

# Case Study: Probabilities & Decision Trees

## ! Important

Please note that you can download PDF and Microsoft Word versions of this case study using the links on the right.

## Case 1

In a hypothetical community, 60% of all people consume at least 6 alcoholic beverages per week and 50% are overweight. The percentage of people who are both overweight and consume this much alcohol is 40%. Construct a 2x2 table to answer (a)-(c) below. For part (d), construct a decision tree.

- *What percentage of people consume at least 6 alcoholic beverages per week, are overweight, or fall into both categories?*
- *You sample at random a person from the community and find that they consume at least 6 alcoholic beverages per week. What is the probability that they are overweight?*

- *What is the probability that someone from this community consumes at least 6 alcoholic beverages per week if they are overweight?*

- *Draw a decision tree to represent this problem*

## Case 2

A new screening procedure can detect 80% of women diagnosed with breast cancer but will falsely identify 2% without breast cancer. The prevalence of breast cancer in the population is 1.6 in 100

- *What is the probability that a woman does not have breast cancer if the test is negative?*

- *What is the probability that a woman has breast cancer if the test is positive?*