Test
- Parametric
  - distributed
- Non-parametric
  - independent of distribution

Z-test

$z < \alpha \longrightarrow H_0$

else $\longrightarrow H_a$

✓ $H_0 \longrightarrow$ Sample mean = popul. mean

$H_a \longrightarrow$ " $\neq$ "

$$z = \frac{\bar{x} - \mu}{\text{stddev of popul.}} \longrightarrow \frac{\sigma}{\sqrt{n}}$$

T-test | $x \rightarrow$ mean of sample

↳ $x_1 = x_2$

popul → mean, std.dev → X

$$t = \frac{x_1 - x_2}{std_1 + std_2}$$

3 versions of T-test :

① 9ndependent sample

↓

compares

2 groups' mean

② Paired sample

↓

Compares mean of same group

③ One-sample T-test

↓

mean of a single group against a known mean.

Chi - Square Test

↓

Categorical variables

$H_0 \rightarrow$ A, B independent

$H_a \rightarrow$ A, B dependent

$$c^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$

O = observed value

E = Expected value

ANOVA → analysis of variance

→ Compare 3+ samples

H_0 → All pairs of samples same

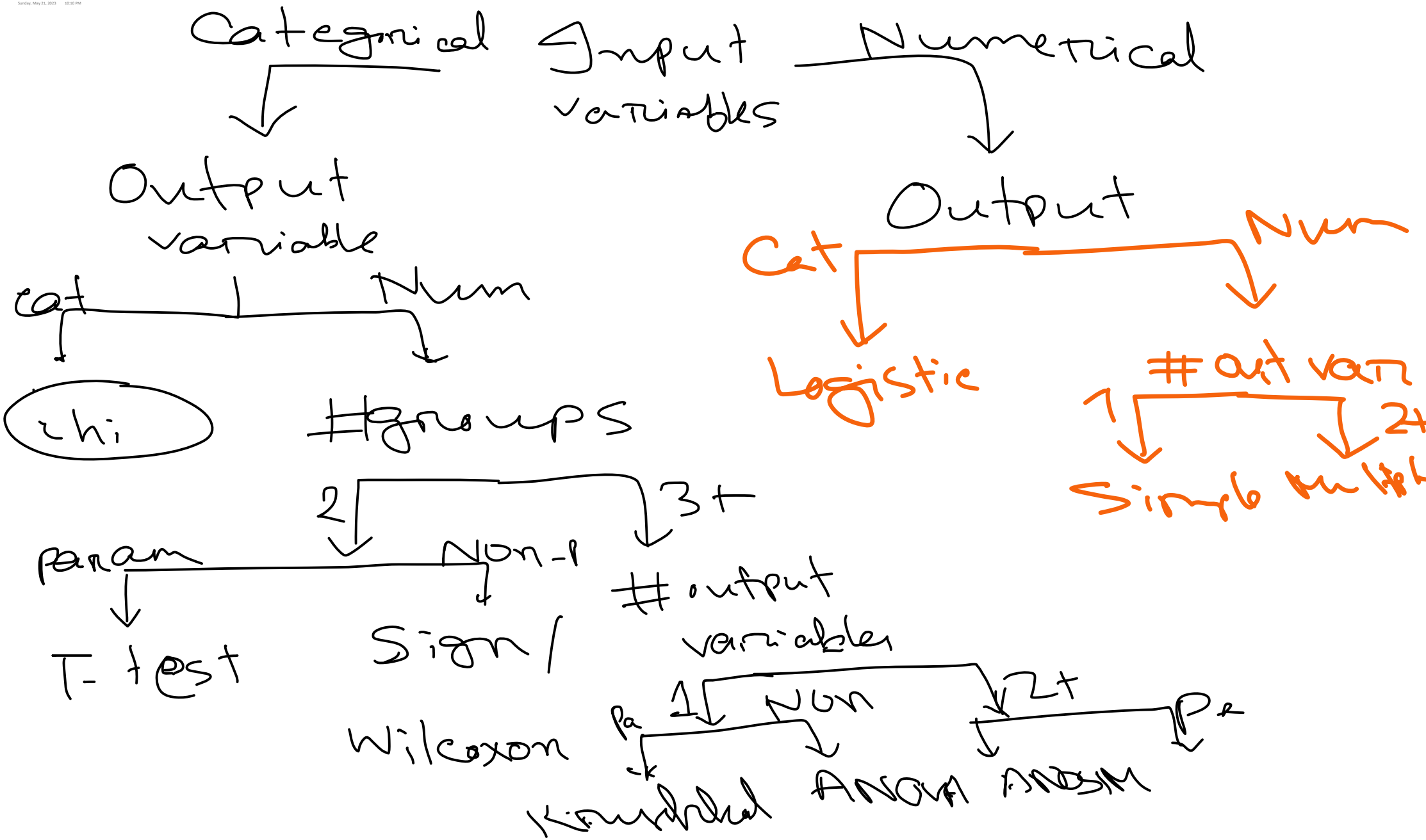
H_a → at least one pair is significantly different

$$F = \frac{SSE_1 - SSE_2}{m} \div \frac{SSE_2}{n-k}$$

SSE = residual sum of squares

m = number of restrictions

k = # indep. variables


Categorical
Input variables
Numerical
Output variable
cat
Num
chi
#groups
2
3+
param
Non-p
T-test
Sign/
Wilcoxon
#output variables
1
Non
2+
Pa
k
ANOVA
MANOM
Output
Cat
Num
Logistic
#out var
1
2+