

# Start Again with Bayes' Theorem

---

Let's define some events:

**R**  $\equiv$  a car is red, **B**  $\equiv$  blue, **W**  $\equiv$  white, **G**  $\equiv$  green

**N**  $\equiv$  a car is new

**I**  $\equiv$  a car is imported

**F**  $\equiv$  a car is fast (a sports car!)

Bayes' Theorem gives us:

$$\begin{aligned} \text{prob}(\text{color} | \mathbf{N \ AND \ I \ AND \ F}) = \\ \text{prob}(\text{color \ AND \ N \ AND \ I \ AND \ F}) / \\ \text{prob}(\mathbf{N \ AND \ I \ AND \ F}) \end{aligned}$$