**What was different between Python and Excel?**

After having created Descriptive Statistics on both Excel and Python, I would conclude to say:

Python provides a wide range of libraries and tools for data manipulation, analysis, and visualization. It can handle larger datasets more efficiently and can automate complex data manipulation and analysis tasks.

While on the other hand, Excel provides basic statistical functions but may struggle with larger datasets and complex analysis tasks.

I would further elaborate the different segments that I can use to compare the two. Which are:

1. Flexibility: Python provides a more flexible and customizable environment, allowing you to write code to perform specific tasks and create custom functions for your analysis needs. Excel, on the other hand, has pre-built functions for common statistical calculations that can be accessed through a user-friendly interface.
2. Visualization: Python offers a range of libraries for creating advanced visualizations, including Matplotlib and Seaborn. Excel also provides some visualization capabilities, but they are more limited.
3. Reproducibility: Python code can be saved and shared, making it easier to reproduce results and collaborate with others. Excel spreadsheets can be shared, but the formulas and functions can be more difficult to follow and reproduce.

So, in conclusion, while Excel can be useful for performing basic statistical analysis on small datasets, Python provides more flexibility, power, and scalability for complex data manipulation and analysis tasks.

**When will you use either of them?**

Python and Excel have different strengths and are suitable for different tasks, so the choice of which tool to use will depend on the specific requirements of the analysis. Here are some scenarios where you might choose to use either Python or Excel:

When to use Python:

* When dealing with large datasets that require complex manipulation and analysis.
* When you need to automate data processing and analysis tasks.
* When you need to create customized statistical models or algorithms.
* When you need to work with data from different sources or file formats.
* When you need advanced visualization capabilities or want to create interactive dashboards.

When to use Excel:

* When you need to perform simple statistical analysis on a small dataset.
* When you need to quickly create charts and graphs for basic data visualization.
* When you need to share results with others who may not be comfortable with coding or unfamiliar with Python.
* When you need to perform financial calculations or create budgeting spreadsheets.
* When you need to perform ad hoc data analysis or data entry tasks.

**If you could do this assignment over, what would you do differently?**

I would gather more knowledge in terms of what the Python libraries can do. I noticed that there are many libraries that contain several ways of visualizing large complex datasets and make them visually appealing and easy to understand.

**What are the gaps in your programming or stats knowledge?**

The gaps to both my programming and stats knowledge are:

* Lack of foundational knowledge: This includes a lack of understanding of some of statistical concepts. Without a solid foundation, it can be difficult to build more complex analyses.
* Limited experience with data manipulation: The ability to effectively manipulate data is a critical part of data analysis. This includes skills such as cleaning and formatting data, handling missing data, and merging datasets. Without these skills, the analysis may be biased or inaccurate.
* Inability to choose appropriate statistical tests: Understanding which statistical test to use for a given dataset and research question is a critical part of statistical analysis.
* Poor visualization skills: The ability to effectively communicate data findings through visualization is critical in many fields. Without these skills, it can be difficult to effectively communicate the results of the analysis.
* Limited knowledge of programming languages and tools: Familiarity with programming languages such as Python or R, and data analysis tools such as Excel or Tableau, is critical in many fields. Without these skills, it can be difficult to access, manipulate, and analyze data effectively.

I understand that to become a skilled data analyst, it's important to identify and address these gaps in knowledge through continuous learning and practice.