Mr. Helter Skelter's Recipe for All-Natural Experiments

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All-natural experiments generate robust stars

- Many datasets, many spurious differences.
- Replace

$$P(\text{natural experiment} \mid \text{big change in time trend}),$$

which converges to unity with more data available, with

$$P(\text{big change in time trend} \mid \text{natural experiment}),$$

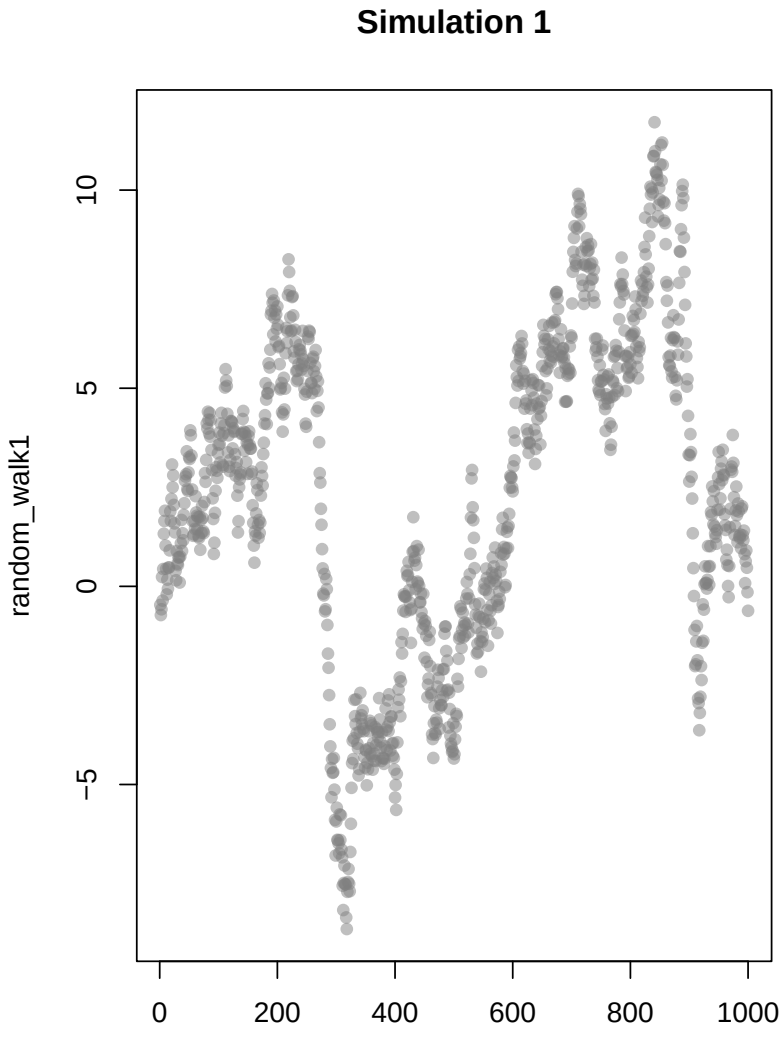
which is covered in statistical theory.

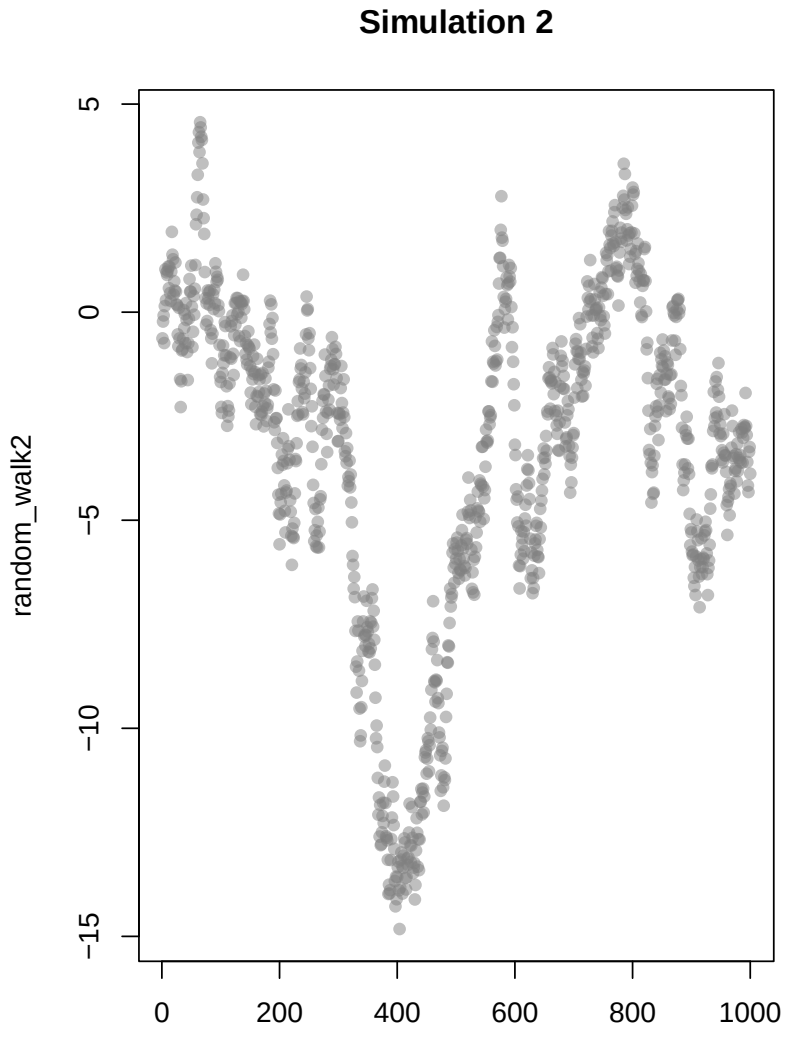
Background

Pyrrho's Lemma, Infinite Monkey Theorem

- *Cheating with Models* (AER:I 2021)
- *Methods Matter: p-Hacking and Publication Bias in Causal Analysis in Economics* (AER 2020).
- *Surprised by the Hot Hand Fallacy? A Truth in the Law of Small Numbers* (ECMA 2018)

Two Random Walks

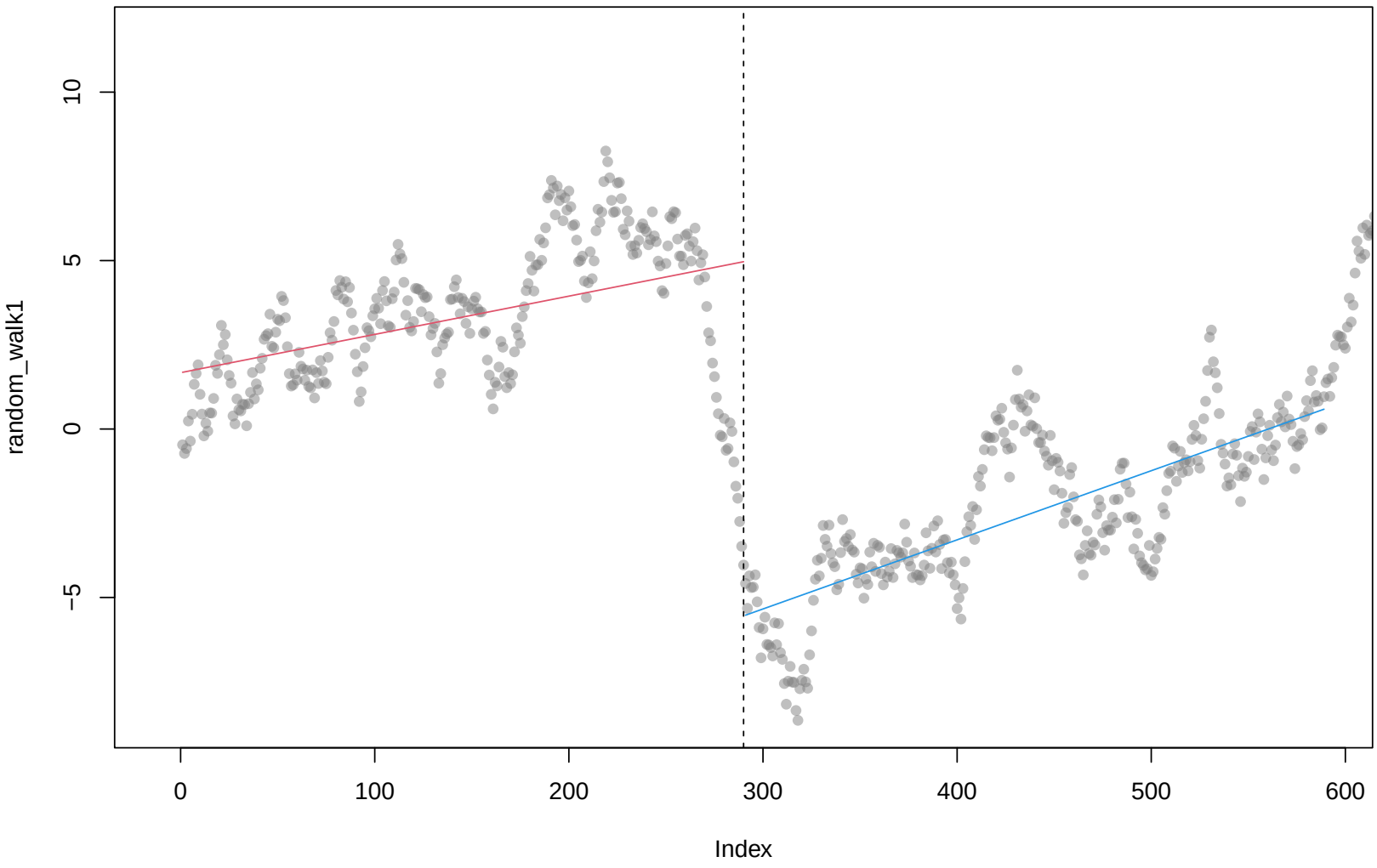




The RDD Recipe

Let the Random Walk 1 data take shape

Find a big break, find a policy treatment.



"Test'' for differences

Notice smaller windows (more causal?) have bigger effects

	(1)	(2)
Treatment	-13.169^{***} (0.569)	-9.639^{***} (0.527)
Time	0.011^{***} (0.001)	0.011^{***} (0.002)
Treatment $\times$ Time	0.009^{***} (0.002)	0.004^{*} (0.002)
Observations	589	1,000
R^2	0.771	0.447

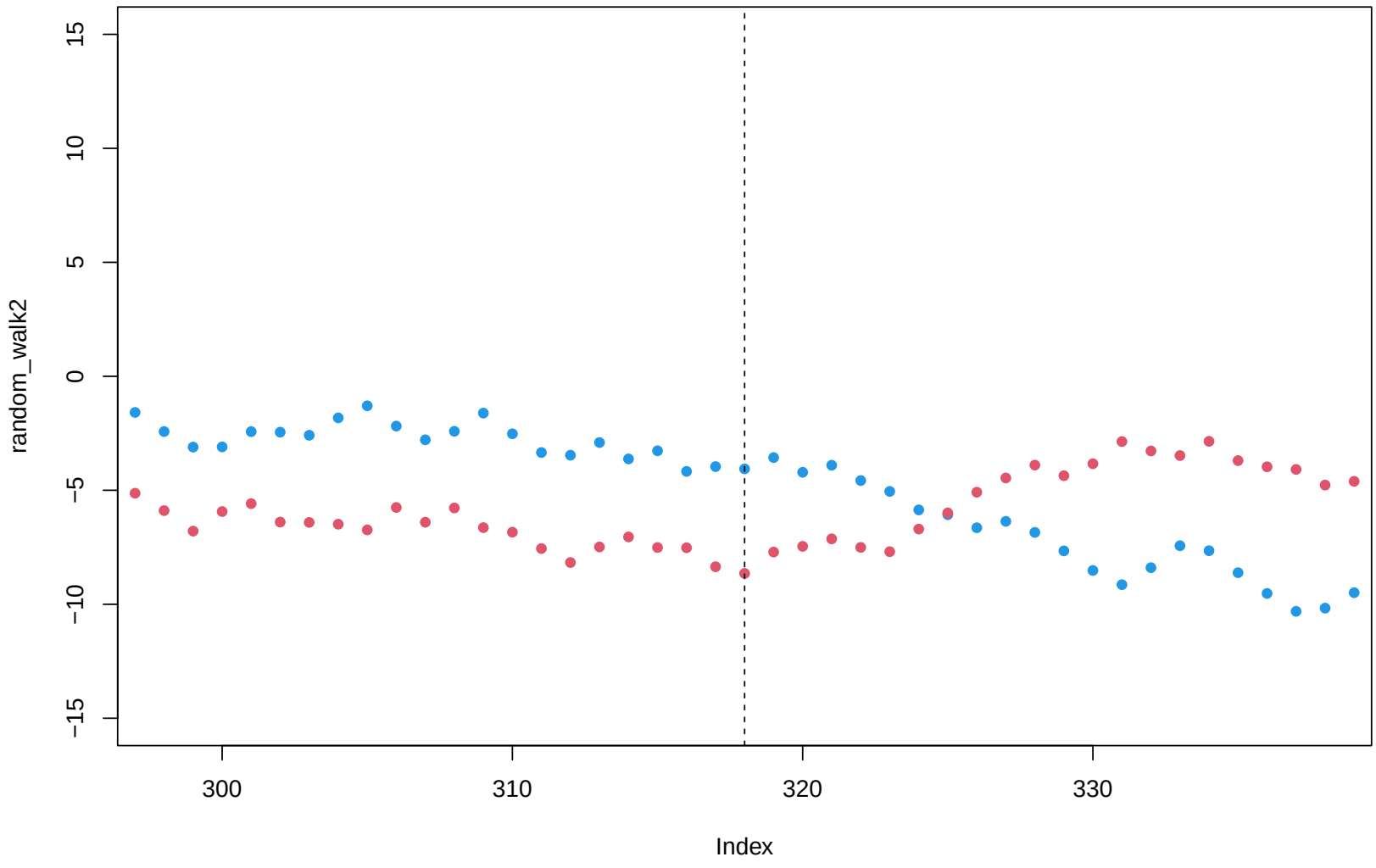
Note: *p<0.1; **p<0.05; ***p<0.01

First column uses a dataset around the discontinuity.

The DID Recipe

Find a reversal of fortune

A success story pairs well with a nice pre-trend



"Test'' for differences

Notice the fixed effects. (Control for most biases, others in the opposite direction.)

	(1)	(2)	(3)
Treatment	1.804* (0.892)	1.847*** (0.652)	5.851*** (0.828)
Fixed Effects	Time	ID	Time and ID
Observations	78	78	78
R^2	0.227	0.164	0.668
Note:			*p<0.1; **p<0.05; ***p<0.01

Conclusion

A confusing literature of mixed results

- We found a robust causal impact. (Spurious, Streak Selection)
- More work on mechanism. (Unclear what we learn from 'letting data speak')

"estimate, not testimate' ' McCloskey, (2008, p.249)