

# Instrumental Variables

## Practice Problems

---

Edward Rubin

# IV + 2SLS

## Practice problems

1. Generate a dataset such that **(A)** treatment is correlated with the disturbance and **(B)** there a valid instrument.
2. Estimate the treatment effect using 2SLS—both through `iv_robust()` and through two stages of `lm()`.
3. What does IV recover when the treatment effect is heterogeneous? Show analytically and/or through your numerical example.
4. Set up (or at least outline) a data-generating process with compliers, always takers, never takers, and defiers. Allow  $\tau_i$  to vary.
5. How much of the information on compliers, always-takers, never-takers, and defiers can you incorporate into a DAG? Explain.