**Homework: Data Organization and Descriptive Statistics Assignment Instructions**

Overview

This **Homework:** **Data Organization & Descriptive Statistics Assignment** is designed to assess your understanding of the concepts and applications covered thus far in this course. In this module, you have looked at how to organize data and describe it in terms of central tendency, dispersion, and shape of distribution. You also have covered cover how to standardize a distribution of data in order to see how a single score compares to other scores. These topics are covered conceptually as well as how to calculate them by hand and in SPSS. These concepts and applications are fundamental to understanding and evaluating data as a consumer in a data-laden world, a consumer of data within our field, and producer of research in our field.

Instructions

Be sure you have reviewed this module’s **Learn section** before completing this **Homework:** **Data Organization & Descriptive Statistics Assignment**. This **Homework:** **Data Organization & Descriptive Statistics Assignment** is worth 60 points. Each question is worth 3 points each. Six points are awarded for mechanics/structure.

* Part I contains general concepts from this module’s **Learn section**.
* Part II requires use of SPSS. You will have to take screen shots and/or copy and paste from your SPSS to place answers within this file. Make sure you only insert relevant and legible images.
* Part III is the cumulative section. These may include short answer and/or use of SPSS but will review material from previous module(s).
* Directions for each subsection are provided in the top of each table (in the blue shaded areas).
* Answers should be placed where indicated (wherever there is “**ANSWER**”).
* Submit the file as a WORD document (.doc or .docx). Make sure the filename of your submission includes your full name, course and section.
  + Example: HW4\_JohnDoe\_510B01

Make sure to check the **Homework Grading Rubric** before starting this **Homework:** **Data Organization & Descriptive Statistics Assignment**.

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|  | **Part I: General Concepts**  **These questions are based on the concepts covered in this module’s assigned readings and presentations.** |  |

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| |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 31 | 47 | 53 | 57 | 61 | 67 | | 40 | 49 | 55 | 58 | 62 | 68 | | 41 | 50 | 56 | 58 | 64 | 69 |  1. The following data represents 18 emotional intelligence test scores. Organize these data into a class interval frequency distribution using 3 intervals with frequency (*f*) and relative frequency (*rf*) columns. | | |
| **ANSWER:** Fill in the yellow cells:   |  |  |  | | --- | --- | --- | | Class Intervals (use whole numbers) | *f* | *rf* (round to 2 decimals) | | 31-43 | 3 | 0.17 | | 44-56 | 7 | 0.39 | | 57-69 | 8 | 0.44 | |  | N = 18 |  | | | |
| 2. | What is the **class width**?  What is the **upper class limit** of the first interval? | **ANSWER**  Class width = (69 - 31) / 3 = 38 / 3 ≈ 12.67 (13 rounded)  Upper class limit = 43 |

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| Answer the following question related to your assigned readings and presentations. | | |
| 3. | What do the following symbols represent?   1. N 2. µ | b. N: represents the total number of individuals in a population.   b. µ: represents the population mean, which is the sum of all the data points in a population divided by the number of data points. |

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| Use the following five (5) numbers to calculate the following by hand (must show all work and do NOT round)   |  |  |  |  |  | | --- | --- | --- | --- | --- | | 3 | 3 | 4 | 5 | 9 | | | |
| 4. | Calculate all measures of central tendency. Label each one. | **ANSWER** Mean = 4.8 (equation: (3 + 3 + 4 + 5 + 9) / 5 = 24 / 5 =?)  Median = 4  Mode = 3 |
| 5. | Is this data best described as normal, positively skewed, or negatively skewed? How does your previous answer confirm this? | **ANSWER** The data is positively skewed as the tail is longer on the right side due to the 9 being farther from the mean than the other values), and the mean is greater than the median. |
| 6. | Calculate the range and average deviation. Show all work. | **ANSWER** Range = 6Equation: 9-3 Average Deviation = 1.44Equation: (3-4.8) + (3-4.8) + (4-4.8.) + (5-4.8) + (9-4.8) / 5 |
| 7. | Calculate the standard deviation using the formula from ch.5 . Show all work. | **ANSWER** |
| 8. | State two ways the standard deviation differs from the average deviation. | **ANSWER** |

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| Students in the psychology department consume an average of 5 cups of coffee per day with a standard deviation of 1.75 cups. The number of cups of coffee consumed is normally distributed.​ Make sure you do NOT round when answering any of these questions. When applicable, show ALL work for full points. | | |
| 9. | Nancy drank 6 cups of coffee. What ***proportion*** of students drank FEWER cups of coffee than Nancy? (do not round and use the table in the appendix of the Jackson e-book) | **ANSWER**  Z = (X - µ) / σ  Z = (6 - 5) / 1.75 ≈ 0.57  The value associated with a z-score of 0.57 is approximately 0.7157.  71.57% of students drank fewer cups of coffee than Nancy. |
| 10. | Which of the following curves (A, B, or C) best illustrate where Nancy’ s data would be? | **ANSWER** |
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| 11. | How many cups of coffee would an individual at the 80th percentile rank drink? (do NOT round) | **ANSWER** Looking up the z-score associated with the 80th percentile in a standard normal distribution table. This z-score is approximately 0.84. |
| 12. | Imagine this course is over and instead of seeing your total points earned, you are given a *z* score and the grade is curved to fit a normal distribution. What would you want your *z* score to be **and why**? (make sure you use a numerical value and indicate whether it is positive or negative) | **ANSWER**  X = µ + Zσ  In the context of grading on a curve, a higher z-score would correspond to a better grade. This is because a positive z-score indicates that you are above the mean. Therefore, you would ideally want your z-score to be as high as possible. For example, a z-score of +2 would put you two standard deviations above the mean, which would likely correspond to a high grade in the class. |

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|  | | **Part II: SPSS Application**  **These questions require the use of SPSS. Remember you must submit all of your work within this word document. You will need to take a screen shot of your data view if necessary, or copy and paste your output into the spaces below.** | |  | |
| The following dataset contains scores for depression, a subscale on the DASS-21 from 18 individuals. This variable is considered scale and is discrete. Enter the following data into SPSS to answer the following questions. Make sure you name the variable “Depression” and that you set the scale of measurement within SPSS.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 11 | 13 | 15 | 17 | 18 | 22 | | 7 | 8 | 18 | 17 | 13 | 11 | | 9 | 16 | 18 | 12 | 13 | 15 | | | | |
| 13. | | Insert the descriptive statistics table (NOT the frequency table) from your SPSS output. | |
| **ANSWER** Insert table here | | | |
| 14. | | Create a histogram of the data using SPSS and paste it below. | |
| **ANSWER** Insert SPSS graph here | | | |

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|  | **Part III: Cumulative**  **These questions can be related to anything covered thus far in the course.** |  |

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| As part of his dissertation, Joe wanted to know if an icecream reward can increase the number of books read by children in the first grade. The small school has four 1st grade classes – two are given the reward and two are not; total number of books read at the end of the term are compared. | | |
| 15. | What is the independent variable? Is it a true manipulated variable or a subject / participant variable? | **ANSWER** The independent variable in this study is the implementation of the ice cream reward. It is a true manipulated variable as Joe is actively introducing a change (giving an ice cream reward) to some classes and not to others, thereby controlling the variable. |
| 16. | What is the dependent variable? What is its scale of measurement? | **ANSWER** The dependent variable is the total number of books read by the children at the end of the term. The scale of measurement for this variable would be a ratio scale, as it involves counting a measurable quantity (number of books), which has a meaningful zero point (0 books read indicates no reading activity). |
| 17. | He found a huge difference – students read more in the classes rewarded with icecream. What is a potential confounding variable? | **ANSWER** A potential confounding variable in this study could be the individual interest or motivation of students in reading. If, for example, the classes chosen for the ice cream reward already had more students who were intrinsically motivated to read books, then it could falsely appear as if the ice cream reward led to more books being read. Similarly, if the teachers in the rewarded classes spent more time encouraging reading or if these classes had more interesting books available, these could also be confounding factors. |

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| Answer the final question related to your previous readings and presentations on reliability and validity. | |
| 18. | When you log in to take your psychology exam, you are flabbergasted to find that all of the questions are on calculus and not psychology. The next day in class, students complain so much that the professor agrees to give you all a makeup exam the following day. When you arrive in class the next day, you find that although the questions are different, they are once again on calculus. In this example, there should be high reliability of what type? What type(s) of validity is the test lacking? Explain your answers. |
| **ANSWER**  The test is demonstrating high test-retest reliability. The calculus test is consistently about calculus content, hence the high test-retest reliability. However, the calculus test lacks both content and construct validity. Ttest claims to be a psychology test, but it's not giving any psychological content but calculus content which tells about the content validity that it lacks. The construct being measured should be psychology knowledge, but the test is measuring students in calculus knowledge instead. Therefore, the construct validity is also poor. The calculus test is reliable in its intended measure of calculus, but since the students were hoping for a psychology exam the validity would have to be poor as the exam doesn't measure what intended. | |

Submit this assignment by 11:59 p.m. (ET) on Sunday of Module 4. Remember to name the file appropriately.

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|  | **Done!** |  |