432 Quiz 2 for Spring 2024

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Quiz Instructions

Quiz 2 includes material from the first 24 classes in 432, including all of Jeff Leek's *How to be a Modern Scientist*.

All necessary Quiz 2 elements will appear by 5 PM on 2024-04-18 at https://github.com/THOMASELOVE/432-quizzes-2024/tree/main/quiz2. There, we will link to:

- the Main Document (this **44 page** pdf) containing the instructions and all **34** questions,
- the Google Form Answer Sheet, and
- the seven data sets we are providing.

This is an open book, open notes quiz. You are welcome to consult the materials provided on the course website and that we've been reading in the class, but you are not allowed to discuss the questions on this quiz with **anyone** other than Professor Love and the teaching assistants. You will be required to complete a short affirmation that you have obeyed these rules as part of submitting the Quiz.

0.1 Deadline is Tuesday 2024-04-23 at NOON.

The deadline to complete your work and submit the Google Form Answer Sheet is **Tuesday 2024-04-23 at Noon**. All of your answers must be submitted through the Google Form Answer Sheet by the deadline, without exception. Please do not wait until the last moment to submit your work.

0.2 Footnotes are hints.

There are **ELEVEN** footnotes in this document, including this one[1].

[1] Read the footnotes. That's where we put (some of) the hints.

0.3 The Google Form Answer Sheet

The Google Form Answer Sheet contains places to provide your responses to each of the 34 questions, and a final affirmation that you followed the rules for the Quiz. You must be logged into Google via CWRU to access the Answer Sheet. You must complete the final affirmation in order to submit your results. You will then receive an email copy of your submission, with a link that will allow you to edit your results, or complete your work, as needed.

0.4 Writing Code into the Answer Sheet

We may ask you to provide R code in your response on the Answer Sheet. Do not include the `library` command at any time for any of your code. Instead, assume in all questions that all relevant packages have been loaded in R. A list of R packages that Dr. Love used in building the Quiz and its answer sketch is available in the last section of these Instructions.

0.5 Should I Answer All of the Items?

A blank response cannot possibly score better than an incorrect one, a guess might be correct (or at least partially correct), so you should definitely answer all of the items.

0.6 Scoring

Four of the 34 items (Items Q02, Q21, Q29 and Q30) are worth 4 points while the remaining items are worth 3 points each, adding to a total of **106** points[2].

0.7 When Will I Know How I Did?

Dr. Love will grade the Quiz, and results (including an answer sketch) will be available by class time on Thursday 2024-04-25.

0.8 How Long Should Quiz 2 Take?

Quiz 2 is meant to take 6 hours to complete. I expect most students will take 4-8 hours, and some will take as little as 3 or as many as 12. Some questions will take more time than others to answer. Again, it is **not** a good idea to spend a long time on any one question.

The questions are not in any particular order, and range in difficulty from "things Dr. Love expects everyone to get right" to "things that are deliberately tricky".

[2] A score of 90 on the Quiz (out of 106 points) will be treated as if it were a score of 90 points out of 100, so in a sense there are six *extra* points available.

0.9 Asking for Help

If you need clarification on a Quiz question, you have exactly one way of getting help:

- You can ask your question via email to **431-help at case dot edu**.
- Specific questions are more likely to get helpful answers.
- We will not review your code or your English for you.
- We will not tell you if your answer is correct, or if it is complete.

During the Quiz period (2024-04-18 through 2024-04-23) we will not answer questions about Quiz 2 except through the email listed above. We promise to respond to all questions received before 9 AM on 2024-04-23 in a timely fashion.

0.10 Taking the Quiz

We recommend the following process for taking the Quiz.

- If you encounter a tough question, skip it, and build up your confidence by tackling other questions.
- When you return to the tough question, spend no more than 10-15 minutes on it. If you still don't have it, take a break (not just to do other questions) but an actual break.
- When you return to the question, it may be much clearer to you. If so, great. If not, spend 5-10 minutes on it, at most, and if you are still stuck, ask us for help.
- This is not to say that you cannot ask us sooner than this, but you should **never, ever** spend more than 20 minutes on any question without asking for help.
- Note that 15 minutes per question (which should be more time than you need for most questions) for 34 questions yields 8.5 hours of total time on the Quiz.

0.11 Seven Data Sets We Have Provided for Quiz 2

I have provided the **seven** data sets tabulated below on our Quiz 2 web page. Each is described in the Quiz itself, and each will be useful to you. They are:

File Name	Used in Items
`dataB.rds`	Q09 - Q10
`dataD.csv`	Q16 - Q23
`dataE.rds`	Q25 - Q30
`dataH.csv`	Q01 - Q03
`dataN.rds`	Q31 - Q34
`dataS.rds`	Q04 - Q06
`dataT.csv`	Q11 - Q12

0.12 Packages and Settings used by Dr. Love

All of the packages I used in writing the Quiz and its answer sketch are listed below[3]. You are permitted to use other packages to complete the Quiz if you like, but you shouldn't need to do so.

```
knitr::opts_chunk$set(comment = NA)

library(bayestestR); library(bestglm)
library(car); library(caret); library(countreg); library(cutpointr)
library(Epi)
library(GGally); library(glmnet); library(gt)
library(insight)
library(janitor)
library(lme4)
library(MASS); library(mice); library(mosaic)
library(naniar); library(nnet)
library(patchwork); library(pROC); library(pscl)
library(quantreg)
library(ROCR); library(rstanarm)
library(survey); library(survival); library(survminer)
library(topmodels) ## students do not need this but I did

library(conflicted)
library(rms)
library(tidymodels)
library(tidyverse)

conflicts_prefer(dplyr::filter, dplyr::select, dplyr::summarize, dplyr::count,
                 base::mean, base::sum, car::vif, rms::Predict)

options(dplyr.summarise.inform = FALSE)

theme_set(theme_bw())
```

This concludes the Quiz 2 instructions. Good luck!

[3] This doesn't mean that I didn't also list some other packages here that I did not use, or that you need to use all of these packages to complete the Quiz successfully.