

ch78

BRAND

Brand	yes		No		All	
BMW	4	0.31	2	0.29	6	0.3
NISSAN	2	0.15	2	0.29	4	0.2
VEGA	3	0.23	1	0.14	4	0.2
AUDI	4	0.31	2	0.29	6	0.3

## BMW - Yes

$$P(\text{BMW}|\text{Yes}) \quad 4 = 0.31$$

$$P(\text{Yes}) \quad 13 = 0.65$$

$$P(\text{BMW}) \quad 6 = 0.3$$

$$P(\text{Yes}|\text{BMW}) = 0.67$$

## BMW - No

$$P(\text{BMW}|\text{No}) \quad 2 = 0.29$$

$$P(\text{No}) \quad 7 = 0.35$$

$$P(\text{BMW}) \quad 6 = 0.3$$

$$P(\text{No}|\text{BMW}) = 0.33$$

## Nissan - Yes

$$P(\text{Nissan}|\text{Yes}) \quad 2 = 0.15$$

$$P(\text{Yes}) \quad 13 = 0.65$$

$$P(\text{Nissan}) \quad 4 = 0.2$$

$$P(\text{Yes}|\text{Nissan}) = 0.50$$

## Nissan - No

$$P(\text{Nissan}|\text{No}) \quad 2 = 0.29$$

$$P(\text{No}) \quad 7 = 0.35$$

$$P(\text{Nissan}) \quad 4 = 0.2$$

$$P(\text{No}|\text{Nissan}) = 0.50$$

## vega - Yes

$$P(\text{vega}|\text{Yes}) \quad 3 = 0.23$$

$$P(\text{Yes}) \quad 13 = 0.65$$

$$P(\text{vega}) \quad 4 = 0.2$$

$$P(\text{Yes}|\text{vega}) = 0.75$$

## vega - No

$$P(\text{vega}|\text{No}) \quad 1 = 0.14$$

$$P(\text{No}) \quad 7 = 0.35$$

$$P(\text{vega}) \quad 4 = 0.2$$

$$P(\text{No}|\text{vega}) = 0.25$$

## Audi - Yes

$$P(\text{Audi}|\text{Yes}) \quad 4 = 0.31$$

$$P(\text{Yes}) \quad 13 = 0.65$$

$$P(\text{Audi}) \quad 6 = 0.3$$

$$P(\text{Yes}|\text{Audi}) = 0.67$$

## Audi - No

$$P(\text{Audi}|\text{No}) \quad 2 = 0.29$$

$$P(\text{No}) \quad 7 = 0.35$$

$$P(\text{Audi}) \quad 6 = 0.3$$

$$P(\text{No}|\text{Audi}) = 0.33$$



Color

color	Yes		No		All	
Black	8	0.62	1	0.14	9	0.45
Red	2	0.15	4	0.57	6	0.3
Blue	3	0.23	2	0.29	5	0.25

Black - Yes

$$P(\text{Black} | \text{Yes}) = \frac{8}{13} = 0.62$$

$$P(\text{Yes}) = \frac{13}{20} = 0.65$$

$$P(\text{Black}) = \frac{9}{20} = 0.45$$

$$P(\text{Yes} | \text{Black}) = \frac{8}{9} = 0.89$$

Black - No

$$P(\text{Black} | \text{No}) = \frac{1}{7} = 0.14$$

$$P(\text{No}) = \frac{7}{20} = 0.35$$

$$P(\text{Black}) = \frac{9}{20} = 0.45$$

$$P(\text{No} | \text{Black}) = \frac{1}{9} = 0.11$$

Red - Yes

$$P(\text{Red} | \text{Yes}) = \frac{2}{13} = 0.15$$

$$P(\text{Yes}) = \frac{13}{20} = 0.65$$

$$P(\text{Red}) = \frac{6}{20} = 0.3$$

$$P(\text{Yes} | \text{Red}) = \frac{2}{6} = 0.33$$

Red - No

$$P(\text{Red} | \text{No}) = \frac{4}{7} = 0.57$$

$$P(\text{No}) = \frac{7}{20} = 0.35$$

$$P(\text{Red}) = \frac{6}{20} = 0.3$$

$$P(\text{No} | \text{Red}) = \frac{4}{6} = 0.67$$

Blue - Yes

$$P(\text{Blue} | \text{Yes}) = \frac{3}{13} = 0.23$$

$$P(\text{Yes}) = \frac{13}{20} = 0.65$$

$$P(\text{Blue}) = \frac{5}{20} = 0.25$$

$$P(\text{Yes} | \text{Blue}) = \frac{3}{5} = 0.60$$

Blue - No

$$P(\text{Blue} | \text{No}) = \frac{2}{7} = 0.29$$

$$P(\text{No}) = \frac{7}{20} = 0.35$$

$$P(\text{Blue}) = \frac{5}{20} = 0.25$$

$$P(\text{No} | \text{Blue}) = \frac{2}{5} = 0.40$$

Time	Yes		No		All	
Day	7	0.54	5	0.71	12	0.6
Night	6	0.46	2	0.29	8	0.4

Day - Yes

$$P(\text{Day} | \text{Yes}) = \frac{7}{13} = 0.54$$

$$P(\text{Yes}) = \frac{13}{21} = 0.62$$

$$P(\text{Day}) = \frac{12}{20} = 0.6$$

$$P(\text{Yes} | \text{Day}) = \frac{7}{12} = 0.58$$

Day - No

$$P(\text{Day} | \text{No}) = \frac{5}{7} = 0.71$$

$$P(\text{No}) = \frac{7}{21} = 0.33$$

$$P(\text{Day}) = \frac{12}{20} = 0.6$$

$$P(\text{No} | \text{Day}) = \frac{5}{12} = 0.42$$

Night - Yes

$$P(\text{Night} | \text{Yes}) = \frac{6}{13} = 0.46$$

$$P(\text{Yes}) = \frac{13}{21} = 0.62$$

$$P(\text{Night}) = \frac{8}{20} = 0.4$$

$$P(\text{Yes} | \text{Night}) = \frac{6}{8} = 0.75$$

Night - No

$$P(\text{Night} | \text{No}) = \frac{2}{7} = 0.29$$

$$P(\text{No}) = \frac{7}{21} = 0.33$$

$$P(\text{Night}) = \frac{8}{20} = 0.4$$

$$P(\text{No} | \text{Night}) = \frac{2}{8} = 0.25$$

1. BMW Black Day

$$P(\text{Yes}) = 0.47 \quad 0.89 \quad 0.58 = \boxed{0.53 \text{ Yes}}$$

$$P(\text{No}) = 0.33 \quad 0.11 \quad 0.42 = 0.04$$

2. Vega Blue Night

$$P(\text{Yes}) = 0.75 \quad 0.6 \quad 0.75 = \boxed{0.51 \text{ Yes}}$$

$$P(\text{No}) = 0.25 \quad 0.40 \quad 0.25 = 0.07$$

3. Nissan Blue Day

$$P(\text{Yes}) = 0.50 \quad 0.60 \quad 0.58 = \boxed{0.26 \text{ Yes}}$$

$$P(\text{No}) = 0.50 \quad 0.40 \quad 0.42 = 0.24$$



4.	Audi	Red	Night	
$p(\text{Yes})$	0.67	0.33	0.75	$= 0.22 \text{ Yes}$
$p(\text{No})$	0.33	0.67	0.25	$= 0.20$

5.	Nissan	Red	Night	
$r(\text{Yes})$	0.5	0.33	0.75	$= 0.19$
$p(\text{No})$	0.5	0.67	0.25	$= 0.23 \text{ No}$