Homework 11

STAT 625 Fall 2022

Due November 22, 2022, 12:30pm

1 Reading

- No reading or PLC this week.

2 Primary Questions (no challenge questions this week):

hint some of these problems may be easier to write by hand. If you have a way to capture your writing electronically with another application, you may include imported graphics in your knitted file using syntax like:

```
‘‘‘{r foo, out.width="100%", fig.cap="An example image."}
knitr::include_graphics("foo.pdf")
‘‘‘
```

1. Weisberg problem 12.1 (4 parts) ** The question has a typo. Please use black spruce data.
2. Weisberg problem 12.3 (4 parts)
3. Weisberg problem 12.4 (1 part)
4. Weisberg problem 12.9 (2 parts)

3 Extra Credit Questions

(You can get more than full credit for doing this. The others questions are required)

5. Weisberg problem 12.2 (1 part, counted as 2 parts)
6. Weisberg problem 12.7 (2 parts)
7. (a) Derive the deviance expression for logistic regression (12.9) as a likelihood for the fitted vs. saturated models.
   (b) Derive the deviance expression for Poisson regression (12.11) as a likelihood ratio for the fitted vs. saturated models. ** note ** there is a typo in the G^2 formula in the online version of the text. It should be:

$$G^2 = 2\sum_{i=1}^{n} \left[y_i \log(y_i/\hat{y}_i) - (y_i - \hat{y}_i) \right].$$

4 Pre-lecture Check

No pre-lecture check this week.