

500 Class 09

<https://thomaseLove.github.io/500-2024/>

2024-03-21

Lab 4 sketch will be posted by class time

- ① Build an appropriate Table 1.
 - Several covariates are unbalanced by exposure.
 - Rubin's Rules are not quite where we want them.
- ② Unadjusted estimate of treatment effect on outcome.
 - Should indicate a fairly substantial effect.
- ③ 1:1 matching with sensitivity or stability analysis.
 - Love plots look much improved after greedy matching.
 - 760 matched pairs, much better Rubin's Rule 1.
- ④ Weighted (with regression adjustment if you like).
 - Excellent Love plot, Rubin's Rules after ATT weighting
 - Effective Sample Sizes: 760 treated, 1206 control.
- ⑤ Compare your results, and describe any concerns.
 - Matched, weighted, unadjusted estimates pretty similar.

This is, of course, the set of analyses for your Project.

Today's OSIA Presentations

1st Reader	2nd Reader	Manuscript
Sid Dugar	Jesse Chen	Lan P et al. 2019 Utilization of echocardiography during septic shock was associated with a decreased 28-day mortality: a propensity score-matched analysis of the MIMIC-III database <i>Annals of Translational Medicine</i>
Hala Nas	Aman Pande	Wang Q et al. 2022 Adverse Events Following Limited Resection versus Stereotactic Body Radiation Therapy for Early Stage Lung Cancer <i>Annals American Thoracic Society</i>
Sriram Satyavolu	Marie Masotya	Webbe JWH et al. 2022 Outcomes in relation to early parenteral nutrition use in preterm neonates born between 30 and 33 weeks' gestation: a propensity score matched observational study <i>Arch Dis Child Fetal Neonatal Ed</i>

Rosenbaum Chapter 8

Replication, Resolution and Evidence Factors

- Replication is Not Repetition
- Repetition without Resolution
- Varied Views of a Single Object
- Evidence Factors

The lead in the blood of children example is discussed in several of Paul's books, including Rosenbaum 2010 (see our Sources page.)

- What was the most important thing?
- What was the muddiest, most confusing thing?

Replication and Replication Projects: Some Guidance

- [Replication and Replicability in Science](#) from the National Academies of Sciences, Engineering, and Medicine.
- Nosek B and Errington TM [What is replication?](#)
- Moreau D and Wiebels K [Ten simple rules for designing and conducting undergraduate replication projects](#)
- Royal Society Open Science [Replication Studies: Guidance for Authors and for Referees and Reviewers](#)
- Wikipedia on the [Replication Crisis](#)
- Ioannidis JPA 2005 [Why Most Published Research Findings are False](#)
- Peng RD and Hicks SC 2021 [Reproducible Research: A Retrospective Annual Review of Public Health](#)

Bayes Factors as a measure of strength of evidence

The Bayes factor is a ratio of two competing statistical models represented by their evidence, and is used to quantify the support for one model over the other.

See, for instance,

- Wikipedia on [Bayes factor](#)
- The [BayesFactor](#) package in R
- Stefan et al. 2019 [A tutorial on Bayes Factor Design Analysis using an informed prior](#), doi: 10.3758/s13428-018-01189-8

Reminders for Next Week

See the [Class 09 README](#)

- OSIA slides from 1st readers (Morgan, Karlo and John) by 1 PM Wednesday
- 2nd reader slides from Lydia, Miza and Chris by 7:30 AM Thursday
- Video OSIA: 1st reader slides due by class time from Aman, Ava, Chris, Jesse, Justin, Lent, Lydia, Marie, Miza, Naji, Orsino, Sam and Sara.
- We'll discuss Rosenbaum Chapter 9 (Uncertainty and Complexity)