HW 6, STAT 450

Due: Friday, November 22

Directions: This assignment should be completed using Quarto and submitted to Canvas as a self-contained HTML or PDF file.

Reading: Chapter 16 from *R for Data Science (2e)*

```
library(tidyverse)
```

All exercises make use of the `gss_cat` data frame.

```
glimpse(gss_cat)
```

```
Rows: 21,483
Columns: 9
$ year    <int> 2000, 2000, 2000, 2000, 2000, 2000, 2000, 2000, 2000, 2000, 20~
$ marital <fct> Never married, Divorced, Widowed, Never married, Divorced, Mar~
$ age     <int> 26, 48, 67, 39, 25, 25, 36, 44, 44, 47, 53, 52, 52, 51, 52, 40~
$ race    <fct> White, White, White, White, White, White, White, White, White,~
$ rincome <fct> $8000 to 9999, $8000 to 9999, Not applicable, Not applicable, ~
$ partyid <fct> "Ind,near rep", "Not str republican", "Independent", "Ind,near~
$ relig   <fct> Protestant, Protestant, Protestant, Orthodox-christian, None, ~
$ denom   <fct> "Southern baptist", "Baptist-dk which", "No denomination", "No~
$ tvhours <int> 12, NA, 2, 4, 1, NA, 3, NA, 0, 3, 2, NA, 1, NA, 1, 7, NA, 3, 3~
```
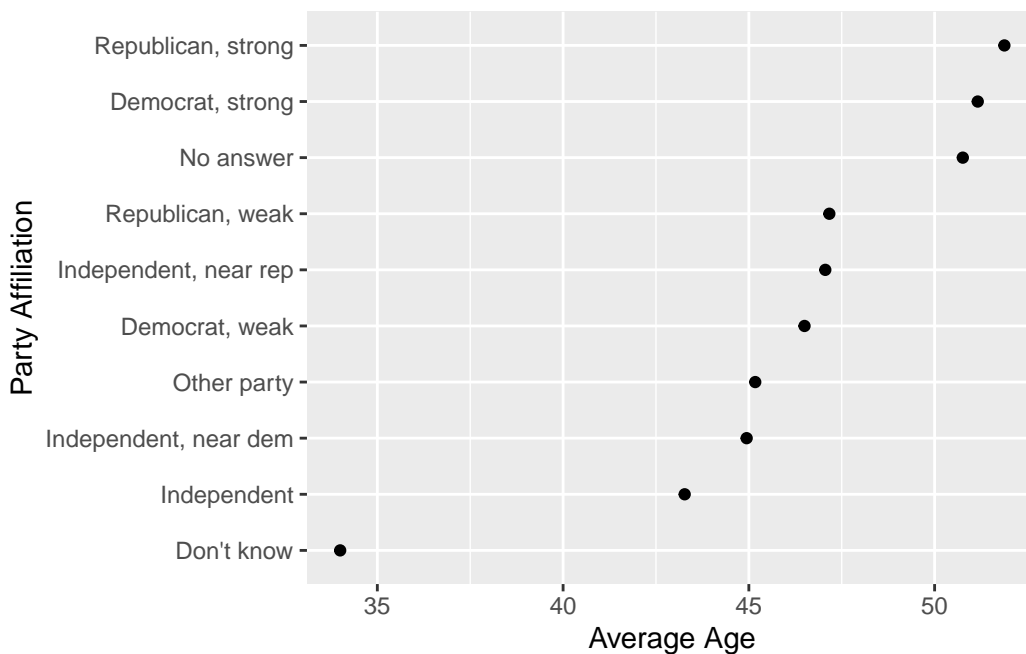
Exercise 1

Use the `dplyr` function `count()` to compute the number of respondents for each category of `relig`, and sort from most to least frequent. What is the most common religion in this survey?

Exercise 2

Run the following code to update the factor `partyid` with better names for the levels:

```
gss_cat2 <- gss_cat |>
  mutate(partyid = fct_recode(partyid,
    "Republican, strong"    = "Strong republican",
    "Republican, weak"      = "Not str republican",
    "Independent, near rep" = "Ind,near rep",
    "Independent, near dem" = "Ind,near dem",
    "Democrat, weak"        = "Not str democrat",
    "Democrat, strong"      = "Strong democrat"
  ))
```

Next use `group_by()` and `summarize()` to compute the average age for each category of `partyid`. Then recreate the R code that makes the graph below.

Exercise 3

Recreate the R code that makes the graph below. When creating this graph use the data frame `gss_cat2` which has the updated names for the levels of `partyid`.