

Unknown truth in the population

Decision by a statistical test

Null is false / effect



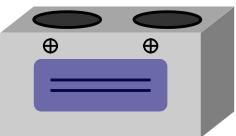
ALARM with FIRE

Power / True positive

$$1 - \beta = 80\%$$

We believe in this to be high.

Null is true / no effect



ALARM without FIRE

Type I error / False positive

$$\alpha = 5\%$$

We control this in our testing.

Reject Null / effect



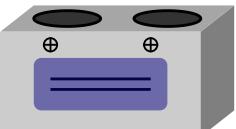
FIRE without ALARM

Type II error / False negative

$$\beta = 20\%$$

We cannot control this in our testing.

Keep Null / no effect



No FIRE, no ALARM

True negative

$$1 - \alpha = 95\%$$

We are rarely interested in.