

Game On! From Country to Concept to Console: European Studios' Impact on the Evolution of Video Games

Since the early 70's, the world has seen an evolution and transformation in the gaming industry that is arguably incomparable to any other form of entertainment. The elevation of advancements in gaming through technological innovations over the decades, has created virtual worlds rivaling literal amusement parks and full on immersive experiences without ever stepping foot outside of your home. Specific contributions to the global gaming industry by various countries have been an integral force towards diversification of video game design studios around the world. Video gaming can be considered one of the great equalizers of our time, connecting people from all across the globe, helping to shape the landscape of interactive entertainment. In particular, European gaming studios have adapted swiftly to innovate and contribute to the ever-changing gaming market to meet the demands of gamers within and outside of Europe.

Utilizing Data Science methodologies serves as a pivotal catalyst in guiding technological innovations, enabling the precise identification of optimal decisions to enhance gaming experiences. This is achieved through the decoding of live interactions among players spanning continents, and the customization of content tailored to resonate with a diverse audience. On the data engineering side, our focus was initially directed towards selecting a globally appealing topic: Gaming! Subsequently, we scoured Kaggle for datasets containing sufficient gaming and location data to support an interactive map on our Dashboard Landing page.

Given the scarcity of open datasets encompassing both criteria, we undertook the challenge of identifying and analyzing multiple datasets, emphasizing detailed discussions on at least one of the criteria. Ultimately, we selected two datasets: "List of Game Studios in Europe and CIS 2020" and "Popular Video Games 1980-2023." Our initial dataset analysis aimed at identifying duplications in values and variables that could potentially impede queries and final results. To address this, we eliminated duplicates by removing the unique identifier column, which contained multiple rows referencing the same video game. Subsequently, we removed duplicate reviews sections that presented identical wording for written reviews. For instance, a review stating, "have only been a Metroid fan for a couple of years but I think this was worth the

19-year wait" appeared in multiple rows, signaling irrelevant data for our ultimate outcome. Additionally, we excluded non-null location data from countries lacking latitude and longitude information to prevent interference with map querying and dashboard presentation.

After performing data cleansing operations, we established application routes to facilitate the rendering of our database on the web app and the execution of diverse queries from the SQL helper file. Following extensive coding efforts, we seamlessly integrated a color scheme into the Cascading Style Sheets (CSS) to align with the overall technical aesthetic of our data narrative. Subsequently, a function was developed to establish a connection between our data and an open map source, incorporating various base and overlay layers to enhance interactivity. A dropdown bar was implemented to facilitate the exploration of different countries, enabling the display of region-specific information. To visually represent the insights derived from the data, a series of bar graphs were generated. For user convenience, an additional dropdown bar was incorporated to allow seamless navigation between various bar graphs, optimizing space utilization. This feature also served to highlight our proficiency by dynamically presenting different paragraphs to the end user based on the selected graphs, showcasing our current level of coding skills in this sector after one full week of classroom lecture, outside homework, and additional practice for depth of understanding and application.

Fig 1. Gaming Studios Dashboard Landing Page

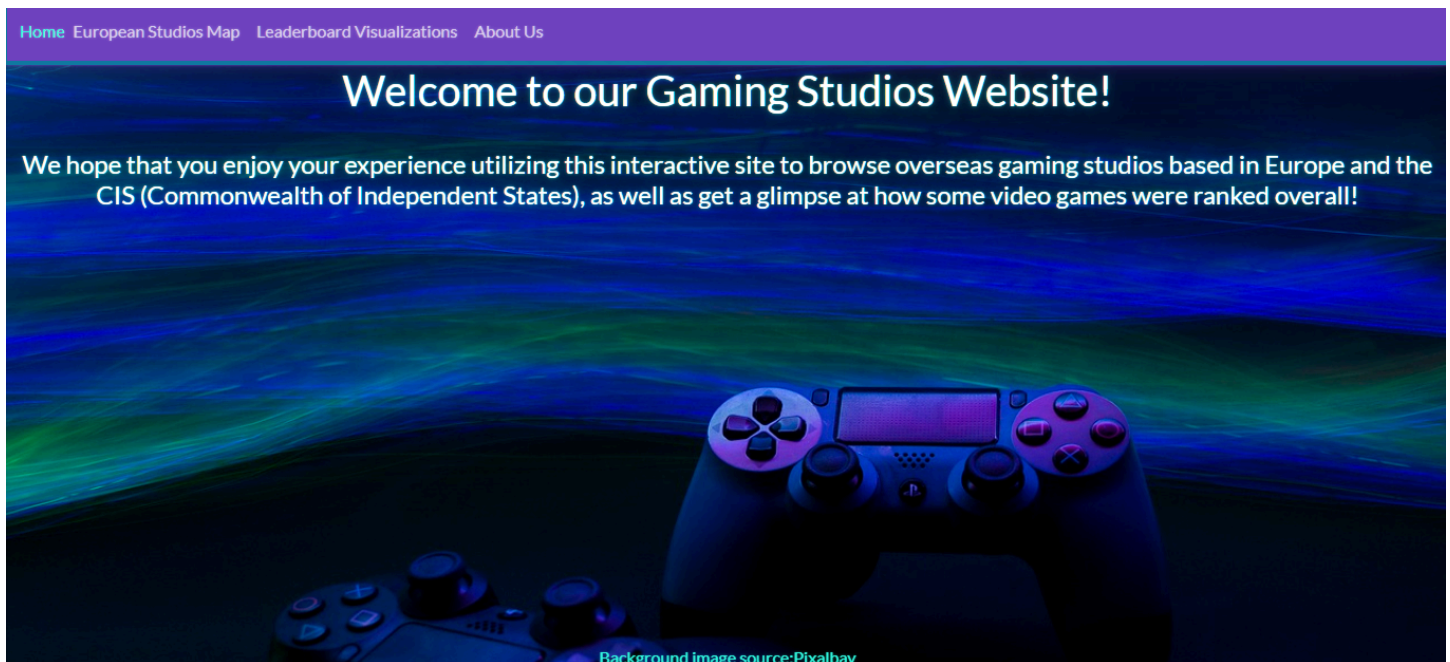


Figure 1: [Gaming Studios DashBoard Landing Page](#)

Selecting the hyperlink adjacent to **Figure 1** above will initiate redirection to the "Welcome to our Gaming Studios Website" landing page. This interface provides users with the opportunity to engage with our interactive platform, facilitating exploration of gaming studios located in

Europe and the CIS (Commonwealth of Independent States). Furthermore, users can gain insights into the overall rankings of various video games by clicking on the following functional links presented on this landing page: *European Studios Map*, *Leaderboard Visualizations*, and *About Us*.

Fig 2. European Studios Dashboard

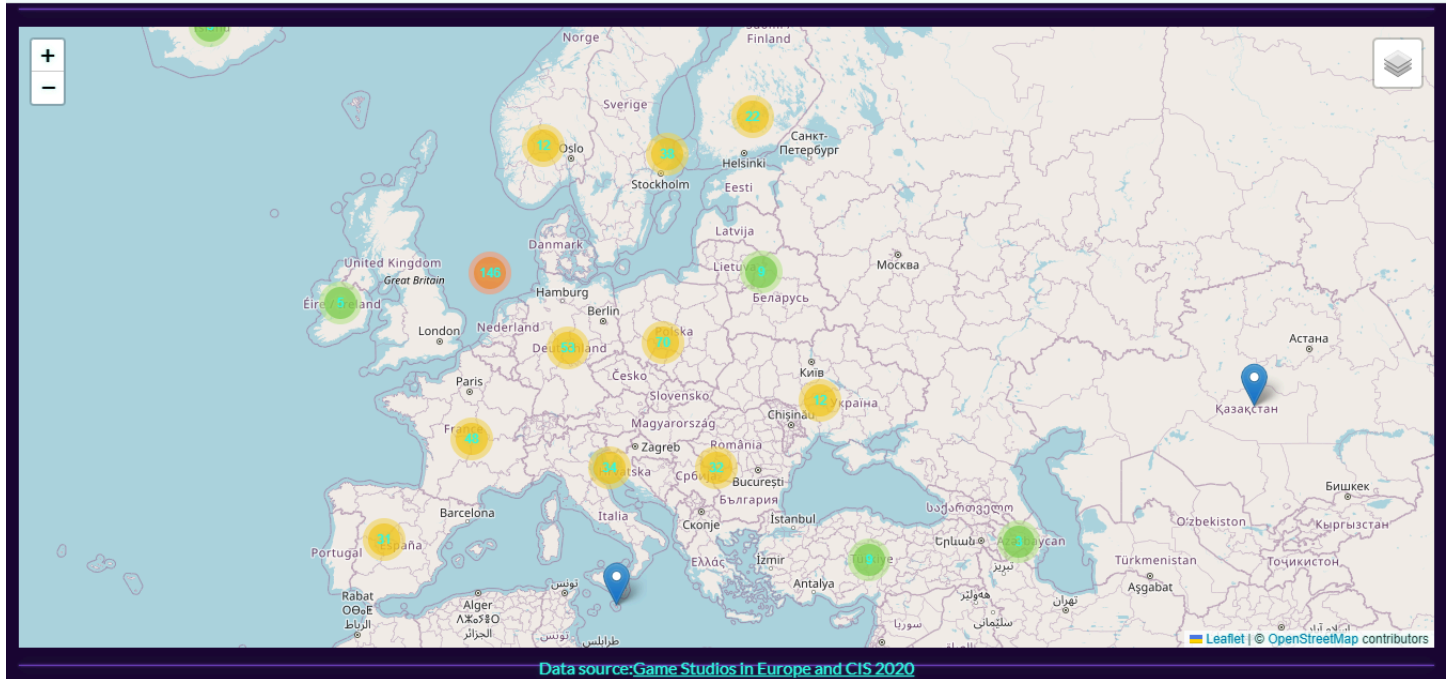


Figure 2: [European Studios Map](#)

Selecting the hyperlink adjacent to **Figure 2** above will activate redirection to the "Welcome to our European Studios Dashboard." Within this interface, users can leverage an interactive map featuring diverse gaming studios situated in Europe, allowing for precise filtering based on the desired country of scrutiny. It is important to note that for seamless access to external links from the map, users should click the link and manually remove the initial URL leading to the link (<https://presley202.pythonanywhere.com/>).

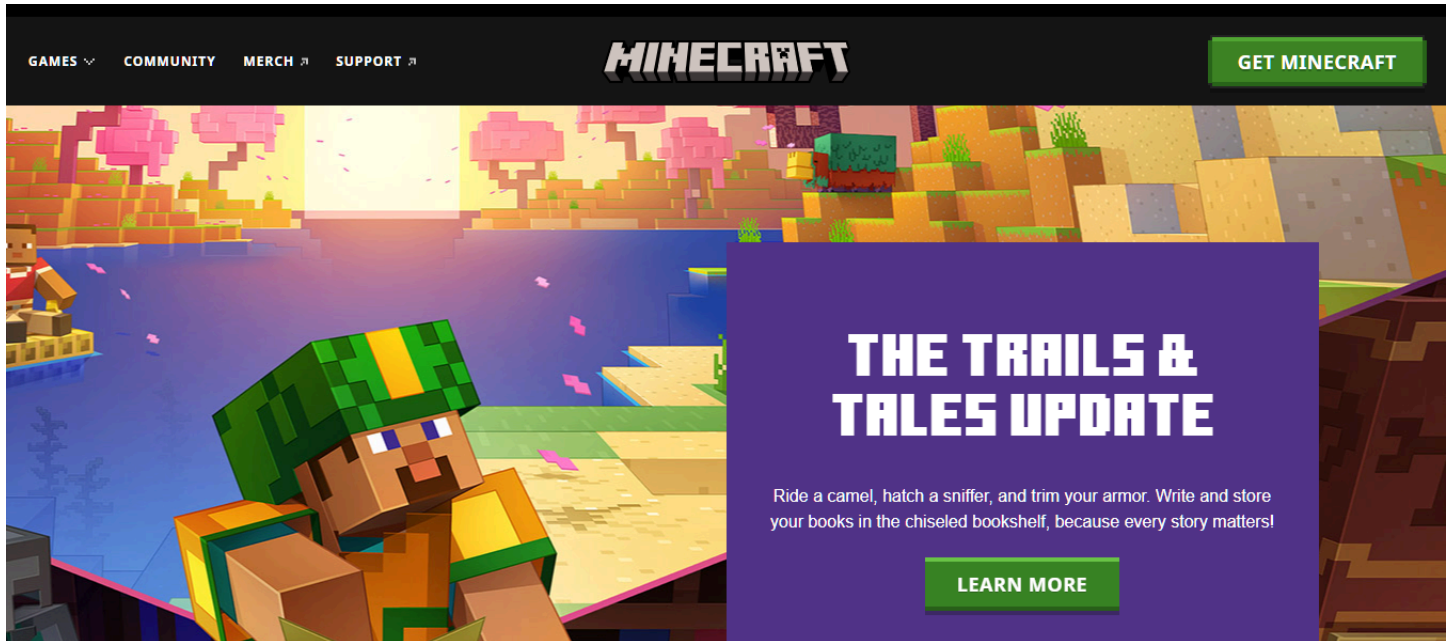
Fig 3. [Mojang Studios-Sweden](#)

At the top of our most-played titles reigns Minecraft, brought to avid gamers by Mojang Studios out of Sweden and boasting an impressive 33,000 plays! The game's success, rooted in its seemingly simple concept of battling creepers, hunger, and griefers, has catapulted it into the forefront of the gaming landscape, sustained by a continuous influx of content updates. One can't help but wonder how long it will be before we will be seeing a machine gun wielding Steve in Fortnite? Here's looking at you Epic Games!

Conversely, an anomaly on the list is [Elden Ring: Shadow of the Erdtree](#), a title that garnered a high rating of 4.8 but recorded by a mere total of one (1) player. Notably, this game remains unreleased, prompting a closer examination of the dataset. It's important to

acknowledge that several game publishers distribute pre release copies for testing purposes, encompassing bug identification, gauging player reactions, and advertising strategies. Consequently, unreleased games may report minimal player counts with high ratings, which should not be indicative of their potential quality. The peculiar case of only 1 player can be attributed to missing information within the dataset, a discovery made during the extensive processes of data cleansing, JavaScript implementation, and website design.

Figure 3: [Minecraft](#) and [Elden Ring](#)



The lack of countries like Africa and India in our Gaming Studios and Top Played Games datasets presents countless limitations and biases that negatively influences the comprehensiveness and representativeness of the data including, cultural bias, biases in inadequate global trends, socioeconomic bias, and accessibility bias, to name a few. For example, data between regions, general market size, and geographical indices could skew the analysis and cause a flawed understanding of the actual global landscape. The commission of certain countries from the data set will undoubtedly result in a lack of representation, themes, player preferences, genres, and demographics. This will consequently affect game development, advertising, marketing, and distribution--which will have an overall impact on effective, strategic decision-making related to the barriers faced by gamers in these regions.

Therefore to properly address these biases and limitations in the future, developmental projects in the gaming industry should focus on generating and compiling data from underrepresented regions, to ensure an inclusive and fact-based representation of the global gaming industry at large. Despite these disheartening limitations and biases, one thing remains for sure: the evolution of video games will continue to be at the forefront of technological, global, and geographical progress. The lengthy strides made by the American, European, and Asian countries show great promise that the gaming industry does not plan to stop there--we

have an entire world to explore confirming that video games, gaming studios, and video gamers all remain a vivacious and unending form of enjoyment for humankind around the world--from country to concept to console. Stay tuned, and thanks for playing!

WORKS CITED

1. [Kaggle Data Set: Popular Video Games](#)
2. [Kaggle Data Set: Gaming Studios](#)
3. [Video Game Trivia Questions to Stump Avid Gamers](#)
4. [Gaming Console Timeline](#)
5. [Common Wealth of Independent States](#)
6. [France's Gaming Industry and Ubisoft](#)
7. [Minecraft - Mojang Studios Sweden](#)
8. [Elden Ring - Shadow of the Erdtree](#)