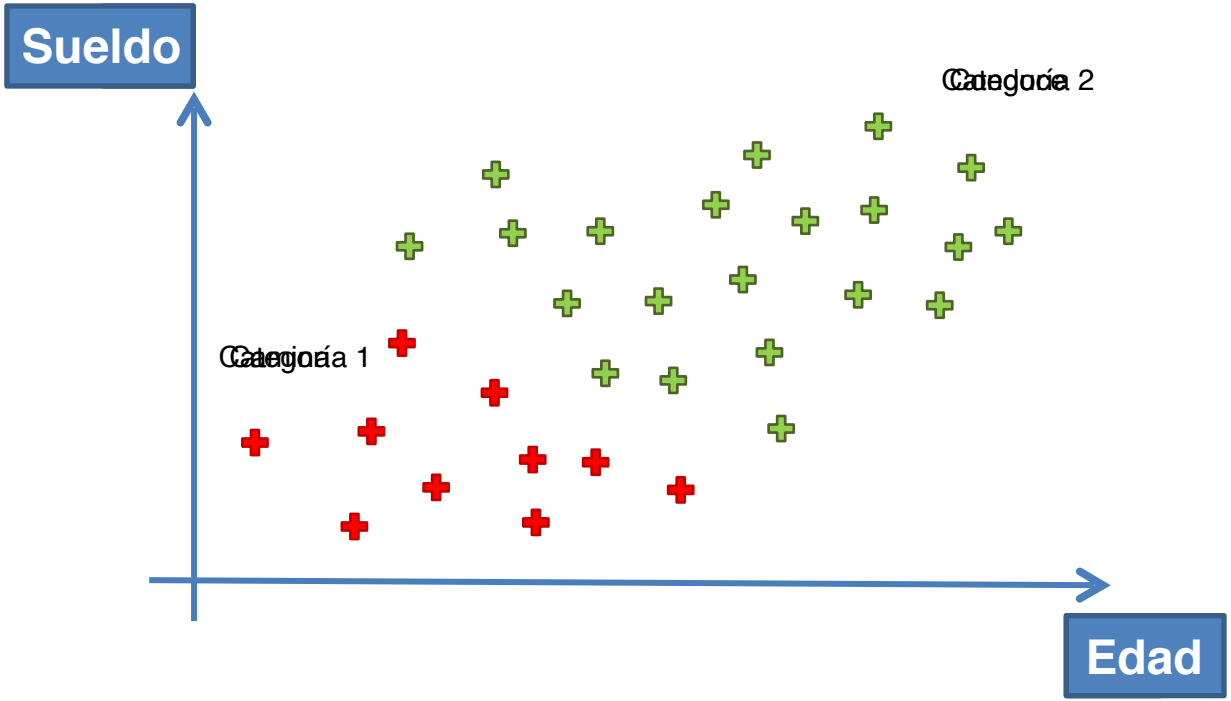
Idea del Clasificador con Naïve Bayes

SUPER
DATASCIENCE
MAKING THE COMPLEX SIMPLE

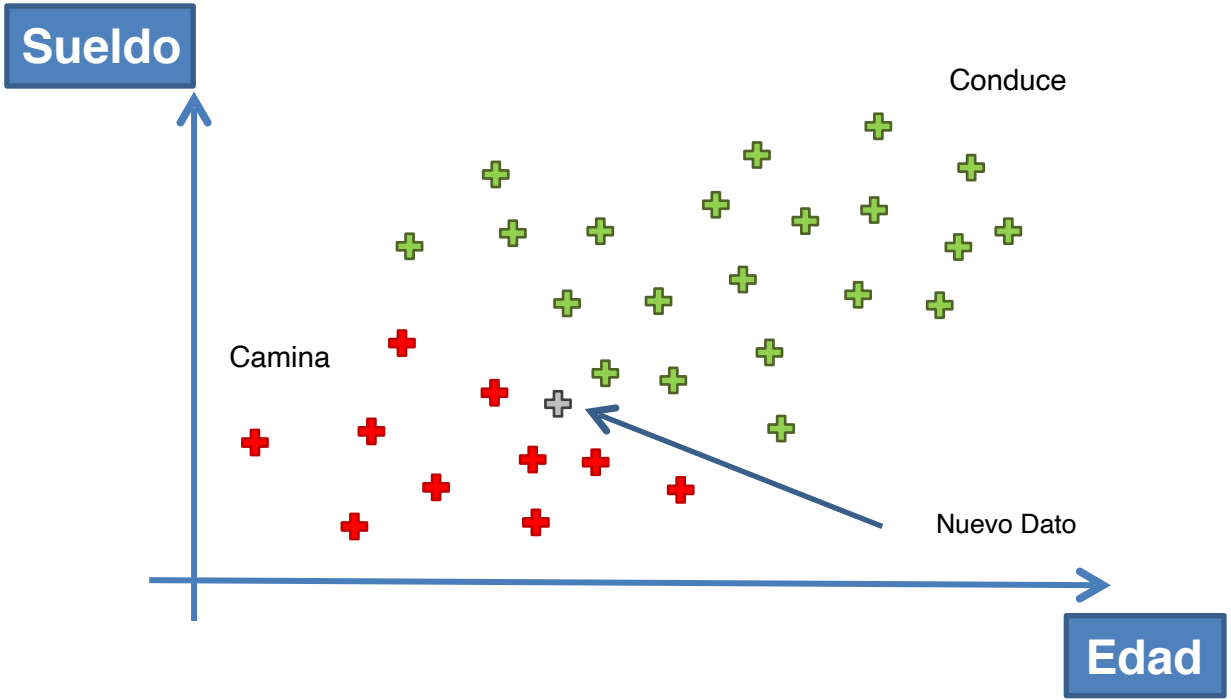
Naïve Bayes

$$P(A \mid B) = \frac{P(B \mid A) * P(A)}{P(B)}$$

Naïve Bayes



Naïve Bayes



Plan de Ataque

Naïve Bayes

$$P(A \mid B) = \frac{P(B \mid A) * P(A)}{P(B)}$$

Paso 1

#4 Probabilidad a Posteriori

#3 Probabilidad Condicionada

#1 Probabilidad a Priori

$$P(Walks \mid X) = \frac{P(X \mid Walks) * P(Walks)}{P(X)}$$

#2 Probabilidad Marginal

Paso 2

#4 Probabilidad a Posteriori

#3 Probabilidad Condicionada

#1 Probabilidad a Priori

$$P(Drives \mid X) = \frac{P(X \mid Drives) * P(Drives)}{P(X)}$$

#2 Probabilidad Marginal

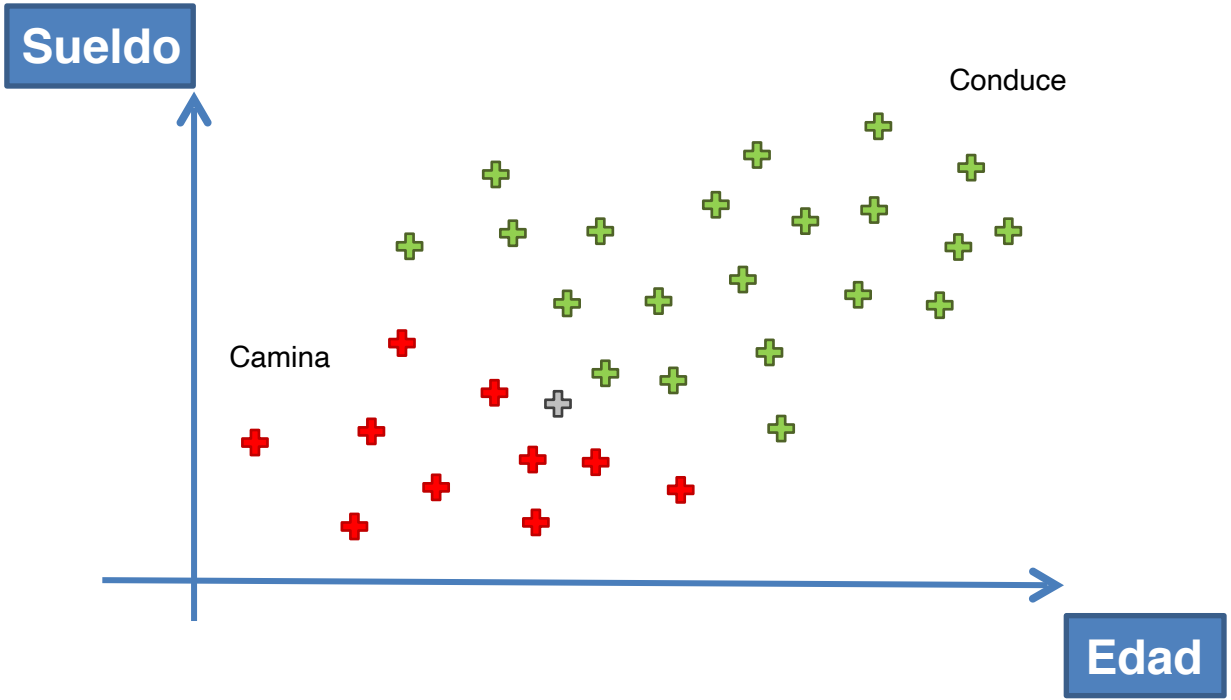
Paso 3

$$P(Walks \mid X) \; v.s. \; P(Drives \mid X)$$

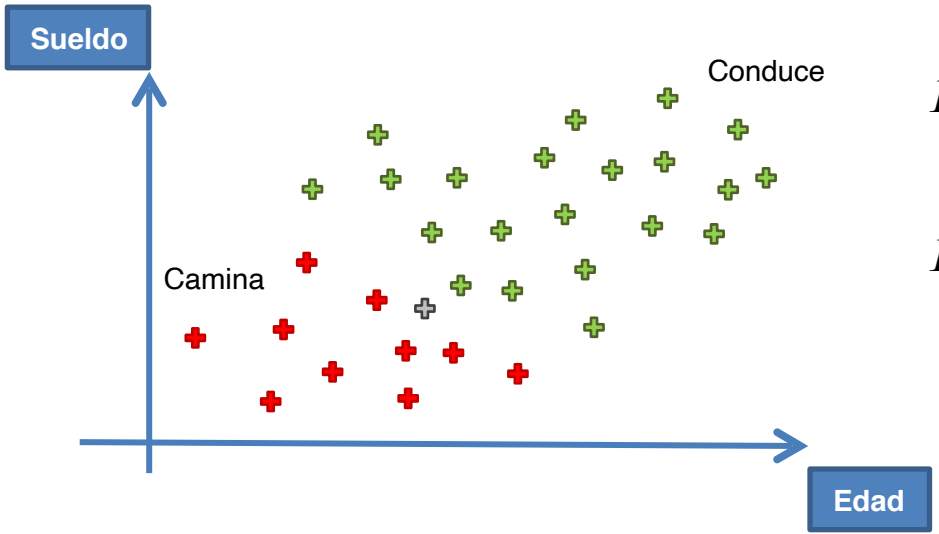
Naïve Bayes

¿Listo?

Naïve Bayes: Paso 1



Naïve Bayes: Paso 1

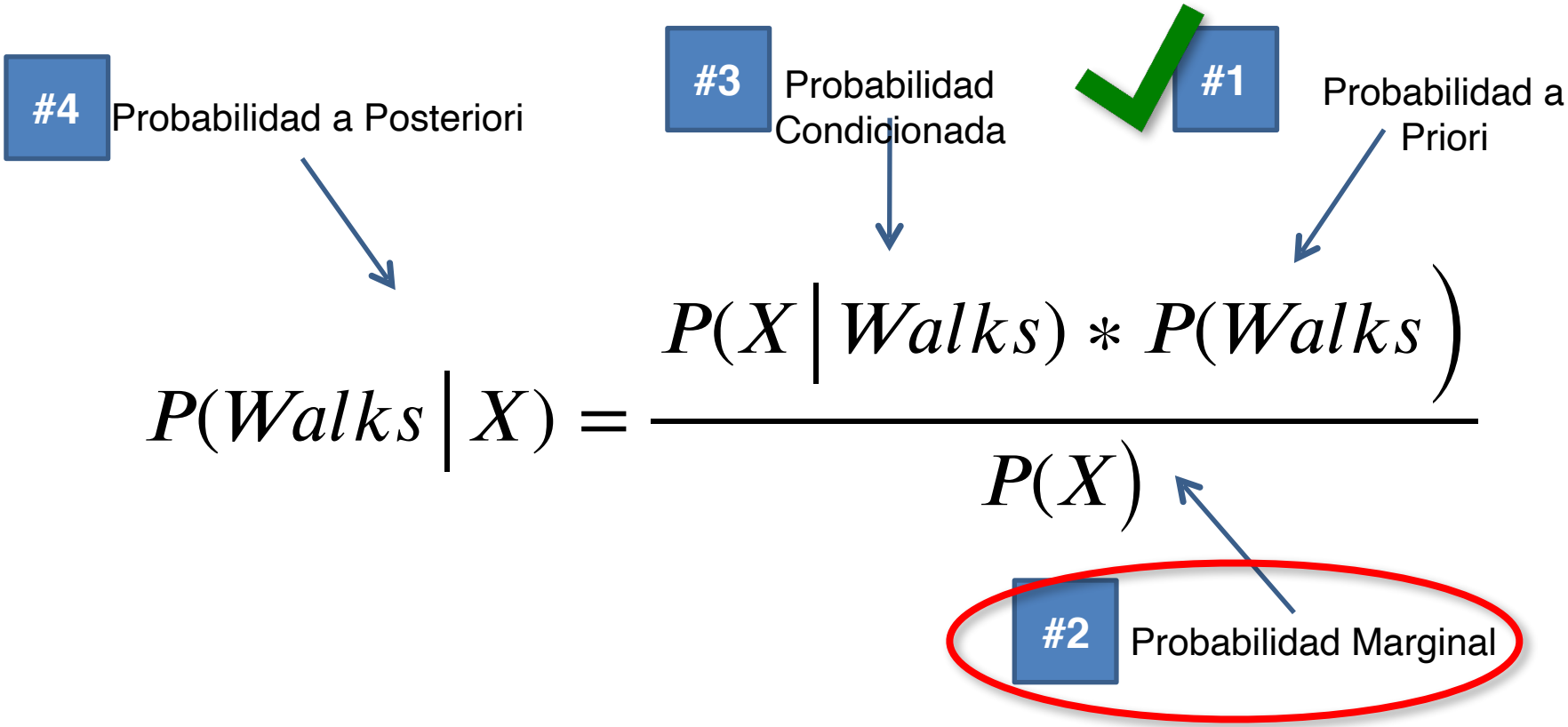


#1. P(Camina)

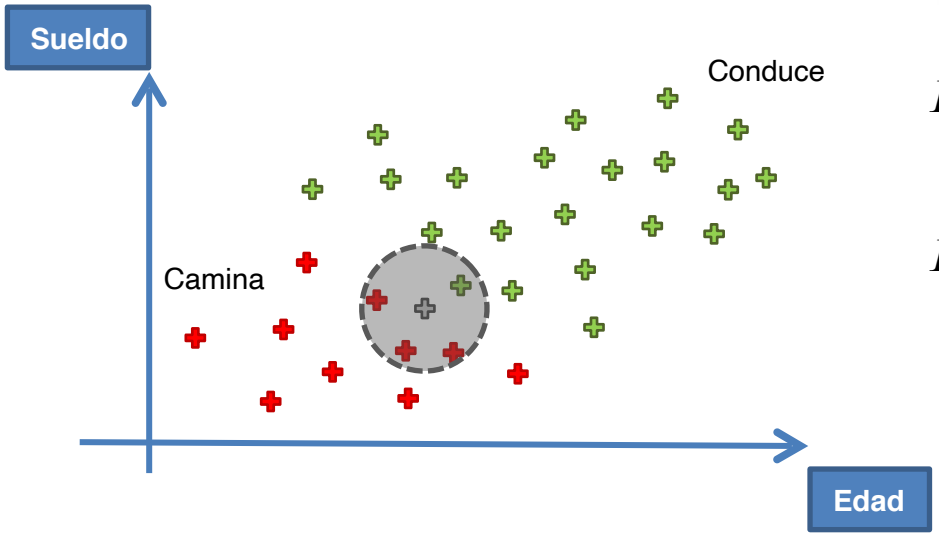
$$P(Walks) = \frac{Number\ of\ Walkers}{Total\ Observations}$$

$$P(Walks) = \frac{10}{30}$$

Naïve Bayes: Paso 1



Naïve Bayes: Paso 1

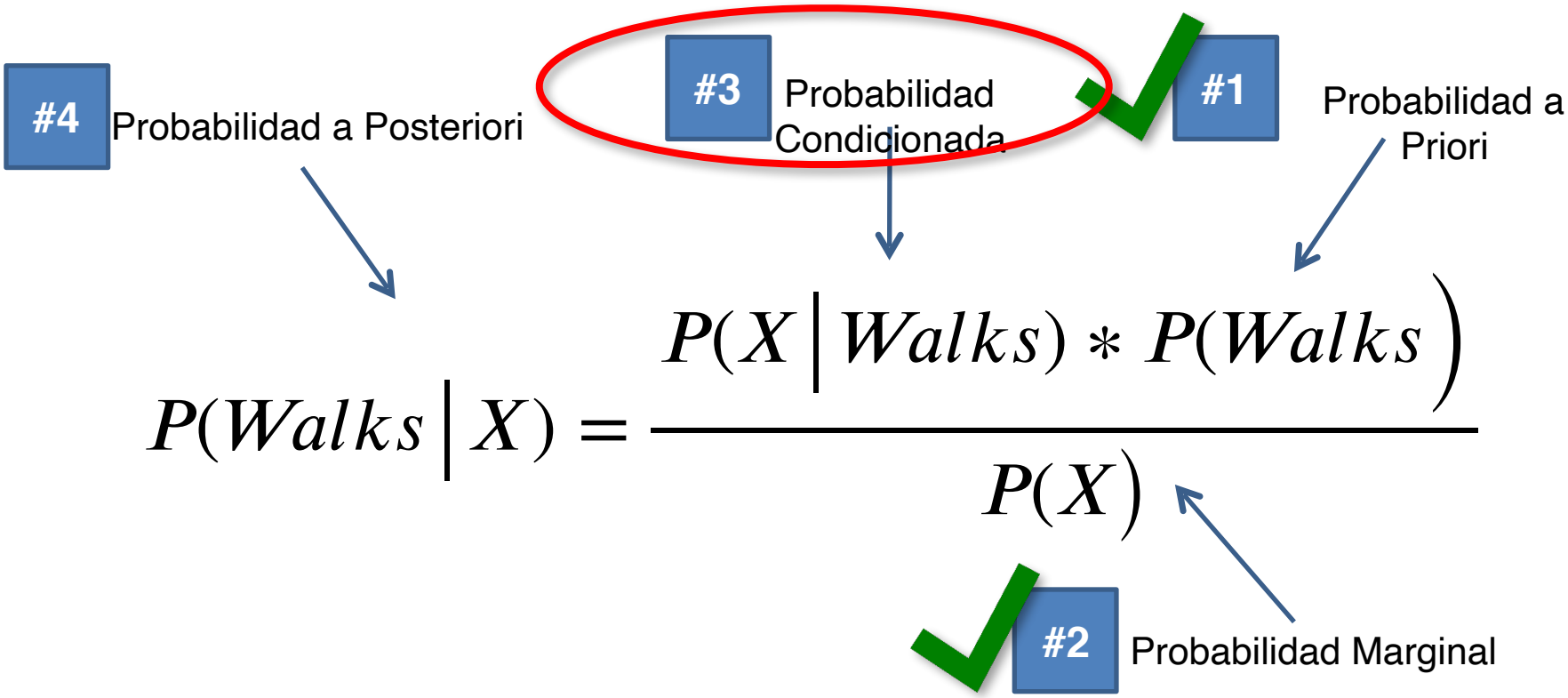


#2. P(X)

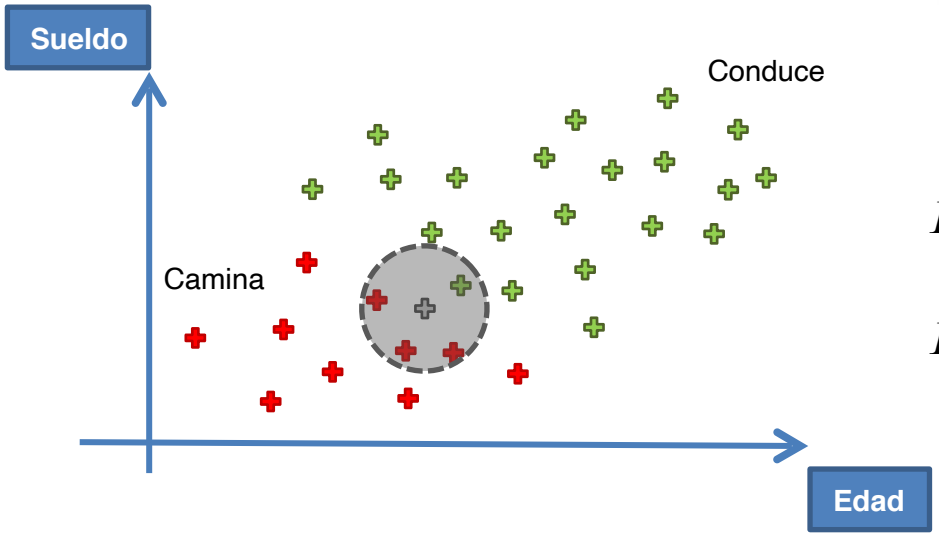
$$P(X) = \frac{Number\ of\ Similar\ Observations}{Total\ Observations}$$

$$P(X) = \frac{4}{30}$$

Naïve Bayes: Paso 1



Naïve Bayes: Paso 1



#3. P(X|Camina)

$$P(X \mid Walks) = \frac{Number\ of\ Similar\ Observations\ Among\ those\ who\ Walk}{Total\ number\ of\ Walkers}$$

$$P(X \mid Walks) = \frac{3}{10}$$

Naïve Bayes: Paso 1

#4 Probabilidad a Posteriori

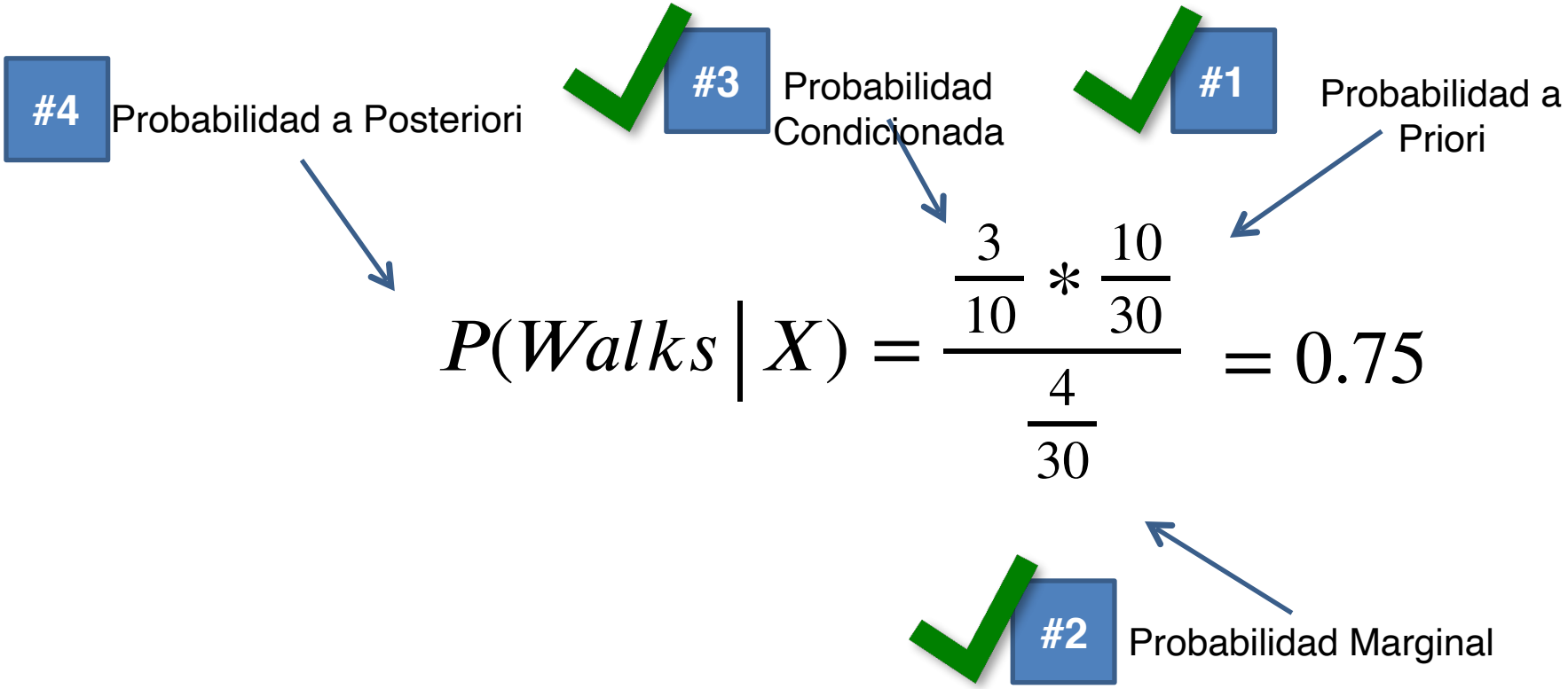
#3 Probabilidad Condicionada

#1 Probabilidad a Priori

$$P(Walks \mid X) = \frac{P(X \mid Walks) * P(Walks)}{P(X)}$$

#2 Probabilidad Marginal

Naïve Bayes: Paso 1



Naïve Bayes

Paso 1 – Listo.

Paso 2

#4 Probabilidad a Posteriori

#3 Probabilidad Condicionada

#1 Probabilidad a Priori

$$P(Drives \mid X) = \frac{P(X \mid Drives) * P(Drives)}{P(X)}$$

#2 Probabilidad Marginal

Naïve Bayes: Paso 2

#4 Probabilidad a Posteriori

#3 Probabilidad Condicionada

#1 Probabilidad a Priori

$$P(Drives \mid X) = \frac{\frac{1}{20} * \frac{20}{30}}{\frac{4}{30}} = 0.25$$

#2 Probabilidad Marginal

Naïve Bayes

Paso 2 – Listo.

Paso 3

$$P(Walks \mid X) \; v.s. \; P(Drives \mid X)$$

Paso 3

$$0.75 \; v.s. \; 0.25$$

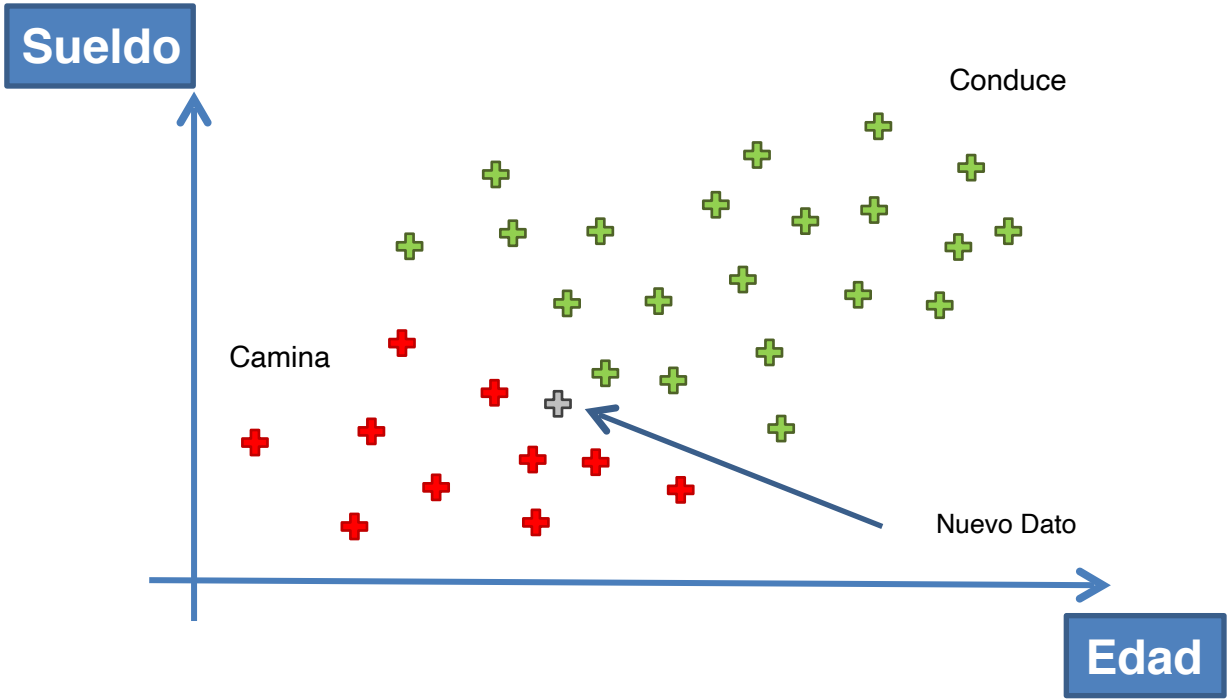
Paso 3

$$0.75 > 0.25$$

Paso 3

$$P(Walks \mid X) > P(Drives \mid X)$$

Naïve Bayes



Naïve Bayes