Univariate/Bivariate Analysis Report Structure Final Abstract Due: 07/20/2020
(Length: 10-12 pages narrative; Tables-Charts-Figures separate) Project No. 1 Report Due: 07/27/2020

COVER PAGE – SEPARATE with:

PROJECT TITLE
Submitted to:
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Statistics 467/567
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I. **Abstract** n=250 words - brief description of proposed study

II. **Introduction** (2-3 pages)
- a. State the problem **as a single thesis** based on preponderance of evidence.
- b. Summarize literature as pertains to the **thesis** at least 10-12 sources (not Wikipedia or some unreliable website).
  1. Delineate three (3) research questions/hypotheses based on the **thesis.**
  2. Or provide hypotheses to test – state Ho: and Ha: (alternative)

III. **Methods** (2-3 pages)
- a. Measures or Variables

  Describe data source, unit of analysis, each of the variables and how measured and therefore coded, such as continuous, discrete, Likert Scale, dichotomous or binary. Specify range. If variables need to be re-coded or summed, justify why.
- b. Explain which type of univariate and bivariate statistics selected;

IV. **Results** (2-3 pages)
- a. Summary Table of Variables: Measures of Dispersion, i.e. Mean, Median, Mode, Frequency Count Standard Deviation, Variance, Standard Error (from Summary in R)
- b. Skewness, i.e .Heteroscedasticity (differing variance)? Based on the univariate analysis (distribution or function depicted), does the variable need to be transformed.
- c. Figures/ Charts / Graphs for univariate analysis – distribution of each of the five (5) variables
  - i.Dot Plot
  - ii.Box Plot
  - iii. Normal Probability Plot (same as Q-Q Norm in R)
  - iv. Histogram
  - vi. P-P Plot i.e. Chi-Square Plot
  - vii.Transformation of a single variable only
  - viii. Hotellings T^2 Confidence Intervals (need 2 variables – can use MANOVA or GLM)
- d. Bivariate Analysis/Graphs
  - i. Variance - Covariance matrix
  - ii. Scatter Plot
  - iii. Correlation matrix
  - iv. Find the eigenvalues and associated eigenvectors
  - v. Compute maximum likelihood estimates (need 2 variables – use logistic regression)
  - vi. Likelihood ratio or Wilks Lambda (comparison of covariance in groups in data set-MANOVA)

IV. **Discussion** (2 pages)
- a. How does the univariate/bivariate lead into the multivariate testing?
- b. Based on the type and distribution of the variables which multivariate tests will you use?
- c. Interpret the covariance matrix as pertains to correlation table and how illustrates dependence, independence of variables (i.e. degeneracy and/or redundancy).
- d. Given the eigenvalue and associated eigenvectors – possible to combine or eliminate some variables?
- e. What is the broader impact of the study? What are the policy implications?

V. **References** – Bibliography (12-14 references) – formatted either in American Psychological Association style (author last name, year in the text and then alphabetically listed in the reference list or American Medical Association style (numbered references in sequential order as they appear in the text and listed numerically in the reference list). See APA reference guide posted on Sakai. **NOTE: No credit will be given for cutting and pasting URL (i.e. web link) in the reference/bibliographic citation list.**