Qualifying Exam

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Contents

Chapter 1

Prerequisites

This is a *sample* book written in **Markdown**. You can use anything that Pandoc's Markdown supports, e.g., a math equation $a^2 + b^2 = c^2$.

The **bookdown** package can be installed from CRAN or Github:

```r
install.packages("bookdown")
# or the development version
# devtools::install_github("rstudio/bookdown")
```

Remember each Rmd file contains one and only one chapter, and a chapter is defined by the first-level heading `#`.

To compile this example to PDF, you need XeLaTeX. You are recommended to install TinyTeX (which includes XeLaTeX): https://yihui.org/tinytex/.

Chapter 2

Introduction

This set of memos covers two reading lists:

- Causal Inference and Population Studies
- Social Networks

The general format of the memos will be as follows:

- Key Background

- Data / Methods

- Research Question

- Argument / contribution

- Open Questions

Chapter 3

Causal Inference and Population Studies

3.1 Foundations

Adler, Nancy E., and David H. Rehkopf. 2008

Citation Adler, Nancy E., and David H. Rehkopf. 2008. "U.S. Disparities in Health: Descriptions, Causes, and Mechanisms." Annual Review of Public Health. {-}

Key Background

- Eliminating health disparities in a fundamental goal of public health research and practice.
- Studying health disparities is challenging due the (i) definition of a disparity and (ii) ability to attribute cause from association.

Methods

- Extensive literature review of both descriptive + causal methods for identifying substantice applications and Annual Review Article — summarizes key studies related to health disparities.

Research Question

- What are the key resear has been conducted on the causes and mechanisms of health disparities in the US, and how is this research conducted?
- What are the causes of health disparities in the US and why what are the specific pathways and mechanisms driving these disparities?

Argument / contribution

- A health disparity is a broad term loosely defined. The broadest definition refers to health differences that occur with respect to gender, race or ethnicity, education, income, geographic location, or sexual orientation. Health disparities result from both biological differences and social disparities, but the latter has a greater effect and in avoidable.
- Data limitations often preclude the study of SES and health—particularly the intersection of SES and Race/Ethnicity. Further, SES indicators may have different meanings for different groups (e.g., Blacks and Hispanics have lower wealth than non-Hispanic Whites and Asians at a given income level), further complicating "controlling" for a covariate.
- Descriptive understandings are important for (i) understanding short and long-term trends in mortality disparities, (ii) sparking causal investigations of health disparities, (iii) allocating resources to reduce disparities in specific diseases, and (iv) increasing public awareness.
- Analytic approaches for establishing causality include propensity score matching, instrumental variables, time-series analysis, causal structural equation modeling, and marginal structural models.

- Identifying the specific pathways and mechanisms by which SES and race/ethnicity affect health can strengthen causal claims and help target health interventions. For example, differential exposure to stress, particularly repeated exposure, is one of multiple pathways identified in the literature.

Unanswered Questions

- How do we collect data with adequate measures of SES, demographic covariates, and health outcomes to identify understand the mechanisms and pathways?

Chapter 4

Methods

We describe our methods in this chapter.