

NYSE MARKET ANALYSIS



INTRODUCTION

This project involves visualizing the NYSE data provided. The project requires that I;

- Create a presentation that shares the visual and summary information. The summary information paragraph should clearly communicate my findings based on my analysis and provide visual or numeric values associated with my summary.
- The visualization(s) might be a bar chart, histogram, scatterplot, box-plot, or other visual that I have learned to make. Include my insights from the measures of center and spread and at least one numeric summary statistic in the summary description.

Data cleaning was also carried out especially formatting of the various data column to the required data types.

Questions that I hope to answer includes:

- Is skewness observed in the data?
- What sector generates the most revenue?
- What sector has the highest mean growth rate?
- Why is the energy sector seeing a reduction in revenue?

GENERAL DATA OBSERVATIONS

Total Revenue For the Different GICS Sectors From 2013 - 2015

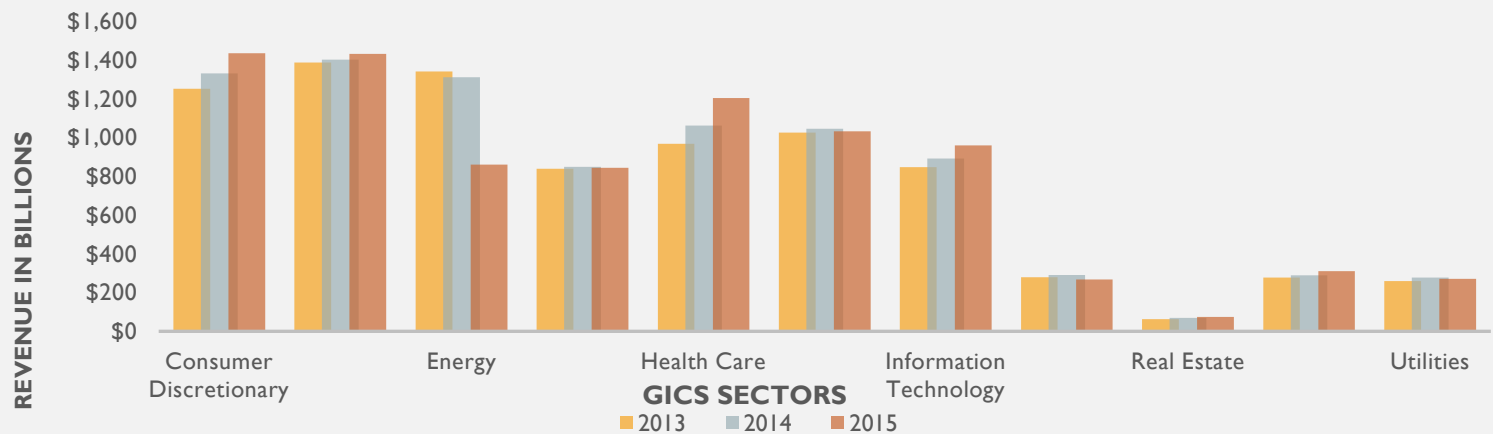


Fig. I

GICS SECTORS STATISTICS FOR 2013 - 2015				
GICS Sectors	Mean	Median	Range	Standard Deviation
Consumer Staples	\$1,408,772,944,000.00	\$1,403,938,460,000.00	\$43,973,294,000.00	\$22,381,729,668.69
Consumer Discretionary	\$1,340,478,213,666.67	\$1,332,319,553,000.00	\$182,844,880,000.00	\$91,695,067,170.81
Energy	\$1,172,287,814,666.67	\$1,311,915,971,000.00	\$481,342,477,000.00	\$269,341,162,045.29
Health Care	\$1,079,269,089,666.67	\$1,063,334,023,000.00	\$237,396,398,000.00	\$119,497,728,882.59
Industrials	\$1,035,469,819,333.33	\$1,033,831,829,000.00	\$19,914,097,000.00	\$10,057,587,885.79
Information Technology	\$900,130,826,666.67	\$892,347,814,000.00	\$112,180,094,000.00	\$56,493,582,264.62
Financials	\$844,447,774,000.00	\$844,713,181,000.00	\$9,596,251,000.00	\$4,803,627,688.58
Telecommunications Services	\$292,568,000,000.00	\$289,106,000,000.00	\$31,654,000,000.00	\$16,108,476,402.19
Materials	\$279,489,478,000.00	\$280,102,204,000.00	\$22,675,120,000.00	\$11,349,970,996.30
Utilities	\$269,584,484,000.00	\$270,915,907,000.00	\$18,327,543,000.00	\$9,236,028,557.12
Real Estate	\$68,294,053,000.00	\$68,647,454,000.00	\$12,435,699,000.00	\$6,225,377,225.90

Fig. II

After data cleaning was completed, I opted to use the data from 2013 to 2015 as the base of the analysis, as it has complete records for this time period.

From the first image (Fig. 1), an increase in revenue going from 2013 to 2015 is observed for most sectors. A major exception to this trend is the energy sector, where we observe a big drop in revenue generated from 2014 to 2015.

From the second image (Fig. II) showing the mean, median, range and standard deviation values of the sectors from 2013 to 2015. It is observed that the mean revenue values for most of the different sectors is greater than the median value. This shows that the data might be right skewed. The highest range value was observed in the energy sector, the healthcare sector tops the chart with the highest standard deviation value showing that earnings in this sector differs greatly from company to company.

GENERAL DATA OBSERVATIONS

GICS SECTORS CONTRIBUTIONS IN PERCENTAGE FOR 2013 - 2015

GICS Sectors	2013	2014	2015	Grand Total
Consumer Staples	16.3%	15.9%	16.5%	16.2%
Energy	15.7%	14.9%	9.9%	13.5%
Consumer Discretionary	14.7%	15.1%	16.5%	15.4%
Industrials	12.0%	11.9%	11.9%	11.9%
Health Care	11.3%	12.0%	13.9%	12.4%
Information Technology	9.9%	10.1%	11.0%	10.4%
Financials	9.8%	9.6%	9.7%	9.7%
Materials	3.3%	3.3%	3.1%	3.2%
Telecommunications Services	3.3%	3.3%	3.6%	3.4%
Utilities	3.0%	3.2%	3.1%	3.1%
Real Estate	0.7%	0.8%	0.9%	0.8%
Grand Total	100%	100%	100%	100%

TOTAL COST OF PRODUCTION FOR EACH SECTOR FOR 2013 TO 2015

GICS Sectors	2013	2014	2015
Consumer Staples	10.8%	9.4%	10.5%
Consumer Discretionary	9.8%	9.9%	9.8%
Energy	10.6%	10.6%	1.3%
Health Care	22.0%	21.8%	22.9%
Industrials	10.8%	10.8%	11.1%
Information Technology	12.4%	12.7%	13.8%
Financials	22.0%	22.6%	23.0%
Telecommunications Services	14.2%	12.9%	8.8%
Materials	25.2%	25.9%	25.2%
Utilities	24.0%	12.5%	20.2%
Real Estate	19.7%	18.6%	20.5%

GICS SECTORS REVENUE GROWTH RATES

GICS Sectors	2014	2015 %diff	Mean %	
Consumer Discretionary	5.9%	7.2%	1.3%	6.6%
Consumer Staples	1.0%	2.0%	1.0%	1.5%
Energy	-2.4%	-52.2%	-49.8%	-27.3%
Financials	1.1%	-0.5%	-1.7%	0.3%
Health Care	8.9%	11.8%	2.9%	10.4%
Industrials	1.9%	-1.2%	-3.1%	0.4%
Information Technology	5.0%	7.1%	2.1%	6.0%
Materials	3.6%	-8.5%	-12.1%	-2.4%
Real Estate	9.8%	7.7%	-2.2%	8.7%
Telecommunications Services	3.7%	6.8%	3.1%	5.2%
Utilities	6.6%	-2.6%	-9.2%	2.0%

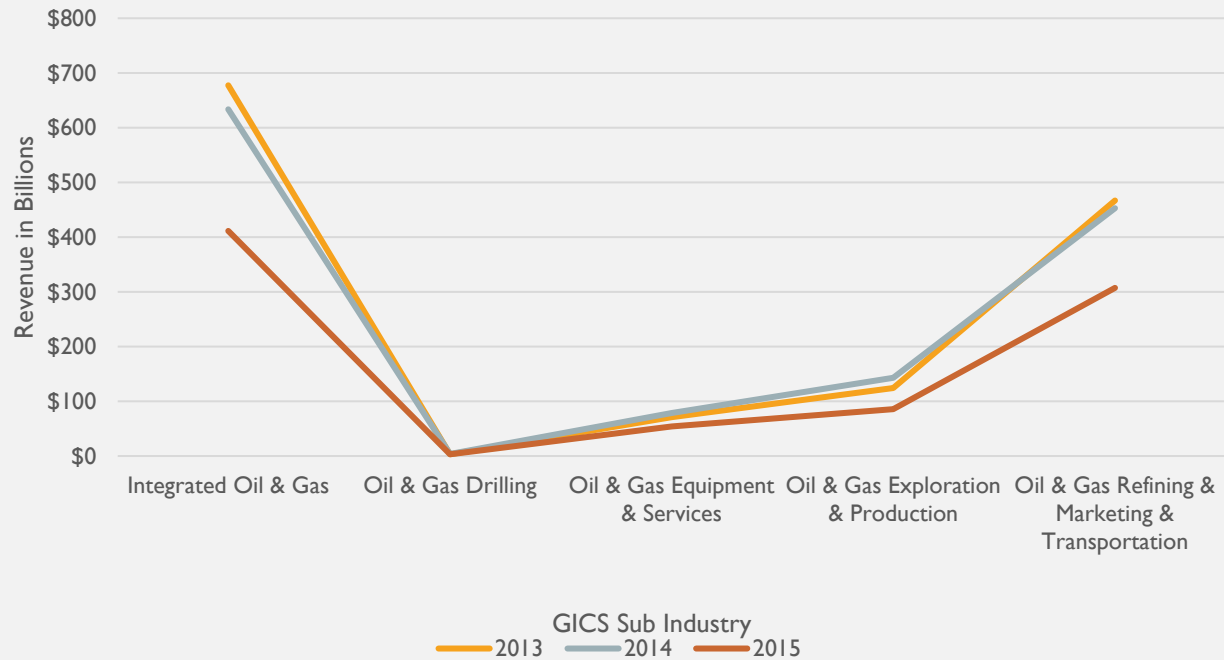
Fast moving consumer goods, i.e., consumer staples accounts for 16.2% of the total combined revenue from 2013 – 2015. It is closely followed by the energy and consumer discretionary sectors accounting for 13.5% and 15.4% respectively. We observe small fluctuations in revenue values for most of the sectors, except with the energy sector where 5.0% decrease was observed from 2014 to 2015.

Small variations in total cost of goods were also observed for most sectors seeing small increase and decrease across the years. Some sectors however display larger variations of differences with notable mentions being the Energy and Telecommunications sectors experiencing a large decrease going from 2014 to 2015. Utilities sector however saw its cost of production increase from 12.5% to 20.2%.

The health sector has experienced the highest mean growth rate with 10.4%, seeing this sector grow with steady increases over the couple of years. The energy sector on the other hand, has seen its revenue growth rate significantly diminish as it reports a mean growth rate of -27.3%. This could be due to the new drive for clean and renewable energy, requiring investment in research and development and this sector also records the highest other operating expenses cost.

THE ENERGY SECTOR

Revenue of the Different Energy Sub-industry



From the line chart, we observe a pattern with the integrated oil and gas sub sector leading revenue generated across the three years. The oil and gas drilling sub sector records the lowest generated revenue. The chart also shows a very close revenue value between the oil & gas equipment & services and the oil & gas exploration & production sub sectors. The chart also shows the decrease in generated revenue across the years.

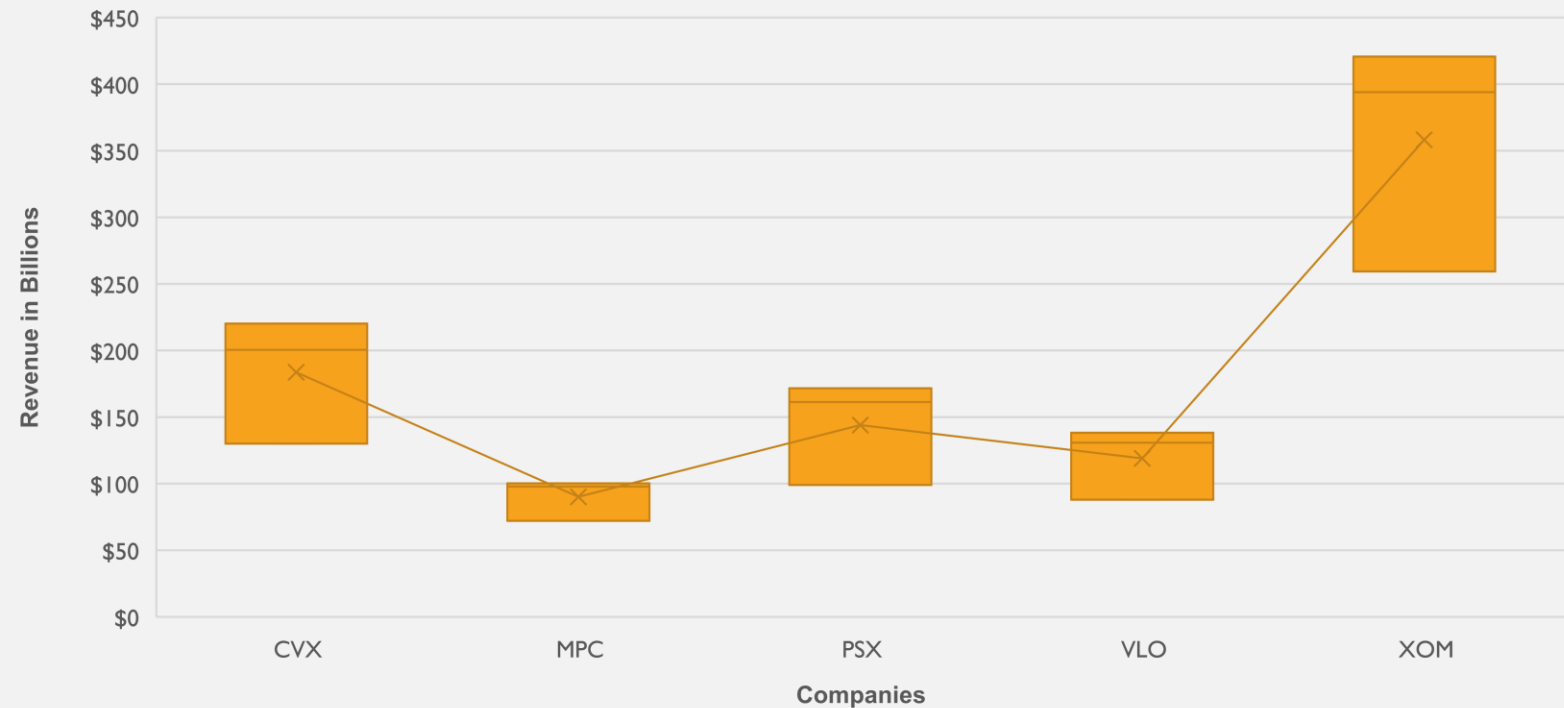
The table below helps to understand why the energy sector has experienced reduction in its revenue. In the table we observe a steady increase in the “other operating item cost” for the energy sector, where it accounts for just over 25% of this cost across all industries. This cost would include transportation which is a major contribution. As discussed in the previous observation on page 4, the energy industry might also be experiencing this due to the increased demand for clean and renewable energy.

OTHER OPERATING ITEM COST FOR EACH SECTOR FOR 2013 TO 2015				
GICS Sectors	2013	2014	2015	Grand Total
Consumer Discretionary	4.9%	4.9%	4.4%	4.7%
Consumer Staples	0.7%	0.7%	0.6%	0.6%
Energy	23.0%	24.7%	27.7%	25.3%
Financials	23.3%	22.1%	20.0%	21.7%
Health Care	14.9%	15.7%	17.7%	16.2%
Industrials	5.9%	5.8%	5.2%	5.6%
Information Technology	1.3%	1.1%	1.2%	1.2%
Materials	1.5%	1.3%	1.1%	1.3%
Real Estate	3.5%	3.5%	3.3%	3.4%
Telecommunications Services	12.5%	11.6%	10.8%	11.6%
Utilities	8.7%	8.5%	7.8%	8.3%

THE ENERGY SECTOR

TOP FIVE ENERGY COMPANIES BY REVENUE WITH STATISTICS							
Companies	2013	2014	2015	Mean	Median	Range	Standard Dev
XOM	\$420,836,000,000	\$394,105,000,000	\$259,488,000,000	\$358,143,000,000	\$394,105,000,000	\$161,348,000,000	\$86,476,837,124
CVX	\$220,156,000,000	\$200,494,000,000	\$129,925,000,000	\$183,525,000,000	\$200,494,000,000	\$ 90,231,000,000	\$47,448,588,609
PSX	\$171,596,000,000	\$161,212,000,000	\$ 98,975,000,000	\$143,927,666,667	\$161,212,000,000	\$ 72,621,000,000	\$39,274,846,204
VLO	\$138,074,000,000	\$130,844,000,000	\$ 87,804,000,000	\$118,907,333,333	\$130,844,000,000	\$ 50,270,000,000	\$27,177,770,941
MPC	\$100,160,000,000	\$ 97,817,000,000	\$ 72,051,000,000	\$ 90,009,333,333	\$ 97,817,000,000	\$ 28,109,000,000	\$15,596,432,744

Boxplot of the Top Five Energy Companies By Revenue



We will be looking at the top five companies in the energy sector as they account for over 75% of the total revenue accrued by this sector. The table shows that Exxon Mobil Corp (XOM) leads the revenue board, boasting a revenue that sees it almost double that of its closest partner Chevron Corporation (CVX).

Below we have a boxplot giving a better description of the already calculated statistics value. We observe that XOM has a higher range value, which can be observed going from its revenue from 2013 to 2015. It is also observed that the median values are larger than mean values across all five companies pointing to left skewness.

CONCLUSION

Although the NYSE data was mostly incomplete, especially for the research and development column, I was able to still draw out meaningful insights especially on the Energy sector.

From the brief analysis, I was able to conclude that :

- The general data set is right skewed, but left skewed for the energy sector.
- Consumer Staples generates the highest revenue.
- The health sector has the highest mean growth rate for the reviewed time period.
- The energy sector has seen its revenue reduce due to increased cost and need for renewable energy.
- The top five energy companies account for over 75% of total revenue generated in the energy sector.

