

Exercise - The False Positive Paradox

Psyc 402 - Fall 2020 - Dr. Diehr

This is for practice and is not scored for points

Suppose you have a new COVID-19 test which is reported to be 95% accurate. It will never miss a person who is infected, though it does have a 5% false positive rate. What would happen if you used this new test to screen 1000 people?

Scenario 1: High Base Rate:

Assume that 40% of the population is COVID positive (COVID+)

Calculations: For each result, also put it in the proper table cell below:

Out of 1000 people, how many will have COVID? _____

Of these COVID+ how many will the test identify? _____

Of the 1000 people, how many will be COVID negative (COVID-) ? _____

Of these COVID-, how many will test positive? _____

		The Real World		Totals:
		COVID+	COVID-	
Test Results	COVID+	(true positives)	(false positives)	
	COVID-	(false negatives)	(true negative)	
		Totals:		1000

Therefore, in this population, what % of the positive test results are true? $(TP)/(TP+FP)$ =**Scenario 2: Low Base Rate:**

Assume that only 2% of the population is COVID positive (COVID+)

Calculations: For each result, also put it in the proper table cell below:

Out of 1000 people, how many will have COVID? _____

Of these COVID+ how many will the test identify? _____

Of the 1000 people, how many will be COVID negative (COVID-) ? _____

Of these COVID-, how many will test positive? _____

		The Real World		Totals:
		COVID+	COVID-	
Test Results	COVID+	(true positives)	(false positives)	
	COVID-	(false negatives)	(true negative)	
		Totals:		1000

Therefore, in this population, what % of the positive test results are true? $(TP)/(TP+FP)$ =