

Epiverse TRACE

powered by **data.org**

A collaborative
software
ecosystem for
outbreak analysis
and modelling

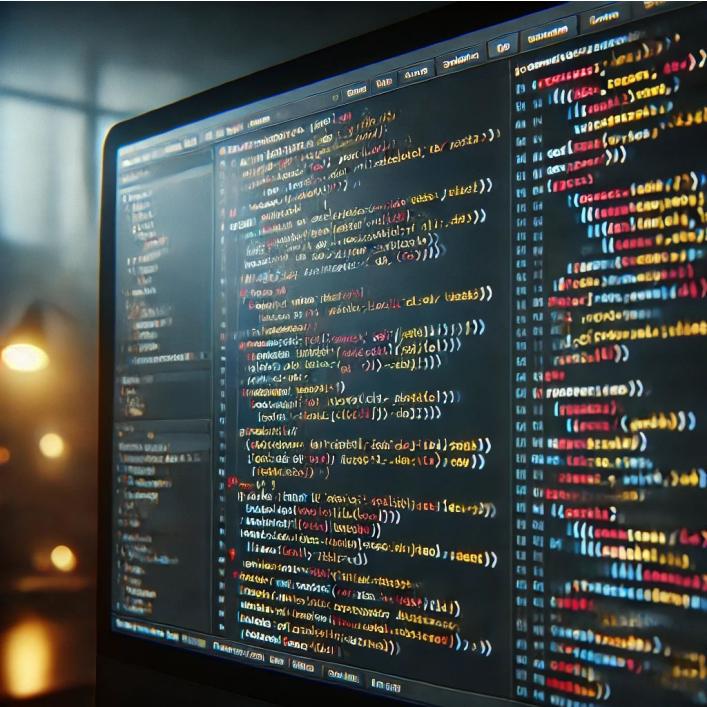
IDM 2024

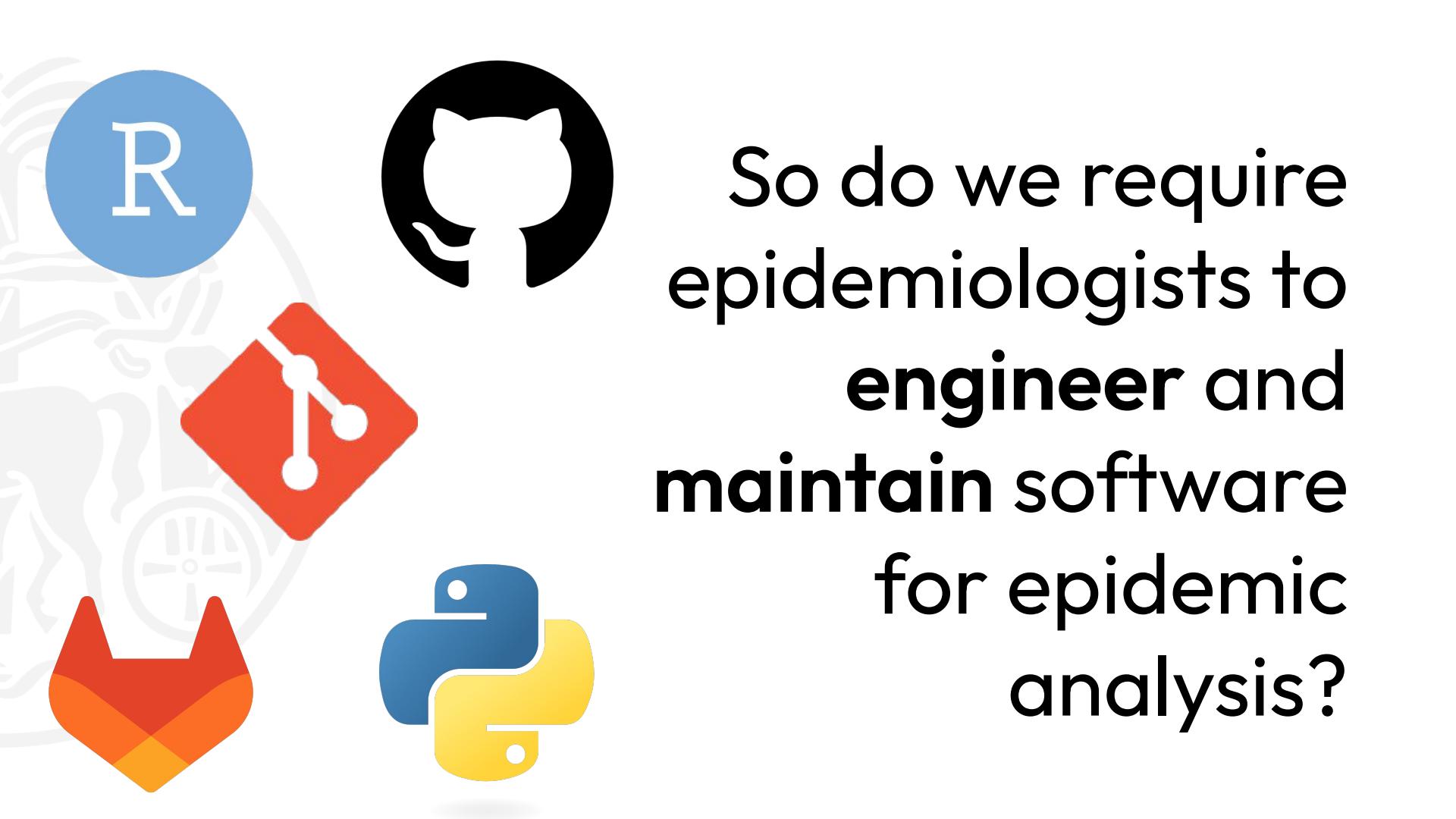
Presented by Joshua W. Lambert on behalf of the Epiverse-TRACE team



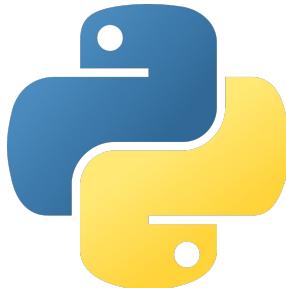
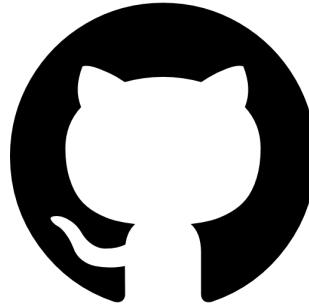
You're not
expected to build
your own computer

You're not
expected to write
your own
operating system





So do we require
epidemiologists to
engineer and
Maintain software
for epidemic
analysis?





“
You don’t build a fire
engine when there’s
a fire.”

The Epiverse initiative

LONDON
SCHOOL *of*
HYGIENE
& TROPICAL
MEDICINE



MRC Unit
The
Gambia

data.org

 Universidad de
los Andes
Colombia


Pontificia Universidad
JAVERIANA
Colombia



The Epiverse is

- Software
- Training
- Co-creation
- Community

Epiverse is software

Early tasks

Middle tasks

Late tasks



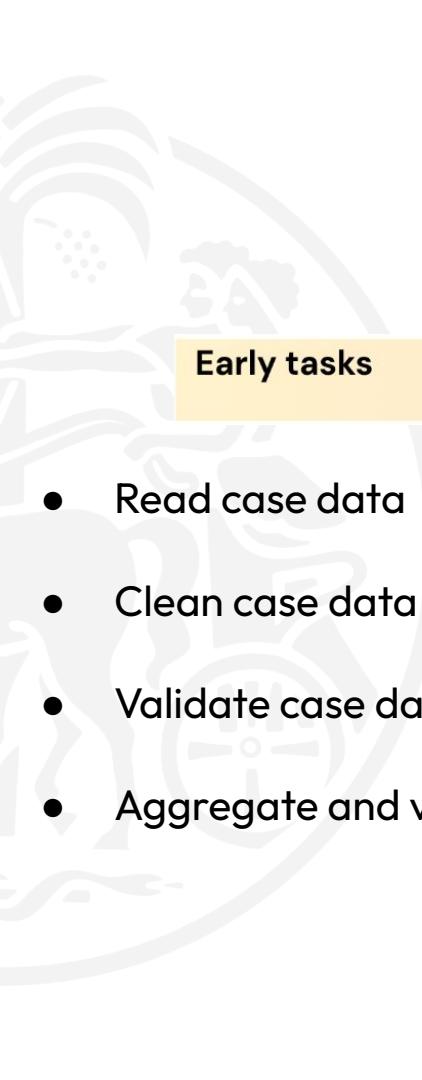


Epiverse software is

- Documented
- Tested
- Interoperable
- Collaborative
- Open



<https://digitalpublicgoods.net/>



Epiverse is training

Early tasks	Middle tasks	Late tasks
<ul style="list-style-type: none">• Read case data• Clean case data• Validate case data• Aggregate and visualize	<ul style="list-style-type: none">• Assess epidemiological delay distributions• Quantifying transmission• Use delay distributions in analysis• Create short-term forecast• Estimate outbreak severity• Account for superspreading• Simulate transmission chains	<ul style="list-style-type: none">• Simulating transmission• Choosing an appropriate model• Modelling interventions• Comparing public health outcomes of interventions



Epiverse training is

- Designed Curriculum
(Learner Personas)
- Multi-lingual
- Interactive
- Open

TUTORIALS
LEARNING
UNDERSTANDING
EXPLANATION

Acquisition

HOW-TO GUIDES
GOALS
Application
INFORMATION
REFERENCE

Action
Cognition

<https://diataxis.fr/>



Epiverse training is

Epiverse tutorials

TUTORIALS

LEARNING

Acquisition

UNDERSTANDING

EXPLANATION

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HOW-TO GUIDES

GOALS

Application

INFORMATION

REFERENCE

<https://epiverse-trace.github.io/tutorials.html>

Epiverse training is

Epiverse tutorials

TUTORIALS

LEARNING

Acquisition

UNDERSTANDING
EXPLANATION

Action

Cognition

Epiverse howtos

HOW-TO GUIDES

GOALS

Application

INFORMATION
REFERENCE

<https://epiverse-trace.github.io/howtos.html>

Epiverse training is

Epiverse tutorials

TUTORIALS

LEARNING

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EXPLANATION

Epiverse vignettes

Epiverse howtos

HOW-TO GUIDES

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<https://epiverse-trace.github.io/<package>/articles/<vignette>.html>

Epiverse training is

Epiverse tutorials

TUTORIALS

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Epiverse howtos

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Epiverse references

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Cognition

<https://epiverse-trace.github.io/<package>/reference/index.html>

Epiverse is co-creation

Level of involvement

Standardise

Integrate

Co-create

Consult

Participate

Develop tools
interoperable
with Epiverse

Incorporate
tools to
Epiverse
pipelines

Co-develop
tools hosted
externally

Contributions
from Epiverse
to external tools

Co-develop
tools hosted
by Epiverse

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tools hosted
by Epiverse

Epi-pipeline community:
WHO Collaboratory &
Epiverse

**R packages for epidemiological
parameters:**

{epiparameter} ← → {epireview}
Epiverse PERG

**Social contact matrix collaboration
{contactmatrix}**

{conmat} ← → {socialmixr}
Kids Institute, LSHTM, UK
Australia

Epiverse is community

Co-organisation of
workshops and hackathons

**Refining the Global Repository of
Epidemiological Parameters data schema**
Collaboratory workshop

Meeting report
WHO Hub for Pandemic and Epidemic Intelligence
Berlin, Germany
May 14 - 16, 2024

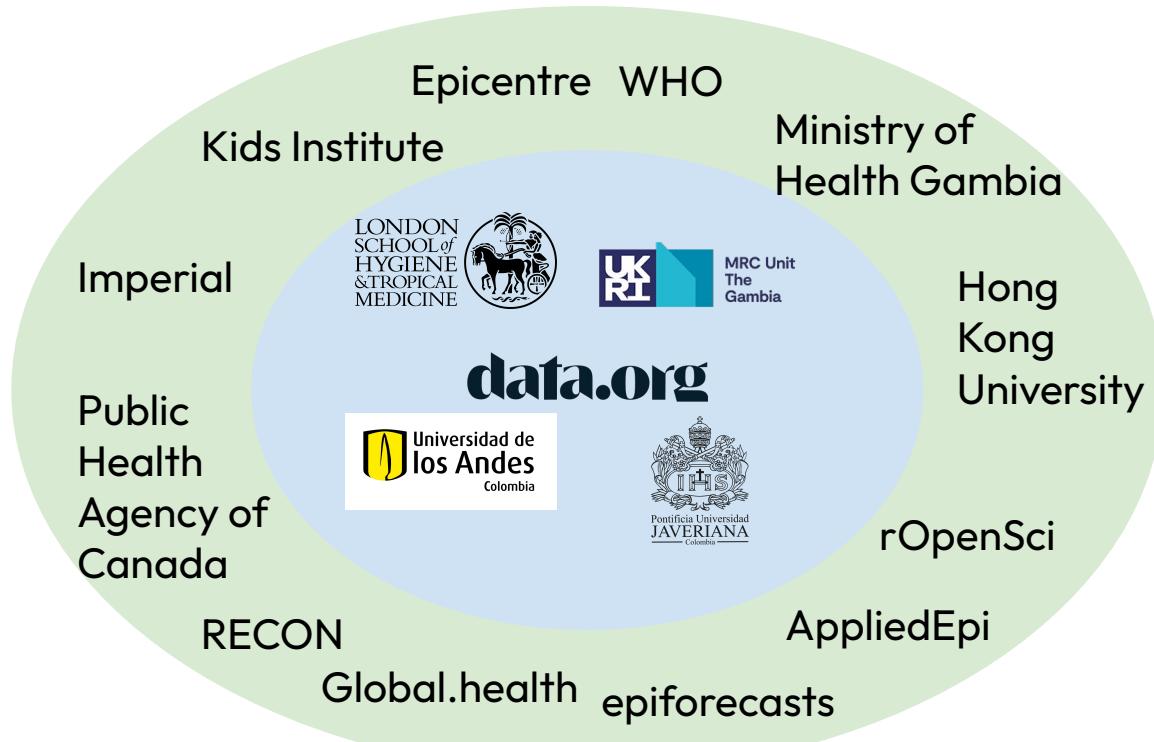
Direct engagement with public health

What Should the First 100 Lines of Code Written
During an Epidemic Look Like?

Discussion board

The screenshot shows a web-based discussion board titled "epiverse-trace". The top navigation bar includes links for Overview, Repositories (60), Discussions (selected), Projects (27), Packages, Teams (2), People (38), and a search bar. Below the navigation, there are two main discussion cards. The first card, with a green header, says "Welcome to Epiverse-TRACE Discussions!" and "Announcements - Bisaloo". The second card, with a purple header, says "Resource section" and "Announcements - chartgerink". At the bottom of the screen, there are filters for "is:open", "Sort by: Latest activity", "Label", "Filter: Open", and a "New discussion" button.

Epiverse community is





Why is Epiverse

useful?
different?

Outbreak analytics is predictable



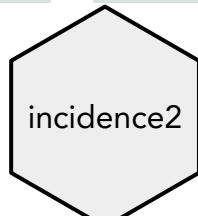
Import line
list data

Clean &
standardise

Convert to
incidence

Estimate
reproduction
number

Simulate
epidemic



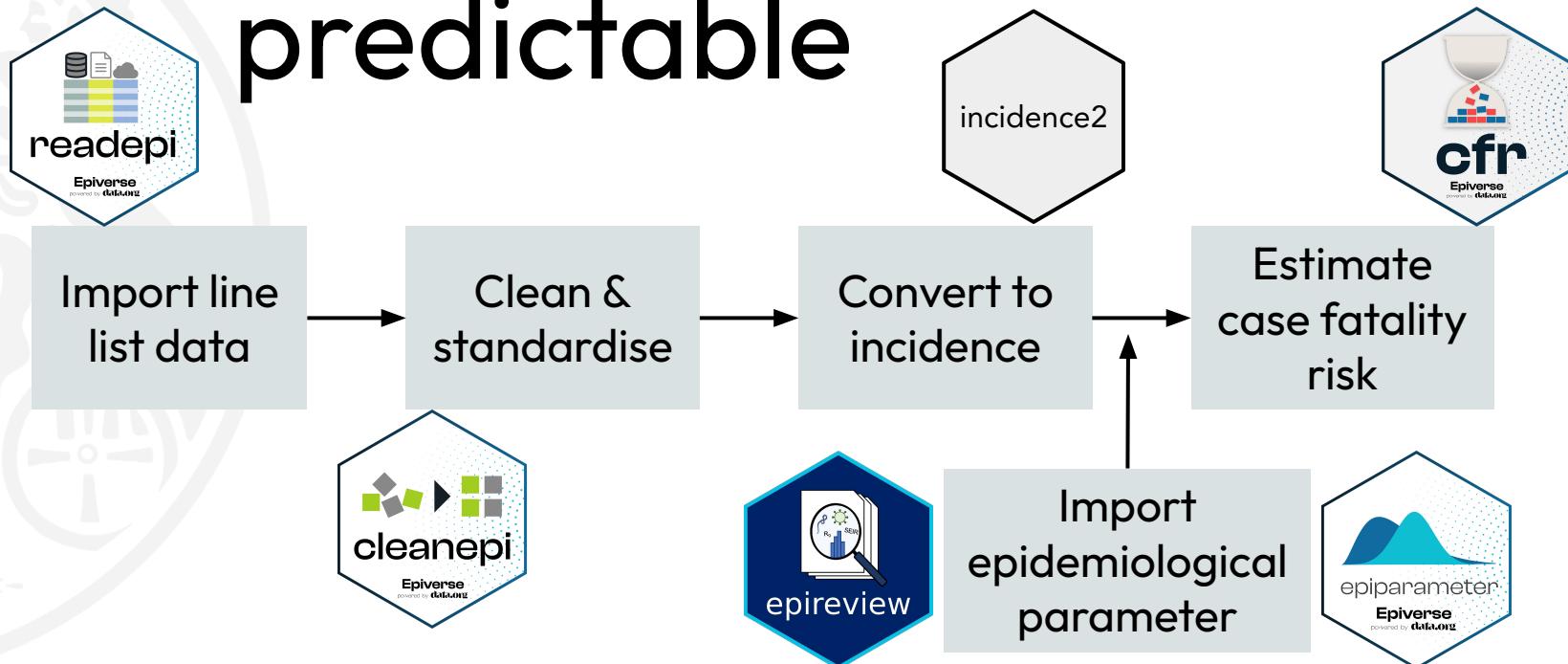
Import
epidemiological
parameter



Import
contact
matrix



Outbreak analytics is predictable





Take home message

- Freedom to write and share software is needed
- Reliable, easy-to-use tools should be available when needed
- Epidemic preparedness needs proficiency with the tools required
- Community-driven development and maintenance of software for outbreak response



- Adam Kucharski
- Sebastian Funk
- Rosalind Eggo
- Joshua Lambert
- Carmen Tamayo
- James Azam
- Andree Valle



- Bubacarr Bah
- Nuredin Mohammed
- Karim Mane
- Banky Ahadzie
- Abdoelnaser Degoot
- Atta Lowe

Epiverse team

TRACE-LAC



- Zulma Cucunubá
- Catalina González-Uribe
- Juan Manuel Cordovez
- Mauricio Cortés
- Laura Gómez Bermeo
- José Velasco
- Miller Diaz Valderrama
- Natalia Niño Machado
- Jaime Pavlich-Mariscal
- Andres Moreno Barbosa
- Adriana Buitrago-López
- Magda C. Cepeda
- Geraldine Gómez
- David Santiago Quevedo
- Nicolás Torres
- Juan Daniel Umaña
- José Bocanegra
- María Camila Tavera
- Julián David Otero
- Juan Montenegro Torres
- Mabel Chavarro
- Hawyn Ernesto Diaz Mora
- David F. Gallo Caycedo
- Denís Toledo Nieto

data.org

- Hugo Gruson
- Chris Hartgerink





Thank you for
listening

Any
questions?

Epiverse GitHub



Get involved