

## **Overview:**

In the dynamic landscape of the technology industry, the phenomenon of layoffs has become an increasingly prevalent and noteworthy aspect. Understanding and closely monitoring this phenomenon is crucial for various people, especially for graduating students who are desperately seeking for a job. Thus, in my project, I am going to analyze the dataset that I found on [Kaggle\(hyperLink\)](#) by visualizing certain important facts about those layoff companies by answering the questions:

-Who they are?-What industry they are from?-Where they are?-When they started the layoff?

This **Choropleth Map** shows the geographic location of the headquarters of each layoff company. The **legends** shows the general industry categories and the range of how the layoff numbers impacted the workforce. The **tooltips**, if you hover your mouse on each data point, will show more detailed information on each company.

Take a quick look, there are more layoff companies on the east and west coast than the central America. However, if you click on each different industries in the legend, the map will show you the locations for that specific industry for more details. This function also works for the Impacted Workforce Range. When you click through the Impacted Workforce Range, you can see the pattern that, evenly distributed companies laid people off across the states. As the impacted workforce gets larger, the number of layoff companies landed on the west coast increases. (This Choropleth Map visually represents the geographic locations of layoff company headquarters. The legends delineate general industry categories and illustrate the range of workforce impact caused by layoffs. By hovering over each data point, tooltips provide detailed information about individual companies.

Upon a quick overview, one can observe a higher concentration of layoff companies on the east and west coasts compared to central America. For a more in-depth exploration, users can click on different industries in the legend, revealing specific locations for each industry. This functionality extends to the Impacted Workforce Range, allowing users to discern patterns in layoff distribution across states. Notably, as the impacted workforce increases, there is a noticeable trend of more layoff companies being situated on the west coast.

In summary, this interactive map offers a comprehensive view of layoff data, empowering users to analyze geographic, industry, and workforce impact patterns with ease.)

## **Aspect Comparisons:**

This part will compare layoff data with different factors such as company, industry, headquarter location, and its IPO status. In this way, people can have a better understanding on technology company layoff phenomenon.

(This section will systematically examine layoff data in correlation with various factors, including company specifics, industry classification, headquarters location, and the IPO (Initial

Public Offering) status of the entities involved. This comprehensive approach aims to provide a nuanced understanding of the layoff phenomenon within the technology sector. It also facilitates a more informed analysis of the factors influencing layoff trends, enabling individuals to formulate strategies to navigate the evolving tech job market.)

#### -Top 10 Layoff Companies:

**Amazon** has the most total layoff employees. The layoff number is up to 18,000.

(**Amazon** holds the distinction of having the highest total number of laid-off employees, reaching a significant figure of 18,000 individuals.)

#### -Top 10 Layoff Industries:

Instead of adopting the more generalized industry category, I choose to use the more detailed one so that you can have a better understanding on the data points. **Fintech** is ranked at the first place with 50 layoff firms in this industry.

(Opting for a more granular approach, I've chosen to utilize detailed industry categories for a nuanced comprehension of the data points. Notably, **Fintech** emerges at the forefront, holding the top rank with 50 firms undergoing layoffs in this particular industry.)

#### -Top 10 Layoff Headquarters:

The Choropleth Map above also kind of give the idea of which place may have the most layoffs. In this bar chart, **San Francisco** has the most layoff companies - 136 firms.

(The Choropleth Map provided earlier offers insights into potential areas with higher layoff occurrences. Complementing this, the accompanying bar chart underscores that **San Francisco** stands out with the highest count of layoff companies, totaling 136 firms.)

#### -Private vs. Public Layoffs:

**Private** companies with 370 firms have more layoffs than the public ones.

(The data reveals that **private** companies, totaling 370 firms, surpass public companies in terms of layoffs. This indicates a notable trend where the private sector experiences a higher incidence of layoffs compared to their public counterparts.)

#### Time Series:

The static line chart and the interactive tree map work together to show the technology companies' layoff trends. The 'Reported Date' legend on the right is clickable, which it can switch to any month's tree map to show you which companies and industries have been impacted. In the tree map, different colors represent right different industries. The size of each box indicates the percentage of being impacted by the layoffs. If you hover your mouse on each block, more detailed information will be given.

From the line chart, the first layoff started at January 2022, and the total number of the layoffs then fluctuated during the year of 2022. It reached its peak at January 2023. The tree map

reflected that the first layoff started with the service industry, and then one year later, every industry has layoffs at different amounts.

(The static line chart and interactive tree map synergize to illustrate the evolving layoff trends within technology companies. The 'Reported Date' legend on the right enhances user interaction, allowing switching between monthly tree maps to unveil the specific companies and industries affected during each period. In the tree map, distinct colors signify different industries, while the size of each block provides a visual gauge of the percentage impact from layoffs. Hovering over individual blocks reveals nuanced details about each company's layoff scenario.

The line chart portrays a temporal narrative, indicating that the initial layoffs commenced in January 2022, with the total layoffs exhibiting fluctuations throughout 2022 before peaking in January 2023. The corresponding tree map visually corroborates this narrative by illustrating the initiation of layoffs within the service industry, followed by subsequent impacts across diverse industries at varying intensities one year later. This dynamic presentation offers a comprehensive overview of the temporal and sectoral aspects of technology company layoffs.)

#### **About Author:**

(pic) Hi! This is Fangzhi Li, a junior majoring in Data Science and Applied Math at William&Mary. This website is the final project of DATA 303 - Data Visualization course. The Choropleth Map and Bubble Chart was made by Tableau, and bar charts by Seaborn (code can be found [HERE\(hyperLink\)](#)).

The first thing that I did after getting the data was to clean the whole dataset. I dropped the columns that are not useful for the data analysis. Then, I further grouped the industry fields so that there won't be overlapping industries with different namings. The original dataset has 289 different industries, after the cleaning process, there are 89 now. Then, I created a 'industryByStockMarket' column which contains the further grouped industries referred by the stock market - 8 more generalized industries. After that, I cleaned the 'headquarter\_location' to contain only the city names, not the state names. Then, I used the Geocode add-ons to encode the latitude and longitude of each headquarter cities so that Tableau can show each position on the map. Detailed data cleanse code can be found [HERE\(hyperLink\)](#).

(Hello! I'm Fangzhi Li, a junior majoring in Data Science and Applied Math at William & Mary. This website serves as the final project for the DATA 303 - Data Visualization course. The Choropleth Map and Tree Map were created using Tableau, and the bar charts were generated using Seaborn (you can find the code [HERE](#))

Upon receiving the data, my initial step involved comprehensive dataset cleaning. I removed columns deemed irrelevant for data analysis. Subsequently, I grouped industry fields to eliminate potential overlaps arising from different naming conventions. The original dataset comprised 289 distinct industries, but after the cleaning process, this number was reduced to 89. I then introduced an 'industryByStockMarket' column, categorizing industries in a more generalized manner with reference to the stock market, resulting in eight overarching industries.

Following this, I refined the 'headquarter\_location' column to exclusively include city names, omitting state names. To facilitate mapping in Tableau, I utilized Geocode add-ons to encode the latitude and longitude of each headquarters city. This step allowed Tableau to accurately position each data point on the map. For a detailed breakdown of the data cleansing process, you can refer to the code [HERE](#).)