Homework 5

This homework is focused on using `for()` loops and the `apply` family of loops to processing data.

1. Load the *countyComplete* dataset from the *openintro* package.

- Use a `for()` loop to calculate the grand mean for the following variables: white, black, native, asian, pac_isl, two_plus_races, hispanic, white_not_hispanic, hs_grad, bachelors, housing_units, home_ownership, housing_multi_unit, median_val_owner_occupied, households.
- Calculate the same values using an `apply` family loop.
- Conduct a test (i.e., not just visual comparison) to ensure the same means were produced by both methods.

2. Calculate the *difference* between the mean for each of the preceding variables and the mean for each state. Do so using only `for()` loops, and then again using only the apply family of loops. Again conduct a test to ensure the same means were produced by both methods.

3. Load the *births* dataset. Use `by()` **or** `tapply()` to calculate the mean birth weight by the following: weeks, premature, sexBaby, smoke. Calculate the same means using `aggregate()`.

- Use the output to report the following for each method:
  - Mean birth weights across weeks for full term non-smokers.
  - Mean birth weights across weeks for premature babies from mothers who smoke.
  - Mean birth weights for weeks 38-40 for full term males across smokers
  - Mean birth weights across weeks for female babies of nonsmoker mothers, between premie and full term.