

You are the head of diagnostic medicine at Central City Hospital in Central City. One of your patients has a variety of symptoms, and you are having trouble determining the likely cause. You consider the possibility that your patient has a rare genetic disorder. The disorder is so rare that its only name is GEN-7U6, and only about 1 percent of the population has it.

You decide to test the patient for GEN-7U6. The only available test delivers a true positive 90 percent of the time. (That is, 90 percent of the time, when a person has GEN-7U6, he or she will test positive.) 9.6 percent of the time the test yields a false positive. (That is, 9.6 percent of the time, when a person does not have GEN-7U6, he or she will test positive.)

Your patient takes the test, and it is positive. Given this result what is the probability that he has GEN-7U6?

The RNV7 test is a non-invasive test for cancer. This test is very accurate, but it's not perfect. A small percentage of people who test positive for cancer with this test don't have cancer, and some who have cancer test negative.

The probability of having cancer *and* having a positive test is 3.2 percent. (A small percentage of the population has cancer, and so this probability is low.) The probability of testing positive (as either a true positive or a false positive) is 8 percent.

Jones has just tested positive. What is the probability that he has cancer given this positive result? (Use the conditional probability rule, not Bayes' rule.)

Create a diagram of this population.

200 people got the flu shot and are employed

150 people got the flu shot and are unemployed

50 people did not get the flu shot and are employed

100 people did not get the flu shot and are unemployed

Put employment status at the top of the diagram.

What is the probability of selecting someone from this population who is employed and did not get the flu shot?

What is the probability of selecting someone from this population who is employed and got the flu shot?

What is the probability of selecting someone from this population who is employed or did not get the flu shot?

a different population

[P1] Joan, Mary, and Tom are members of this population.

[P2] Sixty-five percent of the people in this population have gotten the flu shot.

[C] Therefore, there is a _____ chance that two or three of Joan, Mary, and Tom have gotten the flu shot.

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