

Poisson Lab Data Collection Prelab: Due before lab, Thursday November 10th

Observational Procedure:

1. Find an intersection with a stop light at which you can observe traffic. This intersection should be sufficiently busy that you see at least few cars drive through every green light. Clearly record the location of the intersection in your notebook.
2. Pick a traffic direction (recording the direction) and count the number of cars that make it through the intersection on a green light. Record the time and number.
3. Repeat the measurement in the previous step eight times, recording all the data. This should be done for consecutive green lights – it is recommended that you work in pairs so that one person can count while the other records. These data will be used to determine the mean and standard deviation for the number of cars passing through the intersection, and also to test whether the Poisson distribution is a good approximation.
4. Now, the amount of traffic obviously changes over the course of the day (e.g. rush hour). One can ask how the mean number of cars passing through the intersection is changing with time. Equivalently, in astronomy one may wish to track how the flux from a variable star changes with time. For this lab, we will ask the specific question of how much the traffic changes over the course of about two hours, and assume that the change is linear with time. To do so, repeat the observations from the previous steps 45 minutes and 1.25 hours after the start of your initial observations. For these repeat observations it is sufficient to only make four measurements rather than eight. You are welcome to make observations that are either more frequent or span a longer time baseline, but should include the observations listed above.