Unicorn Test

Hit rate: 100% (sensitivity)
False positives: 0,1% (1 - specificity)

Massive screening

Type 2 diabetes

Population A

Population B

Massive screening

Type 2 diabetes

Population A

Population A

Hit rate
100%

False
positives
0,1%

Prevalence
1 out of 1000

p(Disease|+)?

<25%   **25-49%**   **50%**   **51-75%**   **>75%**

1 out of 1000

Hit rate **100%**   1 out of 1000   False positives
0,1%

PPV = 50%

Hit rate 100%   **1 out of 1000**   **False positives**
                                                         0,1%

$$p(H|D) = \frac{p(H).\,p(D|H)}{p(H).\,p(D|H) + p(\bar{H}).\,p(D|\bar{H})}$$

PPV = 50%

Hit rate 100%   **1 out of 1000**   **False positives 0,1%**

$$p(H|D) = \frac{p(H) \cdot p(D|H)}{p(H) \cdot p(D|H) + p(\bar{H}) \cdot p(D|\bar{H})}$$

PPV = 50%

Hit rate 100%　　　**1 out of 1000**　　　**False positives 0,1%**

$$p(H\,|\,D) = \frac{0.1\% \cdot 100\%}{0.1\% \cdot 100\% + 99.9\% \cdot 0.1\%}$$

PPV = 50%

Hit rate **100%**   1 out of 1000   False positives
                                                        0,1%

$$\frac{\text{TRUE +}}{\text{TRUE +} \; + \; \text{FALSE +}} = \frac{\blacksquare}{\blacksquare + \blacksquare}$$

Massive screening

Type 2 diabetes

Population B

Population B

Hit rate
100%

False positives
0,1%

Prevalence
500 out of 1000

p(Disease|+)?

<25%   25-49%   50%   51-75%   >75%

Population B

Hit rate
100%

False positives

0,1%

Prevalence

500 out of 1000

p(Disease|+)?

<25%   25-49%   50%   51-75%   >75%   **(99,8%)**

500 out of 1000

Hit rate **100%**   500 out of 1000   False positives
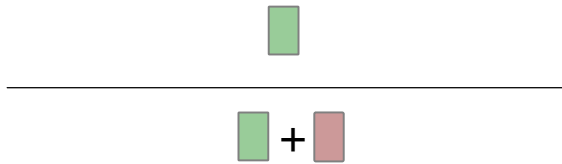**0,1%**
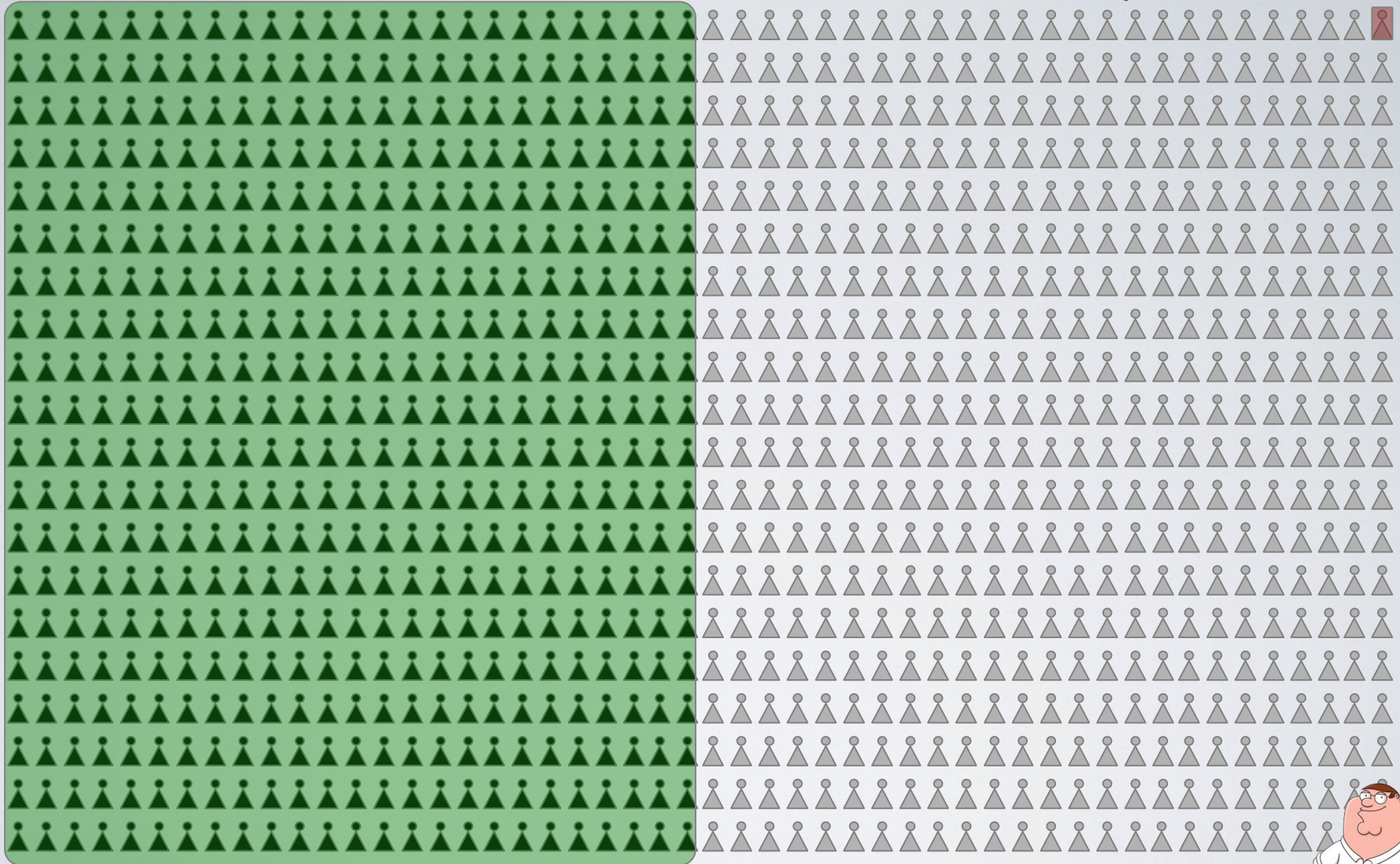
PPV = 99.8%

Hit rate **100%**　　　500 out of 1000　　　**False positives 0,1%**
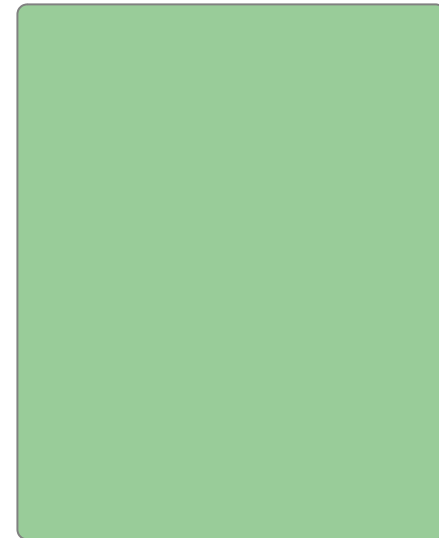
$$\frac{\text{TRUE +}}{\text{TRUE + } + \text{ FALSE +}} = \frac{\quad}{\quad + \;|}$$

Population A

Population B