

CHAPTER OVERVIEW

7: Probability and Risk Analysis

Introduction

The public health applications of **epidemiology**, the branch of medicine concerned with identifying patterns and potential causes of disease and health in populations, were every day in the news during the Covid-19 pandemic. From contact tracing to reproductive rate of the SARS-Cov-2 virus to numbers of hospital beds and nurses available in ICU units across the country, to the discussions and debates over how the virus is spread, no doubt you have learned much about the critical role epidemiology continues to play.

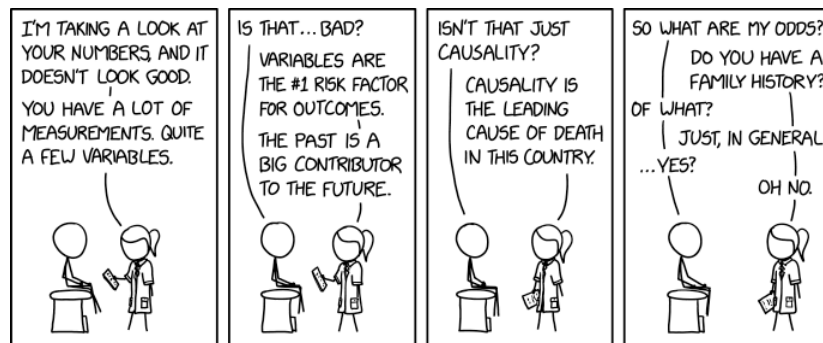


Figure 7.1: “Health data,” <https://xkcd.com/2620/>

This chapter is about probability and will introduce you to **risk analysis** (Fig. 7.1), used to “... characterize the nature and magnitude of risks to human health for various populations...”, a foundational topic in biostatistics and epidemiology. The `epiR` package will be introduced and code examples provided for **descriptive epidemiology** and again for **statistical inference** (Chapter 9).

- [7.1: Epidemiology definitions](#)
- [7.2: Epidemiology basics](#)
- [7.3: Conditional probability and evidence-based medicine](#)
- [7.4: Epidemiology relative risk and absolute risk, explained](#)
- [7.5: Odds ratio](#)
- [7.6: Confidence intervals](#)
- [7.7: Chapter 7 References and Suggested Readings](#)

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