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Title of Resource	Learning Something About Yourself Using Statistics: A Course Project for an Introductory Statistical Methods Course
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Brief Description:	This activity describes a course project one can use for an introductory statistical methods course that specializes in behavioral science. The main objective is for students to select personal behavioral variables of interest to them that they can collect data on and analyze using statistical techniques learned over the course of the semester. This project is broken up into three parts: (a) selection of behavioral variables that the student will collect data for, (b) a 2 month data collection period, (c) data analysis and research report writing.
Keywords:	Statistics, Applying Statistical Concepts, Levels of Measurement, t-test for independent means, Correlation
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Overview: This activity is intended to be used as a course project for an introductory statistical methods class specializing in the behavioral sciences. The overarching goal is to have students apply the statistical techniques/concepts they have learned over the course of the semester in order to analyze a dataset they have collected over a 2 month period. This dataset contains data pertaining to a number of personal behavioral variables. Therefore, this is a great way to make statistics personally relevant to the students. The specific instructions provided below ask students to select 10 personal behavioral variables (4 nominal; 6 ordinal/interval/ratio variables) that they are interested in and agree to collect data for during a 2 month period during the course of the semester. At the end of the semester, students take their dataset and apply statistical techniques they have learned about (e.g. frequency distribution analysis, independent samples t-tests, correlation analysis, graph generation) in order to analyze their personal behavior dataset in order to learn something about themselves via reasoning about statistical evidence. Then, students must write a paper reporting their analyses and what they have learned about their own behavior. This activity can be adapted however you see fit (e.g. requiring more/less variables to be selected; increasing/decreasing the data collection period; modification of the analysis/written report requirements).

Estimated Time: This project contains three major parts:

- *Part 1:* Selection of the behavioral variables students will collect data for on a daily basis later in the semester (Administered on the first day of class; students are given 1.5-2 weeks to complete it; instructor either approves the selected variables or requests revisions in cases where the selected variables do not meet all of the requirements of the assignment. Allow for another 1-2 weeks for students to receive feedback and revise their work, and resubmit for further evaluation)
- *Part 2:* Data collection period. Students are asked to record data for all of their selected variables on a daily basis for 2 months. Students are asked to send in data log updates once every 2 weeks to ensure they are keeping up on entering their behavioral data. I usually begin the data collection period about 1 month into the semester, and end the data collection period with about 2-3 weeks left in the semester.
- *Part 3:* During the last week or two of the semester, students must analyze their data following a set of guidelines and write a report describing the results of their statistical analyses and what they have learned about themselves. Usually, the last class or two of the semester is reserved as a “consultation session”, where students work on their analyses in-class and have the opportunity to ask questions/request assistance.

NOTE: The potential is always there for students to make up their data. Personally, I do not care if they do, as they still need to perform the required statistical analyses and write up a report at the end of the semester. Therefore, in cases where students make up data, they still get an end-of-semester experience in applying what they have learned over the course of the semester and get an experience in communicating the results of statistical analyses in written reports, even if they have robbed themselves of an opportunity to potentially learn something new about themselves.

Below, you will find three documents, each being the instructions/guidelines for each of the 3 parts of the project. I am also including an Excel document template that I provide to students for the purposes of entering data. After the document for Part 1 and before the document for Part 2, you will see a document titled “Data Collection Apps/Web-Services”. I hand this out along with the assignment for Part 1, as it is useful for students to know about data collection apps they can use to facilitate collecting data for certain types of behavioral variables.

Course Project Assignment Part 1

Objectives:

- Selecting personal behavioral variables that you will collect data on throughout the semester for the course project
- Identifying preliminary questions you have about these behavioral variables that you would like to be able to answer using statistical analysis
- Understanding the difference between nominal, ordinal and interval/ratio scales of measurement, and categorizing each of your personal behavioral variables according to their scale of measurement

Guidelines: Identify the personal behavioral variables you will be measuring on a daily basis for 2 months.

8 Strictly Enforced Requirements (No credit for this assignment will be granted until all 8 requirements are fully met; you will only be allowed one opportunity to revise your work if you don't meet all requirements):

- **You must select at least 10 different behavioral variables**, although you are encouraged to select more than 10. The more variables you collect data on, the more information you will learn about yourself and the more options you will have when it comes to data analysis at the end of the semester
- **At least 4 of the variables must be measured on a nominal scale, and at least 6 of the variables must be measured on an ordinal, interval or ratio scale.**
- At the end of the semester, you are going to analyze whether one variable differs or not between two different groups of days.
 - *Example 1: Does my mood (measured on a 1 – 10 ordinal scale) differ between days that I exercise versus days that I don't exercise (whether you exercised or not being a variable measured on a nominal scale)? I might hypothesize that my mood, on average, is greater on days that I exercise than on days that I do not exercise.*
 - *Example 2: Does the number of calories I consume in a day (measured on a ratio scale) differ on average between days that I have a scheduled exam vs. days that I do not have a scheduled exam (whether you have a scheduled exam during a day or not being a variable measured on a nominal scale)? I might hypothesize that the number of calories I consume, on average, is greater on days I have a scheduled exam than I days that I do not have a scheduled exam (due to stress-eating).*
- In order to conduct such an analysis, **you must select at least 1 pair of variables for this analysis where one is measured on a nominal scale and the other on an ordinal/interval/ratio scale.** The nominal variable will be the variable you use to define different groups of days (e.g. group 1 = days you exercise vs. group 2 = days you don't exercise). The ordinal/interval/ratio variable will be the variable you hypothesize differs between the two groups of days (e.g. mood, if you are testing whether your mood differs between days you exercise vs. days you don't exercise)
- At the end of the semester, you are going to analyze whether two variables are correlated with each other or not (or, whether increases in one of the variables predicts an increase, decrease or no change in the other variable)
 - *Example 1: Is my mood (measured on a 1-10 ordinal scale) correlated with how many times I check my cell phone (measured on a ratio scale)? In other words, does my mood for the day predict how many times I check my cell-phone? I might hypothesize that my mood is greater on days that I check my cell-phone more often than days I check my cell-phone less often.*
 - *Example 2: Is the number of hours of television I watch in a day (measured on a ratio scale) correlated with the number of hours I spend studying during that day (measured on a ratio*

scale)? In other words, does the amount of television I watch in a day predict the amount of time I spend studying during that day? I might hypothesize that the amount of time I spend studying is less on days that I watch more television than days I watch less television.

- In order to conduct such an analysis, **you must select at least 1 pair of variables where both variables are measured on an ordinal/interval/ratio scale that you hypothesize are correlated to one another** (e.g. mood (ordinal) and number of times a cell phone is checked (ratio) are both ordinal/interval/ratio variables; number of hours watching TV and number of hours are both ratio variables).
- **Each variable must be a variable!** In other words, there must be a reasonable expectation that the value of the variable will fluctuate to some degree on a day-to-day basis. It is inappropriate to select variables where you expect the value to be the same on most or all days (e.g. *Inappropriate Variable* = “Did I drive today?” This would be inappropriate if you drive every or almost every day. A more appropriate variable might be how many miles you drove today or how many minutes you spent driving today).
- **Each variable must be measured in such a way that there is only one “value” or “response” per day.** It is inappropriate to select variables where there are multiple responses in a single day (e.g. *Inappropriate Variable Example 1* = “What did I eat today?” This would be inappropriate since you eat many different types of food each day. A more appropriate variable might be how many calories you consumed that day, or whether or not you ate vegetables that day; *Inappropriate Variable Example 2* = “What type of music did I listen to today?” If you listen to multiple genres of music in a single day, this would be inappropriate. A more appropriate variable might be whether or not you listened to country music that day; *Inappropriate Variable Example 3* = “What did I wear today?” Since you wear multiple articles of clothing in a single day, this is inappropriate. A more appropriate variable might be whether or not you wore a coat/jacket that day).
- **Each variable must be eligible to have a value or response recorded every single day.** It is inappropriate to select variables where there are days in which you could not record a value or response (e.g. *Inappropriate Variable* = “How alert I felt in class today”; this is inappropriate since you don’t have class every single day. You wouldn’t be able to record a value or response on days you don’t have class, and therefore, would not be appropriate for this assignment. A more appropriate variable might be how alert you felt in general that day, or how alert you felt in the morning that day).
- All variables you select must be variables that you agree to collect data on **every day** during the 2-month data collection period (2/18 – 4/20).

Considerations to Make when Selecting Variables

- Some variables are easier to record on a daily basis than others. Therefore, when considering the selection of a given variable, you should anticipate how easy it will be to record data on that variable on a daily basis for 2 months. In the “Data Collection Apps/Web-Services” handout, I have identified a number of mobile-device apps and web-services that will make collecting data on certain types of variables easier than it would be without the apps/web-services. Therefore, I strongly recommend that you review this hand-out to see what tools you have at your disposal for data collection in order to judge whether measuring a variable you are interested in will be easy enough to collect data for on a daily basis.
- Confidentiality Statement Regarding the Course Project: Depending on the behavioral variables you select, the data you generate and the analyses you perform may be of a personally sensitive nature (e.g. if you select behavioral variables pertaining to sexual activity or drug use). Although I encourage you to select behavioral variables that are of most personal interest to you, it is important that you do not select

behavioral data that you are uncomfortable sharing with me. HOWEVER, all data you collect will only be shared with me. **I ensure you that all data you collect and the ideas/findings expressed in your final papers will be strictly confidential (I will not share or discuss your data and paper with anyone else).** All printed copies of your work will not be copied by me and will be returned to you. All digital copies of your work (updated datasets and final paper) will be deleted from my e-mail and computer (including trash/recycle bin folders) once they have been graded. Finally, my view of you and your grade will not in any way be affected by any data you collect or the results of analyses you perform (unless you used inappropriate statistical techniques to analyze your data).

Grading System = Adhering to these due dates and requirements will account for 20% of your final course project grade. If you fully complete the assignment and turn it in on time (Thursday 1/26), you will receive full credit. If you do not fully complete the assignment or is fully completed after Tuesday 1/26, you will earn no credit.

- In order to earn credit for later parts of the course project, you need to at least complete Section 2 no later than Thursday 2/9 (if you only complete Section 2 by this date, you will be eligible to earn credit for other parts of the course project, but you will still receive no credit for this assignment as you did not complete section 1, and therefore, is not a fully completed assignment). **If you do not at least complete section 2 by 2/9, you will automatically earn no credit for the entire course project (a 20 point deduction from your final grade).**

SEE NEXT PAGE FOR WORKSHEET

Part 1 Assignment: Identify the variables you agree to collect data for on a daily basis for the 2-month data collection period. Make sure they meet ALL the requirements identified in the instruction sheet.

For each variable:

- Identify whether the variable will be measured on a nominal, ordinal, interval or ratio scale.
- Explain exactly how the variable will be measured (what numbers you will use to record your data on that variable). Ultimately, all variables will be measured using a numbers.
 - Example: If I choose “Quality of Sleep”, I must identify how this will be measured. One possible way this can be measured is by using a scale of 1 – 10 (1 = extremely poor; 10 = extremely good). If I choose “Amount of Sleep”, I must identify how this will be measured (e.g. in minutes or hours).
 - Note: For nominal variables, you use words to record “values” or responses. For example, if you choose the nominal variable, “*Did I Exercise Today?*”, your two response options are “Yes” or “No”. For all nominal variables, you must develop and identify a numerical coding system for each possible response (e.g. 0 = No; 1 = Yes).
- In a sentence or two, explain why you want to collect data on that variable. Why is it important for you to study this variable about yourself? What do you hope to learn by collecting data on this variable for yourself? Avoid choosing variables “randomly”. For example, one student in a previous semester collected data on what color shirt they wore each day. When I asked them what they hoped to learn by collecting data on this variable, they said, “I don’t know”. This will not result in a good project later on.

Below, I have listed the minimum requirement of 10 variables. If you have decided to collect data on more than 10 variables, please list them here as well, labeling them as “Variable 11, Variable 12... etc.”

Variable 1:

Variable 2:

Variable 3:

Variable 4:

Variable 5:

Variable 6:

Variable 7:

Variable 8:

Variable 9:

Variable 10:

As mentioned in the requirements, you will later conduct an analysis in order to determine whether one variable differs or not between two different groups of days. In order to do this, you were instructed to select at least 1 pair of variables *where one is measured on a nominal scale and the other on an ordinal/interval/ratio scale*.

From the 10 or more variables you identified above, identify that pair of variables here, and explain the hypothesis you want to test by analyzing the relationship between those variables.

Nominal Variable (variable used to define two different groups of days):

Ordinal/Interval/Ratio Variable (variable hypothesized to differ between the two different groups of days):

Hypothesis:

Also mentioned in the requirements, you will later conduct an analysis in order to determine if two variables are correlated to each other or not. In order to do this, you were instructed to select at least 1 pair of variables *where both variables are measured on an ordinal/interval/ratio*

From the 10 or more variables you identified above, identify that pair of variables here, and explain the hypothesis you want to test by analyzing the relationship between those variables.

Ordinal/Interval/Ratio Variable 1:

Ordinal/Interval/Ratio Variable 2:

Hypothesis:

Data Collection Apps/Web-Services [to be handed out with the Part 1 assignment]

Mobile-device apps or websites to help make collecting data about yourself easier

Contents:

- Open-Ended Data Collection Apps
- Time-Tracking Apps
- Mobile-Device (Phone/Tablet) Usage Tracking Apps
- Mood Tracking Apps
- Financial Expense Tracking Apps
- Physical Activity Tracking Apps
- Diet Tracking Apps

Open-Ended Data Collection Apps

Apps that allow you to record data on whatever behavioral variables you want

- **Daytum (app for iOS only, but you can use a web-browser using an Android phone or computer to record and review data – to use a web-browser to record and review data on your Android phone, visit <http://m.daytum.com>; to use a web-browser on your computer to record and review data, visit <http://daytum.com/login>)** – Really simple app to record data on whatever you want. For the free version, you are able to record data on up to 1,000 different variables (what the service calls “items”). You simply log-on to the service, add a label identifying the variable you are collecting data on, and record your data using a number (e.g. label = “Cups of coffee consumed today”; response = “2”). If you have a variable you are keeping a running sum throughout the day, you can continually edit a value for a variable label throughout the day (e.g. when you drink your first cup of coffee, you enter 1 for the label identified above; when you drink your second cup of coffee, you can change the value from 1 to 2). The service only allows you to record numerical data. **Therefore, it is most useful for collecting data on variables that are measured on an interval/ratio scale** (however, you can use numerical codes for nominal variable responses. For example, if your label is, “Did I exercise today?”, you can use a 1 to represent “yes” and a 2 to represent “no”. However, you will need to remember what your numerical codes represent later when analyzing the data. This may be too much, and if so, I recommend using the Habitbull app described below for recording data on variables measured on a nominal scale). **IMPORTANT** - when recording data on a single variable across multiple days, it is essential you use the same exact label everyday; e.g. if you are recording how many cups of coffee you consumed each day, and you used the label “Coffee cups consumed” on day 1, you must use that exact, word-for-word, character-for-character label the following days, rather than a slightly different one (e.g. “How many cups of coffee consumed” or “Coffee cups consumed?”).
- **AskMeEvery.com (website; e-mail; text-message)** – Not an app. Rather, you visit the website, and identify whatever questions you want to be asked on a daily basis. Once the questions are set, they are e-mailed or text-messaged to you on a daily basis (you can set at what precise time you want the question to be sent to you), and you record your data by replying to the e-mail or text. The website will then store your responses, and allow you to review how you responded on each day. The app also allows you to download your accumulated data as an Excel file. **FREE VERSION** – Only allows you to set 3 questions, and will only allow you to receive and reply to the questions via e-mail. **PAID VERSION** (\$1 per month allows unlimited questions; \$2 per month allows unlimited questions and allows you to receive and reply to questions via text-message).
- **Habitbull (iOS and Android)** – The app asks you to identify goals that you wish to achieve on a daily basis, and then allows you on a daily basis to record whether you met the goal or not in a “yes or no”

fashion (e.g. You may set a goal of drinking 8 glasses of water a day, and the app allows you to record whether you met that goal or not every day). The app maintains a calendar-based daily record of whether or not you met all of your goals that you can review at any time. **This app is only useful for collecting data on variables that are measured on a nominal scale** (as all your responses are categorical – “yes I met the goal” or “no I did not meet the goal”).

Time-Tracking Apps

Apps that allow you to record how much time you spend doing different activities

- **Time-Meter Time Sheet (Android only)** – Allows you to name activities, and record the time you spent doing it using start, pause and end buttons. The app saves this information, and allows you to view daily, weekly, monthly and yearly aggregations of your activity times.
- **Hours (iOS only)** - Allows you to name activities, and record the time you spent doing it using start, pause and end buttons. The app saves this information, and allows you to view daily, weekly, monthly and yearly aggregations of your activity times.

Example uses: How much time do I spend studying per day? How much time do I spend watching TV per day? How much time do I spend exercising per day?

Mobile-Device Usage Tracking Apps

Apps that automatically record data about your mobile-device usage, such as time spent on phone, number of times you have checked your phone, and/or the time you spent using individual apps

- **QualityTime (Android only)** – Works in the background to record phone and app usage. Records time spent on the phone, times you checked your phone, how much time you spent using individual apps. This app saves this information and allows you to view daily, weekly, monthly and yearly aggregations of the data. Also tracks at what point in the day each app is used for an individual day.
- **UBhind (iOS; available for Android as well, but I recommend QualityTime over this one for Android users as it provides more information)** –It allows you to simply track how much time you spent on your phone and how many times you have checked your phone in a given day. The app saves this information in memory and allows you to access daily reports.
 - The weakness of UBhind for iOS is that it doesn't provide information about individual app usage (e.g. how much time you spent using the Twitter app vs. the Instagram app). This is a problem overall for iOS devices, as Apple is very restrictive of what data apps have access to. However, if you have iOS version 9.0 or later, you can go to Settings → Battery → Battery Usage, and this will display how much time each app was on-screen in either the last 24 hours or the last 7 days. Therefore, if you have an updated iOS, you can use this along with UBhind to get a detailed set of data about your mobile device usage. **IMPORTANT** – This service does **not** store and maintain daily records. Therefore, if you are using this to see how much time you spend on Twitter every day, you must review and record elsewhere the time spent using Twitter at the end of each day.

Example uses: How many times do I check my phone or tablet? How much time do I spend on Twitter using my phone or tablet? How much time do I spend reading / writing e-mails on my phone or tablet? How much time do I spend playing games on my phone or tablet?

Mood Tracking Apps

Apps that allow you to record your mood. Beyond of interest to the course project, it is interesting to note that apps like this are increasingly being used by counseling and clinical psychologists in order to treat patients' mood disorders.

- **iMoodJournal (iOS and Android - \$2)** – The better of the two apps listed in this section, but costs \$2 (the other one is free). You record your mood on a scale of 1 – 10, and the app provides you the option (but doesn't require you) to write more detailed information to contextualize the rating (e.g. what event was occurring or what activity you were engaged in when you rated your mood, what precise emotion you were feeling when rating your mood, etc.). This app allows you to set reminders to notify you at specific times when to rate your mood. You can set the app to remind you to rate your mood once or more times a day at set times (e.g. you may want the app to ask you about your mood only at 9pm every day to track your average mood throughout the day, or you may want it to ask you to rate your mood every two hours between 10am – 8pm every day to track how your mood fluctuates throughout the day). The app stores your ratings (and optional writings), and you can view daily, weekly, monthly and yearly aggregations of your mood data. Another benefit of this app over the other is that it is completely private.
- **Moodpanda (iOS and Android)** – You use this app to rate your mood on a scale of 0 – 10 on a daily basis. This app stores your ratings, and allows you to review your past mood ratings. Although one advantage it has over iMoodJournal is that it is free, there are some reasons you may choose to pay for iMoodJournal over this one. First, your mood ratings are shared publically with other app users (although, you can select a fake name so that your ratings are not identifiable). Second, the app only allows you to enter one mood rating per day (and thus wouldn't be able to enter multiple ratings at different times of the day if you were interested in tracking how your mood changes over the course of a day). Third, the app doesn't allow you to set reminders within the app to rate your mood at a set time, increasing your chances of forgetting to do so (although, you could set a reminder outside of the app using your device's clock app). Finally, it doesn't allow you to contextualize your mood rating by being given the option to write anything to attach to the rating.

Financial Tracking Apps

Apps that allow you to keep track of how much money you spend on a daily basis

- **Dollarbird (iOS and Android)** – Allows you to record all of your financial transactions so that you can keep track of how much money you are spending each day. The app allows you to record the amount you spent and what you spent it on and/or where you spent it at. If you are trying to budget, the app allows you to enter your income and will deduct each expense from that income so you can track how much you are spending vs. how much you are earning. The app stores your daily expense records for later review.

Physical Activity Tracker Apps

Apps that automatically record different aspects of your physical activity, such as number of steps walked, how far you ran and how many minutes you spent on a bicycle. These apps are useful for those who always have their phone on them, no matter where they go or what they are doing.

- **Moves (iOS and Android)** – The app runs in the background of your phone, and automatically distinguishes between when you're walking, running, cycling or riding in a car. The app automatically records data like how many steps you have walked in a day, how many miles you have ran, and how many minutes you spent cycling. The one downside to this is that since it is tracking many different variables, it can be a drain on your battery (which isn't necessarily a problem if you're in the habit of charging your phone when you are not physically active, such as when you're sleeping, studying or watching TV; the other apps below are less of a battery drain since they track less information about your physical activity). The app stores your daily data for later review.
- **Runtastic Pedometer (iOS and Android)** – The app runs in the background of your phone, and automatically records data on the number of steps you have walked or run (this app doesn't distinguish walking from running as the Moves app does), the average pace in which you walk/run, and an estimated number of calories you are burning due to your walking/running. The app stores your daily

data for later review. Although it records less information than the Moves app, it doesn't drain your battery as much).

Diet Tracking Apps

Apps that allow you to record what you eat throughout the day, and provides data on the nutritional content of what you are eating (e.g. calories, sodium, cholesterol, etc.)

- **Cron-O-Meter (iOS and Android)** – The app allows you to record everything you eat throughout the day (broken up into breakfast, lunch, dinner and snacks), and calculates an estimate of the nutritional content of your diet (the app advertises tracking over 60 nutrients for over 50,000 different foods). The app also allows you to enter your daily weight and exercise activities (the app also calculates an estimate of how many calories you burned for each exercise activity you enter). The app stores your daily data for later review.

Other Apps that Students in Past Semesters Reported as Having Used for the Project:

- Health/Physical Activity Related Apps
 - FitBit
 - MyFitnessPal
 - FitnessPro
 - Health (iOS only)
- Financial Tracking Apps
 - Mint
 - Mint Bills (also known as Check)

Course Project – Part 2 - Data Collection and Reporting Instructions *(with example dates that you can modify)*

You are required to collect data on your minimum 10 variables that have been approved by me (after receiving your graded Course Project Assignment Part 1) every day for 2 months during the **data collection period of Sunday 10/1 to Thursday 11/30**.

In order to ensure that you are collecting data on a daily basis, I am requiring that you send me an updated data log every 2 weeks (see the due date schedule below). On each data-log due date, you will be required to send me an updated Excel document that records the data you have collected in the preceding two weeks (the Excel data-log document is found in the Course Project folder on Blackboard).

If you are using data collection apps and/or web-services that keep a daily record of the variables you are collecting data for, such as those identified on the handout, you are required to manually enter the data collected in those apps into the data-log Excel document.

- **Strong recommendation: I would update the data-log Excel document with the data that is collected by such apps/web-services either every day or every two days.** This way, it shouldn't take too much time in a single sitting to enter your data into the data-log Excel document. If you wait to do this every two weeks, it will probably take a relatively long time during a single sitting to enter 2 weeks of data into the Excel document. Therefore, maintain your data-log Excel document either every day or every other day.

On each of the due dates listed below, e-mail me your updated data-log Excel document

Data-Log Update	Due Date (all dates are fall on a Fri)	Required Period of Time Covered in Update
1	10/6	10/1 – 10/5 <i>(10/1 = first required day of data collection)</i>
2	10/20	10/1 – 10/19
3	11/3	10/1 – 11/2
4	11/17	10/1 – 11/16
5	12/1	10/1 – 11/30 <i>(11/30 = last required day of data collection)</i>

Grading System = Adhering to these due dates and requirements will account for 40% of your final course project grade. For each of the 5 update due dates, you will receive full credit if you e-mail it to me by the due date and you have collected data on a daily basis during the 2-week period (or the 6-day period for the first update). You will receive 0 credit if you do not e-mail it to me by the due date and/or have not collected data on a daily basis during the update period.

Course Project – Part 3 - Data Analysis & Final Paper Assignment Instructions (with example dates)

Paper Due on Friday December 15th via e-mail

No late assignments will be accepted for credit, as I need to grade your paper and submit final grades close to the due date of the paper.

Course Project Analysis Consultation Sessions = Classes of Thursday 12/7 and Tuesday 12/12. These will be the classes where I'll be available to answer whatever questions you may have about this assignment. Therefore, it's a good idea to start working on the analysis portions of this assignment before 12/7 so that you know whether you have a question about something or not. It will be very difficult for me to help you with this work over e-mail, so, it is your responsibility to be prepared for this session.

To finalize the course project, you will be applying the statistical techniques you have learned this semester towards your personal behavioral dataset in order to learn something about yourself.

Requirements:

- **You must perform and write about the results of five distinct statistical analyses that are performed using SPSS and/or Excel, with the following requirements:**
 - **Analysis 1 is a frequency distribution analysis.**
 - Instructions for each analysis of this type: You choose at least one ordinal/interval/ratio variable, and perform a frequency distribution analysis. You will need to generate a frequency distribution analysis table that contains raw frequencies, relative frequencies, cumulative frequencies and cumulative percent (or, Percentile Ranks). Model this table after the ones that were generated during the semester. You should have between 5 and 8 values or groups of values. Therefore, make a grouped frequency distribution if needed. Also, in Excel, generate a graphical depiction of the frequency distribution using either a bar or line graph. Also, quantify the central tendency and variability of the distribution using the appropriate statistics (you must determine the shape of the distribution before deciding what the most appropriate measure of central tendency and variability is)
 - Written Report Instructions: Discuss the question about yourself that you hoped to learn an answer to by conducting this analysis, and why you thought it was an important question to answer. Discuss what you initially expected to discover (your hypothesis). Report the results of the analysis by providing a 1-2 paragraph commentary about what you have learned about the behavior you analyzed using a frequency distribution. Discuss the relative frequencies/cumulative frequencies of different values or groups of values to discuss common vs. rare behaviors; discuss the shape of the distribution by looking at your graph, and discuss what you can learn by doing so. Discuss the central tendency and degree of variability of the distribution, and what you have learned from that. Speculate on the causes of variability in this behavior (e.g. what causes you to have high vs. low values of the variable). Did the analysis support or challenge your hypothesis (or, what you initially expected to find by doing this analysis)? Include the table and graph into the written report, with the x- and y-axes of the bar graph clearly labeled as to what each is representing.
 - Tutorial Video for Creating Tables in Microsoft WORD:
<https://www.youtube.com/watch?v=I1JkfpQ10rg>

- **Analysis 2 is an independent samples t-test (the results being interpreted using null hypothesis testing procedures).**
 - Instructions for each analysis of this type: You are going to conduct an independent samples t-test, not a paired samples t-test. You will treat individual days as “individual subjects/observations”. You must choose one nominal variable to be your “grouping variable/independent variable/the variable you use to categorize the individual days into different groups”. This nominal variable must only have two categories (if there are more than two categories, you need to re-organize or re-code your data so that there are only two categories; e.g. the 7 days of the week can be recoded into weekdays vs. weekends) You must choose one ordinal/interval/ratio variable to be your “test variable/dependent variable/the variable that has been quantitatively measured each day”. Your goal is to determine if the mean value of the test/dependent variable significantly differs or not between the two groups that are defined by the grouping/independent variable [e.g. *Does my mood significantly differ or not between days that I exercised vs. days that I did not exercise?*; *Mood is my ordinal/interval/ratio test/dependent variable because it was measured on a quantitative scale (1-10) and whether I exercised or not is my grouping/independent variable, as it is the variable that I have used to categorize individual days into 1 of 2 categories*]. For each group, you must determine the mean/standard deviation of the test/dependent variable. For the t-test that is used to determine whether the numerical difference in means is significant or not, you must determine the obtained value of t , the degrees of freedom of the analysis and the p-value. Use an alpha-level of .05 for your analysis. Generate a bar graph showing the mean values of the test/dependent variable for each group. In Excel, have the x-axis represent the two groups and have the y-axis represent the values of the test/dependent variable.
 - Written Report Instructions: Discuss the question about yourself that you hoped to learn an answer to by conducting this analysis, and why you thought it was an important question to answer. Discuss what you initially expected to discover (your hypothesis). In a sentence or two, write the results of the t-test using proper reporting format, being sure to include the mean/standard deviation values for each group (see the proper reporting format handout for directions and models; any deviation from the format will cause you to lose points off the assignment, and I am going to be strict on details here). Provide a 1-paragraph commentary about what you have learned about the behavior you analyzed using a t-test. Did the analysis support or challenge your hypothesis (or, what you initially expected to find by doing this analysis)? Include the bar graph in the written report with the x- and y-axes clearly labeled as to what each is representing.
 - Tutorial Video for Creating Bar Graph that Shows the Mean Values of a Variable for two Groups: <https://www.youtube.com/watch?v=uH4RuuVQKLI>

- **Analysis 3 is a correlational analysis (the results being interpreted using null hypothesis testing procedures).**
 - Instructions for each analysis of this type: You must choose two ordinal/interval/ratio variables (you cannot perform a correlational analysis using nominal variables) that you hypothesize have a co-varying relationship with one another. For the analysis used to investigate the presence or absence of a co-varying relationship between these two variables, you must determine the value of the Pearson r correlation coefficient (obtained value of r), the degrees of freedom and the p-value. In Excel, generate a scatterplot showing the relationship, or lack thereof, between the two variables.
 - Written Report Instructions: Discuss the question about yourself that you hoped to learn an answer to by conducting this analysis, and why you thought it was an important question to answer. Discuss what you initially expected to discover (your hypothesis). In a sentence or two, write the results of the correlational analysis using proper reporting format (see the proper reporting format handout for directions and models; any deviation

from the format will cause you to lose points off the assignment, and I am going to be strict on details here). Provide a 1-paragraph commentary about what you have learned about the behavior you analyzed using the correlation. Did the analysis support or challenge your hypothesis (or, what you initially expected to find by doing this analysis)? Include the scatterplot into your written report with the x- and y-axes clearly labeled as to what each is representing.

- **Analysis 4 is either a frequency distribution analysis, an independent samples t-test or a correlational analysis. Follow the instructions above for whatever analysis you select.**
- **Analysis 5 is either a frequency distribution analysis, an independent samples t-test or a correlational analysis. Follow the instructions above for whatever analysis you select.**

Only include graphs and tables that are identified above into your written report. Do not include anything else (e.g. tables from SPSS output).

Extra Credit: Perform a 6th Analysis by Conducting a Time-Series Analysis.

Sometimes, we like to see how a behavior changes over time. If you have an ordinal/interval/ratio variable that you are interested in determining how it changed on a daily or weekly basis over the 2-month data collection period, you can perform a time-series analysis in SPSS. Create a time-series line graph for one or more of your ordinal/interval/ratio variables. Watch the following video to learn how to do this (<https://www.youtube.com/watch?v=Napt50cBibs>). You can approach this in either 1 of 3 different ways. First, you can use all daily data, so you will see the day-to-day fluctuation of the variable across the 62 days of the data collection period. Second, you can calculate the mean value of the variable for each week (Monday-Sunday), and see how the mean value of the variable changed week-to-week over the approximately 8 weeks of the data collection period. Finally, if you care to determine how a behavior fluctuates, on average, across the week, you could calculate the average value of the variable for each day of the week (average value for all Mondays, average value for all Tuesdays, average value for all Wednesdays, etc.).

Written Report Instructions: Discuss the question about yourself that you hoped to learn an answer to by conducting this analysis, and why you thought it was an important question to answer. Discuss what you initially expected to discover (your hypothesis). Include the time-series graph into your written report, with the x- and y-axes clearly labeled as to what each represents. Provide a 1-paragraph commentary about what you have learned about the behavior by performing this analysis. Did the analysis support or challenge your hypothesis (or, what you initially expected to find by doing this analysis)?

Structure the written report into 5 (or 6, if you are doing the extra credit) separate sections, each dealing with a different analysis, labeling each analysis along with a short title for each that you think is appropriate (e.g. you may want the title to be a question, like *“Analysis 1 – How long do I spend on my cell phone each day?”* or *“Analysis 2 - Is my mood influenced by whether I exercise or not?”* or *“Analysis 3 – “Does the amount of time I spend exercising in a day predict how many calories I consume that day?”*).

Grading System

100% = fully completed assignment (follows ALL of the instructions above) and contains no errors

75% = fully completed assignment (follows ALL of the instructions above) and contains only one error

50% = fully completed assignment (follows ALL of the instructions above) and contains two or more errors

25% = Incomplete Assignment (does not follow ALL of the instructions above)

0% = assignment not submitted or submitted late

You must pay careful attention to the details of these instructions if you want your paper to be considered fully complete!