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.

Q 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

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Some Test Statistics

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

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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.