Background Info and Finances:

With a strong prediction model in hand, we needed to know how much a diabetes readmission plan could save the hospital. On one hand, we have the cost of the program per person that it is admitted to and, on the other, the hospital gains money because fewer people will be readmitted. The cost of the diabetes management program based on the time of the physician, discharge nurse, and home visiting nurse is $500 per patient. Though this might seem like a large chunk of change, when we consider the cost of a patient being readmitted for an extra day, about $10000, it does not seem like very much. Considering the average length of stay is 4.5 days, yielding 45000 dollars per readmission, it makes sense to give this additional care to more patients with diabetes than the number of patients that we expect to be readmitted.

The reason why fewer people being readmitted financially benefits the hospital is because of a piece of legislation called the Medicare Care Transitions Act of 2009. The law aims to address the fact that unplanned rehospitalizations among recipients of medicare are expensive and frequent. They account for 17.4 billion of the 102.6 billion Medicare dollars being paid to hospitals in 2004. [www.modernhealthcare.com/article/20090511/NEWS/904239998]

We rely on our model in order to decide how the true positive and false positive rate. These are, respectively, the rate at which we correctly say that a patient who we think will be readmitted will be readmitted, and the rate at which we incorrectly say that someone will be readmitted (within thirty days) that actually will not be readmitted within that time. While we get those two rates from the model, we needed to consult the literature in order to determine the cost of the average stay, the cost of giving the additional diabetes care to a single person (both of which are mentioned above), and the average program readmission reduction that we can expect from the plan.