

# ICME Intro to Stats Summer Workshop

## Section 2 Exercises

2023-07-24

### **Bayes Theorem:**

1% of the population has a certain disease. If an infected person is tested, then there is a 95% chance that the test is positive. If the person is not infected, then there is a 2% chance that the test gives an erroneous positive result (false positive).

Given that a person tests positive, what are the chances that he has the disease?

### **Normal Distribution:**

The speed of cars passing through a FastTrak toll plaza follows a normal distribution with  $\mu = 60$  miles per hour and  $\sigma = 4$  miles per hour. What is the probability that the next car passing through will:

Note, for this question you may find this Z-score table and calculator helpful: [Z Table](#)

- (a) Exceed 70 miles per hour?
- (b) Go slower than 55 miles per hour?
- (c) Have a speed between 52 and 68 miles per hour?