Lecture 12

GLMs so far

- Linear and logistic regression:
    - Estimation
    - Inference
    - Diagnostics
    - Prediction
- Poisson regression:
    - Estimation
    - Inference

Poisson regression model

$$Y_i \sim \mathrm{Poisson}(\lambda_i)$$

$$\log(\lambda_i) = \beta^T X_i$$

Question: What assumptions does this model make?

The importance of assumptions

$$Y_i \sim \text{Poisson}(\lambda_i)$$

$$\log(\lambda_i) = \beta^T X_i$$

Question: How could we assess the *importance* of the Poisson regression assumption? I.e., what is the impact if this assumption is wrong?

Simulation plan

ADEMP: A useful framework for simulation studies

- **Aims:** Why are we doing the study?

- **Data generation:** How are the data simulated?

- **Estimand/target:** What are we estimating for each simulated dataset?

- **Methods:** What methods are we using for model fitting, estimation, etc?

- **Performance measures:** How do we measure performance of our chosen methods?

ADEMP

For the Poisson simulation study:

- Aims:

- Data generation:

- Estimand/target:

- Methods:

- Performance measures:

Class activity

https://sta712-f23.github.io/class_activities/ca_lecture_12.html