

Assumptions of chi-square test

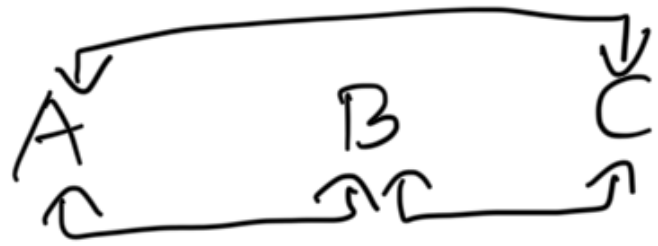
- ① random sampling
- ② mutually exclusive groups. ✓ ✗
- ③ observations are independent
samples

ANOVA : Analysis of Variance.

product vs income

... and + test

idea: apply multiple t-test



3-test.

10 categories:

$${}^{10}C_2$$

$$= \underline{45} \quad \underline{t\text{-test}}$$

ANOVA:

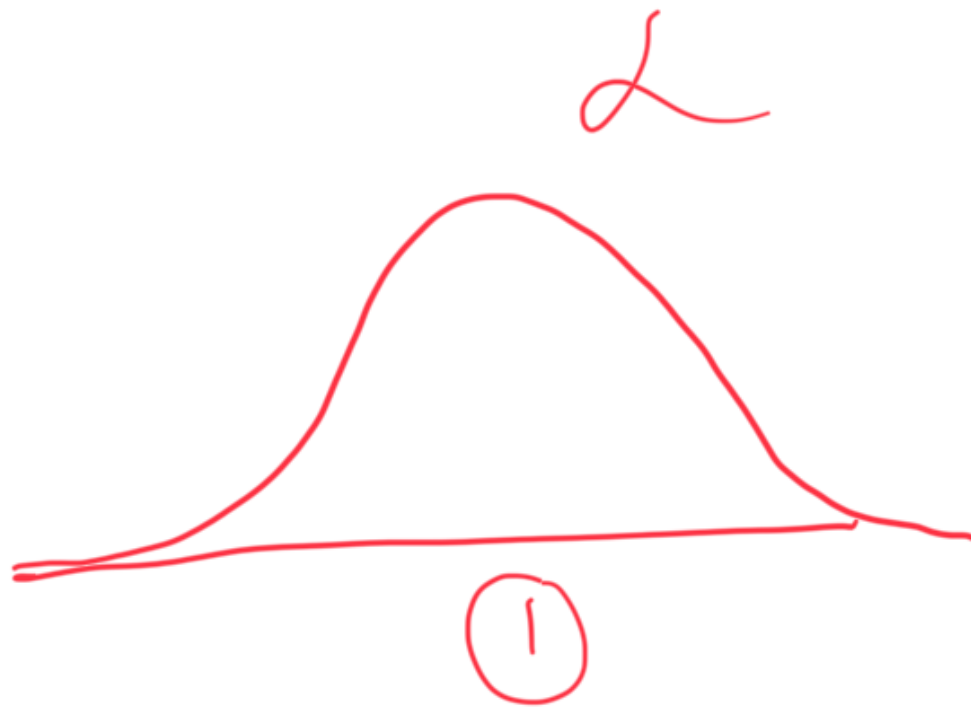
H_0 : the means of all the groups are same

H_a : at least one group has a different mean.



ANOVA: Product:

One-way ANOVA



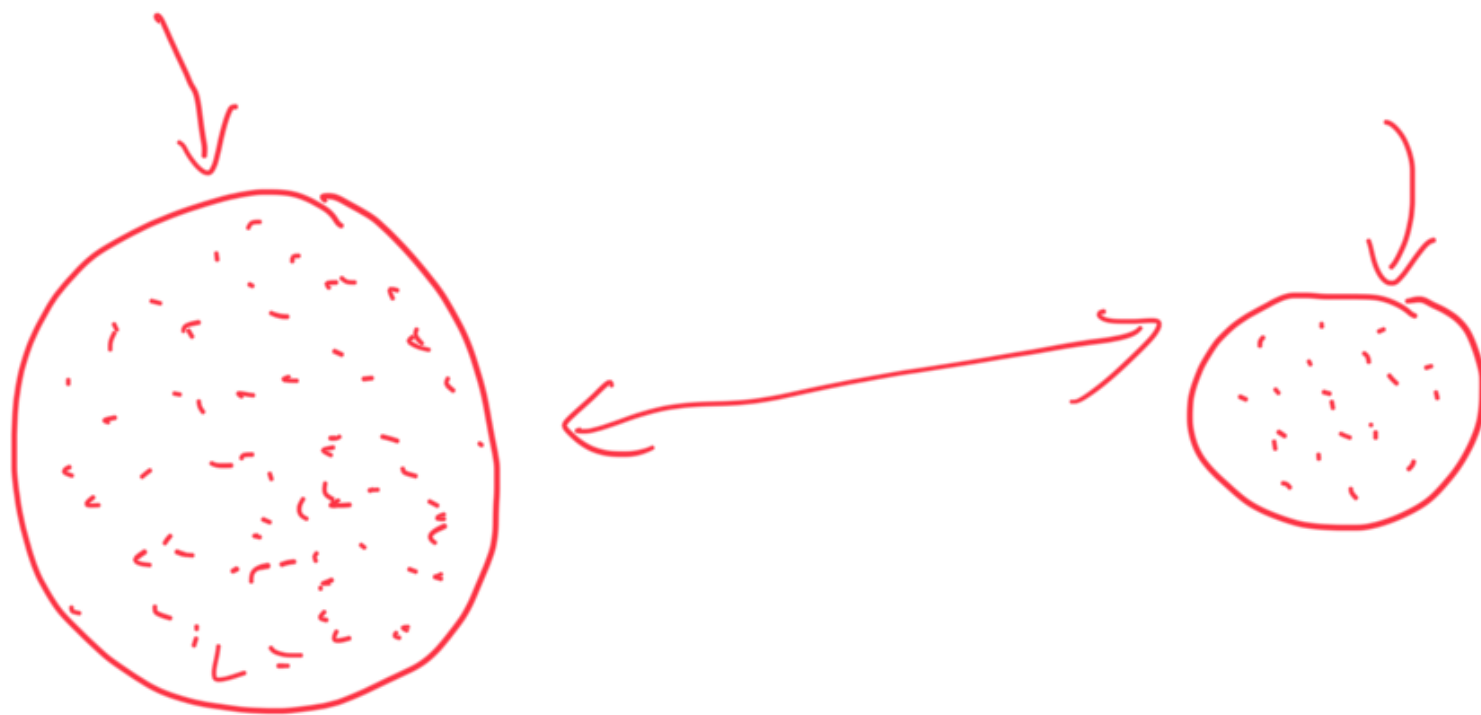
ANOVA

① variance within groups ↓

② variance between groups. ↑

F ratio : if groups are actually different

$$= \frac{\text{variance between groups}}{\text{variance within groups.}}$$



Assumptions of ANOVA

- data is gaussian ✓
- samples are independent

Kruskal - Wallis test (no normality assumption)

H_0 : no diff in the ~~mean~~ ^{median} of groups.

H_a : at least 1 is different from others.

→ robust to outliers.

