


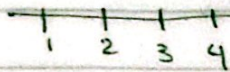
# Different types of Data

\* Quantitative

Quantity  $\leftarrow$  

numerical Data which may

Discrete



\* 8 student

\* anything can be counted

Continuous

numbers in between

5.56 m

\* anything can be measured

\* Qualitative

Descriptive data using words such as

Color  
soft/hard  
Low/high

based on observations

① Nominal scale Data  $\rightarrow$  qualitative / categorical

Labels a scale data gives

Names  
Colors  
Genders  
Order doesn't matter

② Ordinal scale Data  $\rightarrow$

excellent  
Good  
Bad

Ranking 1st  
2nd  
3rd  
order matter  
Difference ~~can~~ not be measured

③ Interval scale Data  $\rightarrow$  order matters

Difference  $\rightarrow$  measured (not ratios)

④ Ratio scale data  $\rightarrow$  order matter

Difference can be measured (ratio)





we can create hypothesis and if data give us strong evidence that hypothesis is wrong we can reject

But

when data give us information that is similar to the hypothesis, but not exactly the same

↳ we can fail to reject the hypothesis

hypothesis that there is no difference between things is called null hypothesis

[bunch of people] → little shift → fail to reject null hypothesis

Alternative hypothesis

statistical test → reject / fail to reject null hypothesis

↓  
③ thing

data

primary hypothesis

alternative hypothesis

what P-values

انه لو الشيا بين حاجتين عاين اقرار بينهم مقارنة  
ازاي هفهم انه احسن افضل من الثاني؟

How Confident ← numbers ← (P) values  
عن طريق

(A) different (B)

0 → 1

more Confident — closer P to 0





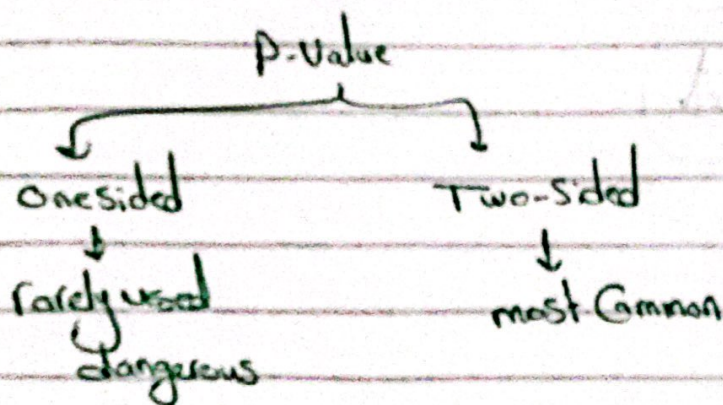
threshold

0.05

0.00001

↓  
False positive once  
every 10000 experiments

### How to Calculate it



[P value] not the Same [probability]

- ① probability of random chance
- ② probability of observing something else that is equally rare
- ③ Probability of observing something rarer or more extreme

we can calculate probabilities and p-values for something  
Continuous —————> statistical distributions

## Regression analysis

analyze relationships between variables

✓ Categorical

✓ Continuous

