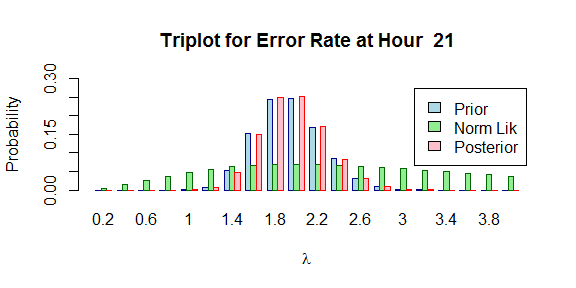
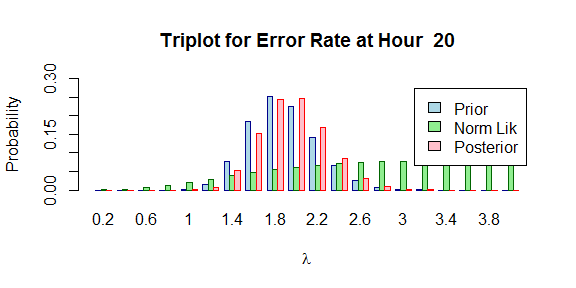
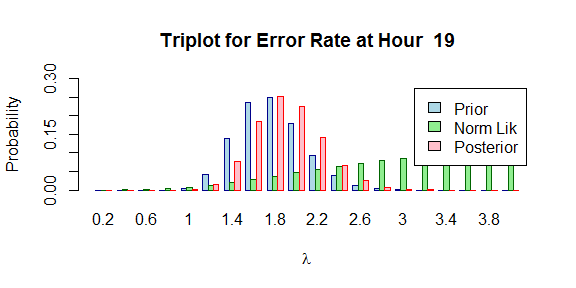
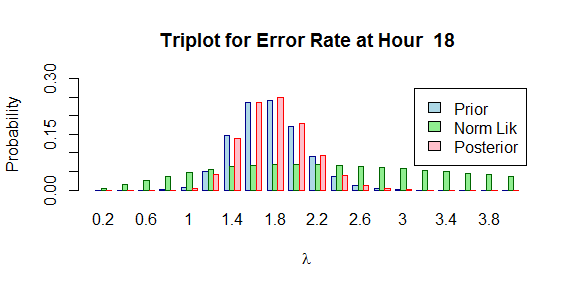
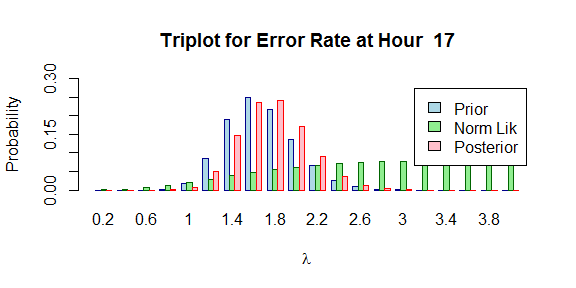
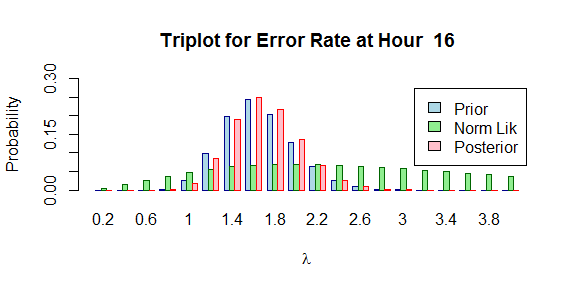
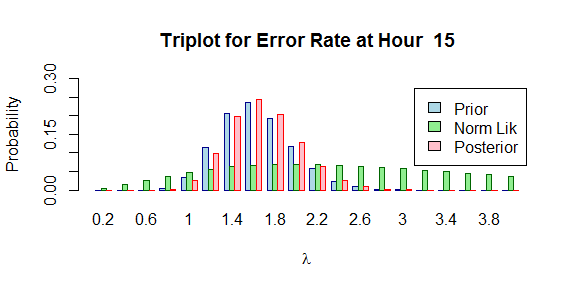
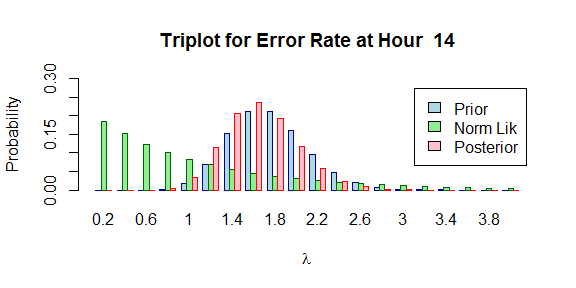
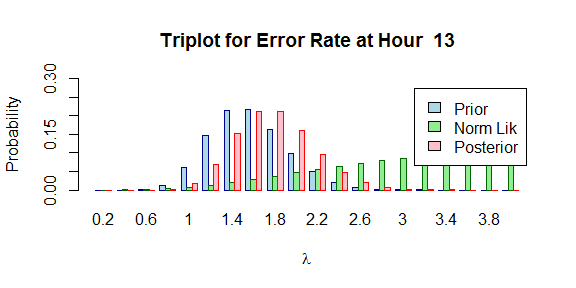
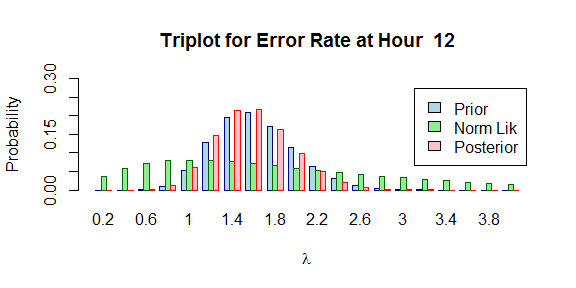
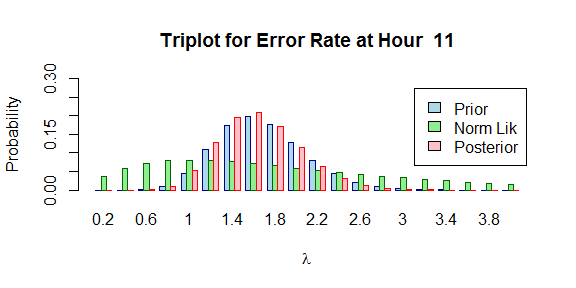
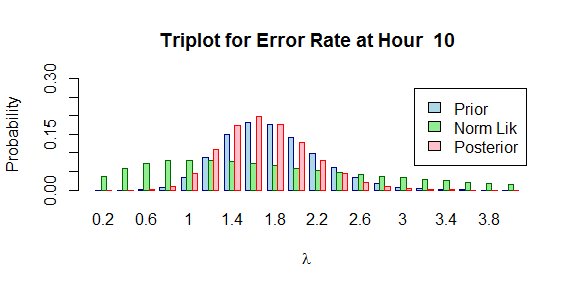
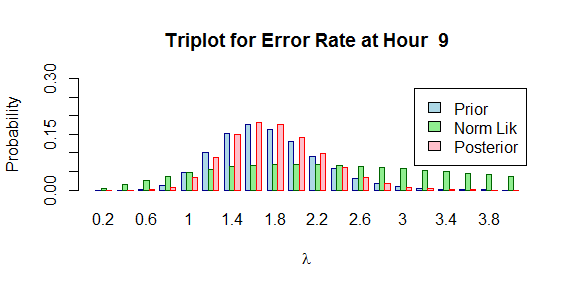
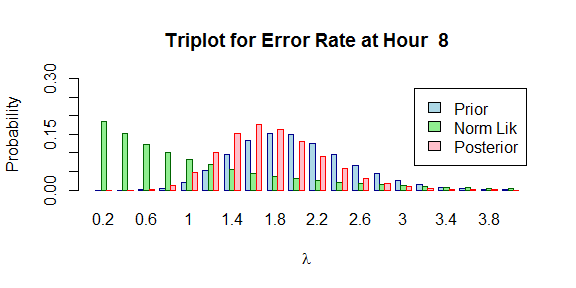
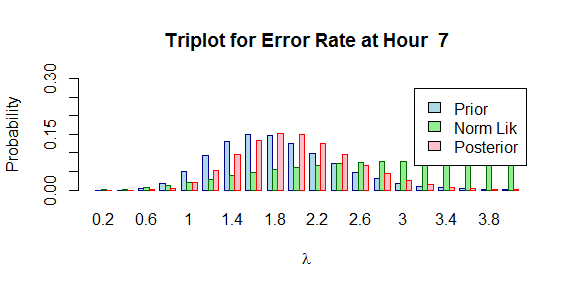
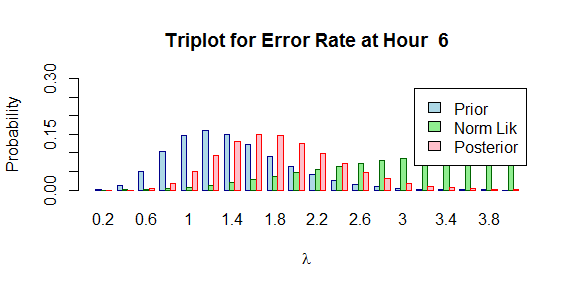
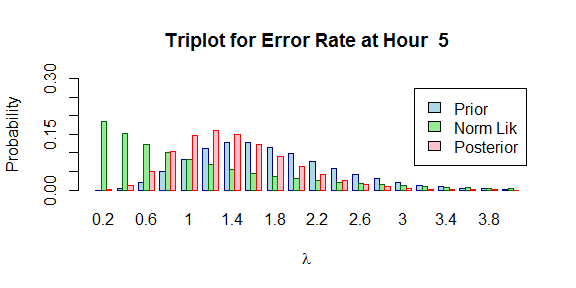
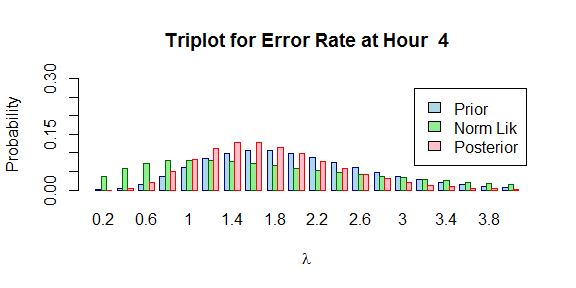
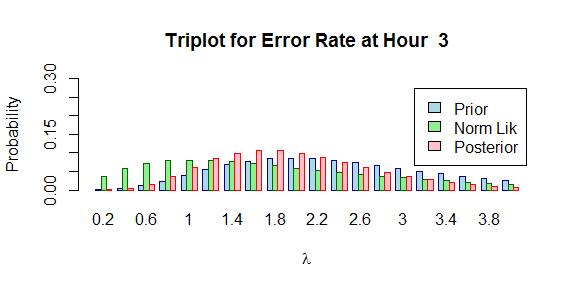
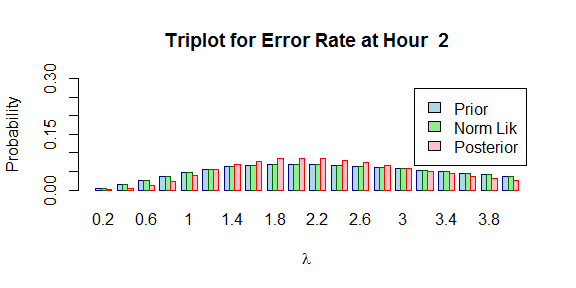
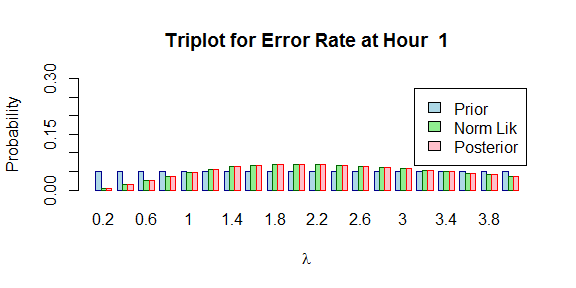
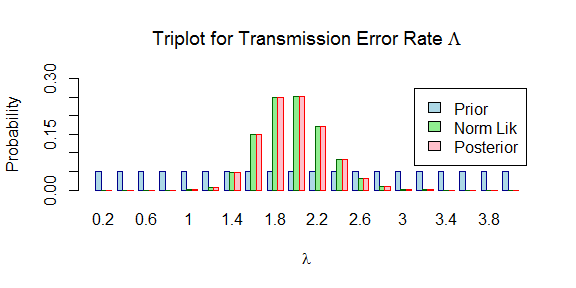
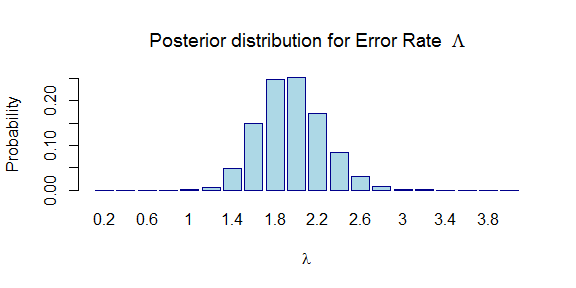
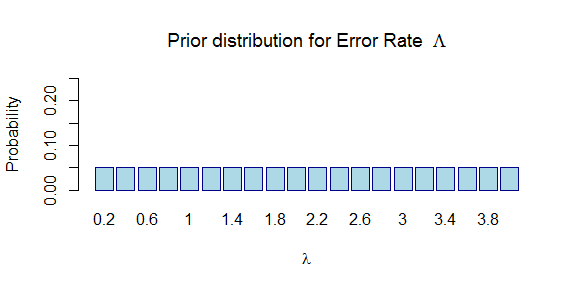
SYST 664: HW Assignment 3

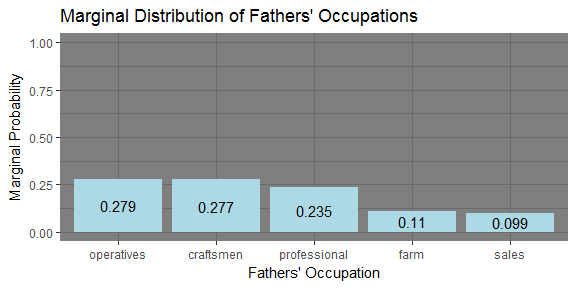
Jake Whalen

February 12, 2018

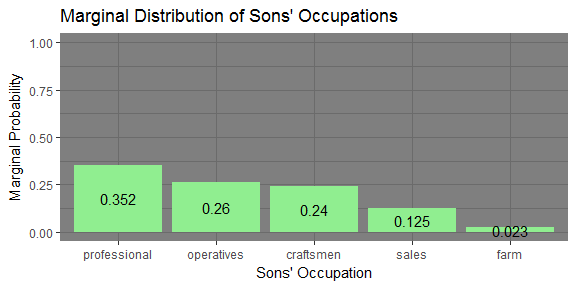


# Problem 1

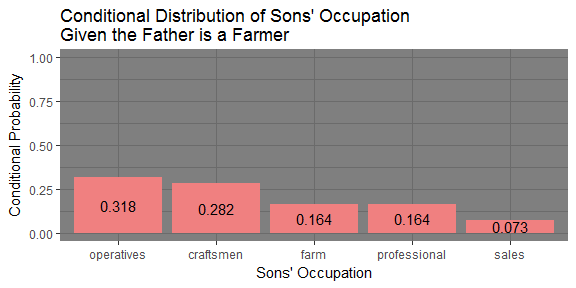
### Part A



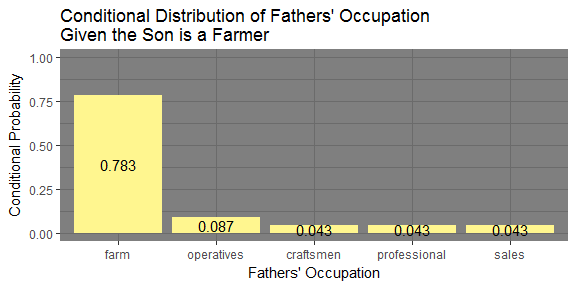
### Part B



### Part C



### Part D



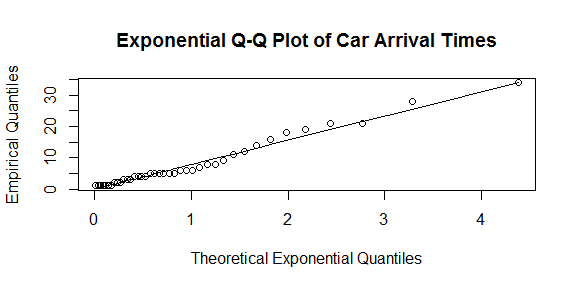
### Part E

##### What do the results in parts a-d say about changes in farming in the population from which these data are drawn?

Marginal probability of farming being an individuals occupation drops from fathers (0.11) to sons (0.023). If the father was a farmer then the son has a 16.4% probability of also taking up the farming occupation. If the son was a farmer then the father was a farmer with a 78.3% probability. Thus while farming may not be passed down at a high rate between these generations it also is not an occupation that the younger generation is flocking to. If the son is a farmer it is unlikely their father had a non-farming job.

# Problem 2

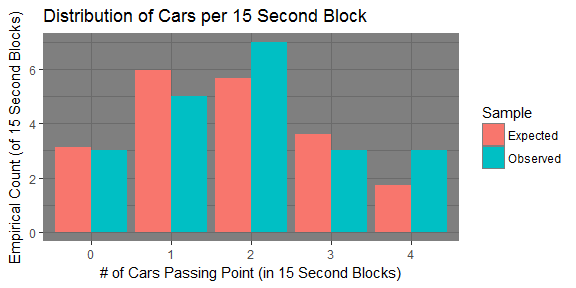
### Part A



Do you think an exponential distribution provides a good model for the interarrival times?

Justify your answer.

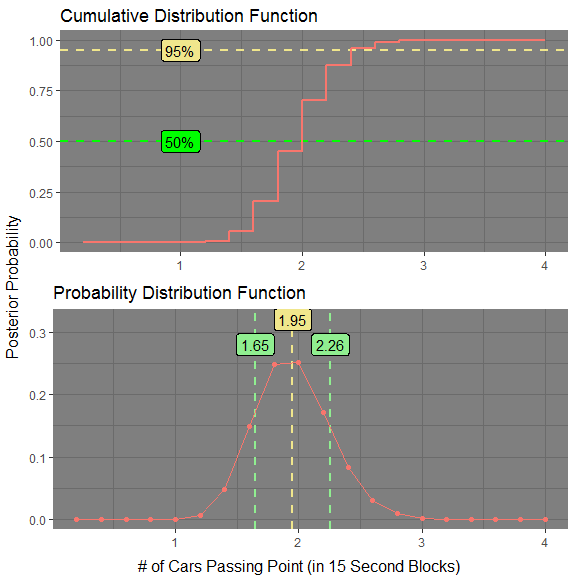
### Part B



Do you think a Poisson distribution provides a good model for the count data?

Justify your answer.

### Part C



Find the posterior mean, standard deviation, median and 95 percentile of Lambda given the observations.

Describe what your results mean in terms of traffic on this motorway.