Warmup: fitted logistic regression model

Group members:

Instructions: Work with a neighbor on the following activity. I will collect the handout at the end of class, and it will be part of your class participation grade. You will be graded only on effort – it is ok if you don't finish all the questions, or get them all correct.

Fitted model

In this activity, we will work with the fitted logistic regression model from the dengue data. The fitted logistic regression model is

$$Y_i \sim Bernoulli(\pi_i)$$
$$\log\left(\frac{\hat{\pi}_i}{1-\hat{\pi}_i}\right) = -2.45 + 0.22\ Age_i$$

1. What is the predicted odds of dengue for a 10 year old patient? What about the predicted *probability* of dengue for a 10 year old patient?

2. Suppose we want to identify patients for whom the predicted probability of dengue is at least 0.5. What age range should we focus on?

3. What is the predicted odds of dengue for an 11 year old patient?

Now let's compare the odds for an 11 year old patient to the odds for a 10 year old patient. We usually compare odds by their *ratio*:

$$\frac{0.97}{0.78} = 1.25$$

That is, the odds that an 11 year old patient has dengue are 1.25 times higher than the odds that a 10 year old patient has dengue.

4. Compare the odds of dengue for a 12 year old patient to the odds of dengue for an 11 year old patient. What do you notice?