

Developing a transdisciplinary database for operationalization of One Health surveillance for Japanese Encephalitis in India

Elizabeth T. Rogawski¹, Pranab Chatterjee*, Manish Kakkar*

¹ University of North Carolina, Chapel Hill

* Roadmap to Combat Zoonoses in India Initiative, Public Health Foundation of India, Delhi



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Background

- Japanese Encephalitis: Complex Epidemiology
- Challenges of using traditional approaches to such multi-dimensional issues
- Ecosystem approach
- Unique challenges of conducting ecosystem research
- Striking the balance



Objectives of Today's Talk

- Development and deployment of a database that collects transdisciplinary data to identify the drivers of JE in a high endemic district in North India
- Discussion in context of JE, but may potentially be expanded in ambit

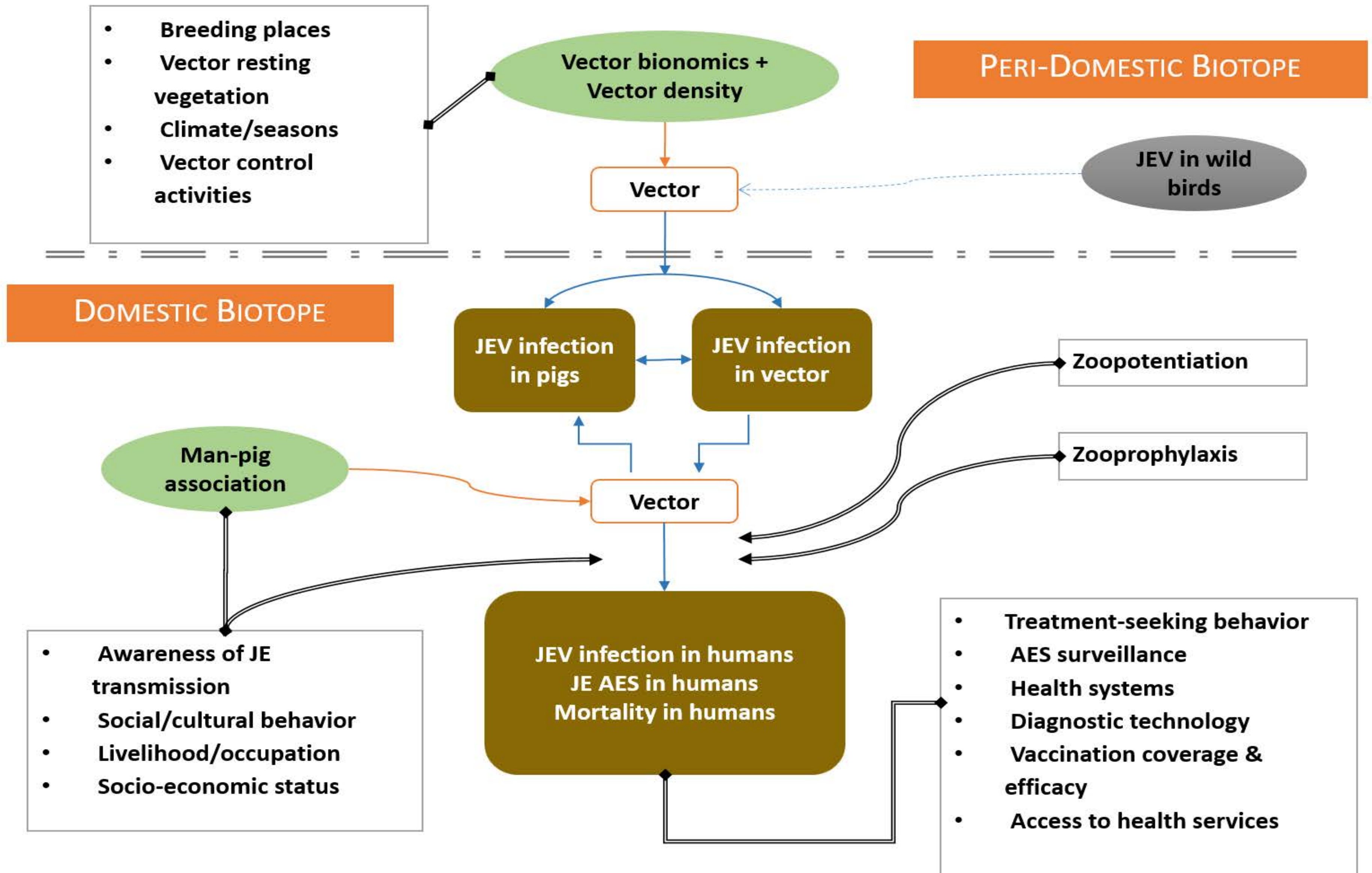


Methods: Finding the Unifying Point

- Step 1: Assembling a Core Research Group
 - Representing the critical linkages in JE
- Step 2: Literature Review
 - From what is known to what we need to know
- Step 3: Expert Consultation
 - Iterative interpretations, extension of experience, often unpublished/unpublishable insights
- Step 4: Identifying the Domains of Enquiry and Variable Groups
 - What are the broad areas of concern and how do they connect with each other?
- Step 5: Developing a Conceptual Framework



The Initial Conceptual Model



Methods: Developing the Database

- Challenge: How to unify the sectors?
 - Macro level: Conceptual Framework
 - Micro level: How?
- A “relational database” approach
- Developing a Unique Identifier
 - The Link ID
 - The data point ID

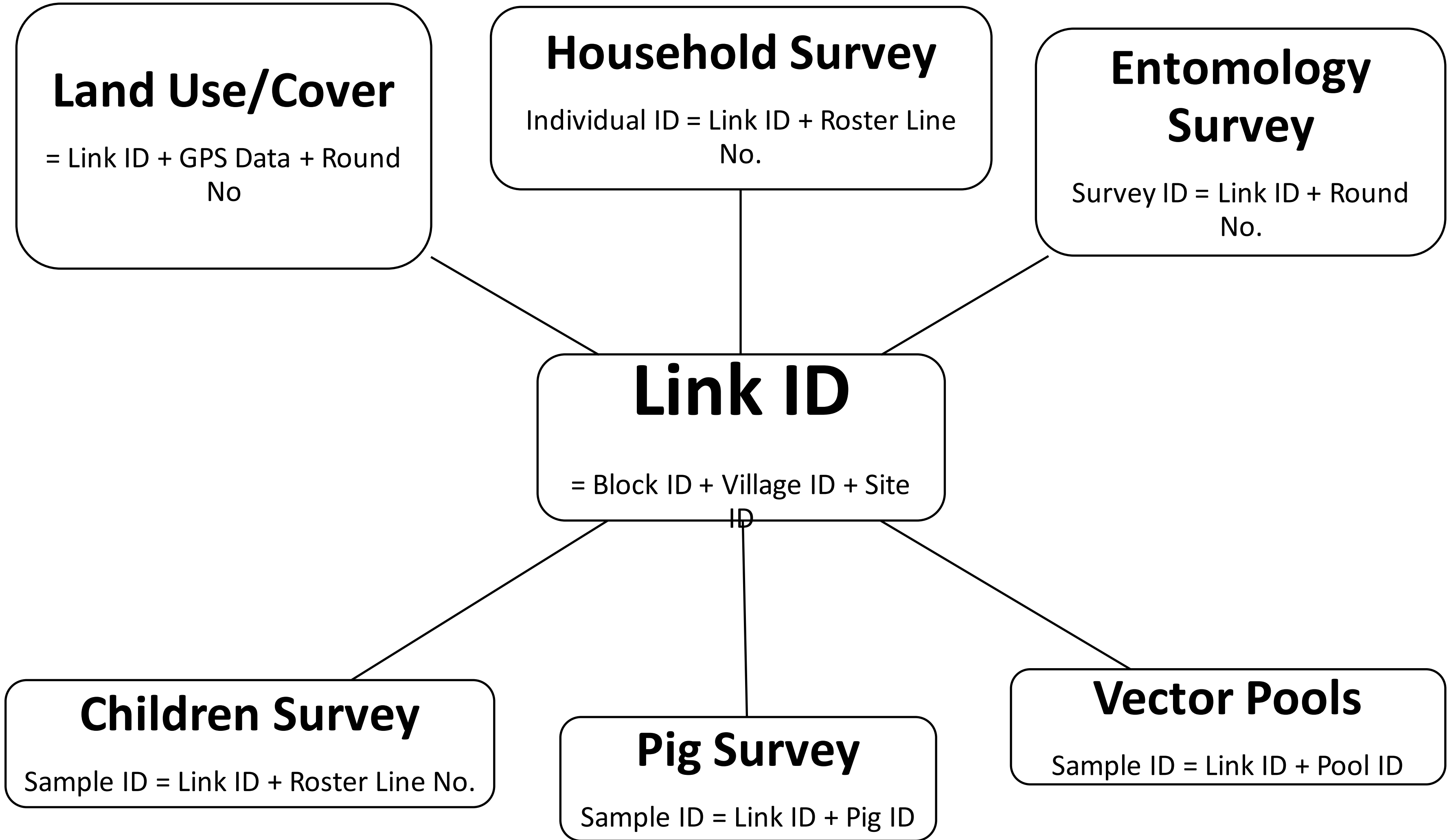


Identifying Transdisciplinary Data Points

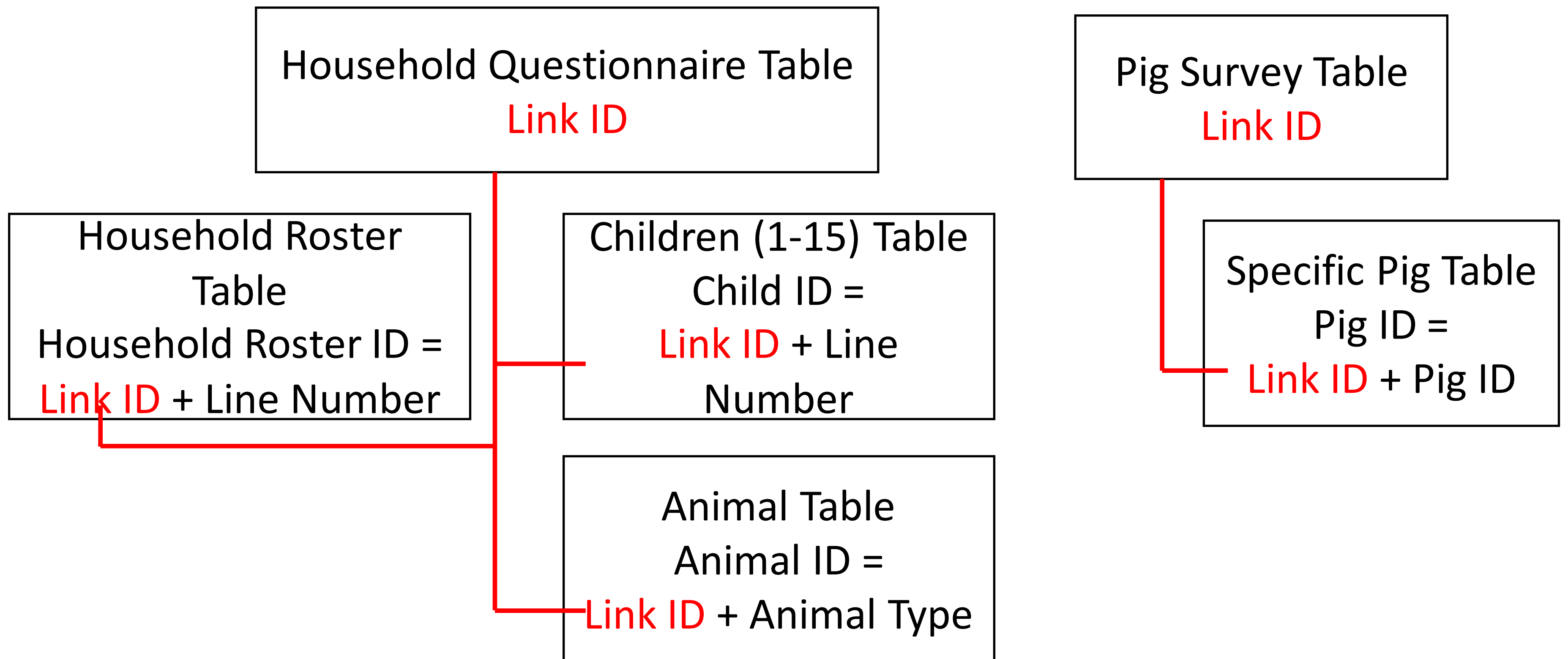
- Two biotopes identified
- Domains identified in a transdisciplinary manner
- Variables not restricted to a specific discipline
- The conceptual framework guided the process



The “Relational” Database



Relational Structure



Illustrative Transdisciplinary Queries

Research question	Data points used	Disciplines queried	Data linkages
What is the association between village-level outdoor vector densities and JEV positivity in children?	Vector densities in peri-domestic sites; JEV laboratory results in children	Entomological and human health	Link by village code in Link ID
Is there an association between man-bovine ratios and indoor vector densities?	Human and bovine census from household survey; vector densities in domestic sites	Animal and human health; entomology	Link by village code in Link ID



Addressing the Challenges of a Relational Database

Known Challenges

1. Cost
2. Information overload
 1. Unnecessary information
 2. Redundant information
3. Complex databases in isolation

Solutions

1. Using MS Access
2. Developing conceptual model
3. Link IDs connecting databases



Challenges and Learning

Challenges

- “Front end” approach
- Evidence vacuum

Learning Point

- Formative research and pilot studies
- Using innovative methods like scoping reviews and realist reviews, research priority setting, etc.



Strengths and Implications

Strengths

1. Collects transdisciplinary data
2. Relational database
3. Cheap and minimal tech barriers
4. Self-correcting

Implications

1. Explore complex EcoHealth/One Health problems
2. Declarative data extraction
3. Deliverable, affordable, sustainable
4. Stays accurate and relevant with changing disease epidemiology; identifies new patterns



Thank You

Questions?

Web: <http://zoonoses.phfi.org>

Email: rczi@phfi.org

Twitter: @CombatZoonoses

Facebook: <http://fb.com/rczi2009>

