

MODULE 1: TASK-ASSESSMENT

Task Outcomes. This task assesses your ability to:

- describe two variables appearing within a data-driven story meeting an audience’s needs;
- use SPSS to create charts expressing the vital characteristics of variables deemed important by an audience;
- compute summary/descriptive statistics using SPSS;
- meld summary/descriptive statistics and charts into a data-driven story meeting audience needs; and
- contribute a data-driven story using a predetermined format.

Additional Materials. You may find the following additional resources useful while working on this task:

- [Data Visualization: Best Practices](#)
- [Reporting Research in APA Style/Tips and Examples](#)
- [Reporting Statistics in APA Style | Guidelines & Examples](#)
- [SPSS: How to Make a Frequency Table](#)
- SPSS can produce [histograms](#), [bar graphs](#), [pie charts](#), [line graphs](#), [scatterplots](#), and [box plots](#).
- [SPSS: Mode, Median, Mean, Range, and Standard Deviation](#)
- [SPSS: How to Find the Mode \(and other things!\) in SPSS](#)
- [SPSS: Types of Charts](#)

You will be asked to import data into SPSS. [This video explains how to import data](#)—make sure you can import data before working on this task!

BACKGROUND INFORMATION

You should expect to: (a) compute descriptive statistics; (b) generate charts; and (c) tell a story using SPSS.

In this course, we will use the terms *plots*, *figures*, and *charts*—interchangeably. (This is common in graduate studies!)

THE DATASET

You may choose to analyze one of the following datasets sent to you by email:



MATH 8070 DBA
Dataset 23 July 2024



MATH 8070 DHA
Dataset 31 July 2024



MATH 8070 EDDIDL
Dataset 15 July 2024



MATH 8070 EDDOL
Dataset 15 July 2024

Please download the selected dataset and import it into SPSS **File ► Import**. Immediately, after completing the import, save the SPSS file to **Module1.sav**.

LET’S SET OUR GOALS...

If you chose healthcare data. For this task, you will focus on the *Weight(kg)* and *SystolicBP(mmHg)* variables. Your audience will expect written results and an interpretation of findings. In this write up, you should:

- Introduce the variables and their meanings
- Provide a descriptive analysis of the first variable and its corresponding chart.
- Provide a descriptive analysis of the second variable and its corresponding chart.
- Provide a commentary about the variables—including a brief comparison of the spread (*SD*) and potential relationships.

The audience wants a general understanding of both variables and whether there may be a potential relationship. Aim to meet their need using a (brief) data-driven story!

Check out <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6316192/> for a data-driven story relating weight and blood pressure.

If you chose business data. For this task, you will focus on the *WholesalePrice* and *RetailPrice* variables. Your audience will expect written results and an interpretation of findings. In this write up, you should:

- Introduce the variables and their meanings
- Provide a descriptive analysis of the first variable and its corresponding chart.
- Provide a descriptive analysis of the second variable and its corresponding chart.
- Provide a commentary about the variables—including a brief comparison of the spread (*SD*) and potential relationships.

The audience wants an understanding of both variables and their relationships. Aim to meet their need using a data-driven story!

Check out Chapter 18 at <https://openstax.org/books/principles-marketing/pages/18-in-the-spotlight> for a refresher on wholesale and retail markets.

If you chose education data. For this task, you will focus on the *Project 2* and *Unit Test* variables. Your audience will expect written results and an interpretation of findings. In this write up, you should:

- Introduce the variables and their meanings
- Provide a descriptive analysis of the first variable and its corresponding chart.
- Provide a descriptive analysis of the second variable and its corresponding chart.
- Provide a commentary about the variables—including a brief comparison of the spread (*SD*) and potential relationships.

The audience wants an understanding of both variables and whether there is a worthwhile relationship requiring additional study. Aim to meet their need using a data-driven story!

<https://ro.uow.edu.au/jutlp/vol15/iss2/3/> presents an interesting story involving final grades. It may be worth skimming to see how the researchers told a story using data.

If you chose instructional design and leadership data. For this task, you will focus on the *AVGTEST* and *GPA* variables. Your audience will expect written results and an interpretation of findings. In this write up, you should:

- Introduce the variables and their meanings
- Provide a descriptive analysis of the first variable and its corresponding chart.
- Provide a descriptive analysis of the second variable and its corresponding chart.
- Provide a commentary about the variables—including a brief comparison of the spread (*SD*) and potential relationships.

The audience wants an understanding of both variables and insight into whether GPA reflects performance. Aim to meet their need using a data-driven story!

Check out <https://files.eric.ed.gov/fulltext/EJ992990.pdf> for an interesting discussion about the potential (or *potentially weak?*) relationship between GPA and performance.

Task—Let’s get to work.

Understanding the Data and Your Audience

It is vital to understand the data and your audience's expectations because not meeting them (or worse, violating them) will lead to a poorly received presentation, meeting, or discussion. Moreover, not understanding your data will lead to a confusing mess! Hence, it is vital to understand your data and audience.

Let's get thinking about the data and the audience.

Address the following questions:

- Which variables do I care about? Why?
- Are the variables related? If so, how? If not, why do they appear unrelated?
- Is there a lot of data? A little bit of data? Share your thoughts.
- Would I want to know about the data's maximum (*Max*), minimum (*Min*), Median (*Mdn*), mode, mean (*M*), and standard deviation (*SD*)? Why or why not? How can they help or hinder my ability to understand the variables?
- Who is my audience? (Who will be receiving a discussion of my understanding of the variables?)
- Which understandings does my audience expect (or want to know)? How can I justify my thoughts about their expectations?
- Which statistics (the *Max*, *Min*, *Mdn*, mode, *M*, and/or *SD*) would help me share my insights into the data in a way that meets my audience's expectations? Why?

APA fact. APA lacks a shorthand or symbol for mode! Isn't that wild?

Preparation

SPSS can produce [histograms](#), [bar graphs](#), [pie charts](#), [line graphs](#), [scatterplots](#), and [box plots](#). You may wish to explore <https://datavizcatalogue.com/> and learn about the purposes and anatomies of the various charts/plots.

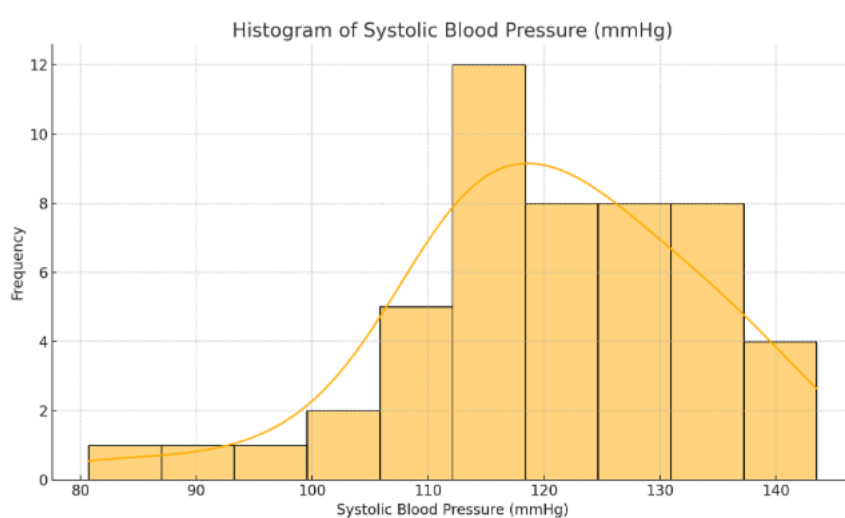
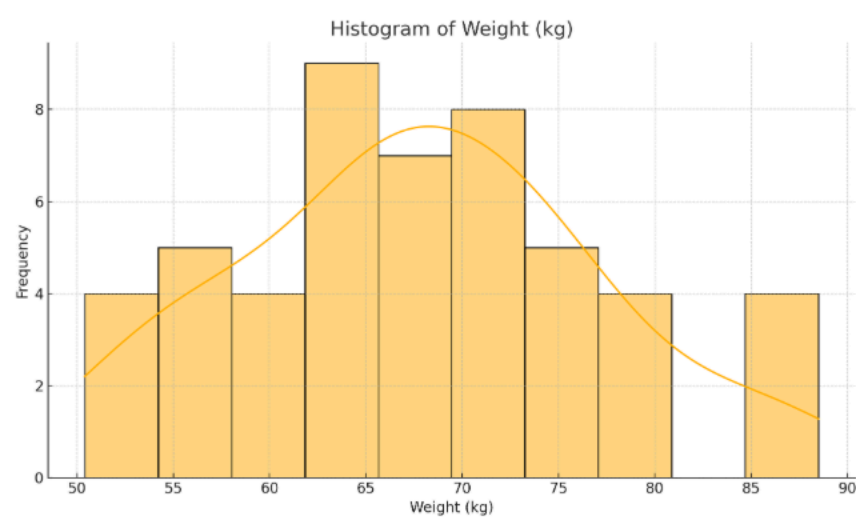
Address the following questions:

- Find the *Max*, *Min*, *Mdn*, mode, *M*, and *SD* for both variables of interest to you and your audience. Remember to record all the values in your notes. You may wish to [copy and paste tables and plots into a Microsoft Word document!](#)
- Rank the statistics in order of importance to you and your audience: *Max*, *Min*, *Mdn*, mode, *M*, *SD*.
- [Produce frequency tables](#), as you deem fit!
- Which chart types (produce [histograms](#), [bar graphs](#), [pie charts](#), [line graphs](#), [scatterplots](#), and [box plots](#)) best help you relate the highest-ranked statistics to your audience? Which types help you understand the frequency tables? Justify your choices using 2-3 sentences.
- Decide which chart type(s) will best enable you to meet the audience's expectations. Justify your choice(s) using 2-3 sentences.
- What's the story you're hoping to share? How can you use the chosen chart types to tell a story? List a few ideas and see which one best helps you frame your four-slide presentation.

**(Place your Descriptive Statistics Table Here—
Must be a Screen Shot or Snip-it From SPSS Calculation)**

		Mean	Median	Mode	Standard Deviation	Min	Max
1	Weight (kg)	67.75	67.7	67.7	9.33	50.4	88.5
2	SystolicBP (mmHg)	120.27	120.7	125.4	13.12	80.7	143.5

**(Place your Histogram Graph Here—
Must be a Screen Shot or Snip-it From SPSS Calculation)**



**(Place your Frequency Table Here—
Must be a Screen Shot or Snip-it From SPSS Calculation)**

Weight Frequency Table

	Weight Range	Frequency
1	(50.362, 58.02]	9
2	(58.02, 65.64]	13
3	(65.64, 73.26]	15
4	(73.26, 80.88]	9
5	(80.88, 88.5]	4

Systolic BP Frequency Table

<input type="checkbox"/>	Systolic BP Range	Frequency
1	(80.637, 93.26]	2
2	(93.26, 105.82]	3
3	(105.82, 118.38]	17
4	(118.38, 130.94]	16
5	(130.94, 143.5]	12

Data and Deliver

The scenario stated your audience expects written results and an interpretation of findings.

- Introduce the variables and their meanings
- Provide a descriptive analysis of the first variable and its corresponding chart.
- Provide a descriptive analysis of the second variable and its corresponding chart.
- Provide a commentary about the variables—including a brief comparison of the spread (*SD*) and potential relationships.

Figures should be APA formatted (within reason) using the [APA's guidelines at this link](#).

So, let's get to creating the write-up.

You may be wondering how to format/present a descriptive analysis. There is no generally accepted template for doing so; however, the following template may be useful:

The data set consisted of 50 data points that included Weight (kg) and Systolic Blood Pressure (SystolicBP in mmHg). Weight was the measure of the mass of individuals in kilograms and SystolicBP is the measure of the systolic blood pressure in millimeters of mercury, the pressure in the arteries during the heartbeats.

Weight (kg) was also found to be symmetrically distributed around its mean with a moderate spread. The average weight was about XX kg and the standard deviation was YY kg. The lowest and highest were AA kg and BB kg respectively. The histogram showed an approximate normal distribution with a mean as the center.

SystolicBP (mmHg) was slightly right skewed and had a broader spread than weight. The average systolic blood pressure was about ZZ mmHg with the standard deviation being WW mmHg. The distribution ranged between CC mmHg and DD mmHg and the histogram was slightly skewed towards the right.

In comparing the two variables, SystolicBP was more variable (spread) than weight as indicated by its larger standard deviation. Though both variables exhibited natural variation as would be expected in a healthcare population, no clear linear relationship can be seen in their univariate descriptions. Additional correlation or scatterplot analysis may assist in establishing the character of any possible relationship between these variables.

Such analyses can be used to establish the basis of patient profiling and can be applied in clinical evaluation where body weight can either affect or determine the blood pressure patterns.

Here's an example for inspiration:

The data set contained 365 observations of typing accuracy (TA) and average finger length (AFL). TA measured how many words, out of 1500 possible, were correctly typed during a 10-minute typing test. AFL was the average length of the index, middle, and ring fingers (measured in millimeters) of a test taker.

TA appears symmetrically distributed about its mean and has a negligible spread ($M = 150.00$, $SD = 4.01$, $Mdn = 150.84$). It ranged from 100 to 200 words, uniformly.

AFL was not symmetrically distributed about its mean and had a significant spread ($M = 78.51$, $SD = 19.88$, $Mdn = 62.77$). Unlike TA, AFL demonstrated a broad spread as it ranged from 32.11 to 108.33 mm.

WHAT DO I TURN IN?

- All tables and figures presented as evidence for responses. All tables and figures must be APA 7 formatted per <https://apastyle.apa.org/style-grammar-guidelines/tables-figures>. This includes the descriptive statistics table, Histogram Graph, and Frequency Table.

- The written results, as produced during *Data and Deliver*.
- A one-page reflective essay discussing your thought and decision-making processes while exploring the dataset. Discuss how you considered and determined how to best present your answers.

Reflective Essay

When performing this analysis, I chose two health-related variables, namely, Weight (kg) and Systolic Blood Pressure (mmHg). The choice of these variables was based on the fact that they are often interconnected in the field of medical research, and the investigation of these variables may unveil some interesting health trends.

I started by computing descriptive statistics like mean, median, mode and standard deviation in SPSS. These are statistics that are necessary in summarizing the center and spread of the data. The mean gives an overall average whereas the median is not influenced heavily by the outliers. I have also added the mode, even though there is no official symbol of it in APA since it can be used to determine the most common values. Standard deviation was particularly necessary to determine variability.

I then plotted the variable distribution using histograms. I selected histograms since they will enable us to visualize the shape of the data and whether it is skewed, clustered or has gaps. Frequency tables were also created to know the way the data clustered into intervals.

When choosing the type of charts, I focused on visual readability and the relevance to the readers. Histograms are most appropriate in displaying distribution particularly in continuous measurements such as weight, blood pressure. These images helped me to illustrate my findings and provide the story easier to tell.

Finally, I thought about the way in which the descriptive statistics and visuals may be used to create a story. Here, the narrative entails determining the common health ranges and observing how these may differ among a population. This process not only allowed me to get to know the data, but also how to convey it to a non-technical audience. The choices I made were based on the need to satisfy the audience and provide the results that are informative and appealing to the eye.

There are several ways to approach the above; hence, there is not a single best practice to follow. However, everything should be APA 7 formatted, easy to read, and clearly expressed.

