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$$P(A|B) = \frac{P(A \cap B)}{P(B)}$$

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  - ▶  $P(B|A)$  is ???



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  - ▶ What percent of the population carry the genetic markers for both Cancers *A* and *B*?
  - ▶ Do we know what percent of the population carries the genetic marker for Cancer *B*?

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  - ▶ 2% of uninfected people also test positive.
- ▶ If you test positive, how likely is it that you have the disease?

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- ▶ The population consists of four groups:
  - ▶ True Positive: diseased people that test positive.
  - ▶ True Negative: healthy people that test negative.
  - ▶ False Positive: healthy people that test positive.
  - ▶ False Negative: diseased people that test negative.

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- ▶ Bayes' Formula 2:

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So if you test positive for the disease, you have a 4.7% chance of having the disease.