

# Causal Inference in R: Introduction

2020-07-29 (updated: 2022-10-16)

```
> who_are_we(c("lucy", "malcolm"))
```



 <https://www.lucymcgowan.com/>



 <https://www.malco.io/>

# The three practices of analysis

- 1 Describe
- 2 Predict
- 3 Explain

Normal regression estimates associations. But we want **counterfactual, causal** estimates:

What would happen if **everyone** in the study were exposed to  $x$  vs if **no one** was exposed.

For causal inference, we need to make sometimes unverifiable assumptions.

Today, we'll focus on the assumption of **no confounding**.

# Tools for causal inference

- 1 Causal diagrams
- 2 Propensity score weighting
- 3 Propensity score matching

# Other tools for causal inference

- 1 Randomized trials
- 2 G-methods & friends
- 3 Instrumental variables & friends

**RStudio Cloud:**  
<https://bit.ly/causal-r-cloud>



# Resources

**Causal Inference:** Comprehensive text on causal inference. Free online.

**The Book of Why:** Detailed, friendly intro to DAGs and causal inference. Free online.

**Mastering 'Metrics:** Friendly introduction to IV-based methods