Statistics for Social Research I

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Assignment #1 – Core Essential Elements

1) Levels of Measurement: Discuss the different levels of measurement (nominal, ordinal, interval, ratio) and provide examples of variables at each level. How does the level of measurement impact the choice of statistical tests and the interpretation of results?

2) Independent & Dependent Variables: Differentiate between independent and dependent variables. How do these variables play distinct roles in statistical analyses? Can you identify scenarios from real-world research where these variables are used in hypothesis testing?

3) Descriptive Statistics: What are the primary measures of central tendency and variability used in descriptive statistics? How can descriptive statistics help researchers summarize and interpret the characteristics of a dataset clearly and

concisely?

1) Levels of Measurement: Discuss the different levels of measurement (nominal, ordinal, interval, ratio) and provide examples of variables at each level. How does the level of measurement impact the choice of statistical tests and the interpretation of results?

Levels of measurement are categories of data types, variables are identified in these categories based on the data type, and based on the level of measurement, one can know what statistics could be used on the variable. Nominal variables are variables such as sex, and religion (qualitative variables) or non-numeric (Healey, 2016), which are variables of categories, counts, percentages, and mode that could be done on nominal variables. Ordinal variables are variables that are in categories, but there is a logical order to the categories such as socioeconomic class of lower class, middle class, and upper class. Interval variables are quantitative variables that have equal intervals and negative values hold meaning just as the positive values, such as temperature, -10 degrees means it is much colder than 32 degrees. Ratio variables are also quantitative variables and there could be no negative values, such as income, one could have no income and that would be measured with a value of 0, mathematical operations and quantitative statistics can be performed on interval and ratio variables.

2) Independent & Dependent Variables: Differentiate between independent and dependent variables. How do these variables play distinct roles in statistical analyses? Can you identify scenarios from real-world research where these variables are used in hypothesis testing?

Independent variables may have an impact on dependent variables, one evaluates the correlation between two or more variables, the researcher controlling variable, the one thought to be impacting variable is the independent variable (x) and the variables that are impacted or dependent on the independent variable are the dependent variables (y, y1,y2). An example, we ask if the level of one’s education impacts the amount of income they have. Education level would be the independent variable and the amount of income is the dependent variable. The null hypothesis would be that there is no relationship between the levels of education and income. The alternative hypothesis would be that there is a relation between the levels of education and income, where the lower the education level, the lower the amount of income.

3) Descriptive Statistics: What are the primary measures of central tendency and variability used in descriptive statistics? How can descriptive statistics help researchers summarize and interpret the characteristics of a dataset clearly and concisely?

Descriptive statistics are statistics about a variable ~~in order~~ to gain ~~some~~ understanding about the variable, such as income, where we want to have an understanding about the values. Some descriptive statistics are central tendency (mean, median, mode), variability (variance, standard deviation), minimum, maximum, and range. These statistics will help the researcher understand the data and the values in the dataset, these statistics also help us understand the shape of the data to identify if the data is approximately normal in its distribution, to where the research could then know what other statistics can be performed on the data.

WORKS CITED

Healey, J.F. (2016) The Essentials of Statistics: A Tool for Social Research, Cengage