Class activity: dengue probabilities

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.

Dengue data

Dengue fever is a mosquito-borne viral disease affecting 400 million people a year. In this activity, you will start to investigate the relationship between age and dengue status, from the dataset of 5720 Vietnamese children admitted to hospital with potential dengue fever.

One way to examine the relationship between age and dengue status is with a table:

Age	Dengue = 0	Dengue = 1
1	184	16
2	419	42
3	532	68
4	457	108
5	487	122
6	369	110
7	360	148
8	289	161
9	244	186
10	185	185
11	165	148
12	126	137
13	96	107
14	68	97
15	42	62
Total	4023	1697

1. What is the (empirical) probability that a patient in the study has dengue? (I say *empirical* probability here because we are estimating it from the observed data).

2. What is the (empirical) probability that a 5 year old patient has dengue? What about a 10 year old patient?

3. If π is the probability of some event, then the *odds* are $\dfrac{\pi}{1-\pi}$. Calculate the (empirical) odds that a 5 year old patient has dengue.

Ethics and human subjects research

Research involving patients falls under the category of *human subjects research* (HSR), which is tightly monitored and regulated. Guiding principles for HSR (see the Belmont Report) require that the participants provide informed consent, that the researchers carefully assess the potential risks and benefits of their study, and that there be fair procedures and outcomes in the selection of research subjects.

The data from the dengue study consist of patients between 1 and 15 years old, who presented to the hospital with potential dengue fever (that is, their symptoms made the doctors suspect they might have dengue fever).

4. What do you think are some of the potential risks and benefits of the dengue study?