Epi Parameter informal drop-in session

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Overview

- Best practices paper (10 min)
- Epiverse's Epi-Training Kit (5 min)

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Best practices paper

PLOS COMPUTATIONAL BIOLOGY

OPEN ACCESS

PERSPECTIVE

Best practices for estimating and reporting epidemiological delay distributions of infectious diseases

Kelly Charniga, Sang Woo Park, Andrei R. Akhmetzhanov, Anne Cori, Jonathan Dushoff, Sebastian Funk, Katelyn M. Gostic, Natalie M. Linton, Adrian Lison, Christopher E. Overton, Juliet R. C. Pulliam, Thomas Ward, Simon Cauchemez, Sam Abbott

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The long paper

medRxiv
THE PREPRINT SERVER FOR HEALTH SCIENCES

CSH Cold Spring Harbor Laboratory BMJ Yale

1 Estimating epidemiological delay distributions for
2 infectious diseases

3 Sang Woo Park[1], Andrei R. Akhmetzhanov[2], Kelly Charniga[3], Anne
4 Cori[4], Nicholas G. Davies[5, 6], Jonathan Dushoff[7, 8, 9], Sebastian
5 Funk[5,6], Katie Gostic[10], Bryan Grenfell[1], Natalie M. Linton[11], Marc
6 Lipsitch[10,12], Adrian Lison[13], Christopher E. Overton[14,15,16], Thomas
7 Ward[15], and Sam Abbott[6,7]

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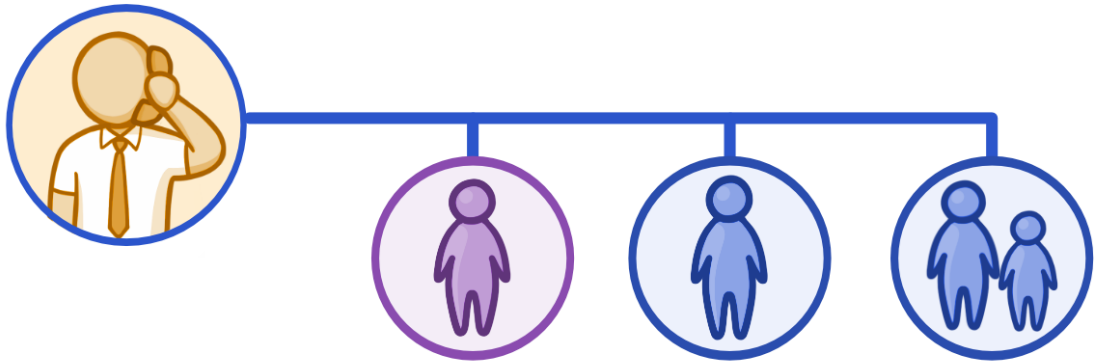
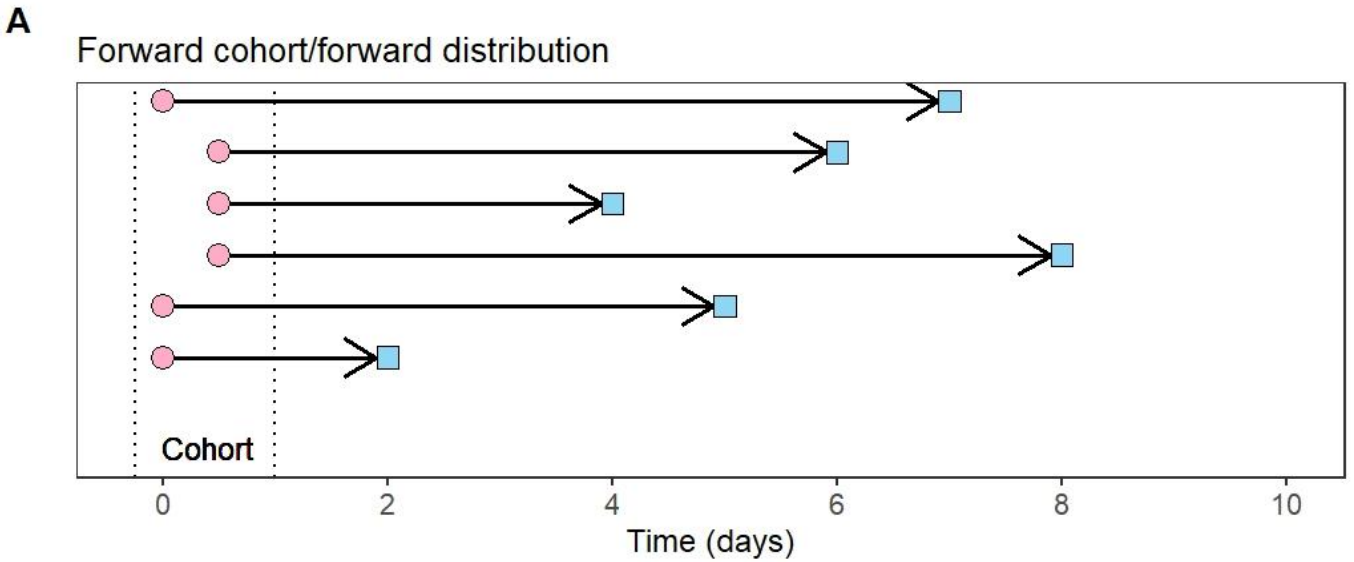
Data

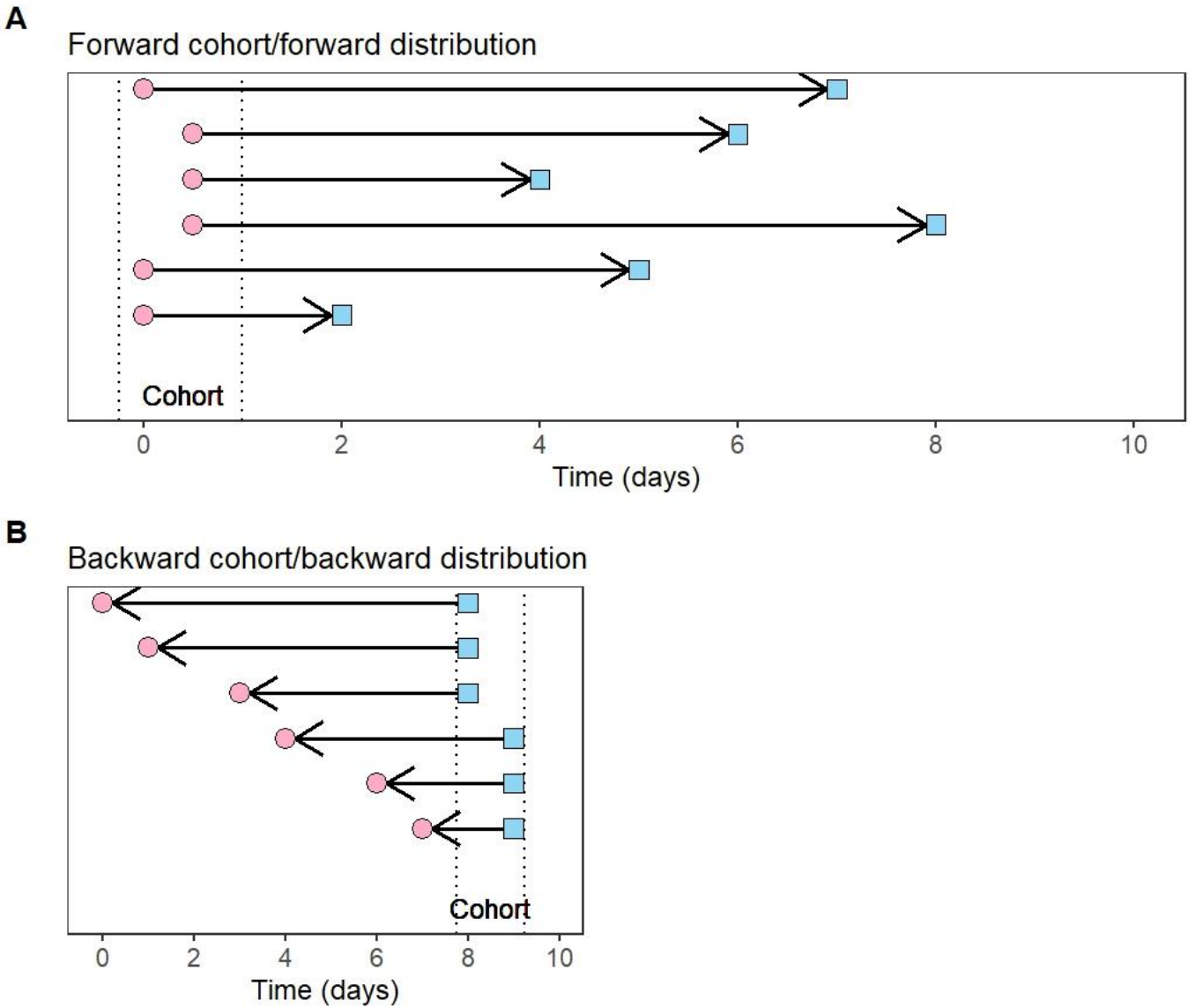
- Contact tracing
- Prospective cohort studies
- Household studies
- Etc.



Measuring delays



Measuring delays



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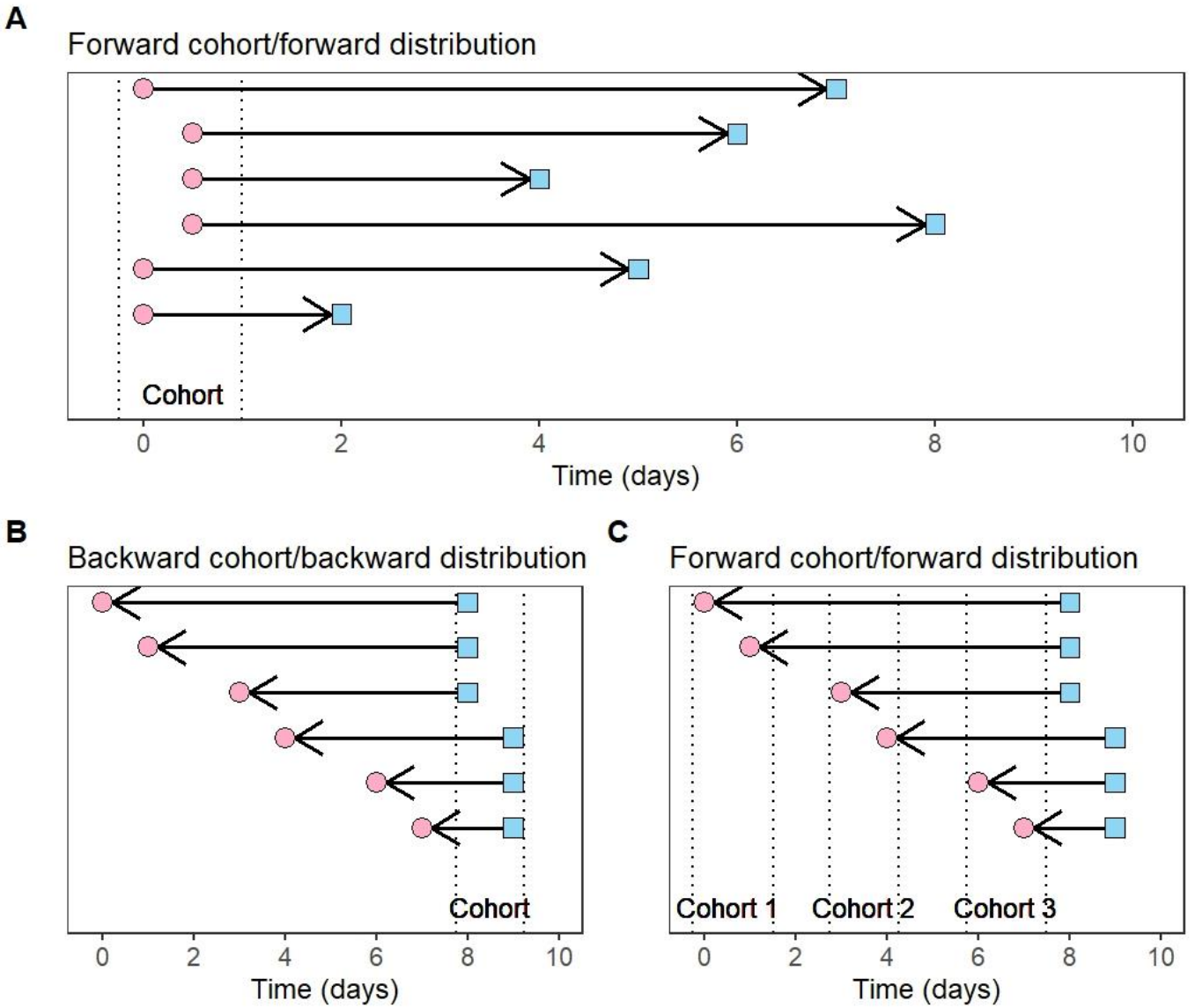

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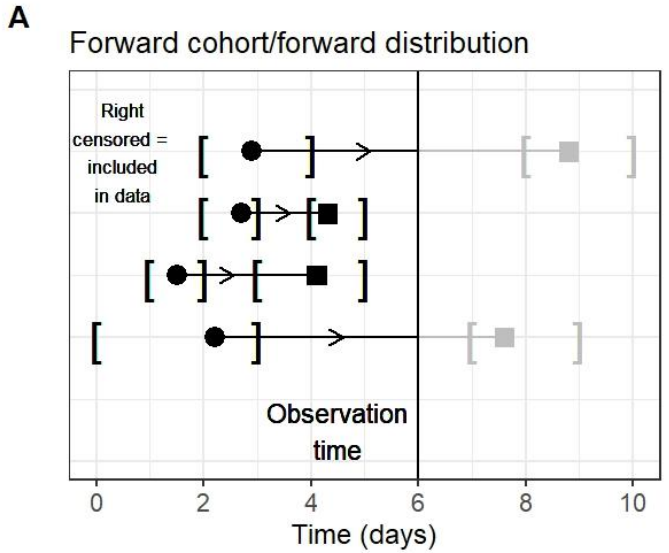
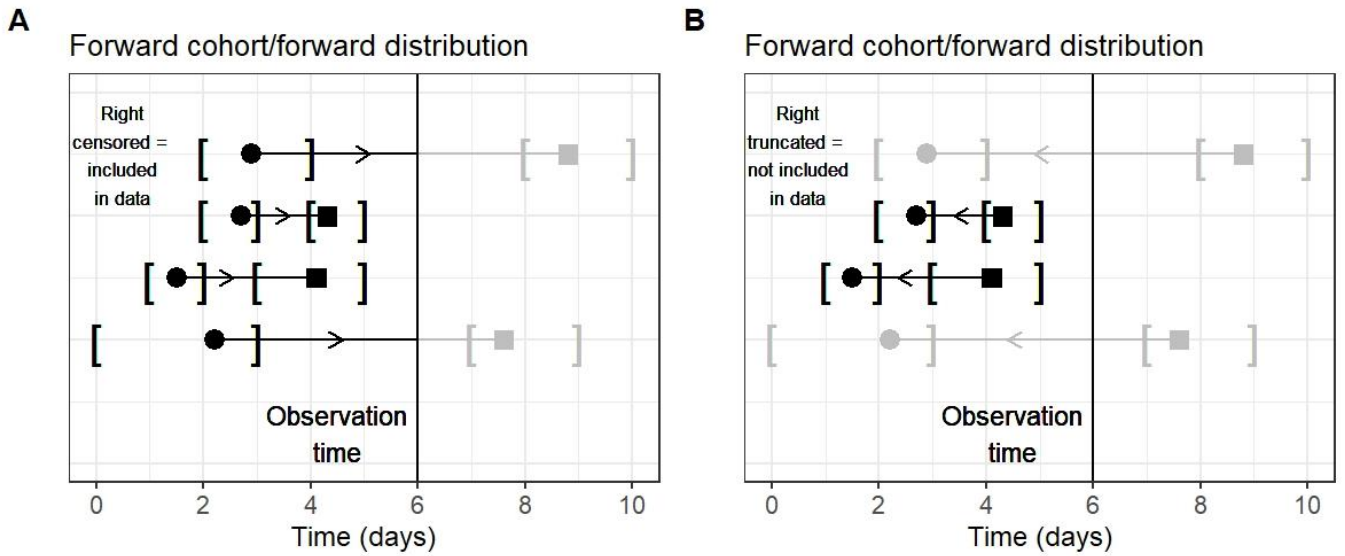
Biases

- Censoring (right, left, interval)



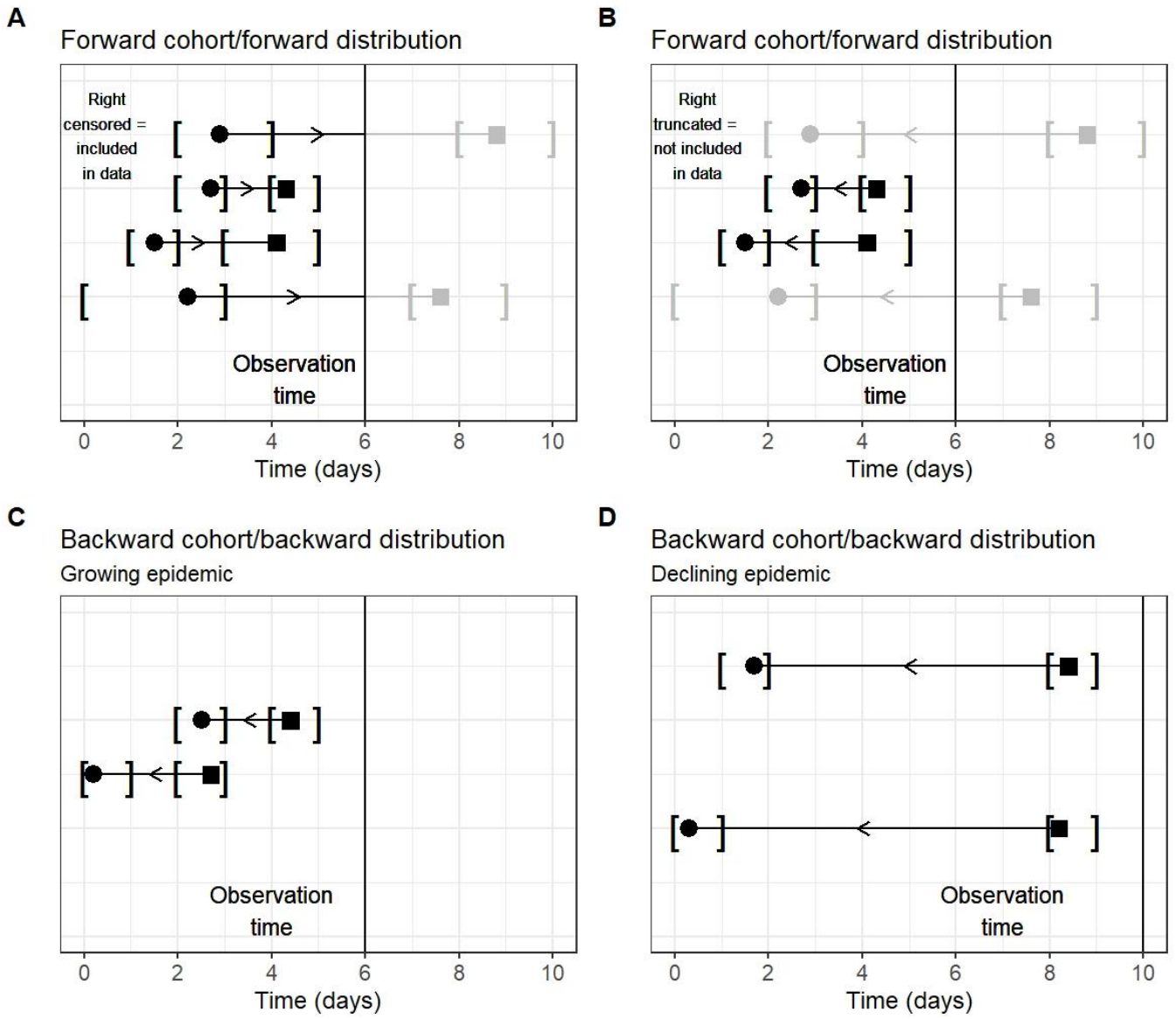
Biases

- Censoring (right, left, interval)
- Right truncation



Biases

- Censoring (right, left, interval)
- Right truncation
- Dynamical bias



Adjusting for biases

- Why important
- How to do it

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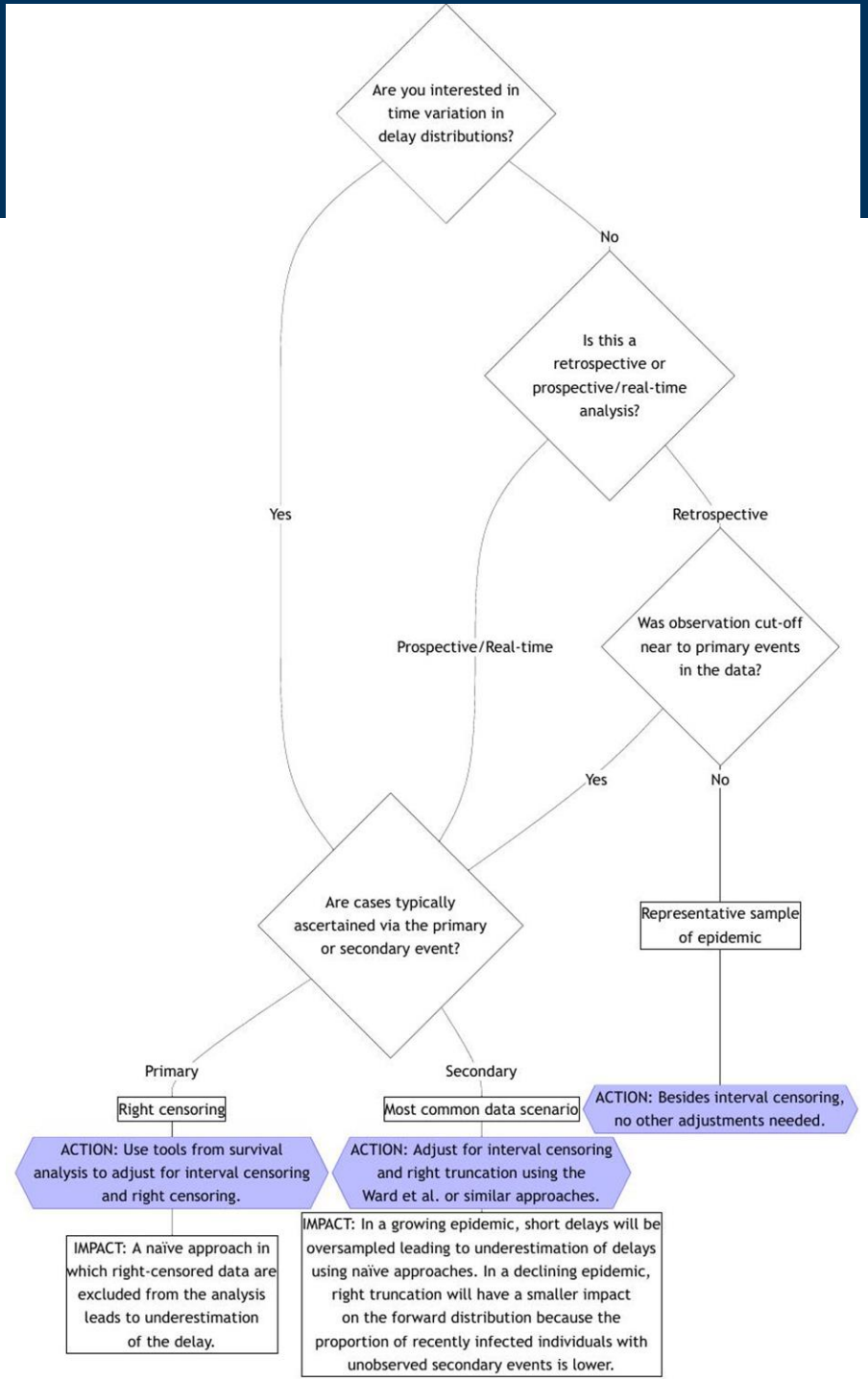
Decision tree



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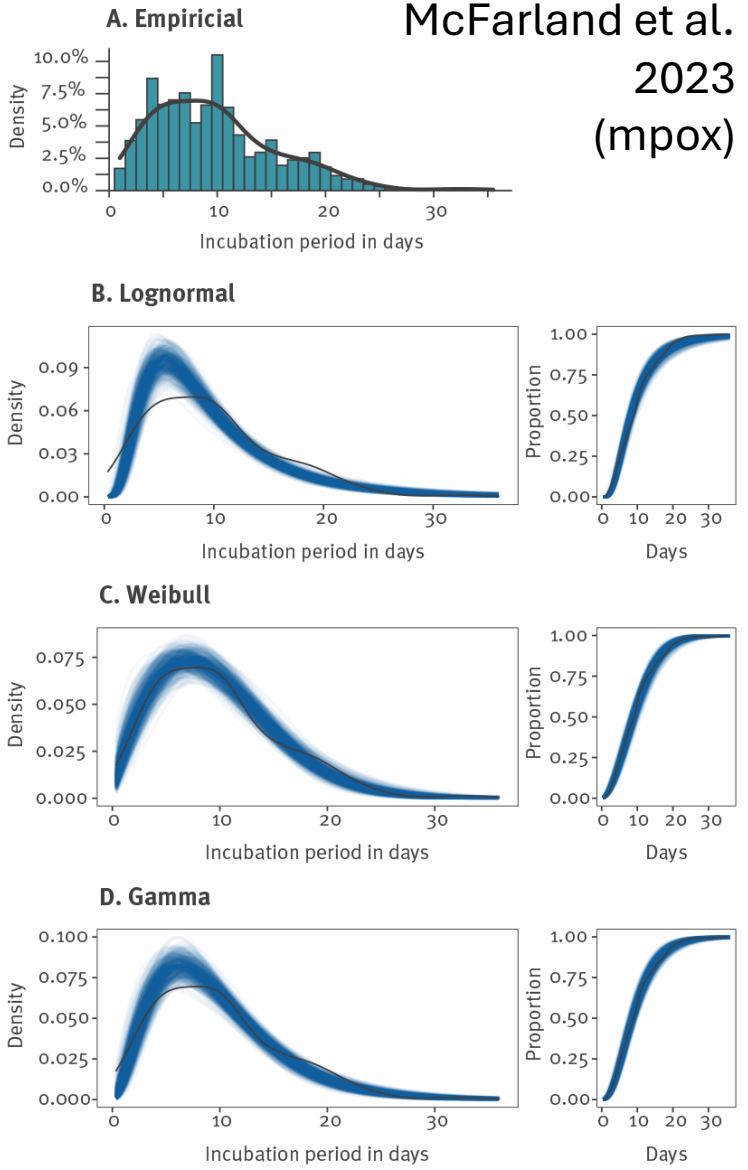
Checklist (estimation)

- ✓ Adjust for biases
- ✓ Compare multiple probability distributions
- ✓ Correctly convert parameters
- ✓ Add subgroups or stratify
- ✓ Check model diagnostics

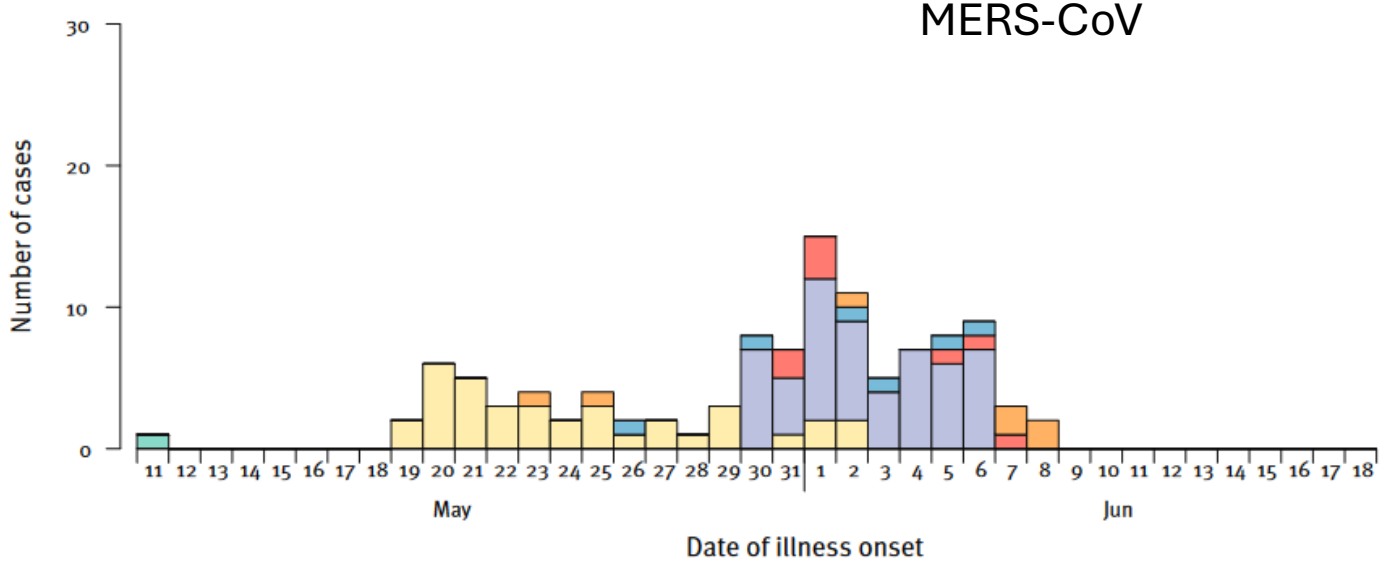
McFarland et al. 2023 (mpox)



Checklist (reporting)

- ✓ Central tendency, variability, and quantiles
- ✓ Parameters
- ✓ Uncertainty
- ✓ Characteristics about study sample
- ✓ Epidemic curve
- ✓ Control measures
- ✓ Data and code

Cowling et al. 2015
MERS-CoV



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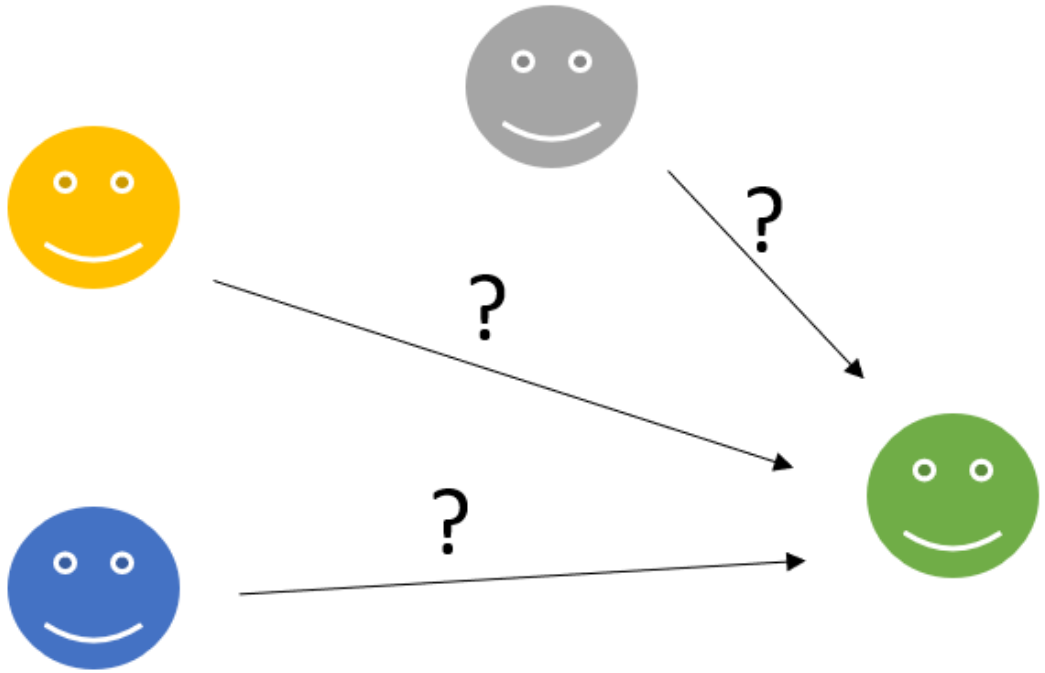
Analyzing incubation period and serial interval data

- Check for multiple possible exposures/infectors
- Check negative serial intervals



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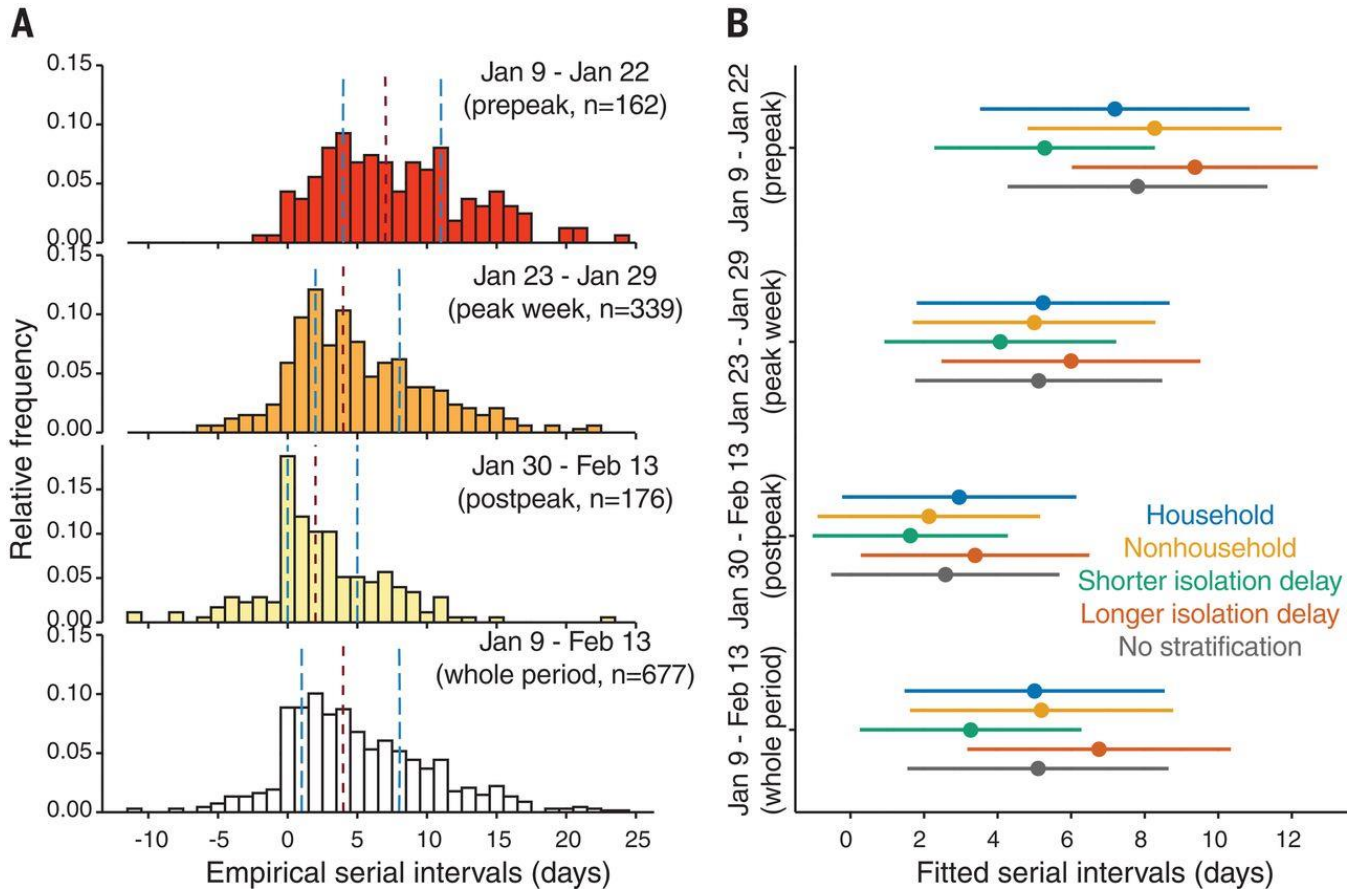
Other considerations

- How to best use new data
- Choice of prior distributions
- Meta-analyses
- Time-varying delays

Ali et al. 2020
COVID-19



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Limitations

- Review not systematic
- Vector-borne diseases

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Conclusions

- Adjusting for bias is important!
- Our recommendations can help:
  - Improve the robustness and utility of delay estimates
  - Provide guidance for the evaluation of reported estimates for downstream use

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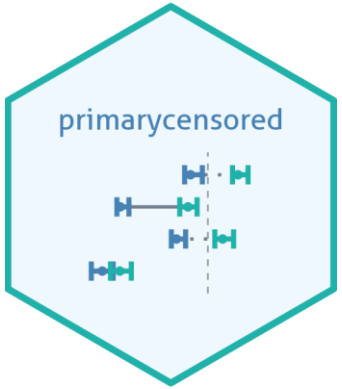
Discussion/future work

- R packages
  - epidist
  - primarycensored
- Identifying barriers to adoption of best practices



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Acknowledgements

- Sang Woo (Daniel) Park
- Sam Abbott
- Andrei Akhmetzhanov
- Simon Cauchemez
- Anne Cori
- Jonathan Dushoff
- Sebastian Funk
- Katie Gostic
- Natalie Linton
- Adrian Lison
- Chris Overton
- Juliet Pulliam

Sam

Sang Woo

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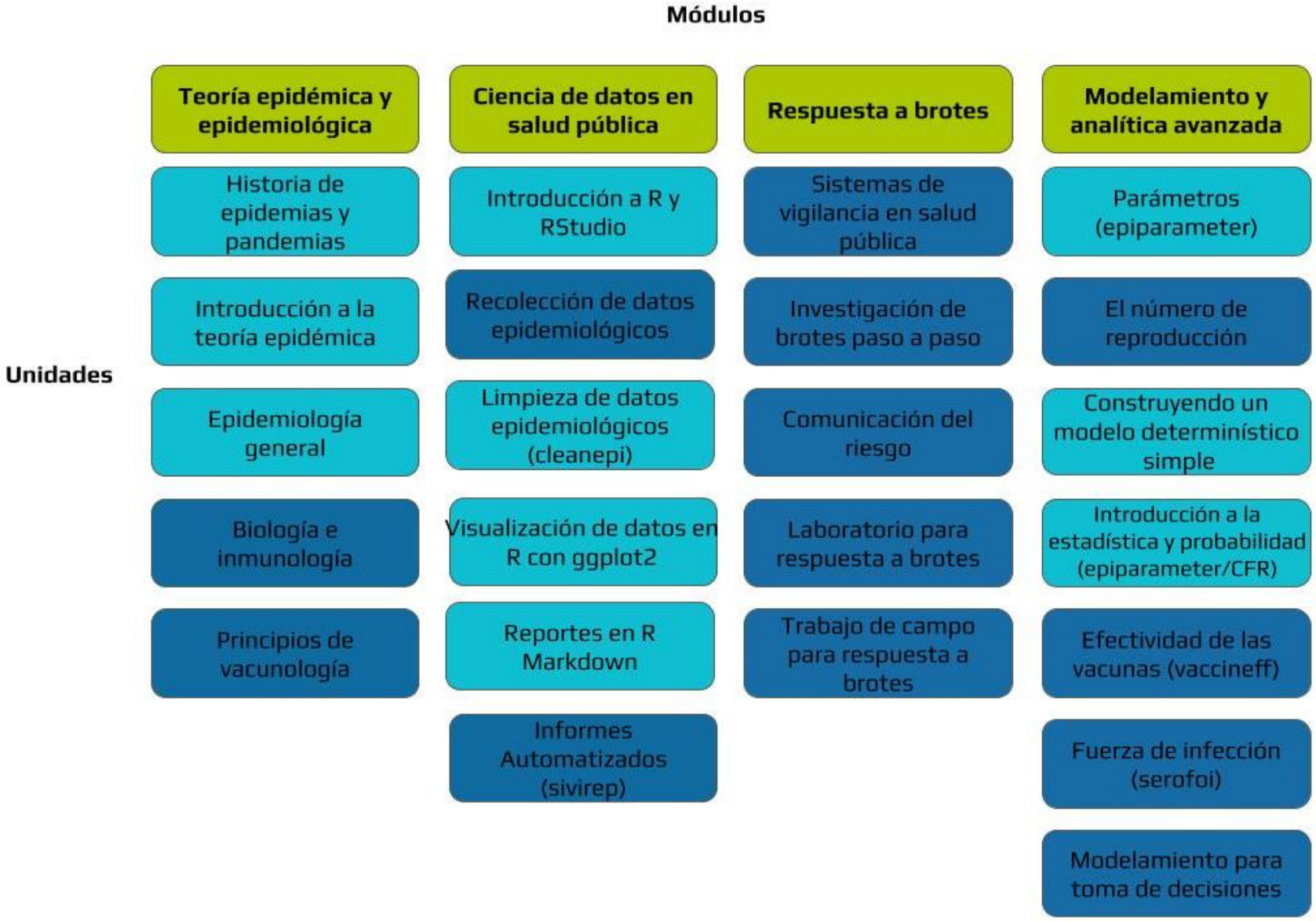
Epi-Training Kit

- Open-access online training
- Infectious disease modeling and public health data science
- Gender perspective
- Latin American context

Epi-Training Kit



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Parameters Unit

Course objectives

- Define key epidemiological parameters and give examples of how they are used

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Parameters Unit

Course objectives

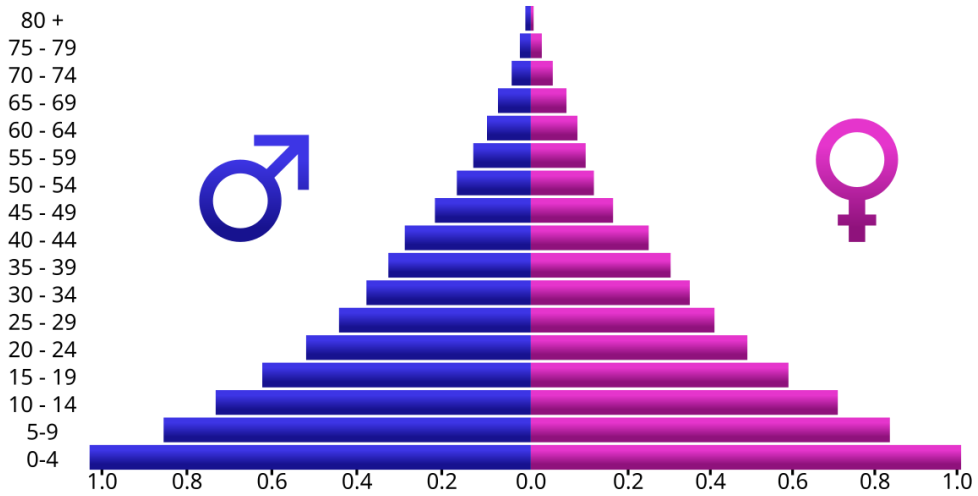
- Define key epidemiological parameters and give examples of how they are used
- Understand the data and methods needed to estimate epidemiological parameters
- Evaluate the quality of epidemiological parameters according to best practices
- Become familiar with the tools to access and estimate epidemiological parameters

Parameters Unit

Theme 1: Introduction

Theme 2: Classification and definitions

- **2.1.** Delays
- **2.2.** Demographics
- **2.3.** Transmission
- **2.4.** Surveillance
- **2.5.** Clinical
- **2.6.** Severity
- **2.7.** Interventions
- **2.8.** Genomics



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Parameters Unit

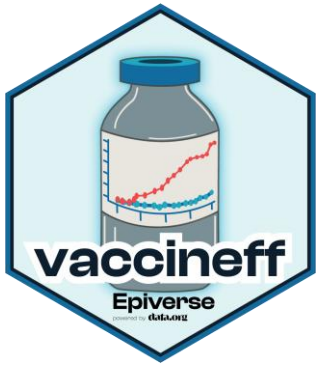
Theme 3: Quality of estimates

- **3.1.** Delays
- **3.2.** Rt
- **3.3.** Quality assessment scales

Theme 4: Databases and tools

Theme 5: References and resources

Theme 6. Case Study



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Parameters Unit

- “Health detective” storyline
- Use of Epiverse R packages
- Video game format for case study

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Parameters Unit

- Pilot phase underway
- Release date TBD
- Adapting to African context next year

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Acknowledgements

- Zulma Cucunubá
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- José M. Velasco
- Joshua Lambert
- Epi-Training Kit Team

Laura

Zulma

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Extra slides

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Gender perspective in course

A lo largo de estas fases, la incorporación de la perspectiva de género se ha planteado mediante:

1) Preguntar explícitamente aspectos relacionados a género a los potenciales usuarios identificados
2) Hacer visible la brecha de género presente en las áreas STEM y la ciencia de datos
3) Identificar barreras de aprendizaje asociadas al género
4) Promover la participación de mujeres en el diseño y todas las fases del desarrollo
5) Retroalimentar el diseño de acuerdo a los resultados preliminares encontrados
6) Incorporar un enfoque de género en el diseño y desarrollo del curso mediante el uso de lenguaje inclusivo y un equilibrio gráfico que evite la reproducción de estereotipos de género.

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