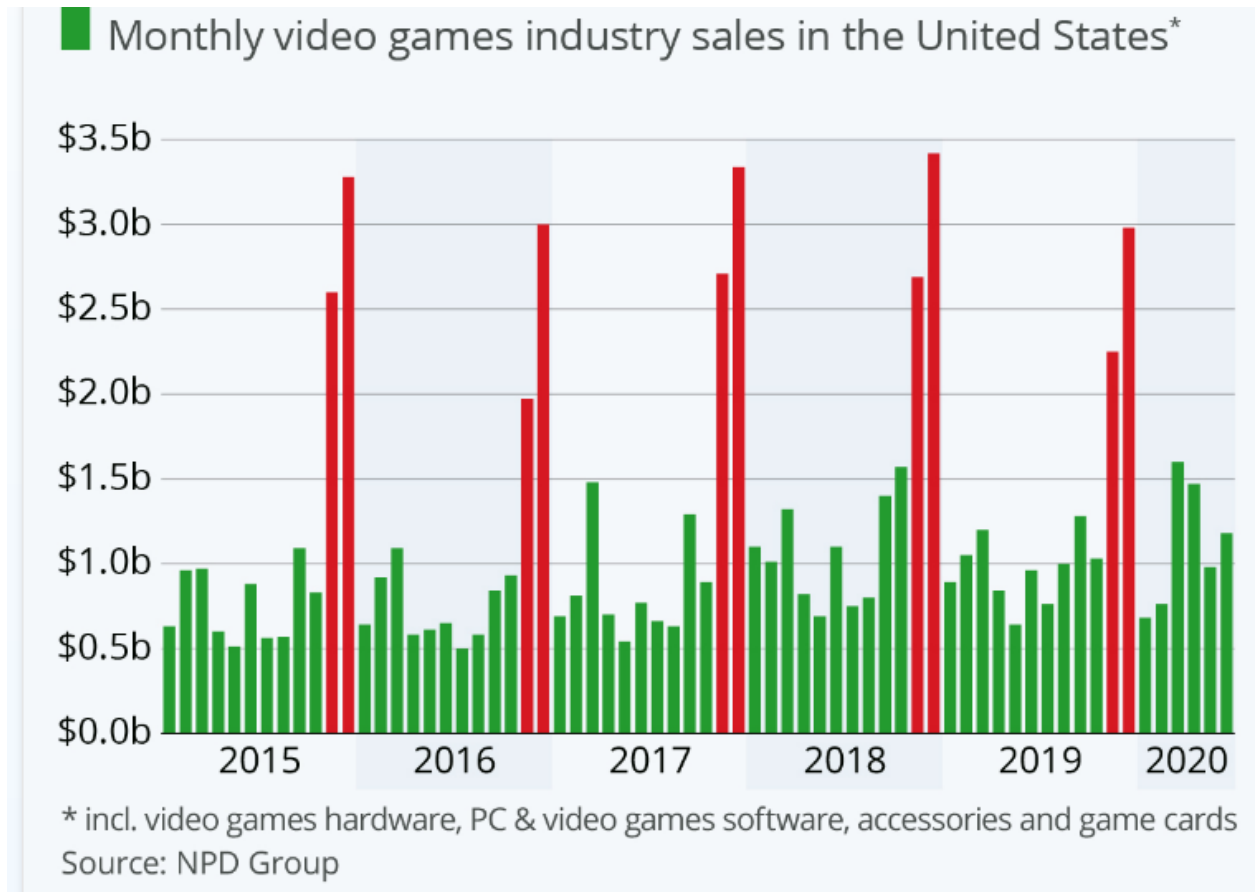


Figure 2.2 - Monthly Video games industry sales in the United States Statista

Information can be extracted extremely quickly from this visualization as the usage of color highlights significant information. The red bars contrast clearly against the green, which provides immediate insights into the months with the most sales. However the choice of colors is jarring[10, 14], a gradient or matching palette would be more pleasing to the eye, without losing information.

C. Github - Contributions Calendar[11]

The contributions calendar found on Github[12] profiles is a data visualization that includes the level of granularity required and a cohesive color scheme. Figure 2.3 depicts months, weeks and days in one calendar format providing a detailed day by day view of the Github user's activity. Additionally it features a dynamic color scheme that accentuates the activity by darkening as the activity increases and therefore demonstrates the density of user activity.

2,298 contributions in the last year

Contribution settings ▾

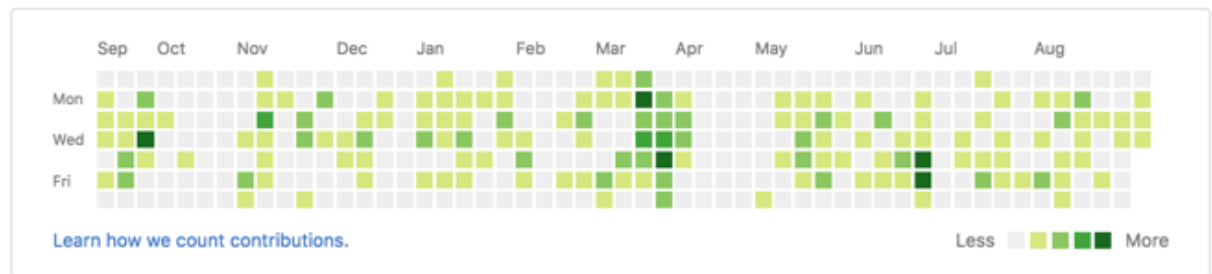


Figure 2.3 - Github Contribution Calendar

The utilisation of color in this visualization enables both an overview of the activity to be identified, but also the density of the activity. Which is represented by the light to dark color transition, where white represents no contributions, light green is few contributions and as the color darkens the number of contributions increases. This data visualization method can be adapted to support video game releases.

Main Body

The proposed data visualization for video game release dates is an adapted version of the aforementioned contribution calendar. As previously stated awareness of busy periods of video game releases subsequently enables a more informed choice when deciding a release date.

The reception and media coverage of a video game can be influenced heavily by the chosen release date, as releasing during a busy period of AAA releases can cause an indie game to be overshadowed by its competition. Similarly a game targeted at a demographic which typically consists of students may result in a lower than expected sales rate, due to students having less free time. Additionally awareness of sales, public holidays and a vast number of other factors must be considered^[13].

A calendar heatmap of video game releases, as seen in Figure 3.1 provides an overview of game releases per year at first glance. Additionally it demonstrates a granular view of the release activity, by each cell representing a single day. The release activity per week can also be identified by looking from top to bottom. Therefore enabling a wide range of insights to be analysed using a single visualization.

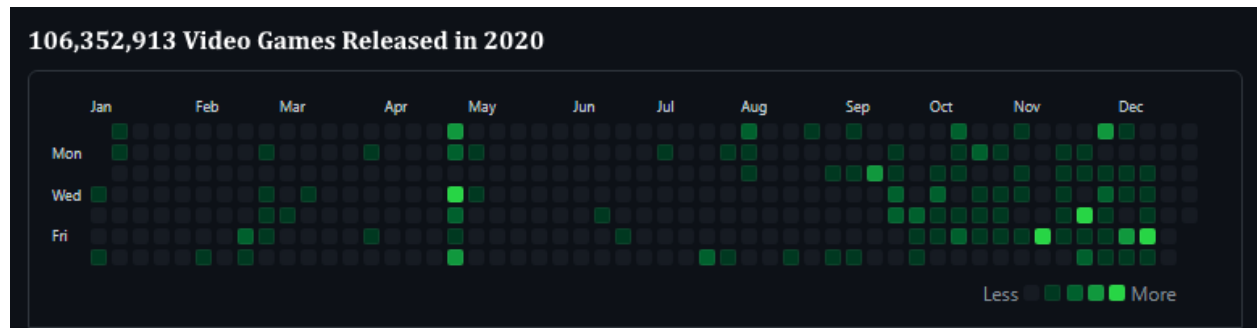


Figure 3.1 - Prototype of a Video Game Release Heatmap for 2020

The dynamic color scheme is the key feature creating the heatmap element. The chosen colors for the scheme will follow a palette of similar colors, and aim to be eye catching to engage the viewer but inoffensive[10, 14].

The heatmap enables the density of video game releases to be identified, this can be used to identify trends. Such as which days typically feature a high number of releases, and therefore aids the developer in identifying gaps that could be used as a potential release date. This heatmap element combined with a level of interactivity could allow the developer to cultivate insights directly related to their domain, instead of a general overview of all video games.

A useful interactivity feature, would be to enable the user to view the release heatmap, for a specific genre of video game as seen in Figure 3.2 (Blue). Providing insights into video games releasing that may be considered as direct competitors. Similarly enabling the selection of the release platform would be beneficial as games releasing on the mobile platform are not necessarily in competition with games on PC. A final but important interactivity feature would be providing the concrete number of games released on a given day. This feature could be triggered by the user selecting a specific cell. Subsequently a message displays the number of releases on that day as seen in Figure 3.2(Purple).

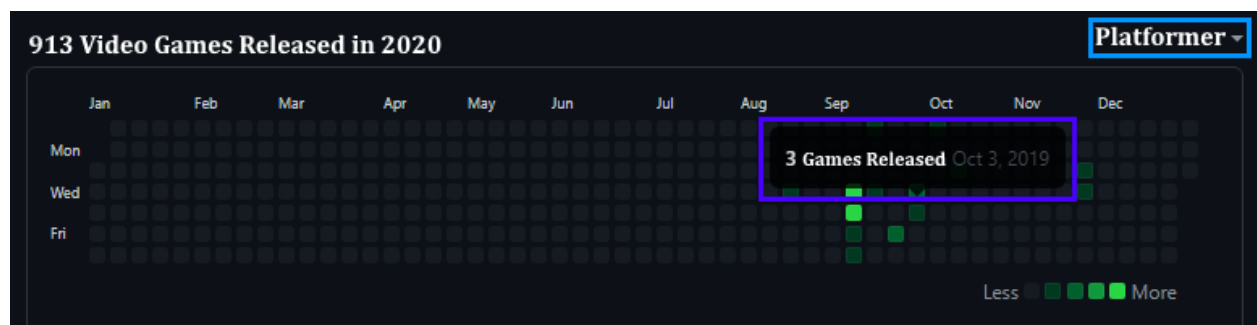


Figure 3.2 - Demonstrating interactivity (Blue - Genre Selection, Purple - Release Count)

The proposed video game release date heatmap, focuses on presenting the density and distribution of releases throughout the year. Therefore allowing game developers to make informed choices when deciding on a release date, in order to avoid competition or to maximise player acquisition. This visualization additionally provides overviews of the release activity of the video game industry, which can be used to identify possible trends for forecasting.

Conclusions

Video game releases have numerous considerations and can ultimately decide the success or failure of the game[6,13]. Providing developers with informed metrics and visualizations enables the developer to view their potential competition in a succinct manner and subsequently plan accordingly.

An issue with this data domain is that typically game developers announce the impending release between 3 months and up to a year or more in advance. This prompts considerations as to how far into the future a developer is able to make plans for. Additionally release dates are becoming more and more flexible as seen with Cyberpunk 2077[15]. Therefore the visualization should only be used as loose guidance when making future considerations.

The proposed calendar style heatmap allows for a wide overview, detailing the state of the video game industry in terms of video game release dates. Additionally provides a granular view of specific time periods, release density, specific insights into genres, and a potential platform for identifying trends. All of which aim to inform game developers of key insights into the industry.

Overview Video - [Click Here](#)

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