Statistics 211
In-Class Assessments
Topic: Chapter 6
Date: Oct. 18, 2016

Suppose you are the detective in charge of a murder investigation. There are three suspects (A, B, and C), and suppose it is certain that exactly one of them is the murderer. Based on your prior knowledge of the suspects, you assign prior probabilities of guilt of $p(A) = 0.8$, $p(B) = 0.1$, and $p(C) = 0.1$. Suppose that new evidence is uncovered, based on which you compute likelihoods of $L(A) = 0.05$, $L(B) = 0.65$, and $L(C) = 0.30$.

1. What is the posterior probability that suspect A is the murderer? Answer to four significant figures.

   answer: 0.2963

2. What is the posterior probability that suspect B is the murderer? Answer to four significant figures.

   answer: 0.4815

3. What is the posterior probability that suspect C is the murderer? Answer to four significant figures.

   answer: 0.2222