

Data Management

Purpose

By now you should know what variables you want to use, and you've looked over the codebook enough now that you have an idea of some potential problems that you will encounter. This assignment uses your chosen research data, and the variables that you chose in the last assignment when you created a personal research codebook. You will thoughtfully review the variables you are interested in, document which ones will need changed and how.

All raw data needs to stay raw, and all changes need to be documented. You will create a script/code file that will make all changes to the data in a programatically and reproducible way. You will create a single code file that imports your raw data, performs some data cleaning steps, and saves out an analysis ready data set that you will use throughout the semester.

Questions to ask

Ask yourself these questions as you go through this exercise:

- Do you need to restrict the data to only one subgroup? (i.e., if you plan to use only participants of a certain age or sex or ethnicity, etc.).
- Do you need to code out missing data? (i.e. was 99 entered as a missing code?)
- Do you need to code out skip patterns? (i.e. are certain codes entered in for questions that won't make sense for a particular group? For example non-smokers may have a response code of -1: **I don't smoke** to a question of "How many cigarettes in the past month have you smoked?")
- Do you need to make response codes more logical?
 - Think about how the "yes" and "no" variables are coded. Does **NO** = 0 and **YES** = 1?
 - Think about how the "strongly agree" to "strongly disagree" variables are coded. Do the numbers make sense?
- Consider collapsing a quantitative variable into categories based on percentages of the data you find after examining the frequency table
- Consider collapsing across categories - maybe going from 5 dummy codes for strongly agree, agree, neutral, disagree, strongly disagree to 2 dummy codes that represent strongly agree and agree as one dummy code and disagree and strongly disagree as another code, then neutral coded as missing
- Do you need to create secondary variables? I.e. If you are working with a number of items that represent a single construct, it may be useful to create a composite variable/score.
 - For example, I want to use a list of nicotine dependence symptoms meant to address the presence or absence of nicotine dependence (i.e., tolerance, withdrawal, craving, etc.). Rather than using a dichotomous variable (i.e., nicotine dependence present/absent), I want to examine the construct as a dimensional scale (i.e., number of nicotine dependence symptoms). In this case, I would want to recode each symptom variable so that **YES** = 1 and **NO** = 0 and then sum the items so that they represent one composite score. In the code below, the **nd_sum** is the new variable I am creating and the variables after of are the variables I am totaling up.
 - * **nd_sum**=sum (of **nd_syptom1 nd_syptom2 nd_syptom3 nd_syptom4**) [THIS IS SAS CODE DO NOT USE]

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Example

Here is an example data management file for the Add Health data from last fall: https://norcalbiostat.netlify.com/data/dm_addhlth.html as an example. *Warning, do not copy this code from the HTML file directly. It will contain special characters that will prevent your code from working. Plus the sleep variable didn't quite work the way we intended.*

Coding instructions

1. Start a new code file (`dm_dataname.Rmd` or `dm_dataname.sps`).
 - Save this file into your `MATH615/project/code` folder.
 - R users: Delete all the template language, DONT DELETE THE YAML HEADER (part between the three dashes)
2. Read in raw data (should be located in your `MATH615/project/data` folder)
3. Restrict the variables to only the ones you are investigating.
 - R users - use the `select` statement found in the `dplyr` package
 - SPSS users use `KEEP`
4. Do some data cleaning.
 - You must explain at each step what you are doing and why you are doing it.
 - Don't forget to confirm that any changes you make actually work.
 - SPSS users may perform tasks using point & click, but the code must be pasted into a `.sps` file that can be run on command.
5. Save the resulting data set to your `data` folder as `datasetname_clean.Rdata`, or `datasetname_clean.sav`.
e.g. `addhealth_clean.Rdata`.

This code file must run successfully on my computer to earn credit. You can keep submitting files until it works.

Submission instructions

1. Upload a the PDF file to the 04 Data Management folder in Google Drive.
 - R users compile your RMD file to create a PDF (knit to PDF)
 - SPSS users present your output that is generated after running your script file.
 - Save your output file as PDF?
 - copy paste output into word then save as PDF?
 - Manually change the file name of your PDF to include your user name before you upload to Google Drive.
 - E.g. `dm_addhealth.pdf` becomes `dm_addhealth_Donatello.pdf` before upload.
 - If you forget to do this your file WILL be overwritten in Google Drive by the next person who forgets.
2. Upload your code file (`.Rmd` or `.sps`) to corresponding assignment in Blackboard Learn.
 - I will download this file and run it on my computer.
 - It must run for credit. If it compiles to PDF for you then this should be no problem for me.

This is a peer-reviewed assignment

You are not expected to have completed data management for every one of your variables under consideration by the submission date. I want to see a VERY good effort has been made (raw data read in, a half-dozen or so variables dealt with, analysis data saved out.)