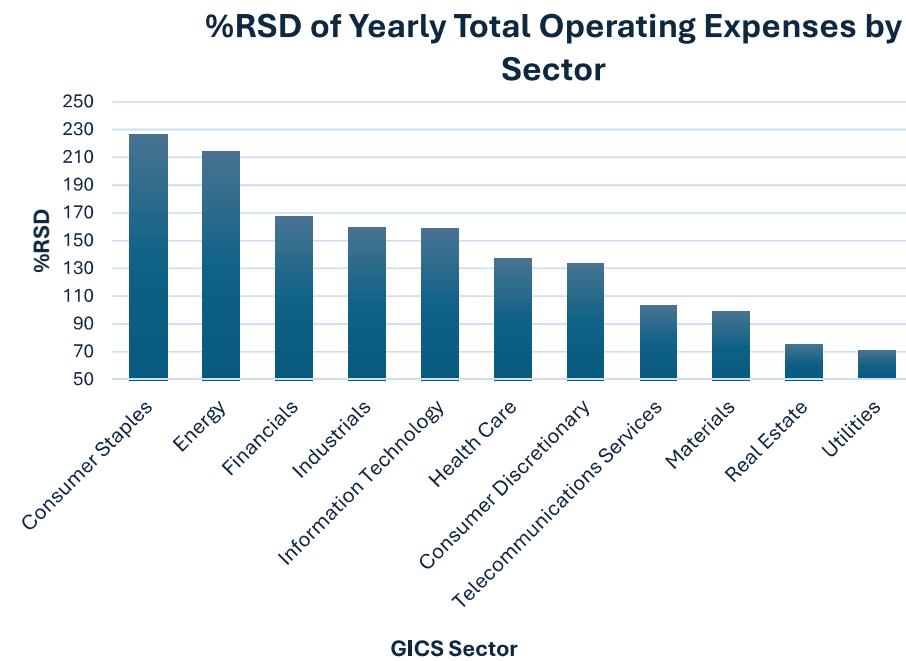


Which GICS sector had the highest variation in total operating expenses from 2012-2015?

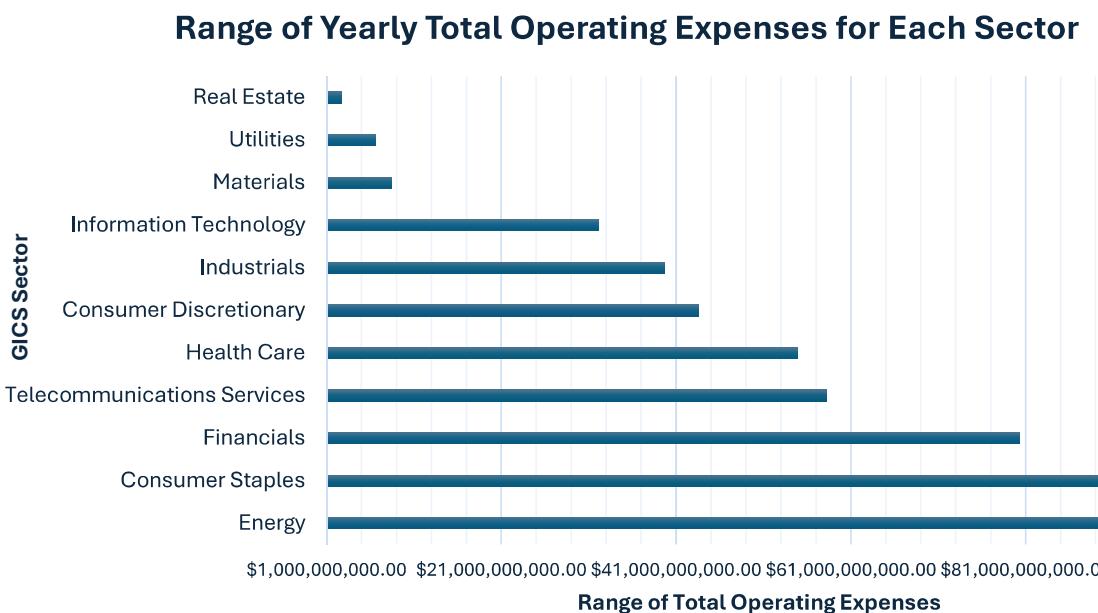


The Energy sector had the largest range in total operating expenses across the sector (\$97.5 billion), with Consumer Staples a close second (\$97 billion). Due to high %RSD and range, it can be concluded that the Consumer Staples sector had the highest variability in yearly total operating expenses from 2012-2015, with Energy just behind.

Within the Consumer Staples sector, there is a right-skewed or positively skewed distribution for total operating expenses. This means the mean is higher than the median as 50% of companies spend less than \$2 billion on operating expenses yearly. Outliers, like the Hypermarkets and Super Centers industry, spend \$52 billion on average, causing a right-skew and increasing the mean.

The bar charts depict the relative standard deviation and range in total operating expense spending for companies in each GICS sector from 2012-2015. While Telecommunication Services companies had the highest average total operating expenses, companies in this sector were relatively consistent in their spending on operating expenses.

The Consumer Staples sector had the highest relative standard deviation (%RSD) in spending on operating expenses (227%) across the sector. The Energy sector was second with an %RSD of 214%. Relative standard deviation was used instead of standard deviation to account for large differences in spending on operating expenses across the group. Telecommunication Services companies spend on average 9x more than any other sector on operating expenses. This made the relative standard deviation a better indication of variability than standard deviation for this dataset.



Resources

Kaggle data: <https://www.kaggle.com/datasets/dgawlik/nyse>

No other resources beyond the Introduction to Data course were referenced.