DA 6823
Kilger
Module 1: Part #1 (50 points)
The Power of Statistics + the Levels of Measurement + the Different Classes of Variables and Determining Appropriate Statistical Technique + Basic Descriptive Measures

General Instructions: In your own words, answer each of the following questions - don't copy (e.g. cut and paste) some definition out of a book word for word. This is not a group project – you are expected to complete this module on your own. You may refer to text books, online or other sources but not your fellow classmates. If you don't understand the question, feel free to ask the instructor in class, in office hours or in an email.

1. Provide a short definition for dependent variable. (3 points)
   Variables that depend on other values.

2. Provide a short definition for independent variable. (3 points)
   Variables with theoretical importance. variable that affects the dependent variable and...
   -1
3. Provide a short definition for control variable. (3 points)
   Similar to Independent variables but are not as theoretically important.
   - variable that affects the dependent variable... -1
4. Be able to describe the simple criteria for each of the four levels of measurement:
   a. Nominal (2 points)
      Variables that can be categorized

   b. Ordinal (2 points)
      Variables that can be ordered from low to high or vice versa.

   c. Interval (2 points)
      Variables that have an equal distance from each other.

   d. Ratio (2 points)
      Variables that have an absolute zero point.

5. Provide an example of a variable for each of the four measurement levels below.

    a. Nominal (2 points)

    Gender

    b. Ordinal (2 points)

    Salaries in a company.

    no - that would be ratio -1

    c. Interval (be careful – be sure it is interval and not ratio!) (2 points)

    Test scores.

    no - that would be ratio -1

    d. Ratio (2 points)

    A car dealership's car sales.

6. Name at least two criteria from the IDRE chart that are used in determining which statistical technique can be used in a situation. (3 points)

    - Number of Dependent variables.
    - Level of measurement of the dependent variables.

7. Briefly explain the difference between descriptive and inferential statistics. (4 points)

    - Descriptive statistics: Giving a summary or context of the data set.
    - Inferential statistics: Using data from a sample group and using it to generalize a bigger group.

8. Almost every statistical technique you will come across has some sort of assumptions – even non-parametric statistics.

    a. Name one benefit of that assumptions of a test provides you (2 points)
    Increases statistical power.

    b. Name one cost that assumptions of a test carry (2 points)
    Data sets might not meet assumptions.

9. What happens if you violate the assumptions of a statistical test? Do the statistical police come and arrest you? (4 points)
   Affects the reliability of the results. careful - affects validity. Reliability is something different ir

10. Using the IDRE chart, suggest the appropriate statistical test for each of the following business cases

    a. As a maker of colored contact lenses, you think that there may be relationship between the color of the contact lenses purchased and the gender of the purchaser. (2 points)
       Wilcoxon Mann-Whitney test. chi square test -1

    b. As an auctioneer of fine art, you think that there may be a different between the price paid for a piece of art between men and women. (2 points)
       2 independent sample ttest

    c. You want to better understand how different versions and price mixes of your product – the Vegematic – have on the number of product sold. You hypothesize that color of product, price, region of the country (North, South, East, West), gender of purchaser, household income of purchaser have an effect on the number of pieces sold. You may also want to make some predictions about how many products would be sold under various levels of these variables. (2 points)
       Multiple regression

    d. As publisher of the popular magazine Rabbit Times, you think that there may be a relationship between the number of pages in the magazine and the number of copies of that issue sold. How do you find out the direction and how strong this relationship might be? (2 points)
       Correlation.

    e. You are the maker of FelineHair – a hair growing drug for hairless cats. You want to test your drug against three other drugs to see which one grows the most hairs on the cats in the experiment. You also want to see if there are other differences in the effectiveness depending upon the gender of the cat and what color coat the cat has. You end up with a drug (4) x cat gender (2) by cat coat color (black, white, brown) experimental design. What analysis technique would you use for this experiment? (2 points)
       Chisquare test. factorial anova -1