

# Co-designing software solutions for the challenges of Latin America and the Caribbean in infectious diseases.

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# Epiverse TRACE LAC

Building an ecosystem for software development for analytics and modeling during epidemics.



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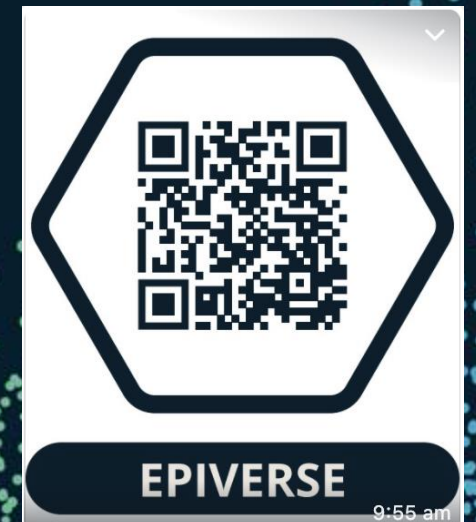
**data.org**

The background features a dark blue field with several wavy, particle-like trails. These trails are composed of small dots in shades of light blue and green, creating a sense of movement and depth. The trails are most prominent in the upper and lower corners, framing the central text.

How do we prepare for future  
epidemics and health crises?



**Epiverse** is a global collaborative initiative to develop a reliable **data analytics** ecosystem dedicated to anticipating the next public health crisis.



# Background



- There is an urgent need for the development of interoperable analytical tools to strengthen the understanding and prediction of epidemics of infectious diseases.
- In Latin America, there are limited analytical capabilities for the analysis of epidemiological patterns.
- There are few learning opportunities and teaching materials available in Spanish.

# Background



- Handling large volumes of information.
- The need to generate evidence for decision-making quickly.
- Insights from interdisciplinary and intersectoral work:
  - Public health and epidemiology
  - Geography
  - Engineering
  - Data science

# Challenge



Data analytics is an essential component of contemporary public health, and it is necessary to consider the people working in this field as part of the human resources required for epidemic response.

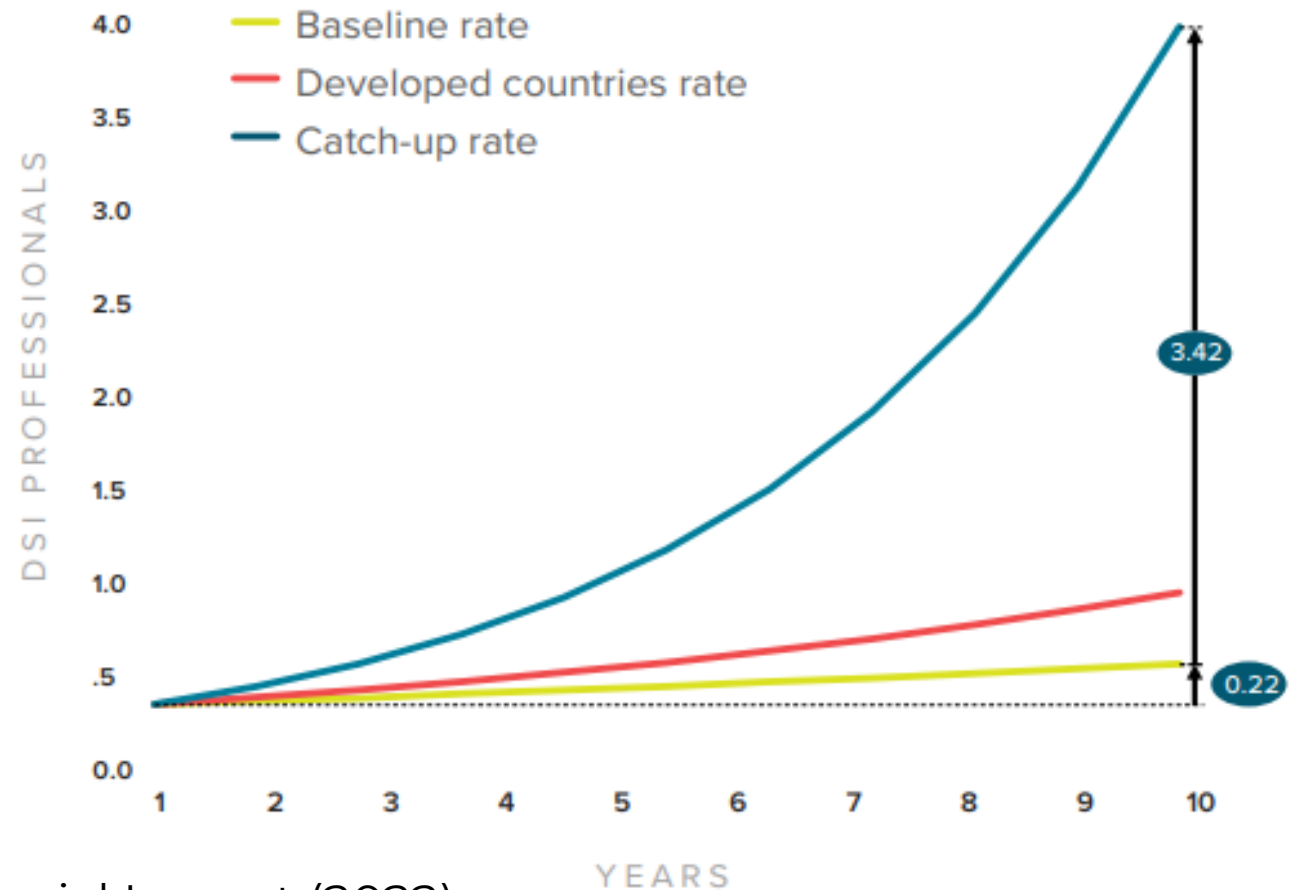
Data Analytics → Decision-Making

- Knowledge for decision-makers
- Basic infrastructure
- Collaboration and trust



# Challenge

Global shortage of data scientists



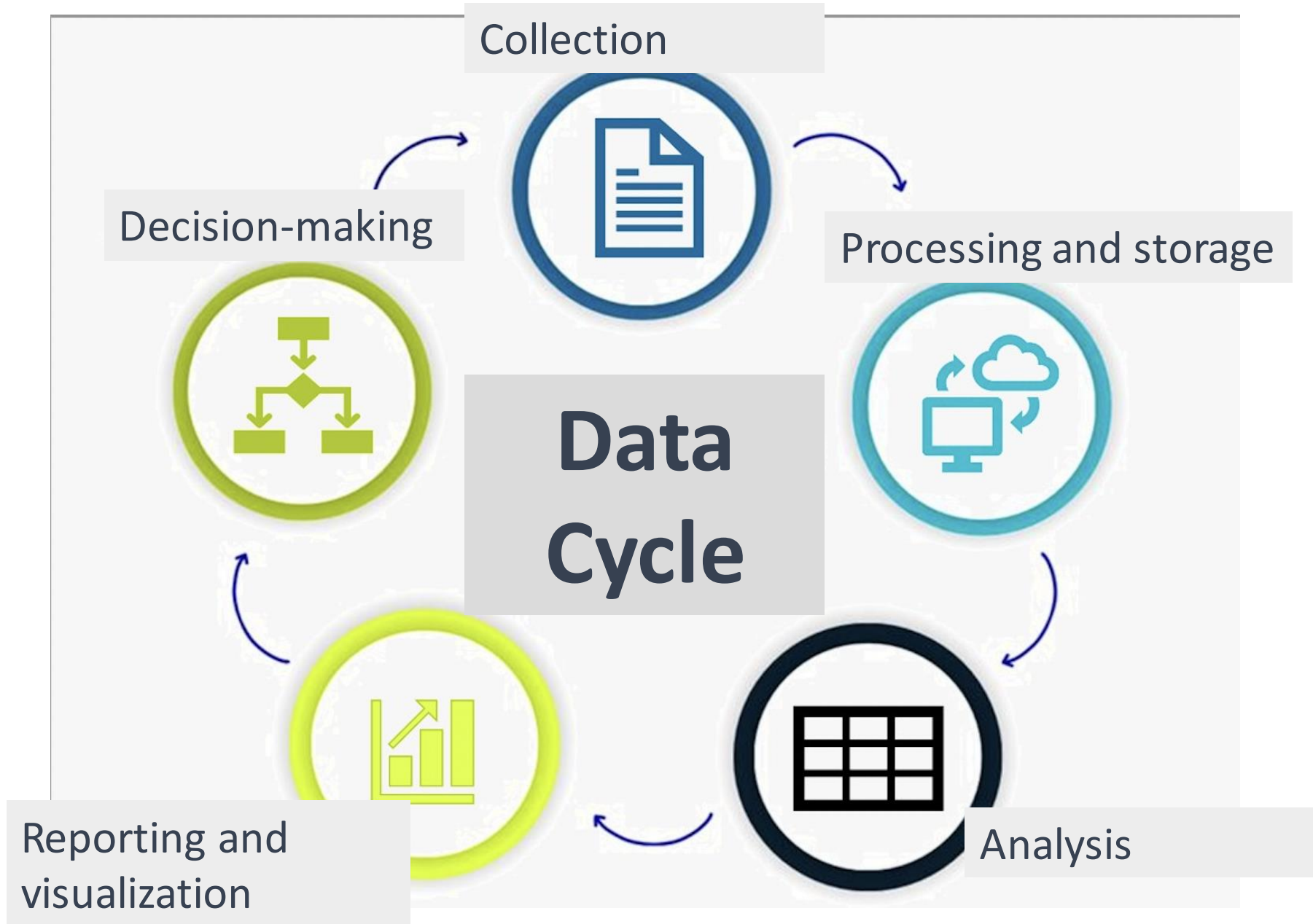
Data.org. Workforce Wanted Data Talent for Social Impact (2022).

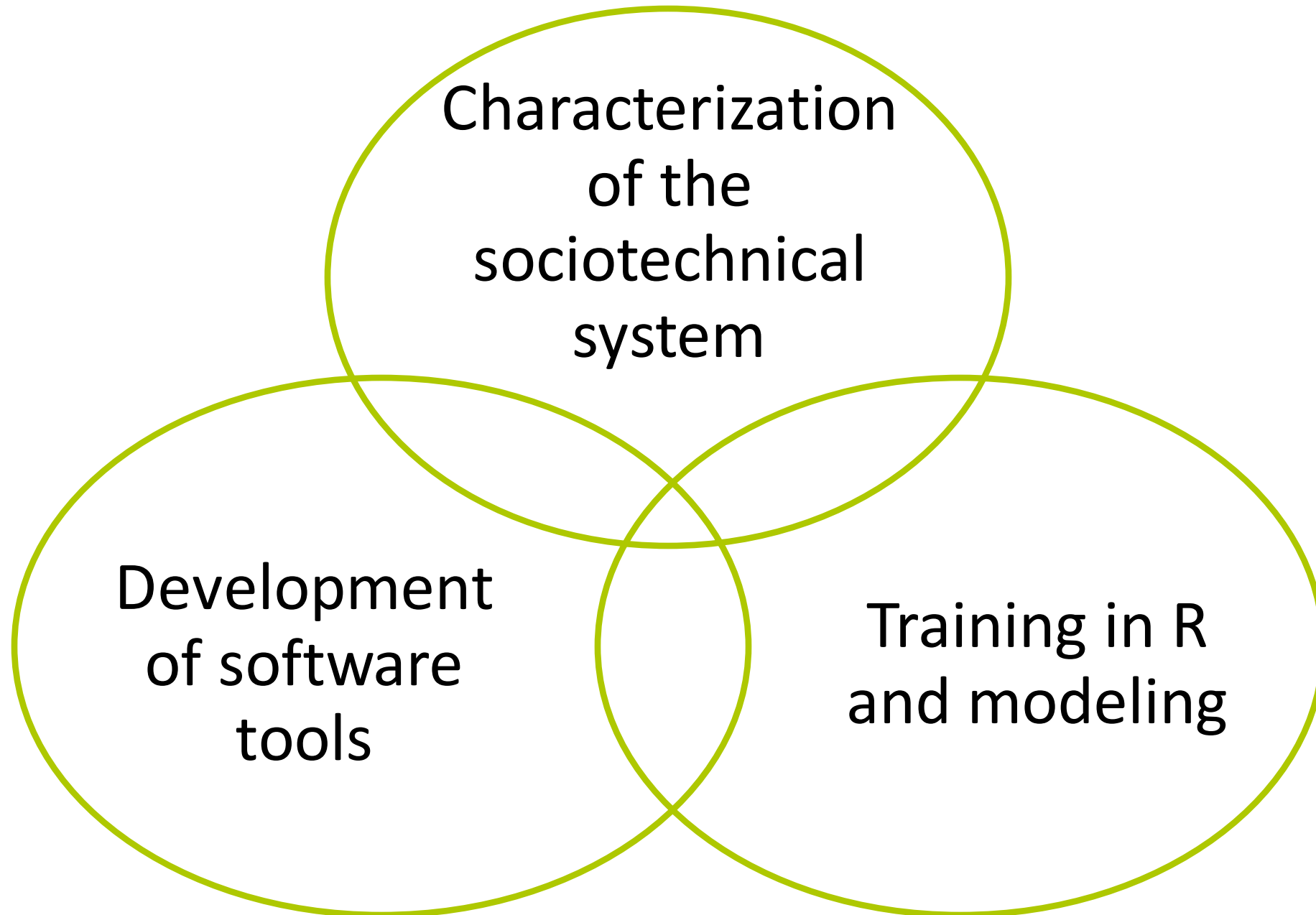


# Challenge



Develop software tools sensitive to the **sociotechnical contexts** of our region and based on interdisciplinary **co-design processes** and the needs of **user communities**.





# Actor mapping:

Provide a universe of actors and infrastructures for niche identification.

Build a visual tool: heuristic, exploratory, and communicative.





# Characterization of the socio-technical system

Who are the users and what are the contexts?

- Public policies and regulation
- Human talent
- Data access and usage
- Availability of infrastructure
- Organizational cultures
- Scale and transfer

Intersectionality  
(gender, ethnicity,  
age, residence)

# Co-development

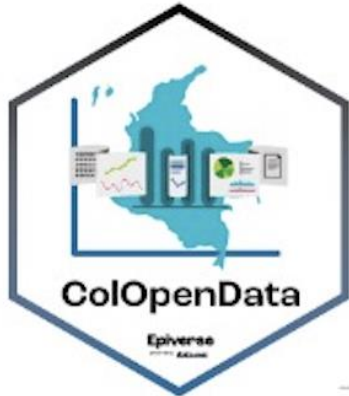




# Co-development of Software



## DESCRIPTION



It is a digital tool that allows for easy and reliable access to the information required for epidemiological studies available in various official databases of Colombia, and correlates them for analysis and decision-making.



This package provides statistical and visualization tools for the analysis of demographic indicators, spatiotemporal behavior, and characterization of outbreaks of vector-borne diseases of Colombia.



It is a tool that enables agent-based simulations for the interaction between humans and mosquitoes through synthetic populations derived from real territories

## FUNCTIONALITY

**Download:** retrieved data.

**Correlation:** cross-referencing variables associated with disease transmission.

**Data reporting and visualization:** basic summary and graphing functions to obtain evidence.

**Demographic:** vulnerable groups based on reported cases and population census data.

**Spatiotemporal:** hotspot identification (local Moran's index) based on incidence rates and travel times between municipalities.

**Endemic channel:** Creation and visualization according to reported parameters.

**Early warning:** risk indicators.

**Configuration:** initialize basic data for the model.

**Simulation:** interaction between humans and mosquitoes to verify the effects of possible interventions in transmission.

**Calibration:** transmission parameters that can be specific to each territory.

**Reporting:** reporting of results obtained in simulation and calibration by the user.



# OUR TEAM



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**CURSO INTERNACIONAL:  
ANÁLISIS DE BROTES Y  
MODELAMIENTO EN SALUD PÚBLICA**

**BOGOTÁ • 2023**  
4 AL 8 DE DICIEMBRE

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