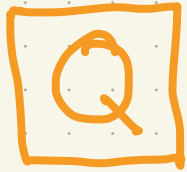


6. Model-Based Inference

Goals

- 1) Convince you Randomization Tests are good approximations of Permutation Tests.
- 2) Tinker around w/ other test statistics
- 3) Introduce Model-Based Inference as a very different philosophy w/ similar results.



How many unique ways are there to partition 74 elements into two sets of size 33 and 41?

$$\binom{74}{33} = \binom{74}{41} = 1.138 \times 10^{21}$$

Permutation Test

vs

Randomization Test

Partition	\widehat{ATE}
1	2
2	1.33
3	1.33
4	4.67
5	-1.33
6	-1.33
7	2
8	-2
9	1.33
10	1.33
11	-1.33
12	-1.33
13	2
14	-2
15	1.33
16	1.33
17	-4.67
18	-1.33
19	-1.33
20	-2

Goals

- 1) Convince you Randomization Tests are good approximations of Permutation Tests.
- 2) Tinker around w/ other test statistics
- 3) Introduce Model-Based Inference as a very different philosophy w/ similar results.

Some Test Statistics

Recall our sharp null, $H_0: Y_i(1) = Y_i(0) \forall i$

Goals

- 1) Convince you Randomization Tests are good approximations of Permutation Tests.
- 2) Tinker around w/ other test statistics
- 3) Introduce Model-Based Inference as a very different philosophy w/ similar results.

Model-based Inference

Recall the potential outcomes/nonparametric framework:

def: Model-Based Inference:

1 Statistic, Many Tests

③ Determine Hypotheses

④ Select Statistic

⑤ Derive/Approx Sampling Dist.

On the PS...

- Perform t-test on Anchoring Experiment
- Compare to randomization result.