

Executive Summary for Predicting Global Mass Layoff Project

Global mass layoffs began in 2019 and continue through 2023. Mass layoffs are defined as at least 50 employees laid off within 30 days or less equivalent to more than one third of the company's workspace or when more than 500 employees are laid off within 30 days or less, irrespective of the size of the company workspace. Companies such as Amazon, Google, and Meta lead the global mass layoff trend. The United States has laid off ten times more employees than the number laid off followed by India. In general, when a mass layoff occurs, it implies a company's health is not in a good shape and its impact on individuals or family. Intriguingly, the global mass layoff trend appears to overlap with the 2-3 years long pandemic caused by COVID-19 virus. Triggers for global mass layoffs are likely to be a dynamic process, as the phenomena is involved with the economy and human well-being. Although some of the analyses using publicly mass layoffs datasets have been done online from the Kaggle community and the others, our team proposes an in-depth analysis regarding the composition of mass layoffs and the relationship between mass layoffs and the other time-dependent variables.

We first re-analyze the mass layoff dataset available at Kaggle, which involves cleaning the missing, empty, and duplicated data points, allowing us to conduct an Exploratory Data Analysis (EDA). EDA is crucial because it establishes a key observation and component in our machine-learned predictive model. We have explored 1) time series analysis of the observed laid off data, 2) linear regression model and 3) a decision tree model. Time series model is still in the process of interpreting the result and investigating whether it is an appropriate model. Mass layoff may not be inherent in time so using time series would not tell us information about seasonality or trend. Decision tree model using funds raised after laid off has low accuracy, suggesting the complexity of the observed laid off data, therefore, the requirement of in-depth modelling. Linear regression using the current stage of the company produces 20% accuracy of predicted percentage laid off. This implies that early staged companies are prone to laid off events, in which underlying causes include the stock market, COVID cases, country's GDP, workspace, global trades, artificial intelligence and many others.

In future, we plan to build a similar predictive model as linear regression to compare their accuracy. We hope our analysis presented here can be useful to provide an insight to a future mass layoff event. Finally, our team wants to design a web-friendly interface to present our results and search or predict future mass layoff events for the company and their employees.