

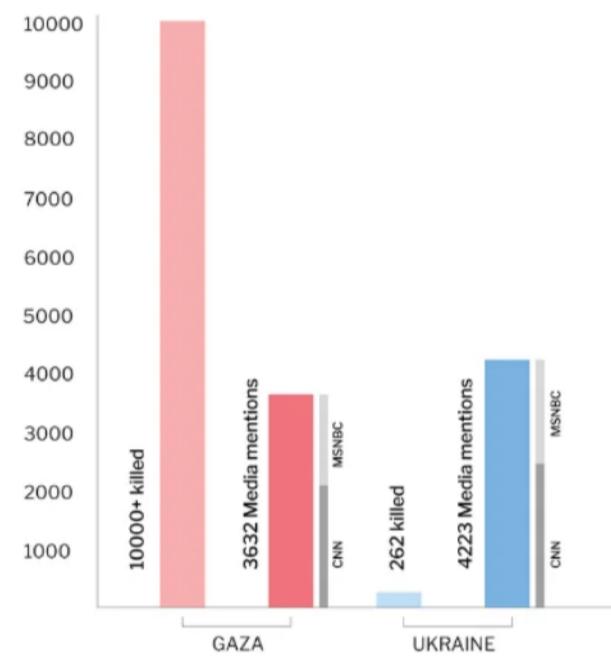
# Assignment 4 - Good-Bad Vis

## Good Visualization and Turn It into a Bad One

### Mentions by CNN and MSNBC vs. Casualties in Ukraine and Gaza (First 100 Days)

Sympathetic victims like journalists, refugees, and children are mentioned more in Ukraine than Gaza, despite a significantly wider gap in casualties and human suffering.

For each child death, child victim mentions were 0.36 times in Gaza and 16.1 times in Ukraine



Sources:  
ICU | CBS News | MSNBC News | The Lancet | The GDELT Project | UNHCR | HRW

### Why it's effective.

This visualization is effective in contrasting media mentions by CNN and MSNBC versus casualties in Ukraine and Gaza over the first 100 days of coverage. It clearly highlights the discrepancy between the number of casualties and the corresponding media attention, particularly with child victim mentions.

### Design Principles Followed

#### Gestalt Principles

**Proximity:** The different colors and positions of the bars in the chart separate the data into two groups—Gaza and Ukraine. This proximity helps viewers quickly distinguish and compare these two sets of data.

**Similarity:** The similar bar shapes and consistent color coding allow viewers to quickly identify the same type of data (e.g., media mentions and casualties), reducing cognitive load.

**Figure-Ground Relationship:** The clear contrast between the background and the bars ensures that the data is visually distinct and easy to interpret.

### Color Differentiation Types

**Categorical Color Differentiation:** The use of red and blue to represent Gaza and Ukraine helps viewers quickly distinguish between the two categories of data, reducing confusion.

**High-Contrast Colors:** The contrasting colors of red and blue enhance visual differentiation, making the differences between the two regions clear at a glance.

### How the visualization communicates the data clearly and efficiently

The bar chart format allows for quick and straightforward comparison.

The use of different bar heights helps viewers instantly grasp the disparity between the number of casualties and the number of media mentions.

The title directly annotates the colors to help readers visually match the colors with their corresponding bars.

The bar charts for CNN and MSNBC are arranged side by side, allowing viewers to compare the mentions by the two media platforms from the same perspective. This parallel structure clearly shows the differences in reporting intensity on the same event by different media outlets.

The specific number of mentions is displayed at the top of each bar, enabling viewers to understand the data directly without additional calculations. This data presentation improves the efficiency of information delivery and reduces comprehension difficulty.

Each bar chart uses consistent colors (red for Gaza, blue for Ukraine), and the same color coding is maintained across the bars for CNN and MSNBC. This helps viewers quickly identify and understand the meaning of each data category, ensuring consistency and accuracy in information delivery.

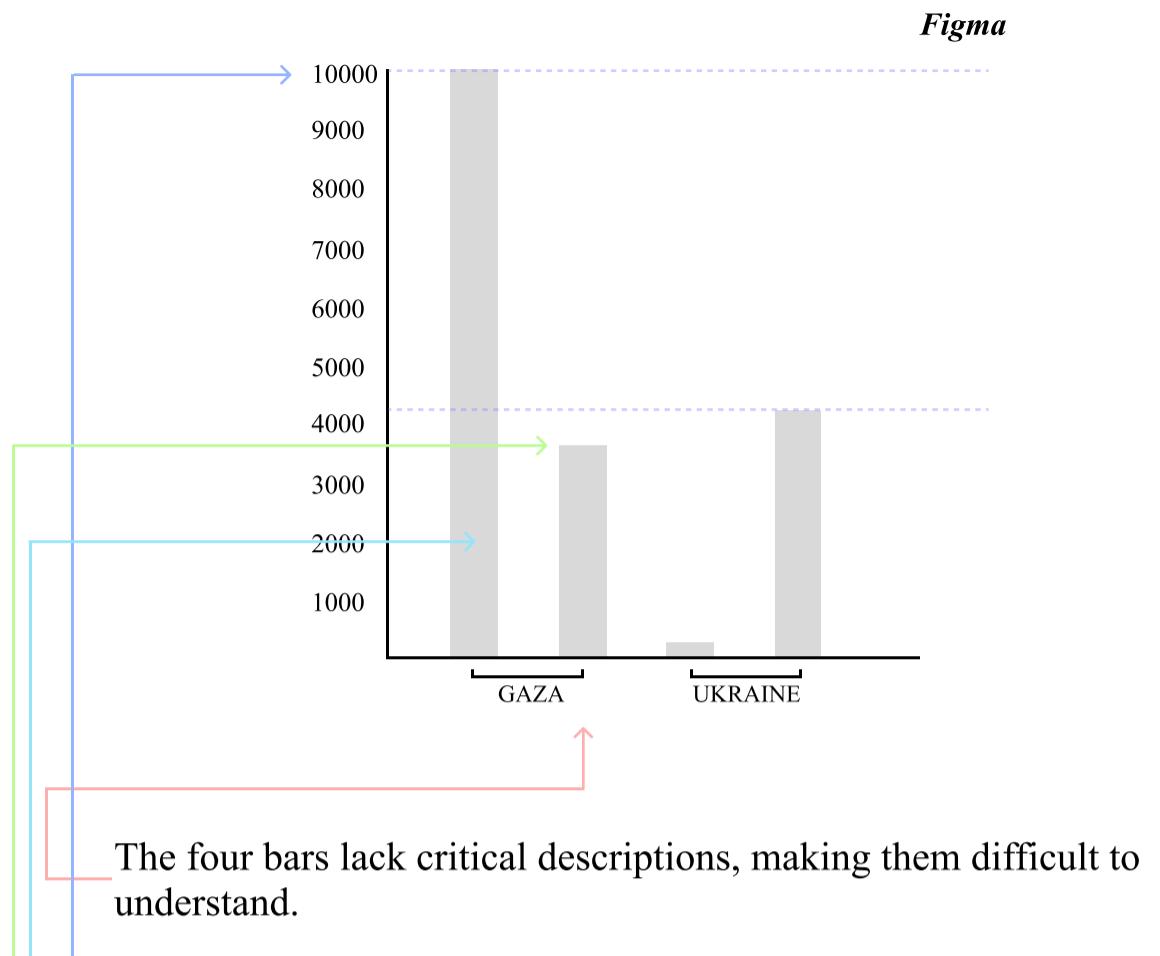
### Transform it into a bad visualization

#### Mentions by CNN and MSNBC vs. Casualties in Ukraine and Gaza (First 100 Days)

Sympathetic victims like journalists, refugees, and children are mentioned more in Ukraine than Gaza, despite a significantly wider gap in casualties and human suffering.



Compared to the original visualization, the representation of colors has been removed, increasing the viewer's cognitive load. Additionally, the sentence emphasizing the contrast has been deleted.



The four bars lack critical descriptions, making them difficult to understand.

The specific data is not labeled on the bars, increasing comprehension difficulty.

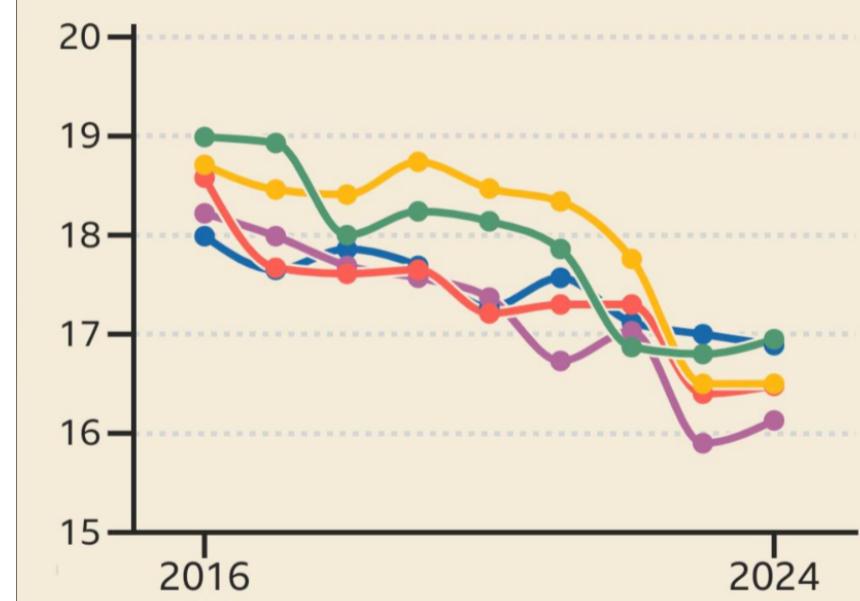
The four bars are not differentiated by color, making comparison harder.

The absence of gridlines makes it harder to compare and visually interpret the data.

## Bad Visualization and Turn It into a Good One

### Average shot distance (m) across Europe's top 5 leagues

■ La Liga ■ Premier League ■ Bundesliga  
■ Ligue 1 ■ Serie A



Source: Driblab



## Why the Original Chart is Ineffective or Misleading

**Overlapping Data Lines:** Multiple lines overlap in the chart, especially in recent years (after 2020), making it difficult to distinguish the trends of different leagues. Viewers struggle to clearly see the specific trends and differences of each league.

**Line Colors Lack Contrast:** Although different colors are used to represent different leagues, some colors are too similar (e.g., red and pink, green and blue), leading to visual confusion.

**Lack of Data Labels:** There are no specific values labeled at key points in the chart, making it hard for viewers to accurately understand the shot distances for different years, especially when data from multiple leagues is close.

**Ambiguous Time Axis:** The time axis is labeled only with the start and end years (2016 and 2024), lacking intermediate years or specific data points. This makes it difficult for viewers to interpret changes that occur within the timeframe and accurately track the progression over time.

## Poor Design Choices

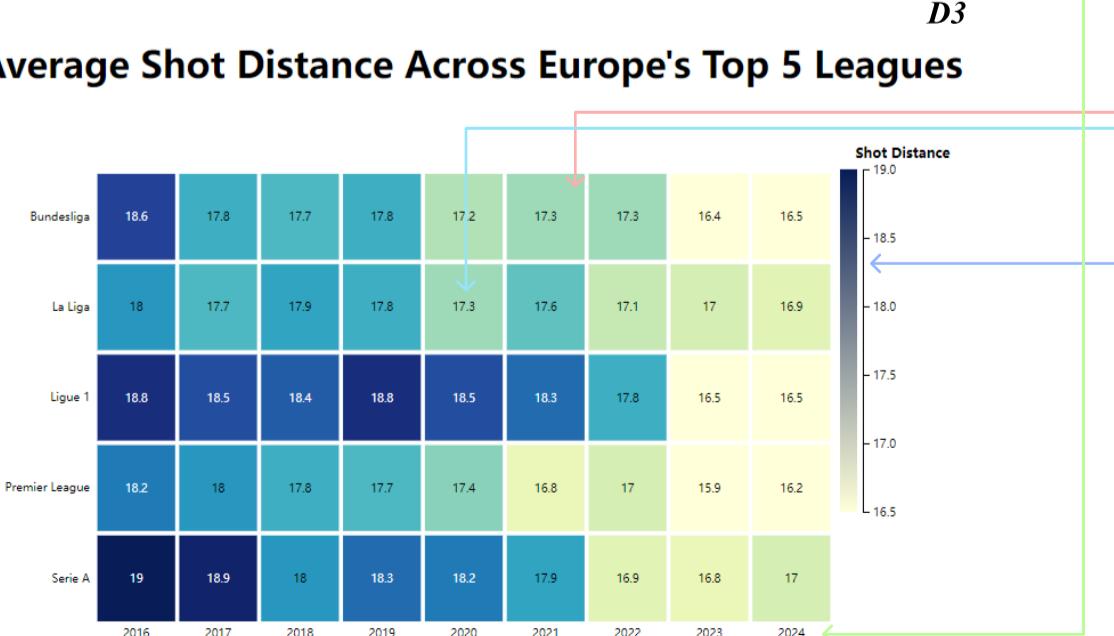
**Inappropriate Line Chart Selection:** Using a line chart for visualizing multiple trends can cause clutter, making it hard for viewers to focus on and differentiate specific changes in each line.

**Inadequate Color Choices:** The contrast of some colors is not strong enough, making it difficult to distinguish lines, especially in overlapping areas.

**Insufficient Labels:** The lack of specific data labels makes the chart difficult to read and interpret, forcing viewers to estimate values.

**Crowded Data Points:** The chart uses numerous data points that are closely spaced, especially in recent years. This results in a cluttered visualization, making it difficult for viewers to clearly trace individual league trends.

## Transform it into a bad visualization



The use of color conveys data trends, allowing viewers to quickly identify changes in average shot distances across different years and leagues. The color gradient intuitively represents the magnitude of the values and variations, enabling viewers to gain an overall understanding of the differences between different years and leagues.

The heatmap has a color legend (color gradient) that helps viewers understand the relationship between color and data, providing a strong visual impact.

Each cell in the heatmap has a specific value label (such as shot distance), allowing viewers to see each value precisely.

The heatmap is suitable for direct comparisons of multiple categories (leagues) at a specific point in time. Viewers can look across a row or column to observe the performance of all leagues in a given year or the changes for a specific league over different years.

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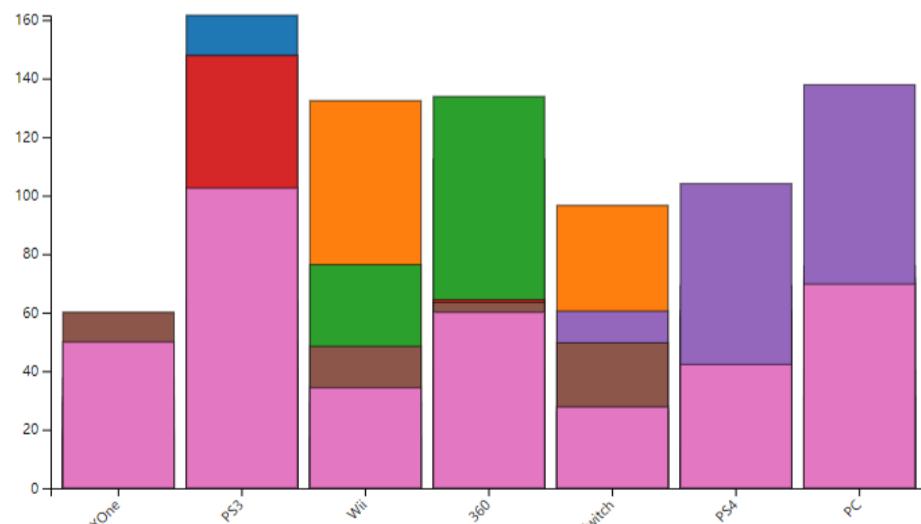
This visualization was inspired by the confusion matrix used to test AI models, and part of the code was sourced from the Google.

## AI Dataset and Make Bad and Good Visualizations

The fake data was created by ChatGPT based on videogames\_wide.

D3

Global Sales by Genre and Platform



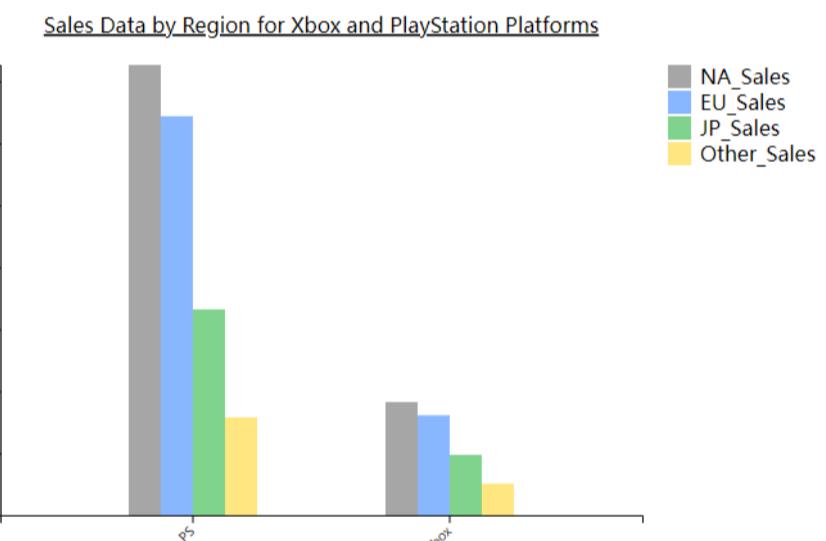
The different categories for each platform in the chart use similar or repeated colors, making it difficult for viewers to distinguish between categories. In visualization, the choice of colors is crucial, especially when comparing different categories, where the same color should represent the same category.

The chart lacks a legend explaining the correspondence between colors and game categories, which prevents viewers from understanding what each color represents. Without a legend, viewers can only guess the meaning of the colors, reducing the readability of the chart.

This chart uses a stacked bar chart but lacks specific numerical labels for each part, making it difficult for viewers to directly read the sales figures for different categories under each platform.

Using stacked bar charts divides each platform's column into multiple segments, which, although it shows the overall composition, also leads to visual complexity. Viewers trying to understand the sales situation of different categories on each platform may find the stacked complexity confusing, especially when there are significant differences between sections, making the overall understanding more difficult.

The labels for the X and Y axes do not provide sufficient descriptive information. The X-axis simply displays platform names without indicating the time period or sales region represented by these platforms.



The chart shows the sales data for Xbox and PlayStation platforms across different regions (North America, Europe, Japan, and other regions). The bars in different colors represent different regions, making it easy for users to compare the performance of the two major gaming platforms in each market.

The color scheme of the chart uses low-saturation but sufficiently contrasting colors (e.g., gray, blue, green, and yellow), making the bars distinguishable without being harsh on the eyes. The low-saturation colors also make the chart easier to read, especially suitable for data-dense visualizations.

The chart has a title at the top, "Sales Data by Region for Xbox and PlayStation Platforms," allowing users to quickly understand the main content of the chart. Each axis is clearly labeled, with the X-axis indicating the platform and the Y-axis representing sales volume, making the chart easy to interpret.

## AI Bad

The legend helps distinguish the sales data for different regions, with each color corresponding to a specific sales region (e.g., NA\_Sales, EU\_Sales, etc.). This helps users quickly understand the meaning of each color, improving the readability of the visualization.

## CSV Example

| Name             | Platform | Year       | Genre      | Publisher  | NA_Sales | EU_Sales | JP_Sales | Other_Sales | Global_Sales |  |
|------------------|----------|------------|------------|------------|----------|----------|----------|-------------|--------------|--|
| Quantum XOne     | 2023     | Shooter    | Microsoft  | 0.18       | 8.29     | 5.46     | 4.21     | 18.14       |              |  |
| Space OdyPS4     | 2023     | Puzzle     | Ubisoft    | 18.1       | 1.94     | 4.8      | 1.08     | 25.92       |              |  |
| Zombie Ki XOne   | 2023     | Role-Play  | Sony       | 14.56      | 18.2     | 2        | 2.68     | 37.44       |              |  |
| Alien Hunt One   | 2023     | Racing     | Microsoft  | 1.4        | 12.4     | 6.1      | 1.09     | 20.03       |              |  |
| Galactic ExPS4   | 2020     | Shooter    | Ubisoft    | 11.27      | 7.2      | 0.43     | 2        | 20.9        |              |  |
| Survival InvPC   | 2020     | Platform   | Ubisoft    | 9.52       | 11.14    | 7.98     | 3.39     | 32.03       |              |  |
| Retro RevvPS3    | 2013     | Racing     | Microsoft  | 7.9        | 2.85     | 6.22     | 3.06     | 20.23       |              |  |
| Robot RevvPC     | 2020     | Role-Play  | Sony       | 9.22       | 12.7     | 6.5      | 1.58     | 33.11       |              |  |
| Alien Terrif     | 360      | Grand Achi | Activision | 5.8        | 9.66     | 0.47     | 3.56     | 19.49       |              |  |
| Solar Defend Wi  | 2009     | Role-Play  | Sony       | 18.53      | 7.05     | 9.95     | 3.55     | 39.09       |              |  |
| Alien Hunt 360   | 2013     | Grand Achi | Microsoft  | 8.04       | 10.4     | 6.65     | 1.09     | 32.9        |              |  |
| Lost Relic PS3   | 2022     | Puzzle     | Ubisoft    | 7.14       | 0.16     | 3.52     | 4.49     | 15.31       |              |  |
| Elemental PS3    | 2019     | Platform   | Nintendo   | 7.38       | 19.34    | 5.74     | 3.27     | 35.73       |              |  |
| Midnight PS4     | 2010     | Racing     | Microsoft  | 15.55      | 8.93     | 7.81     | 2.3      | 34.59       |              |  |
| Alien Hunt PS3   | 2023     | Shooter    | Ubisoft    | 12.29      | 7.7      | 3.53     | 3.06     | 25.86       |              |  |
| Final Outps3     | 2022     | Shooter    | Ubisoft    | 17.75      | 15.59    | 8.44     | 1.17     | 42.95       |              |  |
| Grand Achi Wi    | 2020     | Shooter    | Sony       | 3.53       | 8.23     | 2.7      | 2.88     | 17.34       |              |  |
| Eric Vovk PC     | 2013     | Action     | Microsoft  | 7.78       | 19.7     | 4.52     | 0.76     | 32.17       |              |  |
| Alien Hunt PC    | 2023     | Grand Achi | Nintendo   | 6.78       | 15.35    | 6.55     | 1.47     | 31.15       |              |  |
| Planet InvXOne   | 2018     | Sports     | Sony       | 6.92       | 11.27    | 4.73     | 1.89     | 24.71       |              |  |
| Sky Battle PS3   | 2021     | Racing     | Sony       | 1.68       | 10.84    | 7.96     | 2.96     | 22.94       |              |  |
| Alien Hunt Wi    | 2009     | Grand Achi | Microsoft  | 17.04      | 9.1      | 4.05     | 3.03     | 33.73       |              |  |
| Railroad TiPS3   | 2022     | Shooter    | Nintendo   | 14.33      | 14.42    | 1.77     | 3.55     | 34.07       |              |  |
| Mystic QuPC      | 2018     | Platform   | Sony       | 7.27       | 13.99    | 1.05     | 2.59     | 24.9        |              |  |
| Arcade Rr        | 360      | 2005       | Action     | Ubisoft    | 8.43     | 10.45    | 4.37     | 2.36        | 25.8         |  |
| Horror Ma PC     | 2020     | Grand Achi | Ubisoft    | 2.08       | 8.58     | 0.07     | 0.07     | 11.03       |              |  |
| Virtual Gta      | 360      | 2009       | Racing     | Nintendo   | 18.57    | 16.34    | 6.71     | 3.28        | 44.9         |  |
| Horror Ma Switch | 2014     | Action     | Ubisoft    | 13.13      | 11.61    | 2.21     | 0.76     | 27.71       |              |  |
| Horror Ma PS4    | 2023     | Grand Achi | Ubisoft    | 13.04      | 9.48     | 4.84     | 3.09     | 33.01       |              |  |
| Alien Hunt       | 360      | 2012       | Shooter    | Electronic | 12.09    | 10.28    | 7.8      | 3.69        | 32.86        |  |
| Nina Lege PS4    | 2003     | Racing     | Microsoft  | 11.76      | 2.38     | 8.13     | 3.8      | 26.08       |              |  |
| Space Frot PC    | 2009     | Platform   | Ubisoft    | 18.76      | 7.46     | 9.79     | 1.92     | 37.93       |              |  |
| Alien Hunt Wi    | 2003     | Grand Achi | Ubisoft    | 2.03       | 1.31     | 5.57     | 0.75     | 9.75        |              |  |
| Ancient Ch XOne  | 2013     | Action     | Microsoft  | 16.51      | 2.89     | 6.44     | 3.39     | 29.23       |              |  |
| Sky Invade PC    | 2009     | Role-Play  | Ubisoft    | 13.59      | 16.66    | 7.09     | 0.78     | 38.12       |              |  |
| Horror Ma XOne   | 2023     | Grand Achi | Ubisoft    | 19.1       | 2.45     | 8.69     | 2.01     | 31.13       |              |  |
| Spacex Dev PC    | 2005     | Puzzle     | Ubisoft    | 18.38      | 3.95     | 1.49     | 1.97     | 35.35       |              |  |
| Galactic W PC    | 2001     | Racing     | Electronic | 16.82      | 14.43    | 5.62     | 3.26     | 40.13       |              |  |
| Pixel FightrPS4  | 2019     | Platform   | Ubisoft    | 8.64       | 14.09    | 0.89     | 1        | 24.62       |              |  |
| Spooky Fo        | 360      | 2003       | Action     | Ubisoft    | 11.5     | 1.48     | 8.5      | 0.97        | 22.45        |  |
| Underworld PS3   | 2011     | Sports     | Electronic | 9.4        | 6.54     | 0.75     | 3.34     | 20.03       |              |  |

## Reflection for each visualization

### Good to Bad

This chart presents a comparison of certain values between Gaza and Ukraine, but there are several areas for improvement. The use of a single color makes it difficult to distinguish between the data, and the absence of axis labels and an unclear title make the chart hard to understand at a glance. Different colors should be used to differentiate the data, clear axis labels should be added, and a more informative title should be provided to enhance readability and the effectiveness of data comparison.

### Bad to Good

This heatmap shows the average shot distance in Europe's top five leagues from 2016 to 2024, using a color gradient to express data trends, allowing users to intuitively see the differences between leagues. However, the color contrast is somewhat insufficient, making it difficult to distinguish similar values in the chart. Using red-black and red-white colors might work better.

## AI Bad

This bar chart shows global sales data by platform and game genre. The different colored stacked bars represent various game genres, allowing users to see the sales distribution for each genre on different platforms. However, the color selection is somewhat disorganized, lacking sufficient contrast, and there is no scale, making it difficult for users to visually distinguish each category effectively.

## AI Good

This bar chart shows the sales data for Xbox and PlayStation across different regions, using different colors to represent sales in North America, Europe, Japan, and other regions. While the colors make regional comparisons intuitive, the color contrast is somewhat insufficient, particularly between gray and blue, which makes it hard to distinguish them. It is recommended to optimize the color scheme to improve readability and add more numerical labels so that users can better understand the sales figures.

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