Homework 9 – Stat 230 – Fall 2022

Due date: Friday, November 11

Complete the following exercises and submit your assignment via gradescope (linked on the course webpage).

> **Note**
>
> When the book asks you to "Interpret the model in terms of the odds ratio," it is asking you to interpret the slope of the logistic regression model.

Problems to start after class Nov 4

Q1

Chapter 8, exercise E.1 parts (a) and (c)

Q2

Read the prompt for Chapter 8 exercise E.7 , but then answer the following questions.

```
skincancer <- read.csv("https://aloy.rbind.io/kuiper_data/SkinCancer.csv")
```

(a) Fit a Poisson regression model that uses the continuous version of age (`Age.Midpoint`) to describe the non-melanoma skin cancer incidence. Don't forget to include the population as an exposure offset in your model. Report the fitted model equation.

(b) Interpret the slope for age in context.

(c) What is the predicted cancer rate for the 55-64 ages group (where `Age.Midpoint` is 60)?

(d) Create a scatterplot of the incidence rate against the continuous version of age (`Age.Midpoint`). Do you have any concerns about using your Poisson regression model from part (a)?

Problems to start after class Nov 7

Q3

Chapter 8, exercise E.7

Q4

Chapter 8, exercise E.8