Ch. 5 Exercises: Bayes' Rule

Thea Sukianto

1/26/2021

Exercise 5.1

Let T_1 represent the result of the first test and T_2 represent the result of the second test.

Then P(Has disease | $T_1 = +, T_2 = -$) = [1-P($T_1 = +$ | Has disease)] x P(Has disease | $T_1 = +$) / [[1-P($T_1 = +$ | Has disease)]] x P(Has disease | $T_1 = +$) + [1-P($T_1 = +$ | Doesn't have disease)] x (1-P(Has disease | $T_1 = +$))] =

```
true_positive <- 0.99
false_positive <- 0.05
posterior <- 0.019

((1-true_positive) * posterior)/(((1-true_positive) * posterior) + ((1-false_positive) * (1-posterior)))
```

```
## [1] 0.000203832
```

Ran out of time, saving for next week :(

Exercise 5.2

Exercise 5.4