
**Research Proposal: Assignment #4
Data Analysis Plan**

Instructions for Completion and Submission

Please note that the submission process is two-fold. All assignments must: (1) be e-mailed to the instructor as an attachment (see details below), and (2) be submitted to www.turnitin.com. If both steps are not completed by the due date/time specified on your course schedule, your assignment will be considered late. Additionally, assignments which are not submitted to www.turnitin.com will not be graded.

1. Begin your assignment with a statement of your hypothesis (or hypotheses).
2. Describe your proposed plan for data analysis, which covers the sequence of statistical methods you would use to analyze and present your data.
3. Please be sure to outline the appropriate analyses and presentation methods, as well as utilize the appropriate wording, headings, and subheadings from the example Assignment #4. **This assignment is to be submitted in outline form, and will go into your final proposal in outline form as well.**
4. The three categories of data shown (i.e., Descriptive Statistics, Bivariate and/or Multivariate Analyses, and Test(s) of Hypothesis/Hypotheses) must be described in your analysis plan.
5. This assignment must be completed in MS Word (*.doc or *.docx), MS Works (*.wps), or as a basic rich text file (*.rtf). Absolutely no other file formats will be accepted.
6. E-mail your completed assignment to dkamedasjsu@aol.com as an attachment (do not copy and paste it into the e-mail). Be sure to retain the e-mail you send your assignment with just in case. You will receive a confirmation “thank you” e-mail in response to your submission as soon as possible.
7. Submit your completed assignment to www.turnitin.com by the date/time it is due.
8. Include your name and the name of the assignment in the file name (i.e., the file name you choose for the document). For example: YourName_Assignment4
9. See your respective course schedule for the due date and time.
10. Due dates and times are firm. Late assignments will not be eligible for credit (i.e., points) without a legitimate and substantiated excuse. **Please note: All assignments must be completed in a timely manner to pass the course, regardless of whether or not you receive points for them.**

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- I. **Descriptive Statistics:** This type of analysis is conducted to provide descriptive information (e.g., percentages, means, modes, medians, ranges, standard deviations) about your sample in relation to the background, independent, and dependent variables you have chosen to include. Please note, not all statistics are appropriate for every variable. Be sure you understand what is appropriate.
 - II. **Bivariate and/or Multivariate Analyses:** This type of analysis examines the relationship(s) between or amongst your background variable(s) and your dependent variable(s). The types of bivariate/multivariate analyses you might propose include: correlations, chi-square (cross-tabs), t-test, analysis of variance, and multivariate analysis of variance. Please be sure you understand which analyses are appropriate based upon whether your variables are categorical or continuous.
 - III. **Test(s) of Hypothesis/Hypotheses:** This analysis (or analyses) will examine the relationship between (or amongst) your independent variable(s), and your dependent variable(s). Please note, the number of independent variables and/or dependent variables you have will determine how many individual analyses you will need to propose.
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Guidelines for Assignment #4: Data Analysis Plan

Below you will find the basic guidelines to follow in determining what analyses you will propose to run based upon your variables. Your data analysis plan should be relatively straight forward. For Assignment #4 and your final proposal, please be sure to use the provided headings and subheadings in the example Assignment #4 you will receive next week.

Descriptive Statistics: Descriptive statistics are used to summarize your background, independent and dependent variable(s). Keep in mind that because this is just a proposal, you will not have any actual data to report. What you will need to do is describe what descriptive statistics you would report, and how it would be presented. Be sure to address all of your background (BV), independent (IV) and dependent variables (DV); variables included in this assignment need to match what your proposed in Assignment #1.

1. There are three main types of descriptive statistics that are typically reported: (1) distributions (frequencies), (2) measures of central tendency (mean, mode, and median), and (3) measures of dispersion (range and standard deviation).
2. The descriptive statistics you report will depend on the measurement of your variables.
 - a. For example, if you are collecting data on age in the form of a continuous variable (i.e., you simply are asking or recording a persons' literal age), you would report the mean (average) age for your groups, along with the mode and median.
 - b. If you are proposing to gather data on age based upon categories (e.g., 21-30, 31-40, and 41-50 or something of that nature), you would report the frequency (number and percentage) of subjects who fall into each category. You would do the same for other categorical variables such as ethnicity, socioeconomic status, level of education, and so forth.
 - c. As for measures of dispersion, they would only apply to continuous variables such as age, years of education, or perhaps number of arrests (e.g., reported numerically and not categorically).

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Bivariate and/or Multivariate Analyses: This type of analysis is used to explore a relationship between a background variable and a dependent variable. Bivariate analyses will consist of correlations, chi-squares (cross-tabs), t-tests, or analyses of variance. A multivariate analysis of variance is necessary if you believe two background variables 'work together' and have combined impact on a dependent variable.

1. You will have a separate bivariate analysis for each of your background variables (unless you propose that two more of them produce a possible combined effect).
2. With this type of analysis, background variables are (figuratively speaking) turned into independent variables; that is the function they serve in this type of analysis, in that you are seeking to determine whether or not they have a statistically significant effect on your dependent variable. The reason you want to make this type of determination is because if any of your background variables do have a statistically significant effect on your dependent variable, you can no longer say with confidence that any difference between or among your groups (in terms of the dependent variable) is due solely to your independent variable. Remember, when you hypothesize a relationship between an independent variable and a dependent variable, you are proposing that the difference in the levels of your independent variable will in some way produce (or cause) a measurable difference in your dependent variable.
3. If your background variable and dependent variable are continuous variables (quantitative) the most common bivariate analysis is a correlation (Pearson Product Moment correlation). A correlation simply determines whether or not two variables have a statistically significant relationship, which may be positive or negative. Keep in mind that correlation is not the same as causation.
4. If your background and dependent variables are both categorical, you would run a chi-square which would tell you the level of association between your background variable and your DV (e.g., whether your BV served as significant predictor of your DV). Chi-square analyses produce contingency tables.
5. If your background variable is categorical and your dependent variable is continuous (quantitative), you would run either a t-test or an analysis of variance (ANOVA). Determining what the appropriate test would be depends on the number of levels for your background variable. A background variable with only two levels would require a t-test; whereas, a background variable with three or more levels would require an analysis of variance.
6. On the off chance that you propose a combined effect (i.e., an interaction) of two background variables, you would run a multivariate analysis of variance (MANOVA).

Test(s) of Hypothesis/Hypotheses: The test(s) of your hypothesis (or hypotheses) will include one or more of the following: a t-test, an ANOVA, a MANOVA, or possibly a chi-square. A correlation should not be relevant as your independent variable should be set up as a categorical variable. You must propose the proper number of analyses to test each hypothesis you have included in your study. The number of analyses required for each hypothesis will vary depending on whether you have: multiple IVs, multiple DVs, or multiple DV measures.

1. If you have one independent variable that consists of two levels (groups), and your dependent variable is continuous (e.g., the number of times a subject recidivated), you would run a t-test. A t-test simply tests whether or not there is a statistically significant difference between the means (of your DV) for your two groups.

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For example, your independent variable is type of sentence for drug offenders, the two levels are rehabilitation program and incarceration, and your dependent variable is the number of times the subject recidivates. A t-test would determine whether or not one type of sentence was significantly better than the other in relation to your dependent variable.

2. If you have one independent variable that consists of more than two levels (groups), and your dependent variable is continuous, you would run an analysis of variance. An ANOVA will determine whether or not there are statistically significant differences amongst the levels of your independent variable in relation to your dependent variable.
3. If you have multiple independent variables that you hypothesize produce a combined effect on your dependent variable, which is continuous, you would run a multivariate analysis of variance. When you have more than one independent variable **within a single hypothesis**, you are proposing that your independent variables have some sort of combined effect on your dependent variable (i.e., they *interact* to produce a certain effect).
4. If by chance both your independent and dependent variables are categorical, you would run a chi-square, which would tell you whether or not your IV was a good predictor of your DV.

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