UDACITY

- **Project 2: Analyze NYSE Data**
- **Name: Dayana Katherine Mejia Quintero**

ABOUT

- The project “Analyze NYSE Data“ have different components to show what we learned on the Chapter 2: Introduction to data. On the next pages, we are going to answer different questions that we cross upon when creating the income and loss statement. To answer the questions, we built data visualization to understand better the data. We used two different sectors: Healthcare and Industry to analyze their data and do an exploration of Summary Statistics. We used to calculate the summary statistics, the option of Data Analysis on Excel.
- For the financial model scenarios, we focused on the healthcare sector and Biotechnology subsector. For the forecast model and the assumptions, we chose the company Celgene (CELG), which is a company that discovers, develops and commercializes medicines for cancer and inflammatory disorders.
- NOTE: On the report and also on the excel document, the numbers are with points instead of commas, since I didn’t change the regional setting on my computer.

Does the Healthcare sector have similar Operating profits levels than the Industrial sector in Year 2?

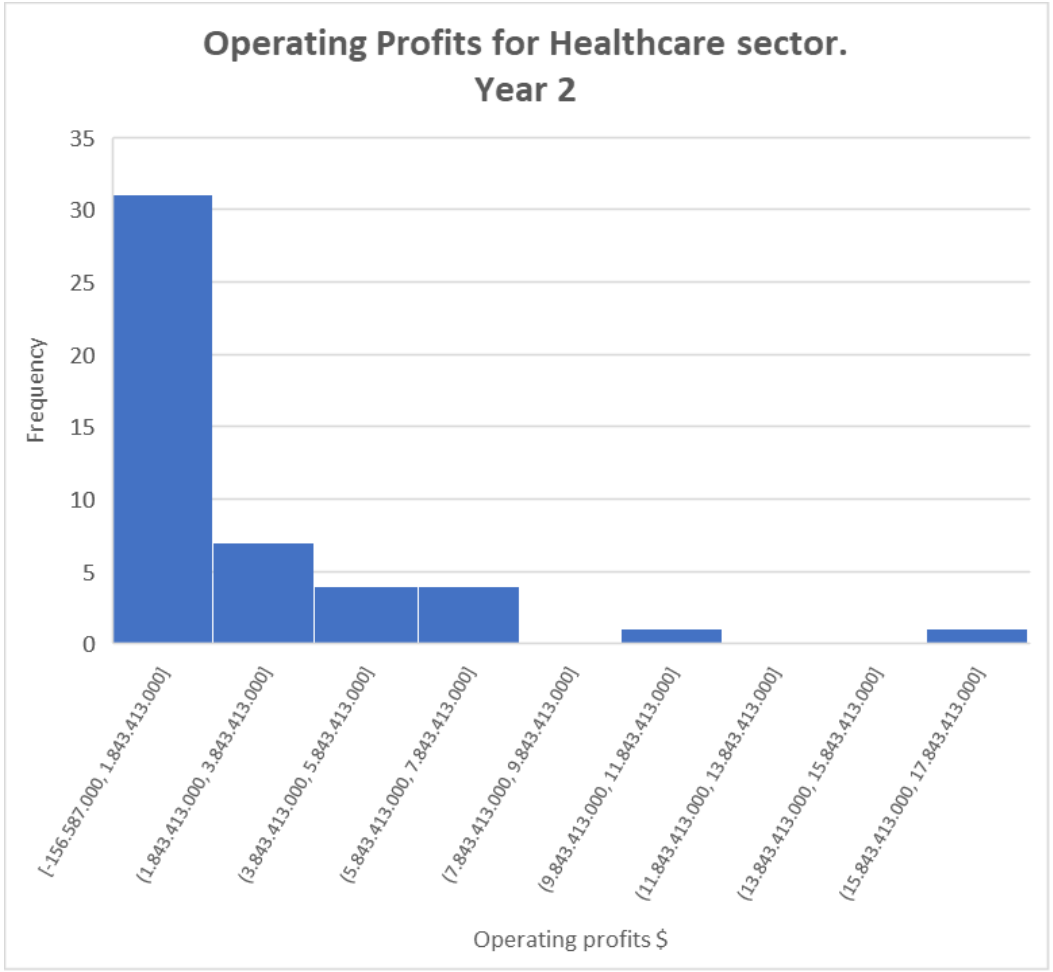


Fig 1. Operating profits for Healthcare sector. Year 2

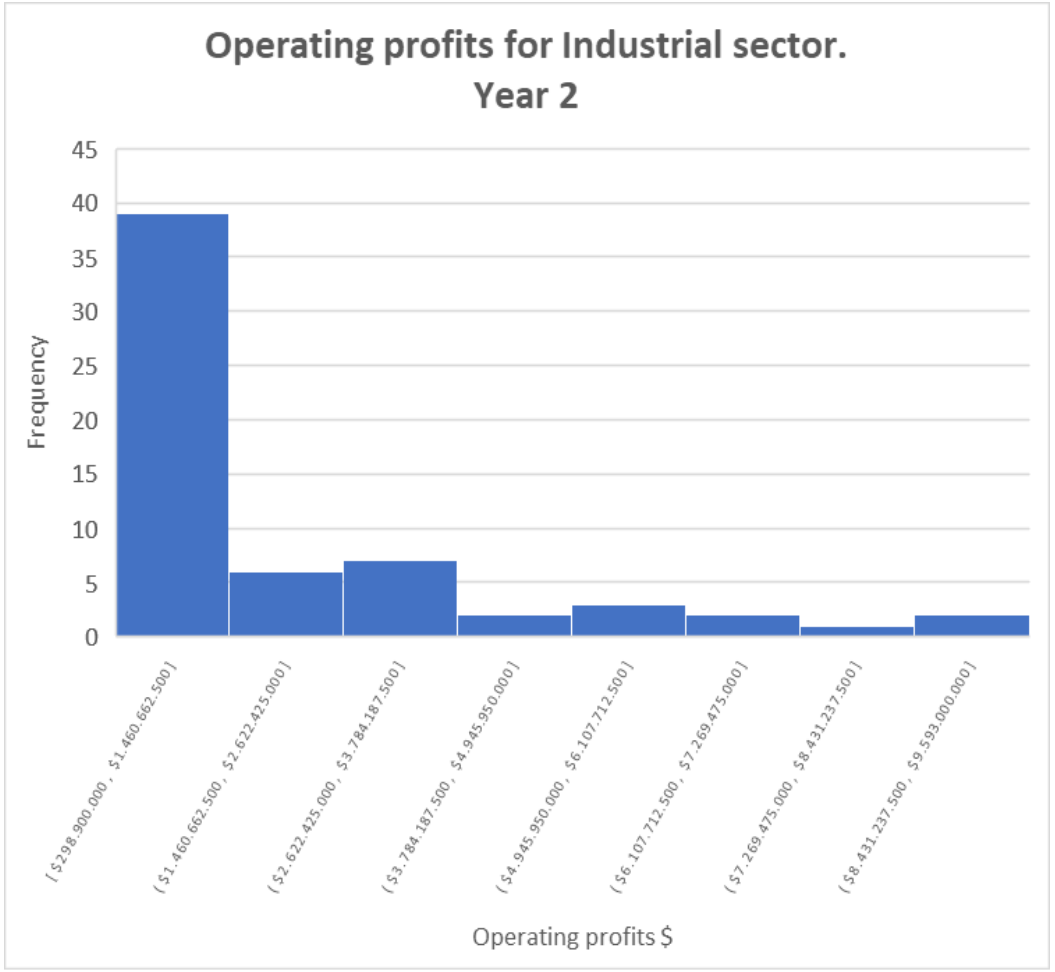


Fig 2. Operating profits fo Industrial Sector. Year 2

Does the Healthcare sector have similar Operating profits levels than the Industrial sector in Year 2?

- On figure 1 and 2, we have the histograms for the annual Operating profits for Healthcare and Industrial sector of all companies in year 2.
- The distributions for both sectors are right skewed which mean that the mean for each is higher that the median. The mean on year 2 for Healthcare is $2.309.894.604 and for Industrial is $2.088.035.894 which is a difference of around 9,60%. When we look the median for Healthcare is $1.019.348.500 and for Industrial is $1.151.500.000.
- The standard deviation for Healthcare is $3.032.845.372 and for Industrial is $2.223.617.256. That means, the variability in Operating Profits for Healthcare is higher, with more companies earning above $10.000.000.000 (more than 24% of them) and more than 40%, earning more than $ 4.000.000.000 million on year 2 on Operating profits. The subsector that have more percentage on Operating profits (32.6%) is Pharmaceutical and have a mean of $2.309.894.604.
- The range of Healthcare is $16.522.587.000 and Industrial sector is $9.294.100.000 which makes higher the variability on the healthcare sector.
- In conclusion, the Healthcare sector have more Operating Profits compare to the Industrial sector in Year 2 but at the same time, since it have higher variability (higher range and higher standard deviation) also shows that the risk is higher and it needs to be taken on consideration when investing.

Does the Healthcare sector have similar expenditure levels for Research and Development than the Industrial sector in Year 2?

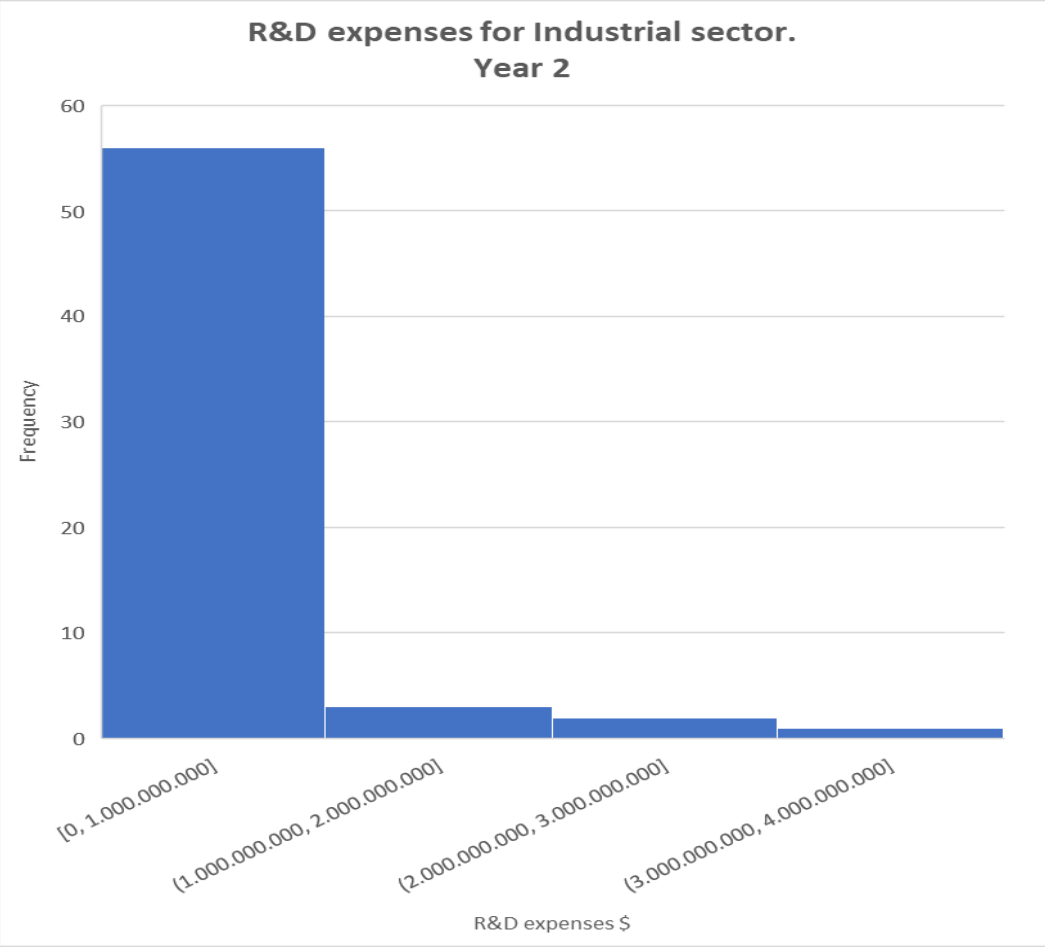


Fig 3. R&D for Healthcare sector. Year 2

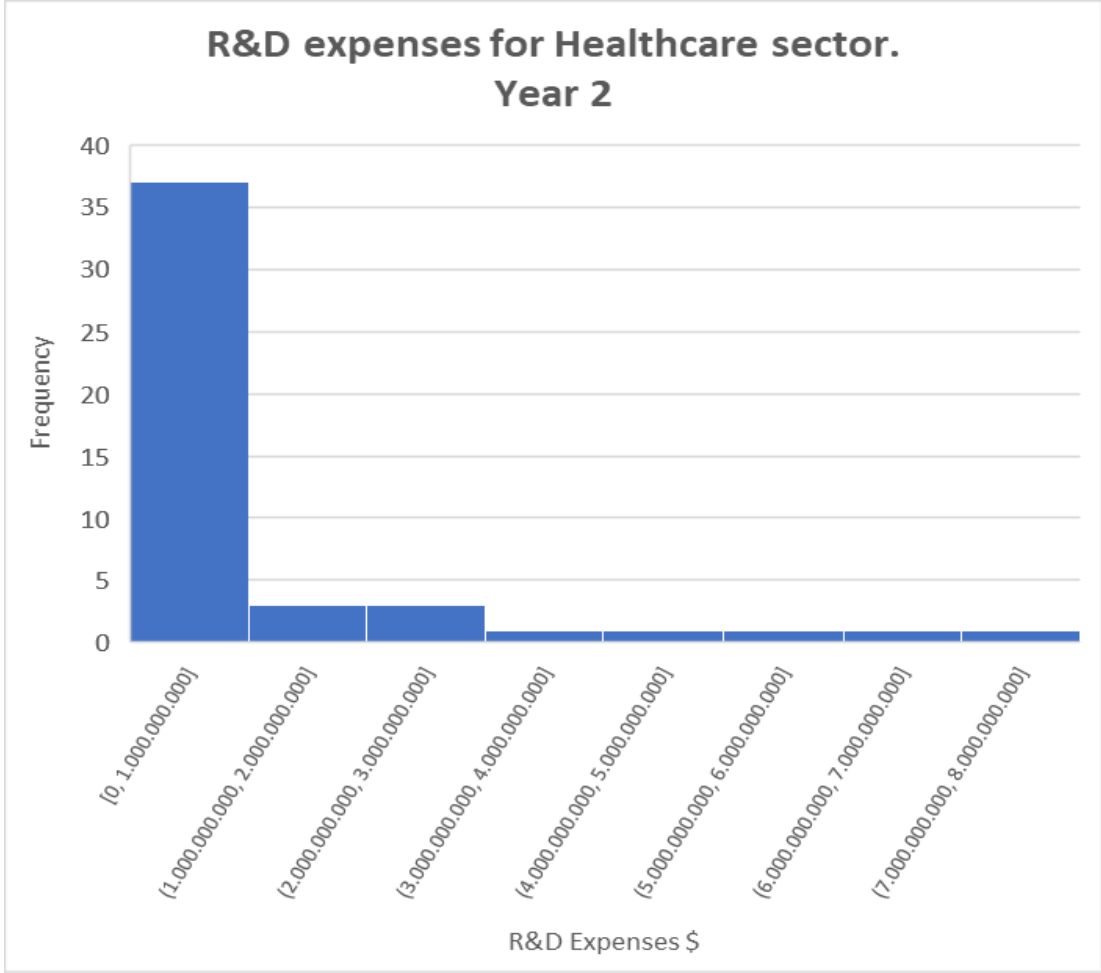
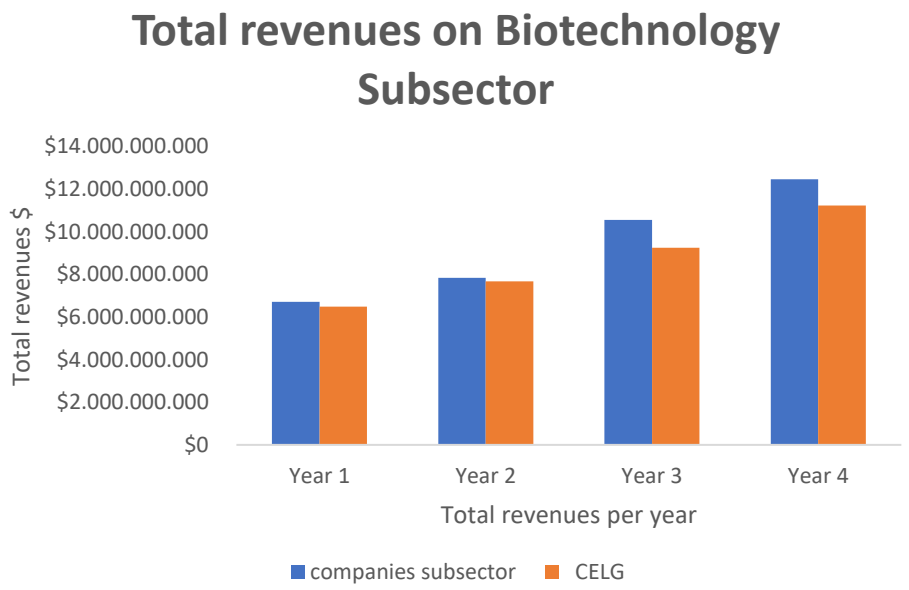


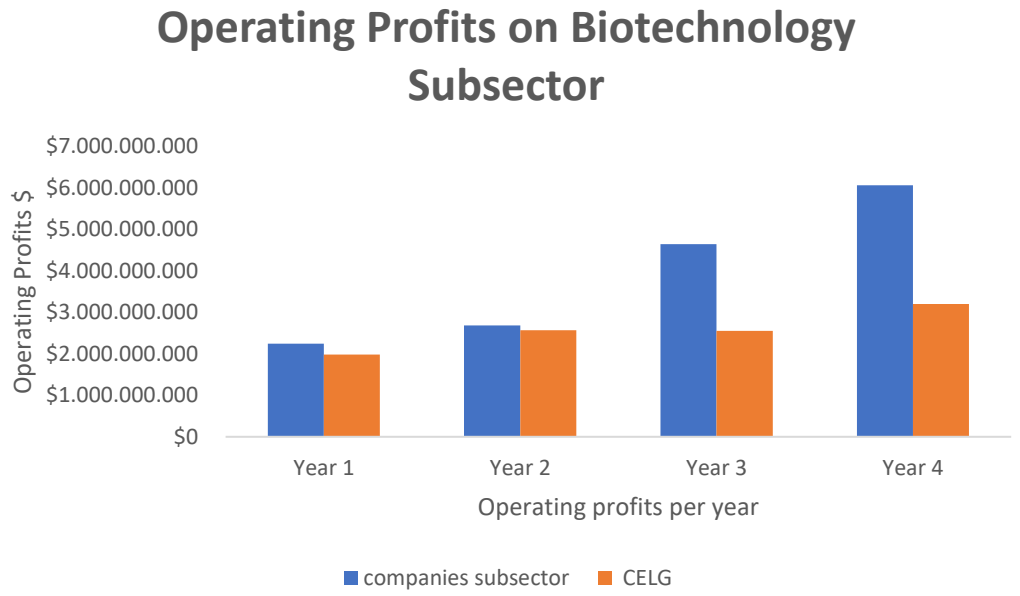
Fig 4. R&D for Industrial Sector. Year 2

Does the Healthcare sector have similar expenditure levels for Research and Development than the Industrial sector in Year 2?

- On figure 3 and 4, we have the histograms for the annual R&D expenses for Healthcare and Industrial sector in year 2. The distribution for both sectors are right skewed. That means, the mean for each is higher that the median.
- The mean for Healthcare is $1.007.093.854 and for Industrial is $232.371.161 which is a difference of around four times. When we look the median, for Healthcare is $312.500.000 and for Industrial is $0 which means that there are more companies that don't expend on R&D on contrast with the ones on Healthcare sector.
- The standard deviation for Healthcare is $1.758.392.475 and for Industrial is $644.125.635. That means, the variability in R&D expenses for Healthcare is higher, with more companies spending above $4.000.000.000 and more than 40% spending more than $ 2.855.000.000 million on year 2 on R&D expenses.
- The range of Healthcare is $$7.503.000.000 and Industrial sector is $3.047.000.000 which makes higher the variability on the healthcare sector and at the same time its more than double the difference,
- At conclusion, the Healthcare sector have much more expenditure levels compare to the Industrial sector in Year 2. If we compare the data with both companies related with the expenditure levels on R&D, we see that the risk is higher with the Healthcare sector.

What are the difference on the different levels between CELG and the other companies that belong to the Biotechnology subsector?

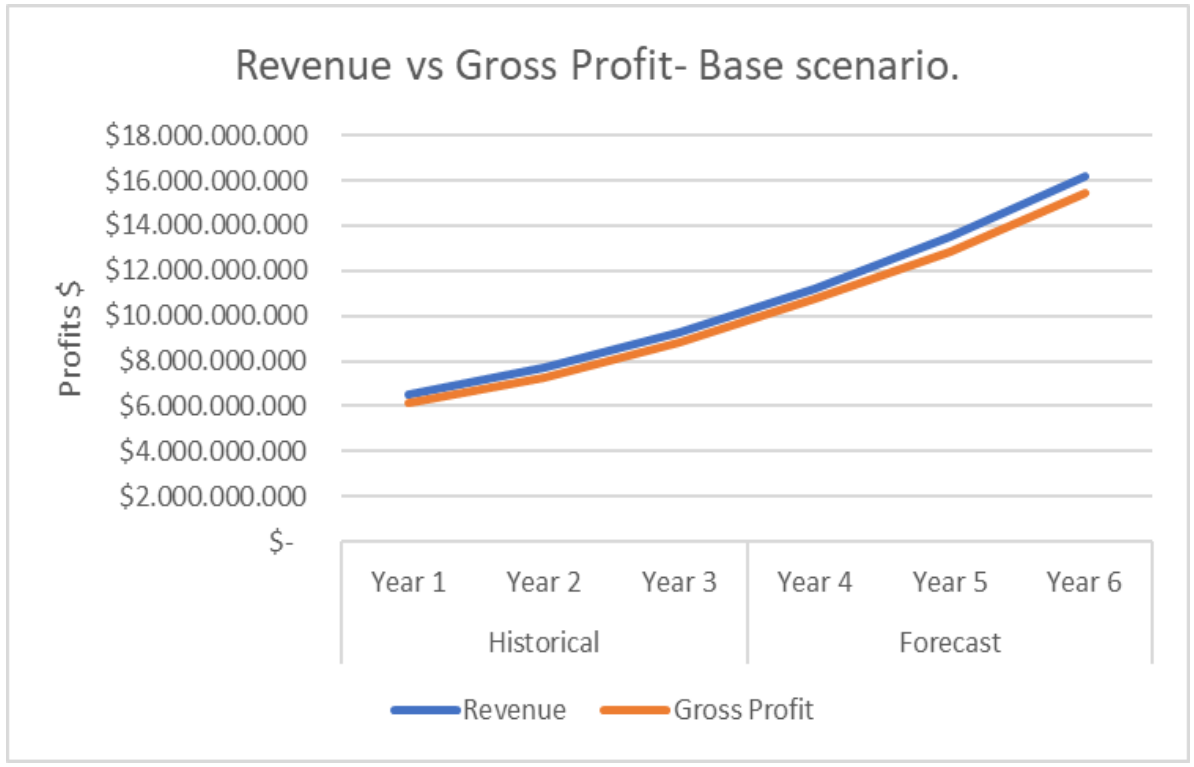


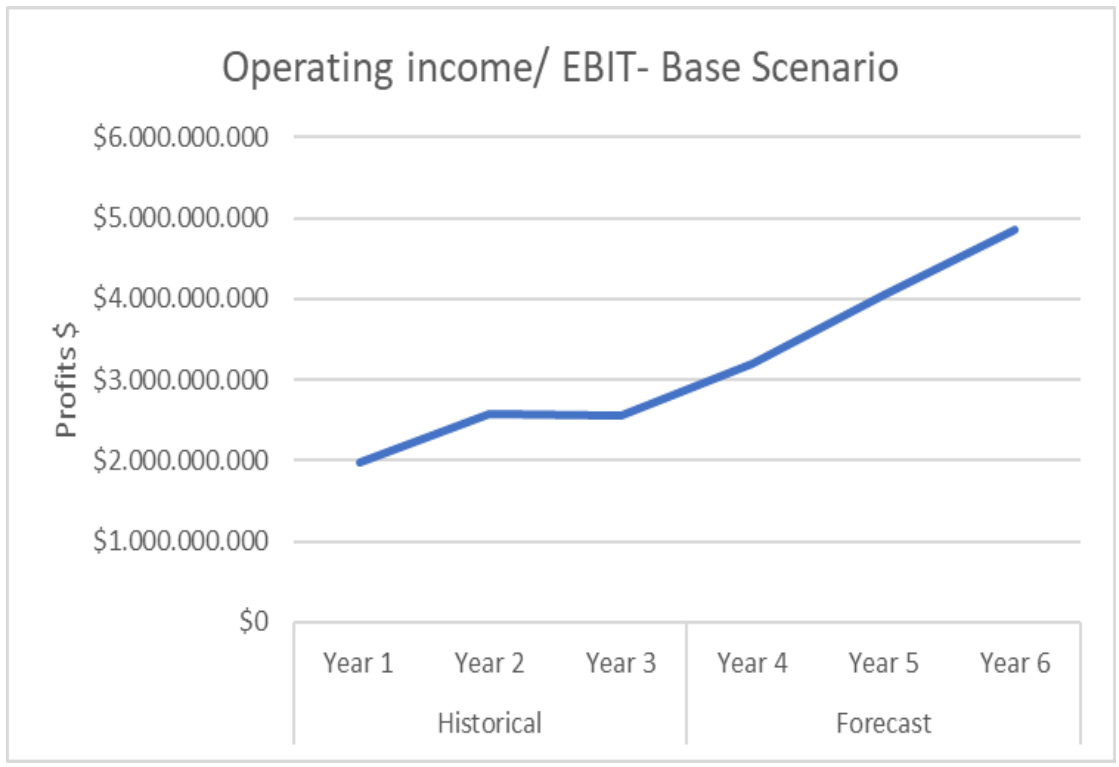


- We have two graphics where we can see the difference between the total revenues per year on average by the companies belonging to the Biotechnology subsector and the company CELG that also belongs to that subsector. On the case of the total revenues, the mean difference shows changes. On the year 1 the difference was 3%, on year 2 was 2%, on year 3 it went up with 12% and then went down again on year 4 with 10%
- The mean total for operating profits for companies categorized under Biotechnology subsector was higher compared to mean total for operating profits for CELG company in every year. The first year the difference was 12%, the second year was 4%, the third year was 45% and the last year was 47%. CELG company had lower operating profits compare with the other companies categorized under Biotechnology subsector.
- On overall, analyzing the data related with the four years, we can see that the range is $1.224.400.000 and the standard deviation is $2.051.607.455 when we observe the total revenues of CELG, which is lower than the range of all the companies of the subsector.

How are revenues comparing to the operating income on base case scenario?

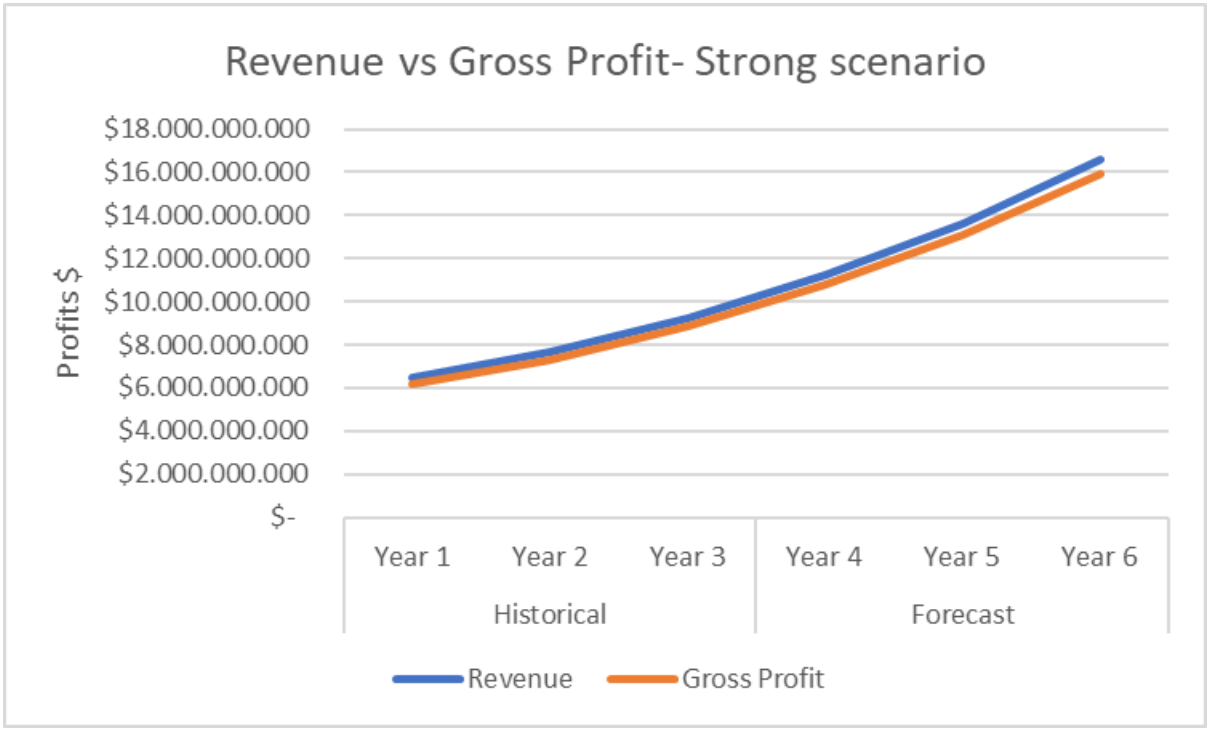
- For the base scenario, we used the formula of standard deviation to make the asusmptions. 20% for revenue growth for year 5 and year 6. This results on year 5 with a total revenue of $13.479.035.312 and a total revenue for year 6 of $16.179.638.169
- For gross profit, following the tendecy and analyzing the data and 95,32% as our assumption, it makes year 5 with $12.848.482.895 and year 6 with $15.422.750.921
- The operating margin assumption is **30,02%** which makes year 5 with an operative income of $4.046.978.580 and year 6 with $4.857.814.198..

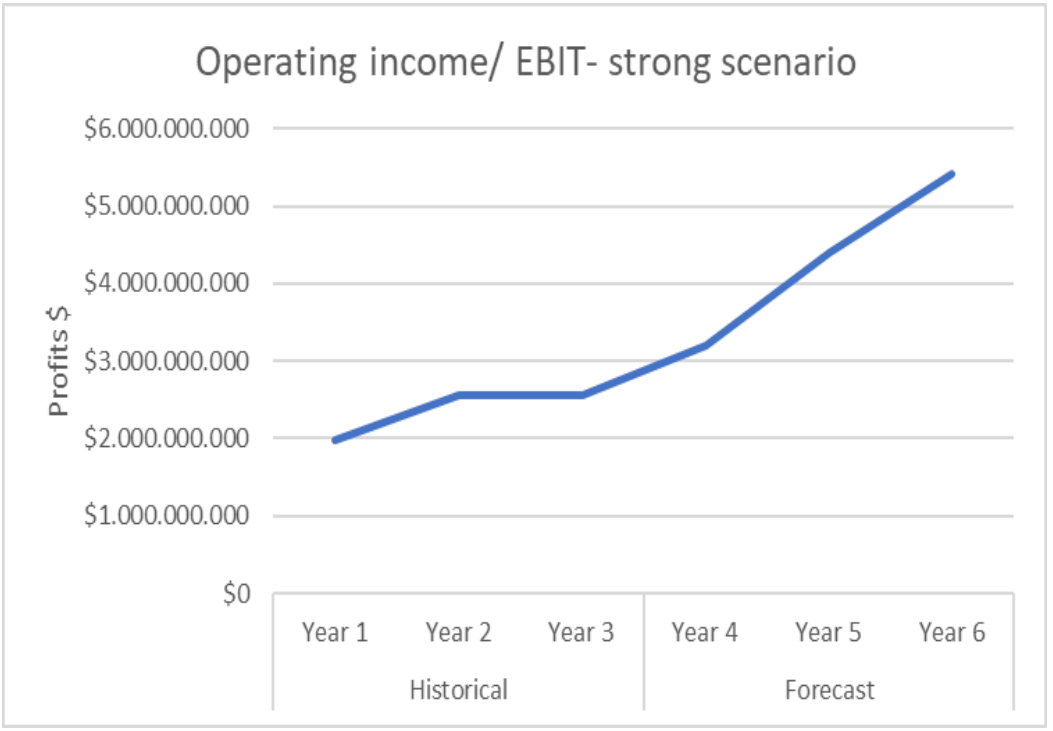




How are revenues comparing to the operating income on strong case scenario?

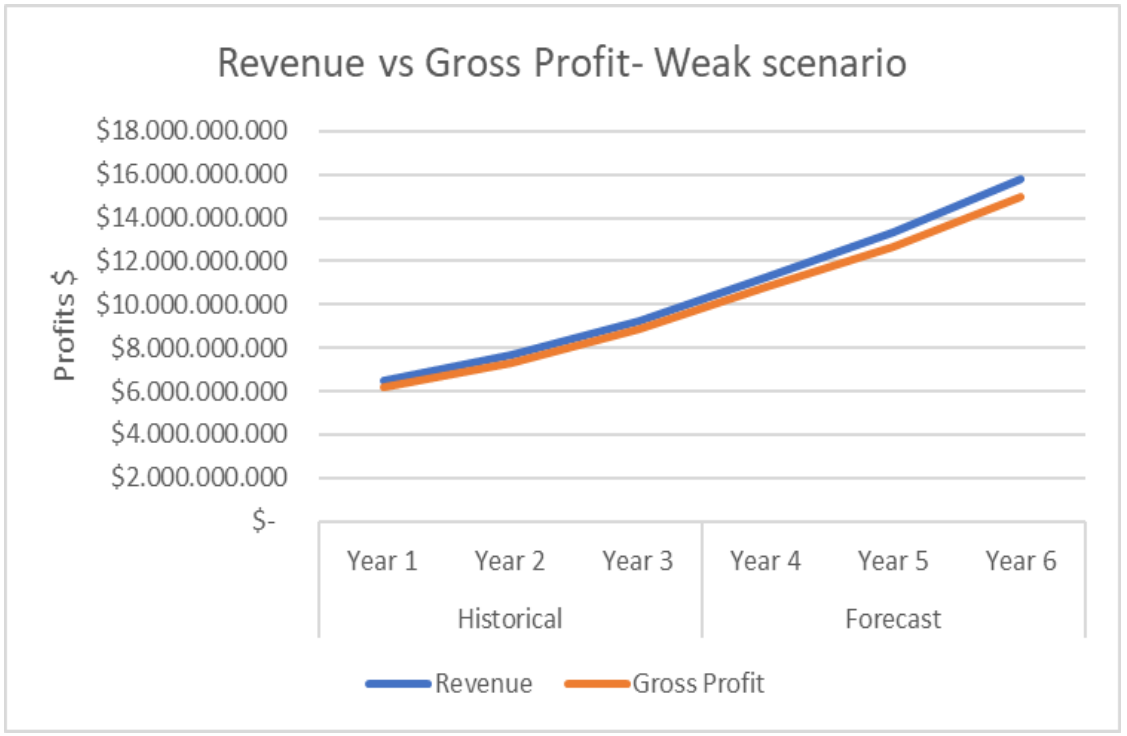
- For the strong scenario, using the standard deviation, our assumption are **21.4%** for revenue growth for year 5 and **21.7%** for year 6 based on how it grew on the last 4 years by analyzing the data of the company. This results on year 5 with a total revenue of $13.634.230.282 and a total revenue for year 6 of $16.595.486.386.
- For gross profit, following the tendecy and analyzing the data, we selected **95.84%** as our assumption, making year 5 with $13.066.815.678 and year 6 with **95.93%** and $15.920.239.749.
- The operating margin for year 5 is **32.27%** and year 6 is **32.68%** which makes year 5 with an operative income of $4.400.288.899 and year 6 with $5.423.123.046.

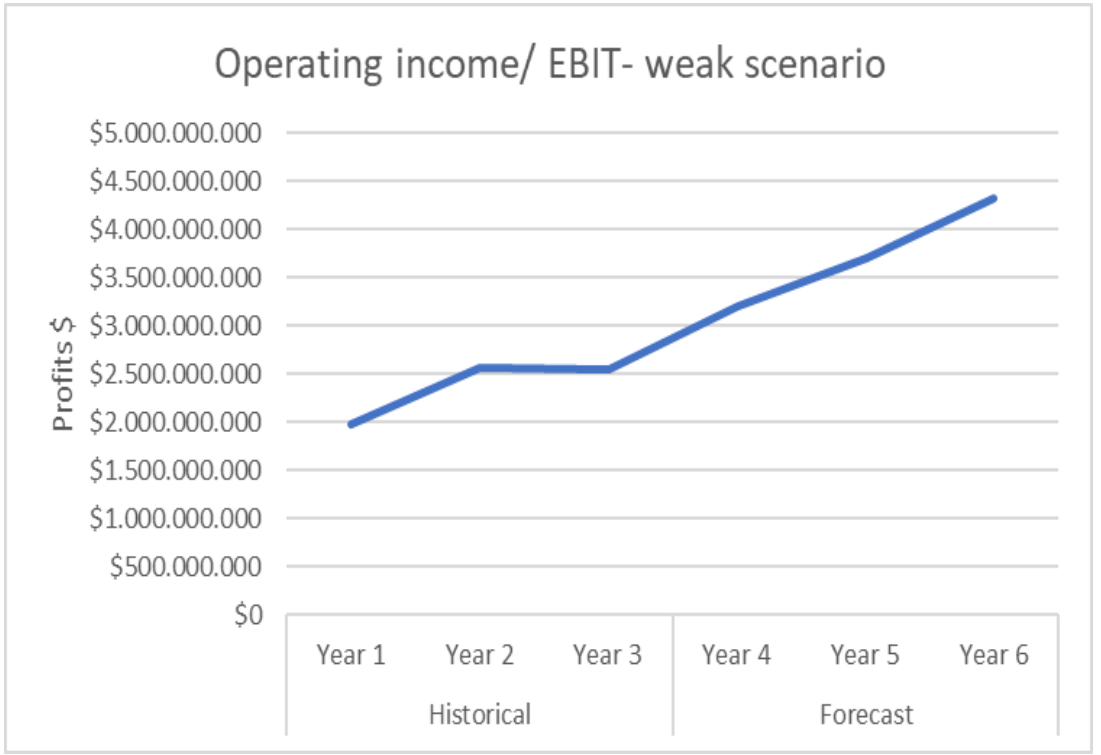




How are revenues comparing to the operating income on weak case scenario?

- For the weak scenario, for revenue growth for year 5 is **18,7%** and year 6 is **18,8%** making our assumption based on how it grew on the last 4 years by analyzing the data of the company. This results on year 5 with a total revenue of $13.250.456.000 and a total revenue for year 6 of $15.769.015.977.
- For gross profit, following the tendecy and analyzing the data, **94,81%** is our assumption for year 5 and **94,72%** for year 6, making year 5 with $ 12.631.752.753 and year 6 with $ 14.935.278.220.
- The operating margin on year 5 is **27,77%** and for year 6 is **27,37%** which makes year 5 with an operative income of $3.700.650.761 and year 6 with $4.316.009.415.





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