PHS Launch! 2022: PHS2000 Roadmap

August 23 2022

PhD in Population Health Sciences
Harvard T. H. Chan School of Public Health

Overview

- Introducing the PHS2000A instructional team
- Roadmap to PHS2000A/B
- How and when to take PHS2000A/B
- PHS Launch! schedule
- Values Affirmation Exercise

Instructional Team

Instructional Team: PHS2000A

- Instructors
  - Jarvis Chen, Department of Social and Behavioral Sciences (jarvis@hsph.harvard.edu)
  - Issa Dahabreh, Department of Epidemiology (idahabreh@hsph.harvard.edu)
- Teaching Fellows
  - Matt Lee (Nutrition): mlee8@g.harvard.edu
  - Rienna Russo (Epidemiology): riennarusso@g.harvard.edu
  - Anna Siefkas (Epidemiology): alynnpalevsky@g.harvard.edu
  - Sudipta Saha (Social & Behavioral Sciences): ssaha@g.harvard.edu

Roadmap to PHS2000A/B

PHS2000A/B

PHS2000A/B is the core quantitative research methods course for the PhD in Population Health Sciences Program.

Why Quantitative Research Methods?

- we want to know what drives the health of populations
- we want to know how best to intervene to improve the population's health
- quantitative research methods are important tools we can use to answer our scientific questions
- how to translate scientific questions into hypotheses that can be tested with empirical data?

Why Quantitative Research Methods?

- When we set out to develop this course, we wanted to give you exposure to a broad range of methods from across our various fields of study. These include methods from epidemiology, sociology, psychology, econometrics, demography, statistics...
- Some of our disciplines have well established frameworks and vocabularies for thinking and talking about particular methodological concepts that are based in the history and conventions of our fields
    - sometimes different words are used for the same concept
    - sometimes there are subtle differences in definitions
    - sometimes similar language can obscure differences

The course is interdisciplinary.

- interdisciplinary faculty instructors and TFs
- interdisciplinary topics and methods
- interdisciplinary language and concepts

The course will prepare you to read through and critically assess various literatures in the population health sciences.

Some Themes for PHS2000A: populations and samples

- What is the relationship between the **population** that we wish to study and the **sample** on which we are able to collect data?
- We will look at sampling theory early on in PHS2000A
    - different sampling schemes
    - how to draw inferences about population parameters from sample data
- We will also address concerns about confounding, selection, censoring, missing data, and generalizability throughout the course

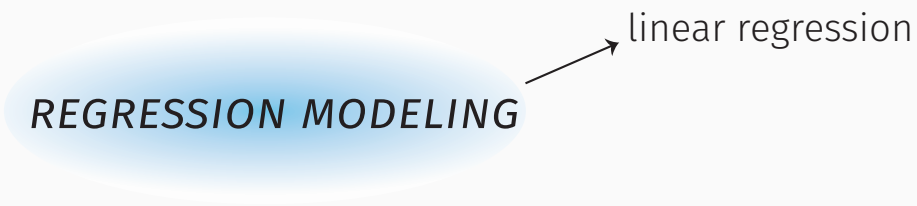
Some Themes for PHS2000A: Regression modeling as a key tool

Regression models can help us to understand complex patterns of associations. Often they help us to see patterns that would be difficult to detect by looking at the raw data alone.

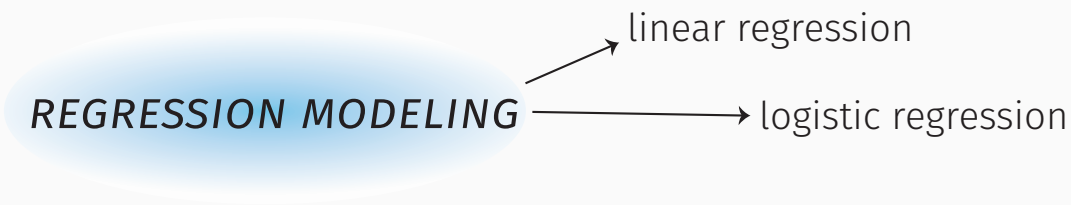
$$Y_i = \beta_0 + \beta_1 x_1 + \cdots + \beta_p x_p + \epsilon_i$$

These are powerful techniques that are often taken for granted now but weren't always so readily available to population health scientists. (Note that models for binary outcomes were not widely available until the 1960's!)

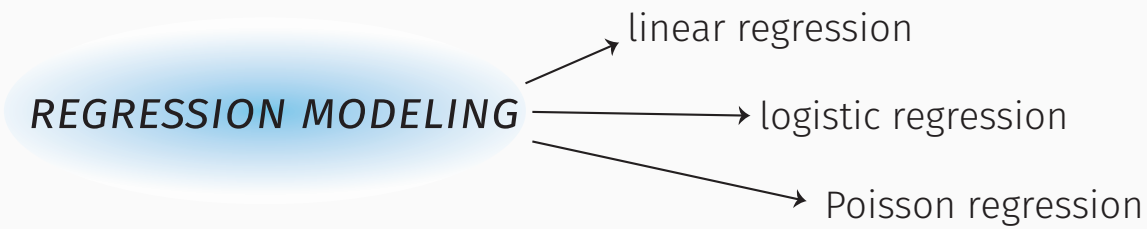
Some Themes for PHS2000A: Regression modeling as a key tool



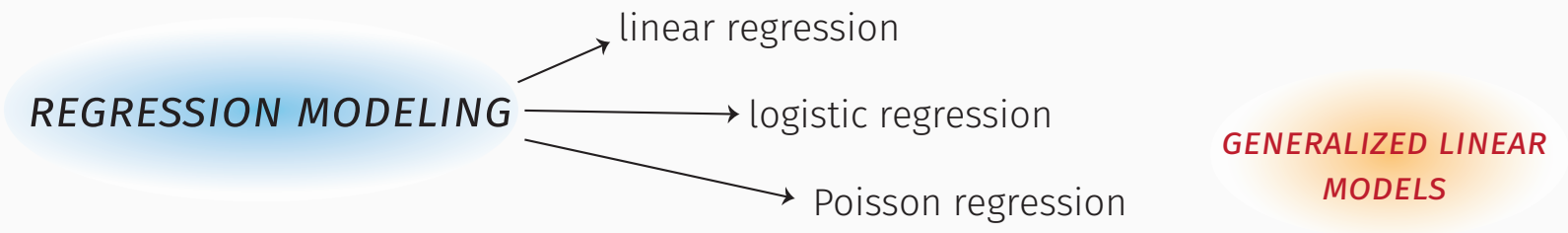
Some Themes for PHS2000A: Regression modeling as a key tool



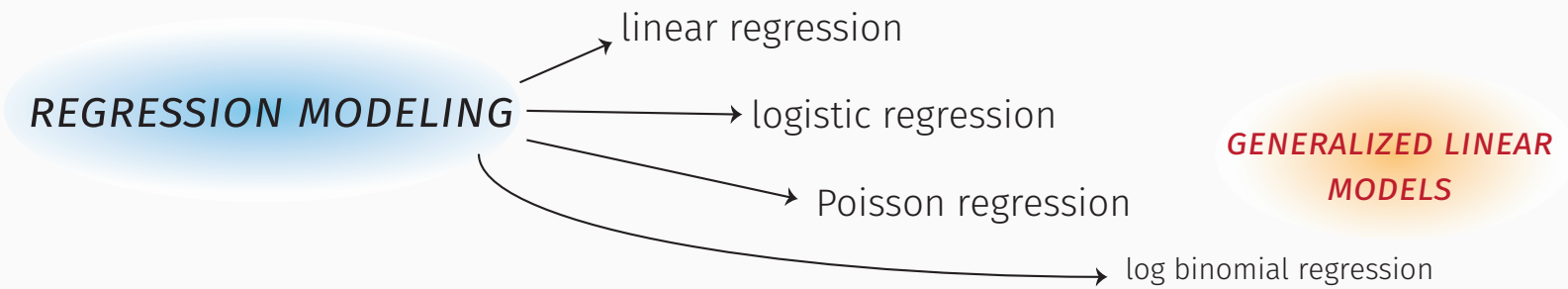
Some Themes for PHS2000A: Regression modeling as a key tool



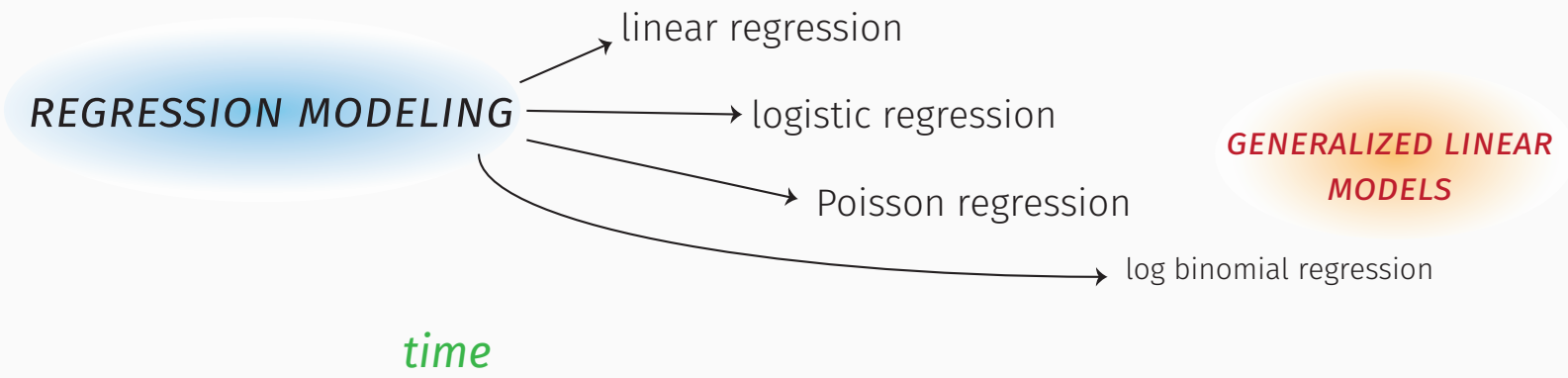
Some Themes for PHS2000A: Regression modeling as a key tool



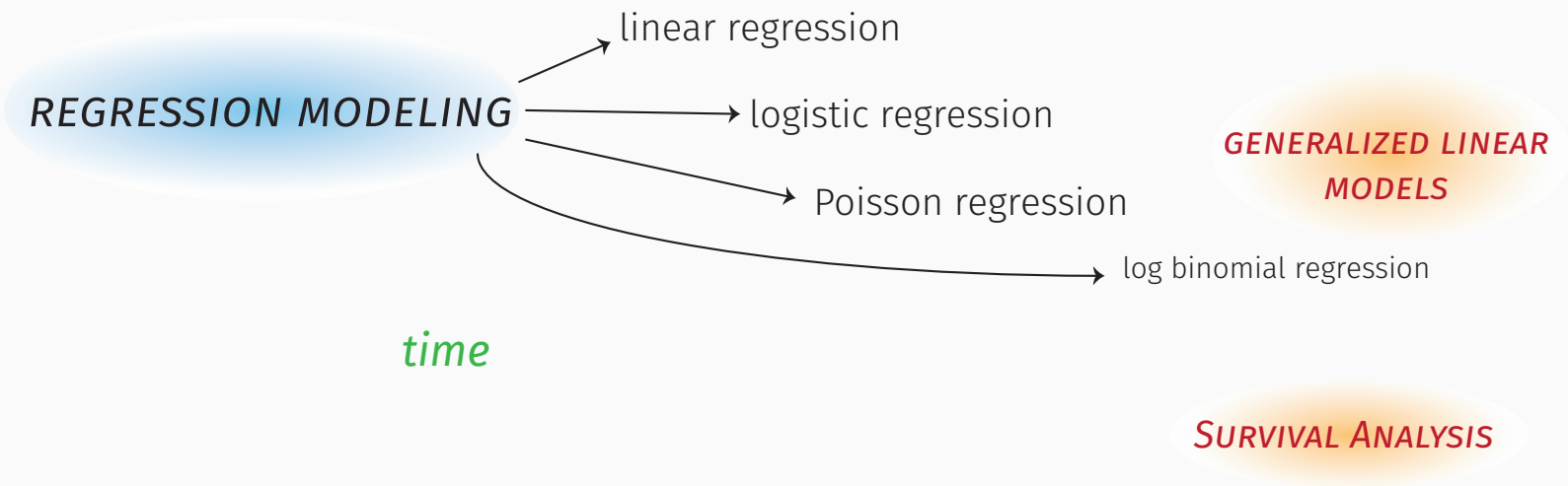
Some Themes for PHS2000A: Regression modeling as a key tool



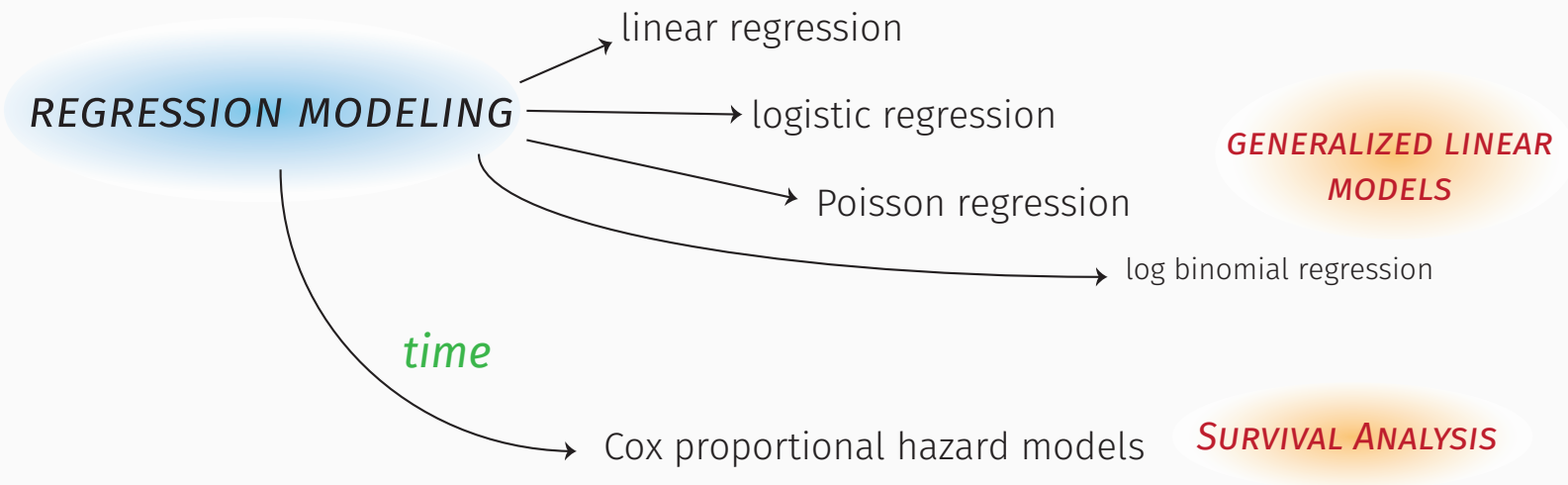
Some Themes for PHS2000A: Regression modeling as a key tool



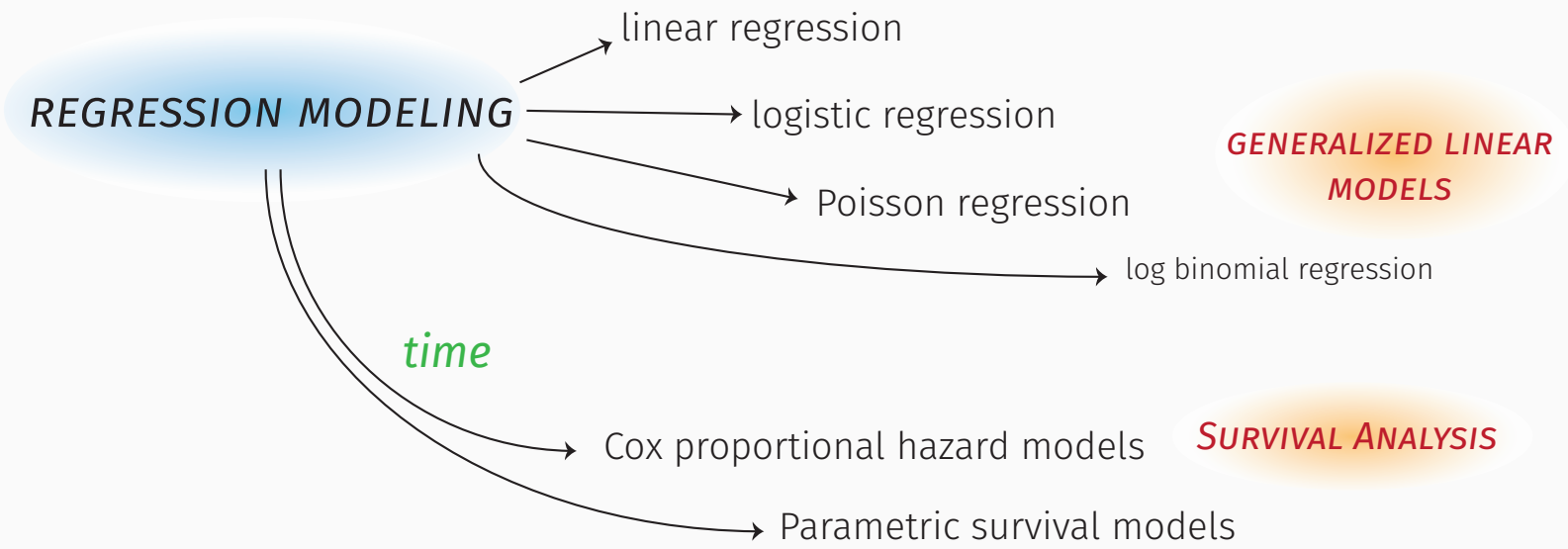
Some Themes for PHS2000A: Regression modeling as a key tool



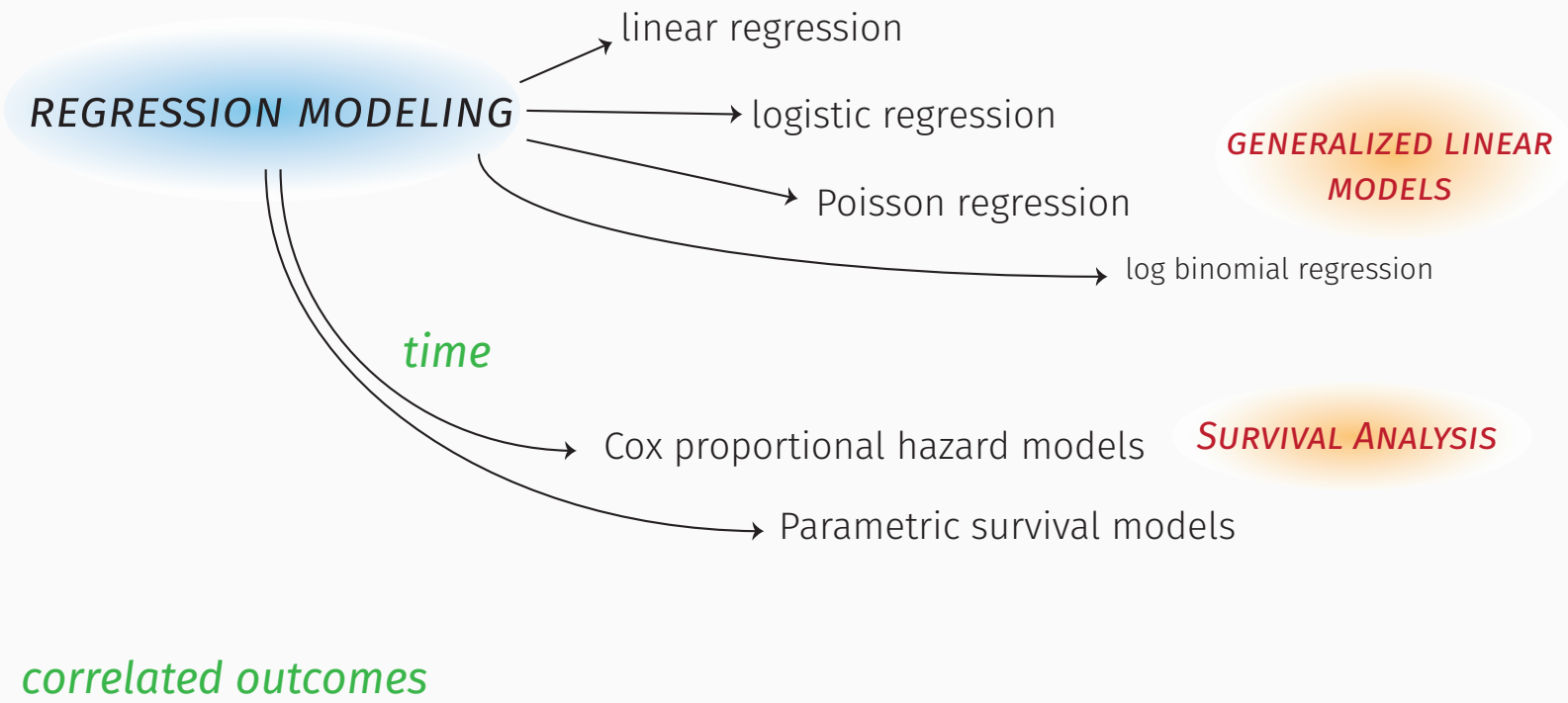
Some Themes for PHS2000A: Regression modeling as a key tool



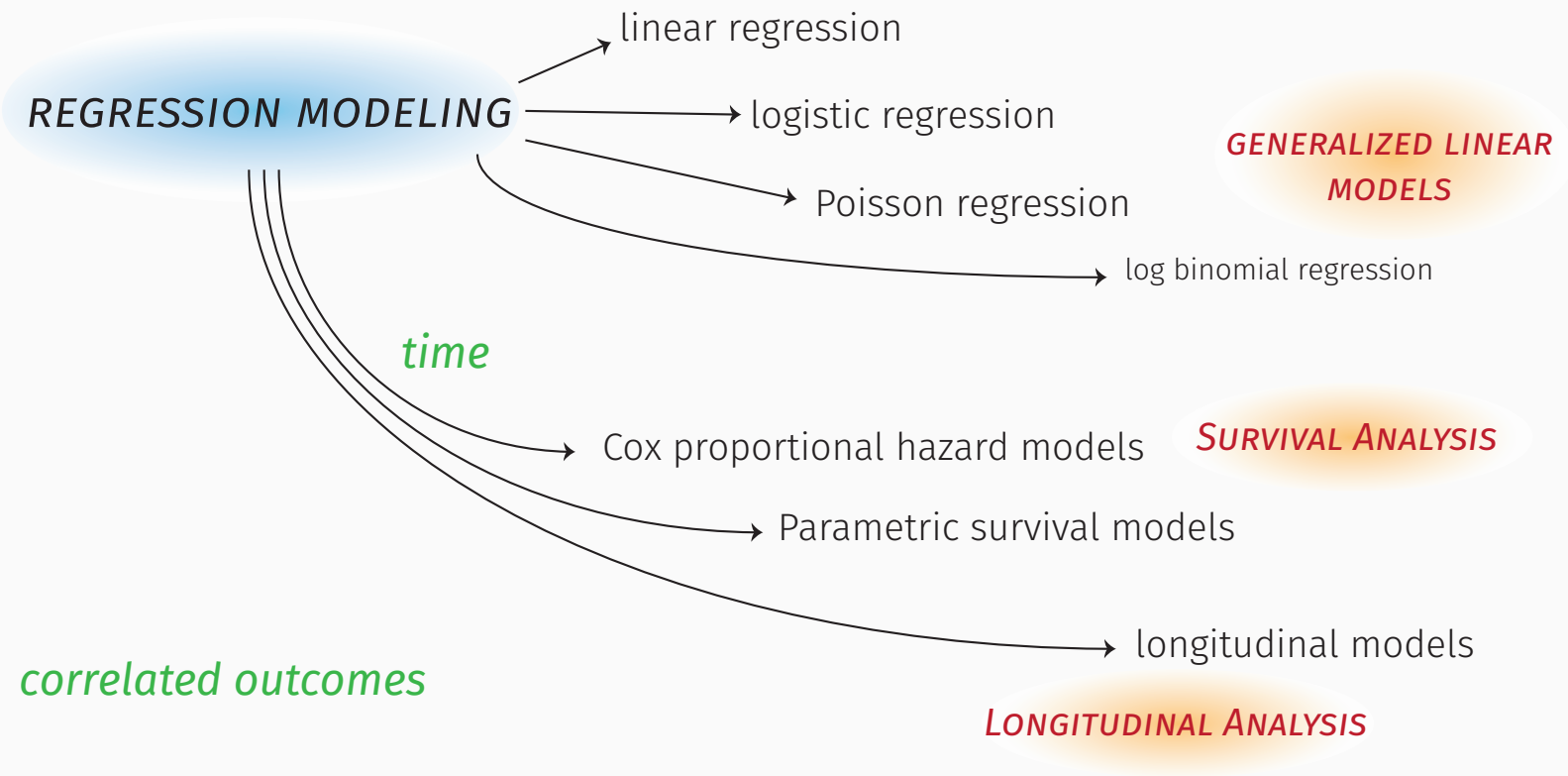
Some Themes for PHS2000A: Regression modeling as a key tool



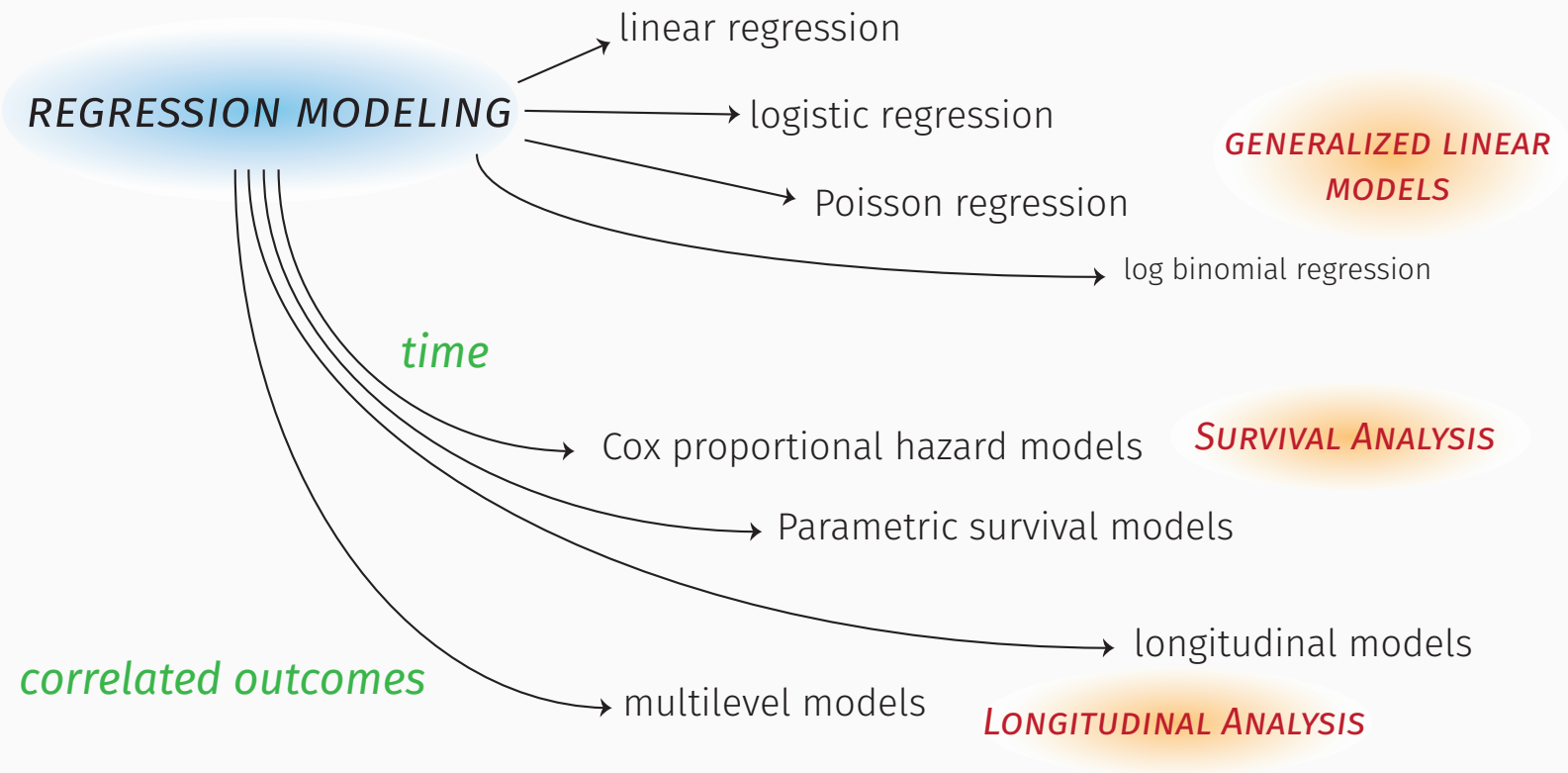
Some Themes for PHS2000A: Regression modeling as a key tool



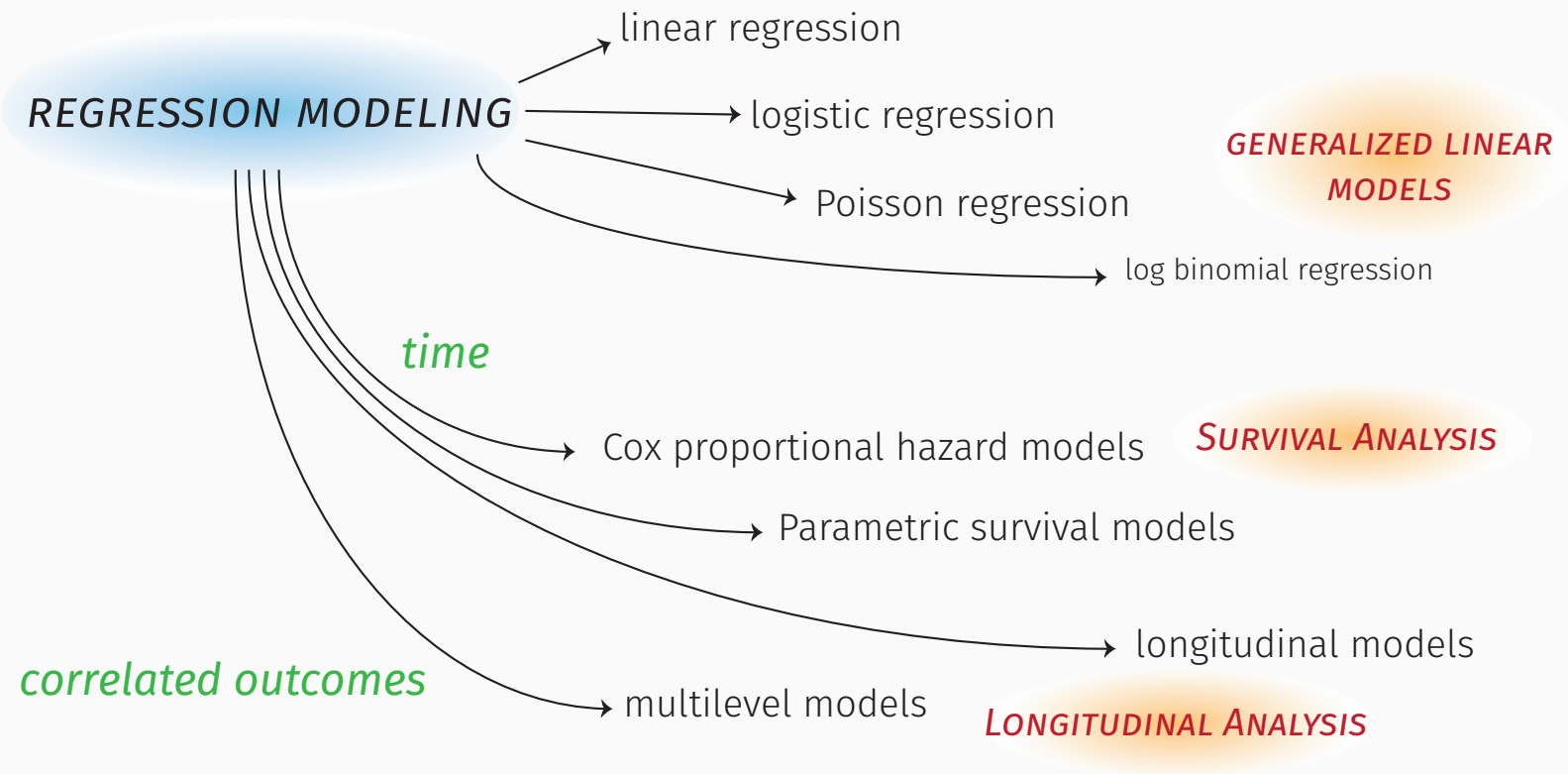
Some Themes for PHS2000A: Regression modeling as a key tool



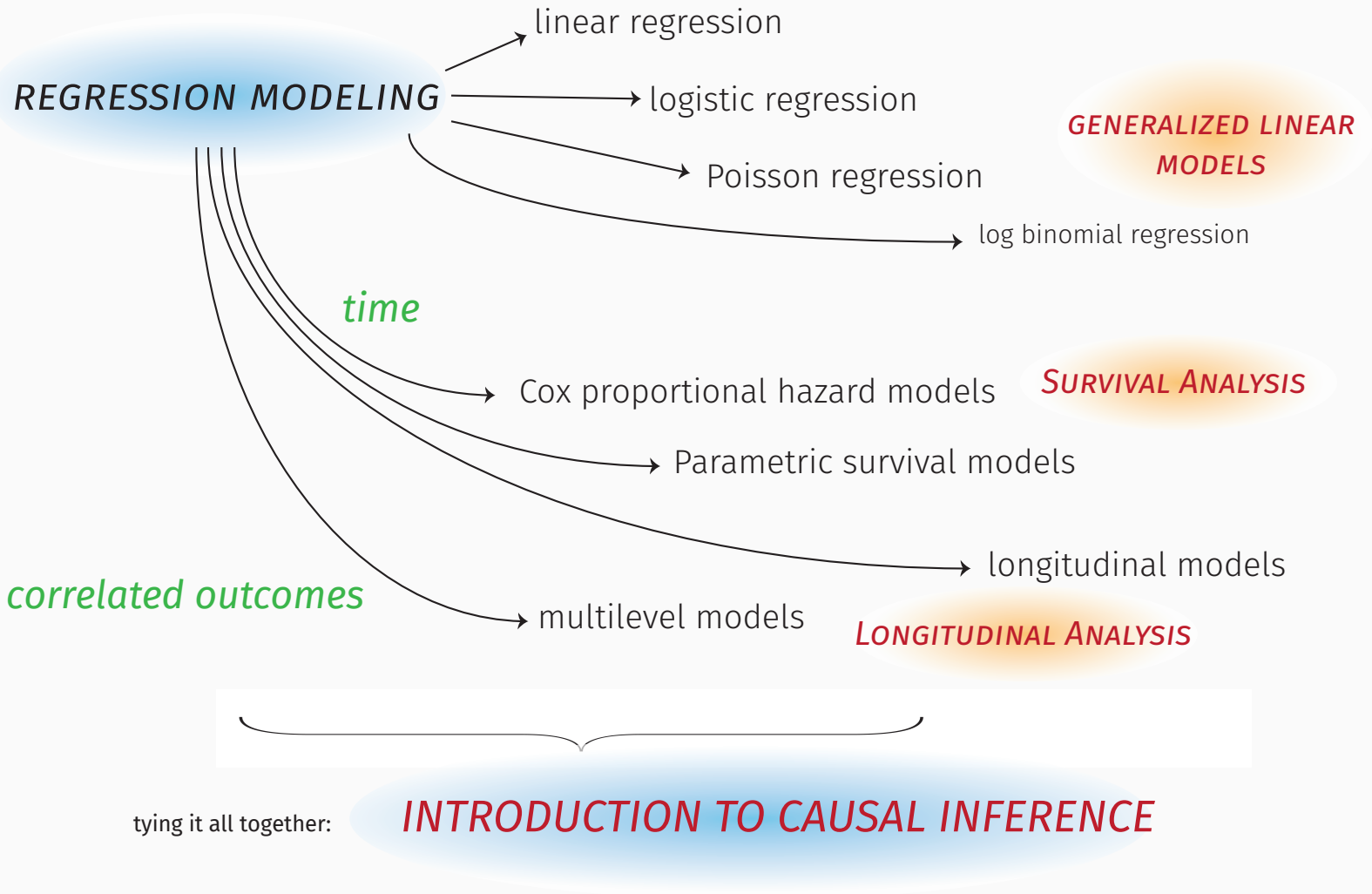
Some Themes for PHS2000A: Regression modeling as a key tool



Some Themes for PHS2000A: Regression modeling as a key tool



Some Themes for PHS2000A: Regression modeling as a key tool



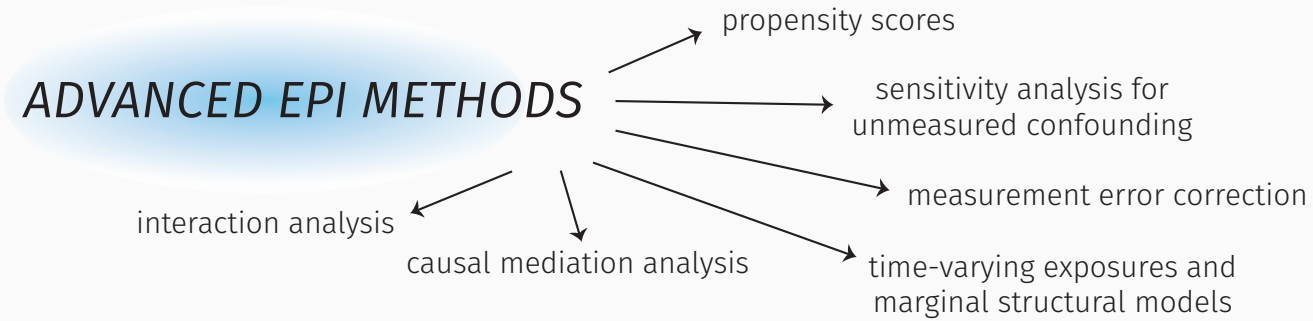
Some Themes for PHS2000A: Regression modeling as a key tool

For each type of model, we will consider

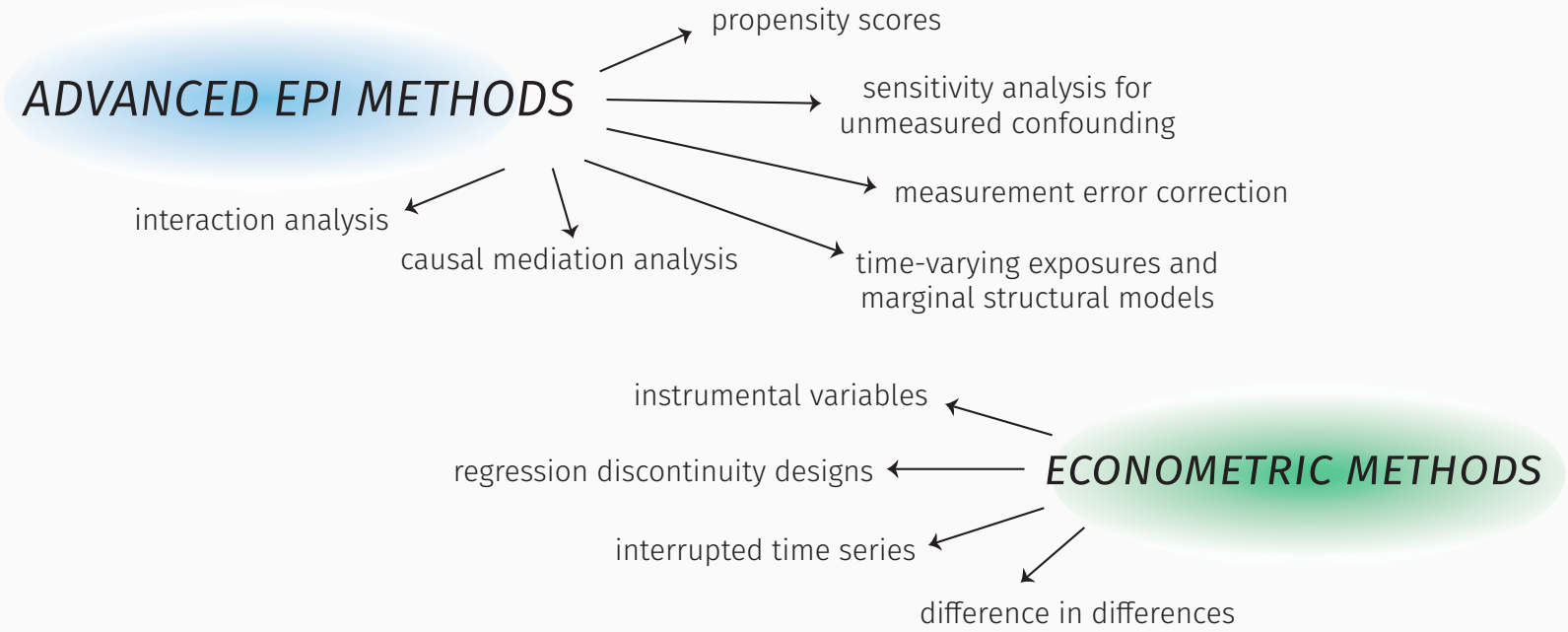
- model specification
- model estimation
- model validation
- statistical inference

Emphasis will be placed on understanding the assumptions and on interpretation.

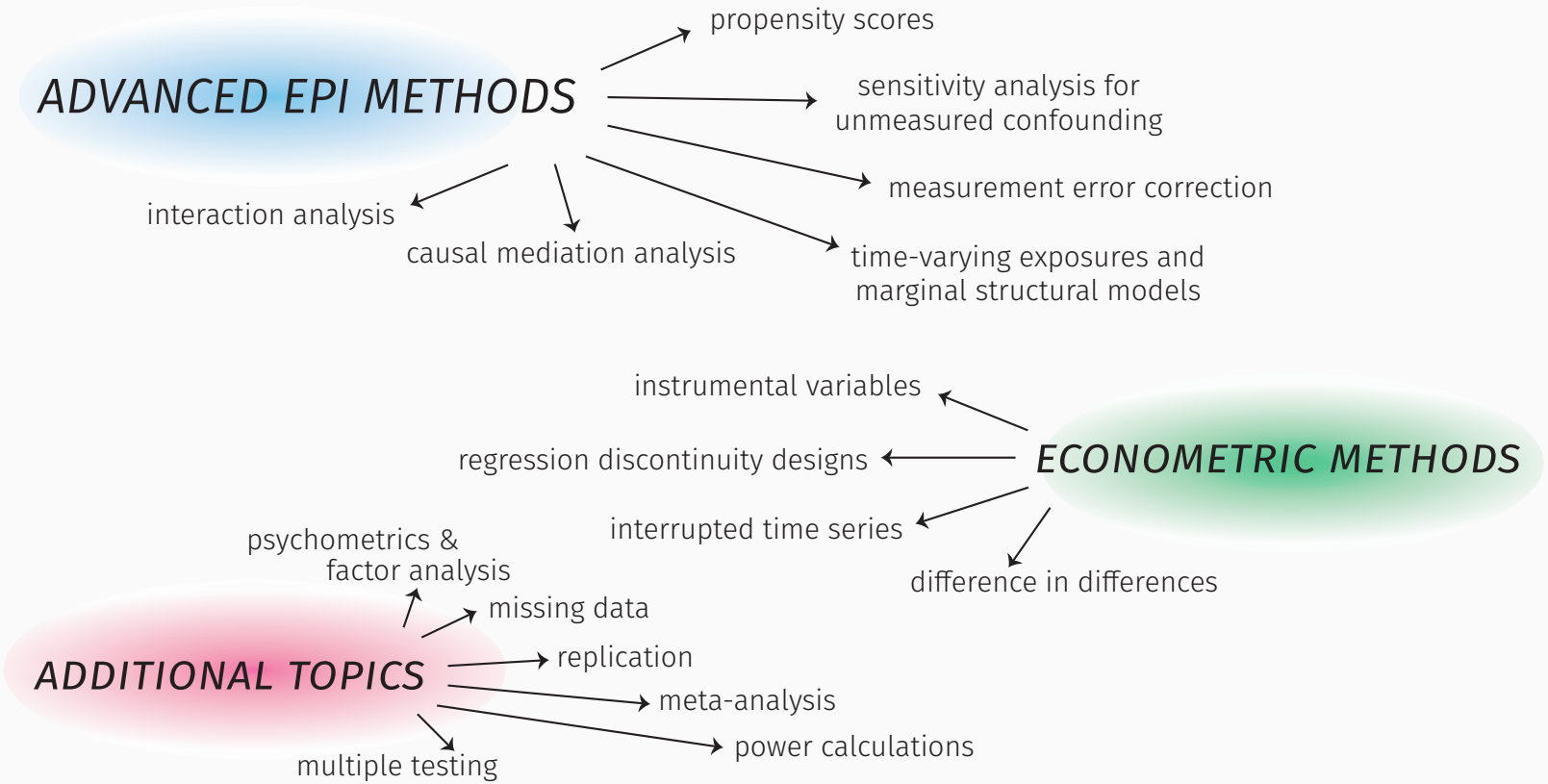
Some Themes for PHS2000B



Some Themes for PHS2000B



Some Themes for PHS2000B



How to take PHS2000A/B

About you

- PHS students bring a wealth of academic, work, and life experiences to their study
- Combined with a passion for learning and a commitment to public health, you are all positioned to make unique contributions to population health sciences
- Everyone who is here deserves to be here!

PHS2000A/B Requirements

- Completion of the three exams in PHS2000A and the two exams in PHS2000B is a requirement of the PHS program (in addition to the Field of Study qualifying exams).
- PHS2000A/B is a major time commitment
- Graduate school is the time to learn methods:
  - the integrated **population health sciences perspective** is unique to PHS2000A/B
  - in addition to learning specific methodologies, you will develop and hone your intuition about quantitative data and inference (**statistical inference** and **causal inference**)

Some considerations

- Use this time to also learn how it is you learn best
  - even after your PhD you will continue to learn methods throughout your career
  - many different styles of learning
  - learn how you learn from others, including your colleagues
  - understanding your process of learning can also lead to good teaching

Some considerations

- Graduate school is a marathon, not a sprint.
  - be open to transforming the ways in which you see and understand the world
  - deep understanding often requires multiple exposures to the same material and time for reflection and absorption.

We want to help you make an informed decision about when to take PHS2000A/B:

- Talk to your academic advisor.
- Most of you are well positioned to take PHS2000A/B this year
- Consider:
  - your prior coursework in statistics and quantitative research methods
  - your performance on the biostatistics pre-assessment (June)
  - your experience with the summer online biostatistics course
  - your experience with the PHS Summer Prep materials
  - your experience with the math reviews that are part of PHS Launch! this week

Options

- Take PHS2000A/B in 2022-2023

Options

- Defer PHS2000A/B to 2023-2024, and instead
  - Take BST201 (Fall) and BST210 (Spring), OR
  - Take BST210 (Spring) and additional statistics course in spring (e.g. at GSE).

Options

- Take PHS2000A in Fall 2022, but defer PHS2000B to Spring 2024.
  - Take an intermediate biostatistics course in Spring 2023, e.g. BST223 (Applied Survival Analysis), BST226 (Applied Longitudinal Analysis), or SBS263 (Multilevel Statistical Methods: Concept and Application)

Options

- all of these options are valid options
- Please note that waiting to take PHS2000A/B until next year does not have to slow down your progress in the program!
- You can usually prioritize fulfilling other field of study requirements in the first year, take PHS2000A/B next year, and still take your PQEI exam on schedule
- Your academic advisor and your field of study administrator(s) can help you figure out your courses if you choose to take this approach

Options

- In rare situations, students who have already taken coursework that covers the material in PHS2000A may opt to request a waiver.
  - Students must take the three exams and achieve a B+ or better on each (compared with the B average required for students taking the course)
  - Students will have access to course materials and all recorded lectures and labs and are welcome to sit in on relevant parts of the course if they need to brush up.
  - Students who do not achieve B+ on the exams must take the course for credit the following year.
- Please refer to the PHS Handbook for details on the waiver application process.

Options

- All of these options are valid choices. The most important thing is that you feel comfortable with your learning process and how you are using your time.
- You are welcome to meet with Jarvis Chen (jarvis@hsph.harvard.edu) during office hours on Friday this week if you would like to discuss.

Resources & Supports

- Office Hours
  - Instructor Office Hours
  - TF Office Hours
- Form your own study groups
  - We encourage collaboration on problem sets
- Tutoring
  - groups of two
  - email Matthew (boccuzzi@hsph.harvard.edu) and cc Jarvis (jarvis@hsph.harvard.edu) to get set up with a tutor

We look forward to working with you!