

Exercises Nov 2

- Probability
- Diagnostic test
- Probability distributions: Gaussian and Binomial

EXERCISE 1

Suppose that a certain form of respiratory allergy usually affects 1 in 20 individuals, while food intolerances concern 3.5% of cases.

Assuming that the two events are independent:

- 1) what is the probability of having both problems?
- 2) what is the probability of having at least one?
- 3) what is the probability of having only one?
- 4) Having a food intolerance, what is the probability of having a respiratory allergy?

A = respiratory allergy

I = food intolerances

$$P(A)=0,05$$

$$P(I)=0,035$$

$$1) P(A \cap I) = 0.05 * 0.035 = 0.00175$$

$$2) P(A \cup I) = 0.05 + 0.035 - 0.00175 = 0.08325$$

$$3) P[(A \cap \bar{I}) \cup (\bar{A} \cap I)] = 0.05 * 0.965 + 0.95 * 0.035 = 0.0815$$

$$4) P(A|I) = P(A) = 0.05$$