Eco Buddies (Liz Clark, Laura Haynes, Lina Clifford, Jessica Martinez, Olivia Dinkelacker)

In Class Likelihood

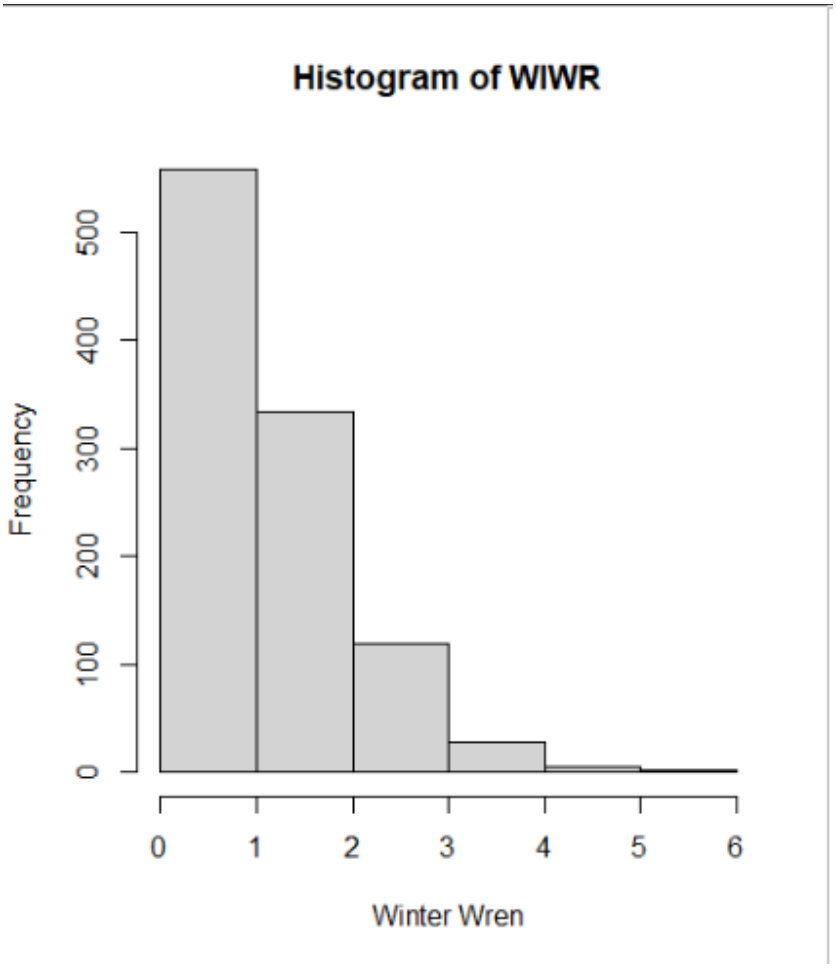
Q1 (1 pt.): What value for λ did you select?

We chose a Lambda value of 4.0

Q2 (1 pt.): How did you choose a value?

Guessing and checking! Lambda of 3.9 and 4.1 both had higher likelihood values than 4.0

Q3 (1 pt.): Include your histogram into your report.



Q4 (1 pt.): What value for λ did you select?

1.5

Q5 (2 pts.): Show the R code you used to calculate the Poisson log-likelihood for the vector of Winter Wren census counts.

sum(log(dpois(x = dat_all$WIWR, lambda = 1.46))

Q6 (1 pt.): What are the two parameters for a binomial distribution and what do they represent?

N = number of trials, and p = probability of success.

Q7 (2 pts.): What were the parameter values you selected?

N = 6, and p = 0.5

Q8 (1 pt.): How did you choose a value for n?

We chose 6 as a value of n because there are 6 plots you can observe birds in.

Q9 (2 pts.): Show R code you used to calculate the binomial log-likelihood for the vector of Winter Wren census counts.

wiwr_counts = c(2, 6)

dbinom(x = wiwr_counts, size= 6, prob = 0.5)

0.234375 0.015625

Q10 (1 pt.): Considering a Maximum Likelihood criterion, which model better fit the data?

The binomial distribution model better fit the data.

Q11 (2 pts.): Considering what you know about the Binomial and Poisson distributions, which model is more appropriate for census count data?

Poisson

Q12 (1 pt.): Create the vector (make sure you set seed to 1) and calculate the log likelihood that it came from a standard normal distribution.

The log likelihood that it came from a standard normal distribution is –12.01869.

Q13 (2 pts.): Show the R code you used to make the calculation

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set.seed(1)

vec_rnorm = rnorm(n = 10, mean = 0, sd = 1)

sum(log(dnorm(vec_rnorm, mean=0, sd=1)))
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Q14 (2 pts.): Use the guess and check method to find the maximum likelihood optimal values for mean and standard deviation (to 2 significant figures) of the numbers in the vector.

set.seed(1)

vec_rnorm = rnorm(n = 10, mean = 0, sd = 0.5)

sum(log(dnorm(vec_rnorm, mean=0,sd=0.5)))

-5.087216

Q15 (1 pt.): How did you choose your starting guess values for mean and standard deviation?

We chose these values based on our previous values for mean and standard deviation, and then guessed and checked from there