Assignment 4

Due Thursday October 3 at 11:59pm on Quercus

As before, the questions without solutions are an assignment: you need to do these questions yourself and hand them in (instructions below). The assignment is due on the date shown above. An assignment handed in after the deadline is late, and may or may not be accepted (see course outline). My solutions to the assignment questions will be available when everyone has handed in their assignment.

You are reminded that work handed in with your name on it must be *entirely your own work*.

Assignments are to be handed in on Quercus. See `https://www.utsc.utoronto.ca/~butler/c32/quercus1.nb.html` for instructions on handing in assignments in Quercus. Markers' comments and grades will be available there as well.

As ever, begin with this:

```
library(tidyverse)
```

1. Work through problems 9.1 and 9.2 in PASIAS. If you like, also work through problem 9.3. (This last problem is not immediately relevant to this assignment, but you have all the background to make sense of it, and doing so will give you some context for what is going on.)

   Hand the next one in.

2. Federal and provincial governments often specify a minimum wage level in government-tendered contracts. To ensure the wage levels are reasonable, government officials often survey wage rates for similar contracts elsewhere. An official believes that the median wage rate for part-time construction millwrights on contract is \$15 per hour. A sample of workers in this category was selected, and their wage rates recorded. The data are in `http://www.utsc.utoronto.ca/~butler/assgt_data/millwrights.txt`.

   (a) (2 marks) Read in and display the (one column of) data.

   (b) (3 marks) Use R to count the number of values above and below \$15. Would you expect a sign test to reject a null median of \$15, against a two-sided alternative, or not? Explain briefly (without doing any more calculation.)

   (c) (2 marks) Make a suitable graph of the wage values. Comment briefly on its shape.

   (d) (4 marks) Use `smmr` to run a suitable sign test on these data. What do you conclude, in the context of the data? Is it consistent with your guess from part (b)? Explain briefly.

   (e) (2 marks) Obtain a 90% confidence interval for the median. (You can use something from `smmr` for this.) Is it reasonable that the interval contains 15? Explain briefly.