STRUCTURAL DRIVERS OF BLACK MATERNAL HEALTH INEQUITIES

A COMMUNITY-ENGAGED SYSTEMS MAPPING STUDY IN CUYAHOGA COUNTY, OHIO

Partner Initiative

Department of Children & Youth (DCY) Maternal & Infant Vitality Initiative

Primary Contributors

Michele Benko Supervisor, Maternal & Child Health Programs, CCBH

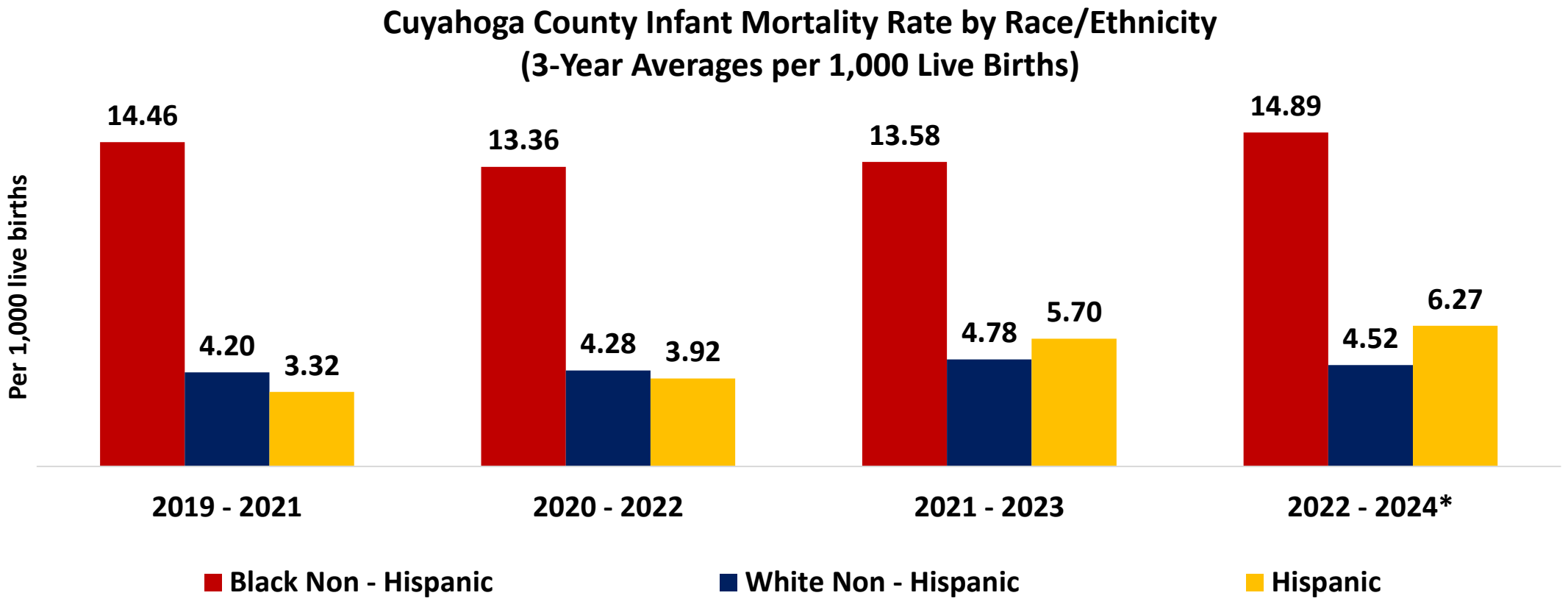
Dr. Prakash Ganesh Assistant Professor, CWRU; Medical Director, CCBH

Dr. John Ansah Assistant Professor, CWRU

Dr. Robinson Salazar Rua Research Associate, CWRU

SCHOOL OF MEDICINE
CASE WESTERN RESERVE UNIVERSITY

WHY FOCUS ON BLACK INFANT MORTALITY?



Data Source: Resident Birth and Mortality Files from the Ohio Department of Health Bureau of Vital Statistics.

WHY FOCUS ON BLACK INFANT MORTALITY?

- Black infant mortality remains **significantly higher** in Cuyahoga County compared to other groups.
- Current challenges are influenced by *clinical factors, social determinants, economic stressors, and structural barriers*.
- Traditional approaches do not capture the **complex feedback dynamics** driving disparities.
- Participatory systems modeling helps communities **see the system**, identify **root causes**, and co-design **high-impact solutions**.

PURPOSE OF THE GMB PROCESS

The Group Model Building (GMB) process aimed to:

- **Identify key drivers** of Black infant mortality in the county.
- **Map community, clinical, and structural factors** that shape maternal outcomes.
- **Build and refine a causal loop diagram (CLD)** representing lived experiences and system behavior.
- Develop a **preliminary system dynamics model** to test strategies.
- **Co-design actionable interventions** aligned with community capacity and local priorities.

PARTICIPANT RECRUITMENT

- Recruitment prioritized Black mothers and families, individuals with maternal health risks, residents, community health workers, community organizations, healthcare providers, public health practitioners, and academic researchers.
- The process intentionally included voices from neighborhoods disproportionately impacted by infant mortality and structural disadvantage in Cuyahoga County.

STRUCTURE OF THE GMB SESSIONS

Session	Activities
Session 1	• Identify outcomes and variables • Build causal loop diagram (CLD)
Session 2	• Validate & refine causal structure • Introduce the seed structure • Generate and evaluate action ideas
Session 3	• Finalize causal map • Explore First Year Cleveland (FYC) App • Co-design strategies to leverage the App
Session 4	• Final strategy prioritization • Discuss implementation pathways

SESSION 1

SESSION 1: IDENTIFYING OUTCOMES

Objective: Understand what outcomes explain infant mortality among Black/African American families.

Participants

- Individually brainstormed potential outcomes, which were written on separate cards.
- Collectively voted to prioritize the top drivers.

Output: A ranked set of top outcomes that served as the foundation for building the causal map.

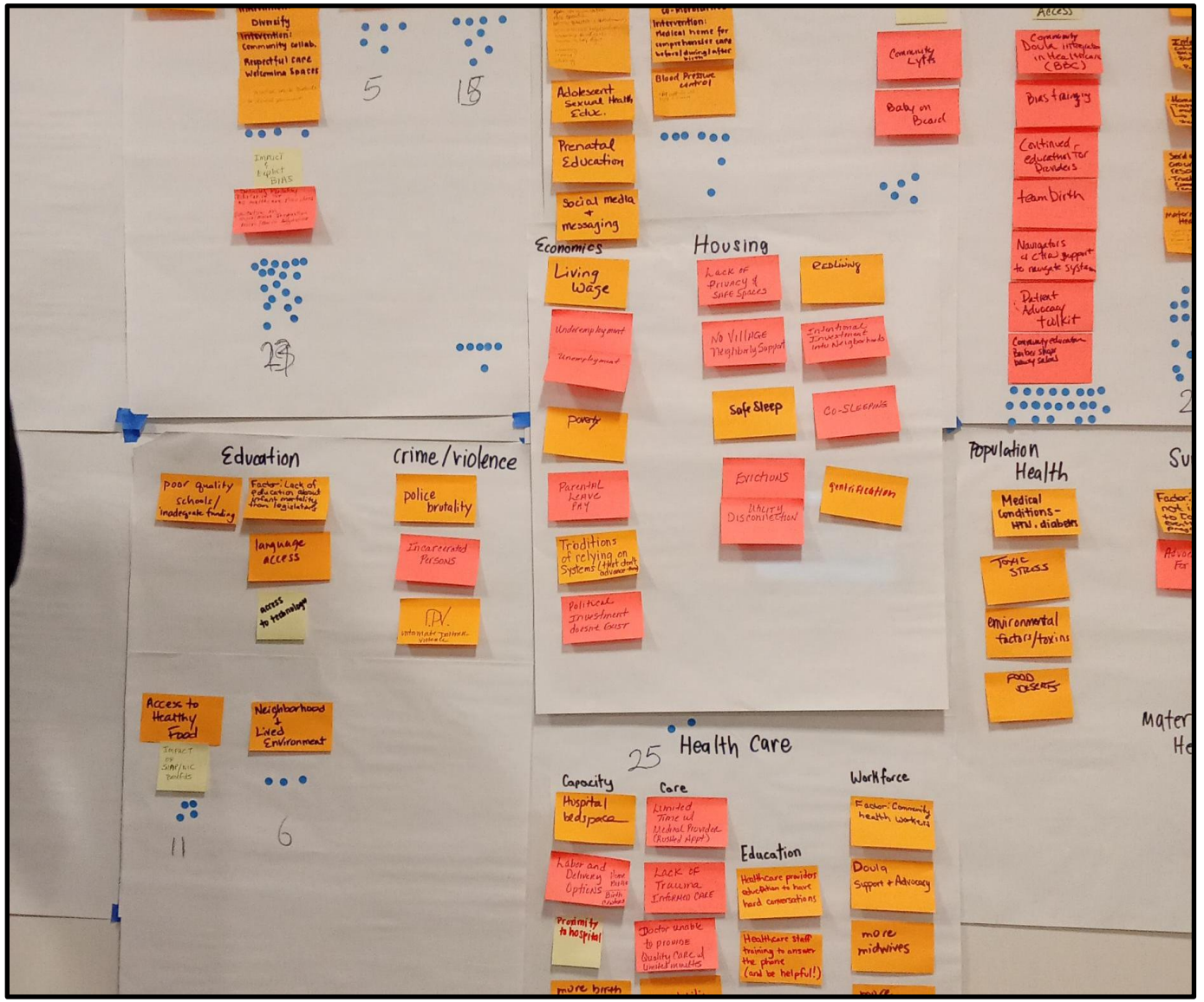
SESSION 1: ELICITING VARIABLES

Objective: Identify the *specific* factors that directly and indirectly influence maternal and infant outcomes.

Participants considered

- **Direct factors:** Prenatal access, stress, clinical risk, nutrition, doulas, home visiting, family networks.
- **Indirect factors:** Housing, income, transportation, neighborhood conditions, racism, trust in healthcare.

Output: Comprehensive list of variables and categories later used for mapping relationships.



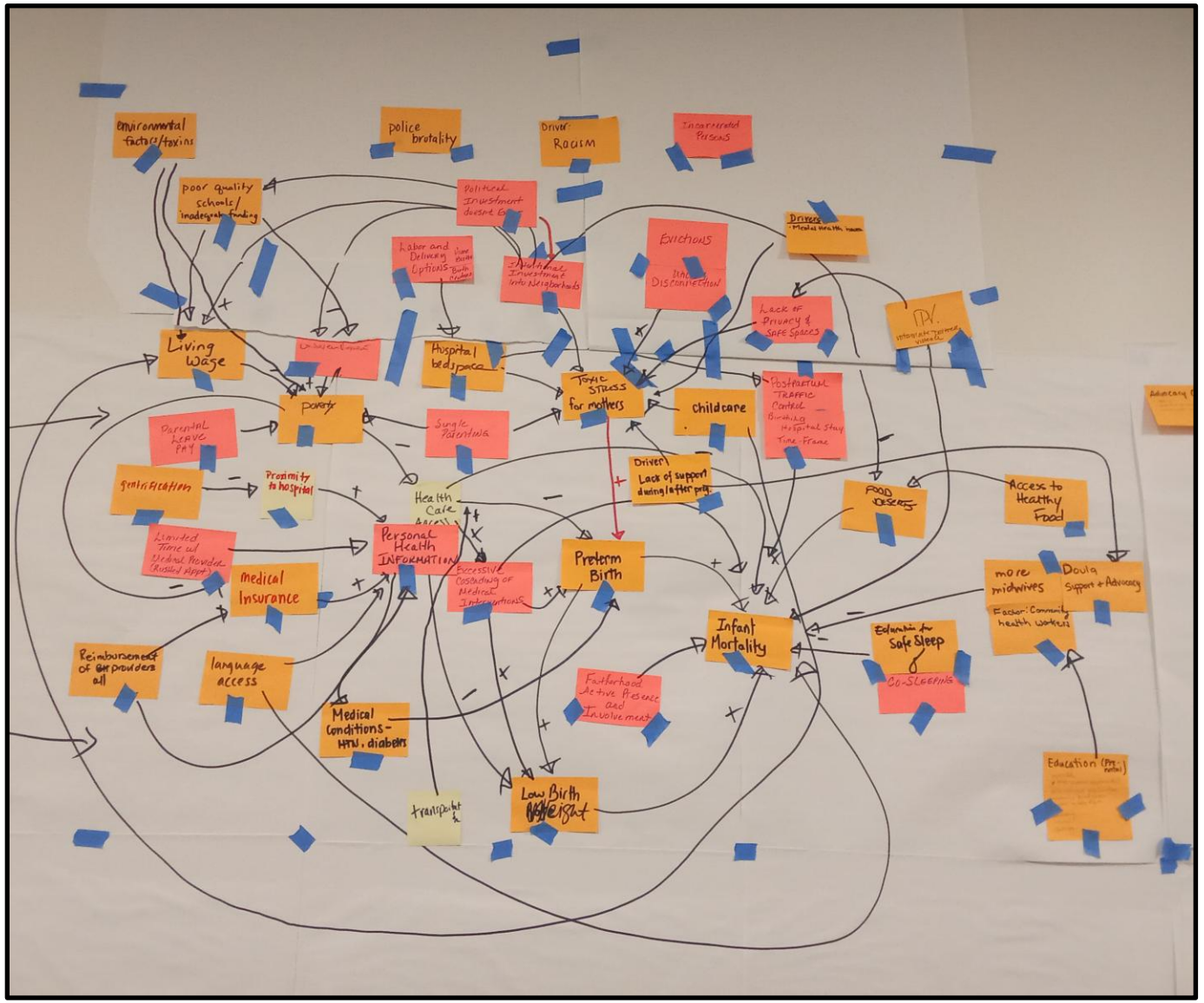
SESSION 1: BUILDING THE CLD

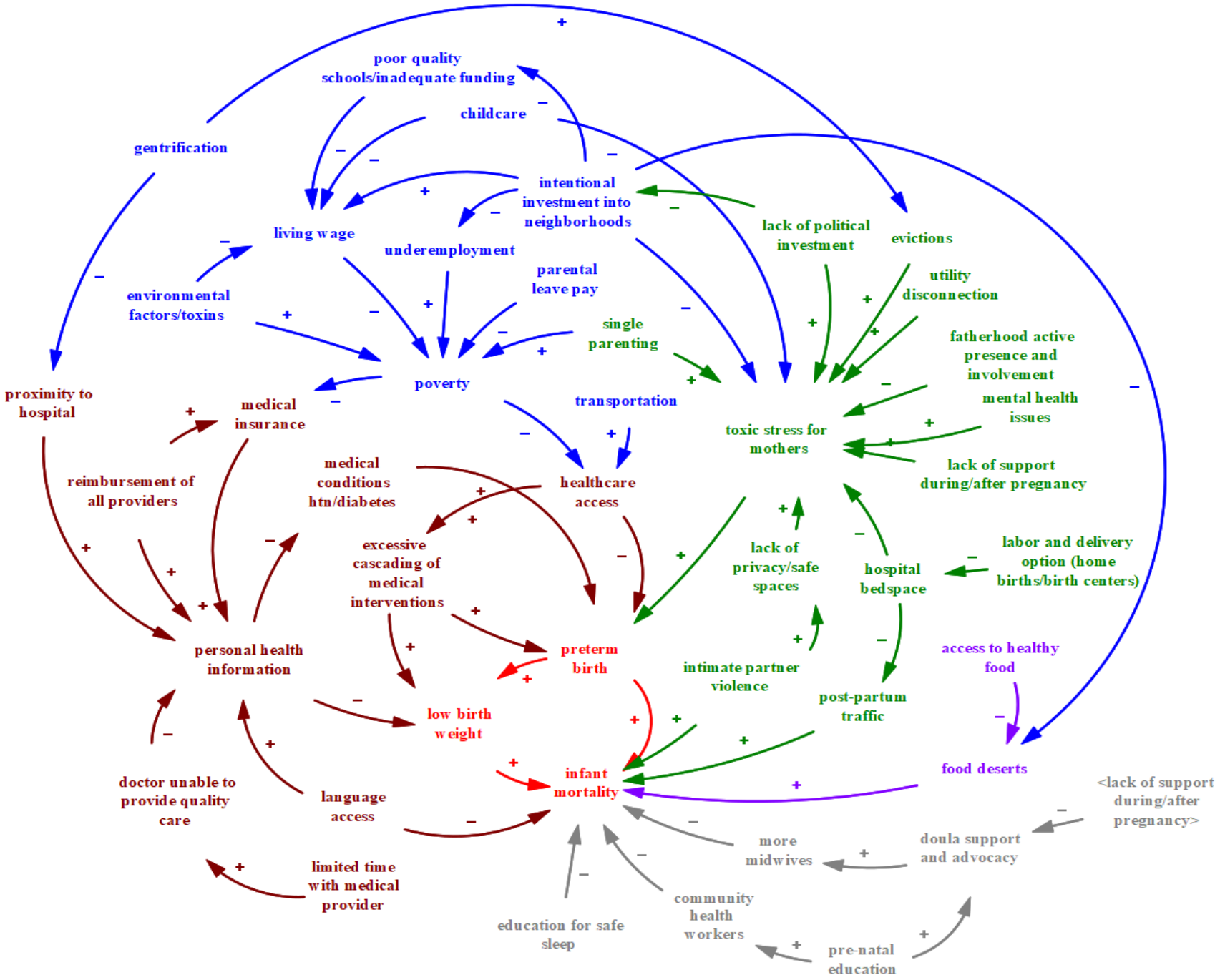
Objective: Build a shared understanding of how factors interact.

Participants mapped

- "What influences what?" → Creating directional connections.
- **Polarity:**
  - (+) variables move in the same direction.
  - (–) variables move in opposite directions.

Output: Causal map reflecting on real lived experiences and professional expertise.





Main Outcomes

Healthcare Factors

Economic Factors

Social Factors

Food system Factors

Community Capacity

All Factors Influencing Infant Mortality

SESSION 2

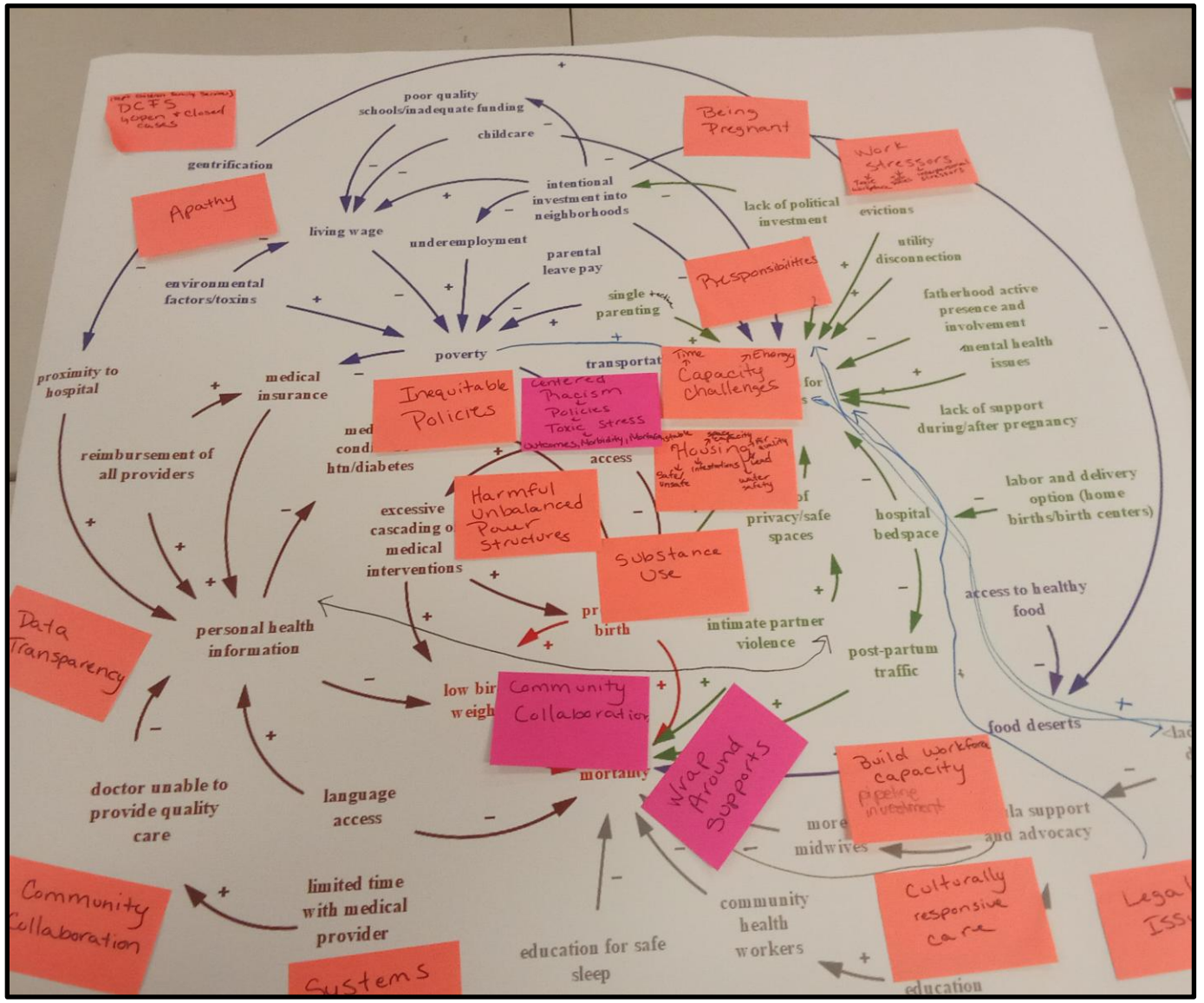
SESSION 2: REFINING THE CLD

Objective: Improve accuracy and completeness of the causal map created in Session 1.

Participants

- Added missing variables.
- Clarified ambiguous relationships.
- Strengthened connections showing social, economic, and structural determinants.

Output: Specific suggestions for improvement on the initial causal map.

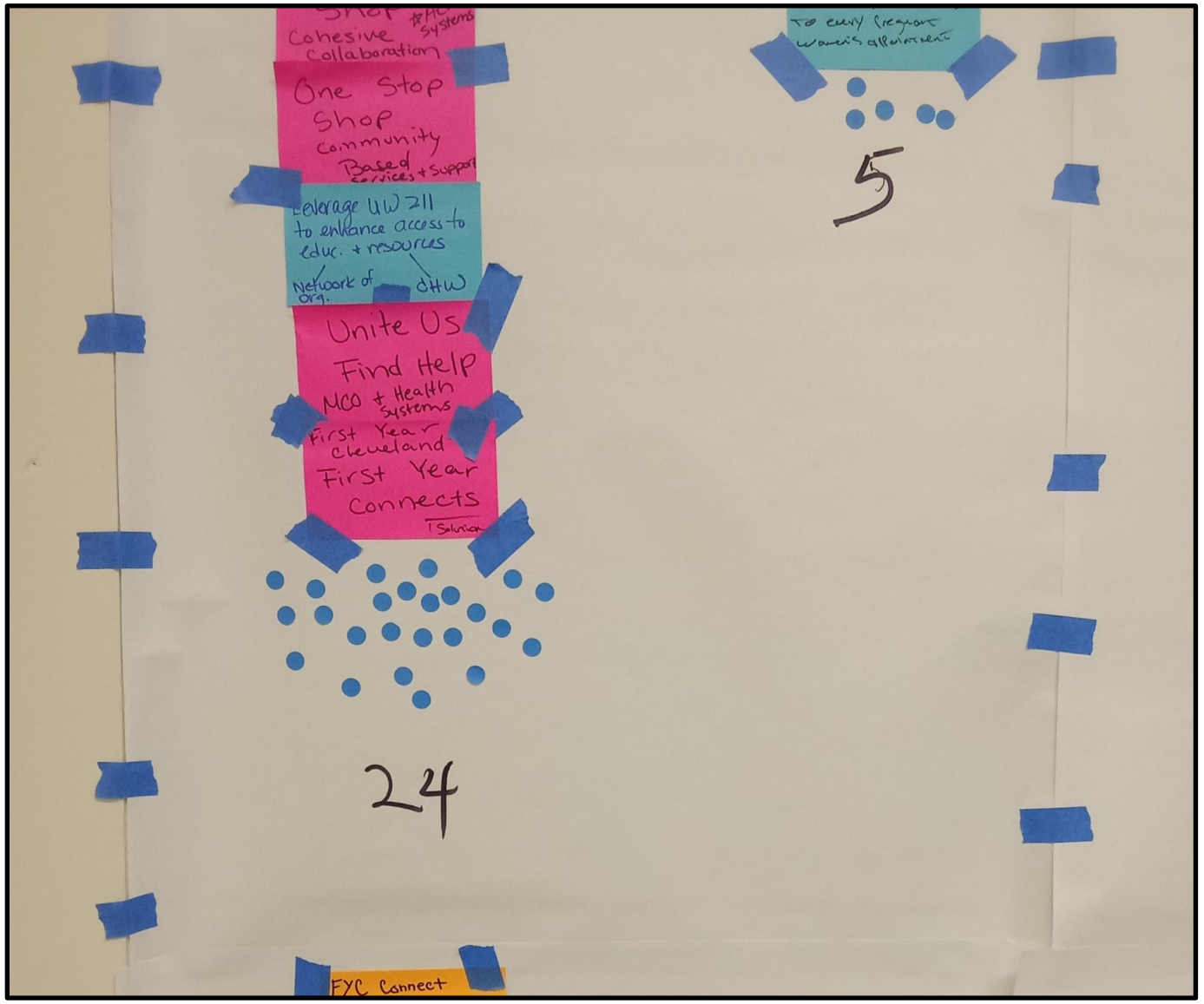


SESSION 2: GENERATING ACTIONABLE IDEAS

Create a "One-Stop Shop" for pregnant women and mothers: A single, trusted place that brings together *all* maternal, infant, and social resources.

Additional Action Ideas

- Strengthen doulas, CHWs, and home visiting services.
- Improve navigation and trust pathways between families and systems.
- Reduce structural barriers (transport, housing, childcare).
- Expand nutrition and basic-needs support.
- Enhance provider cultural responsiveness.



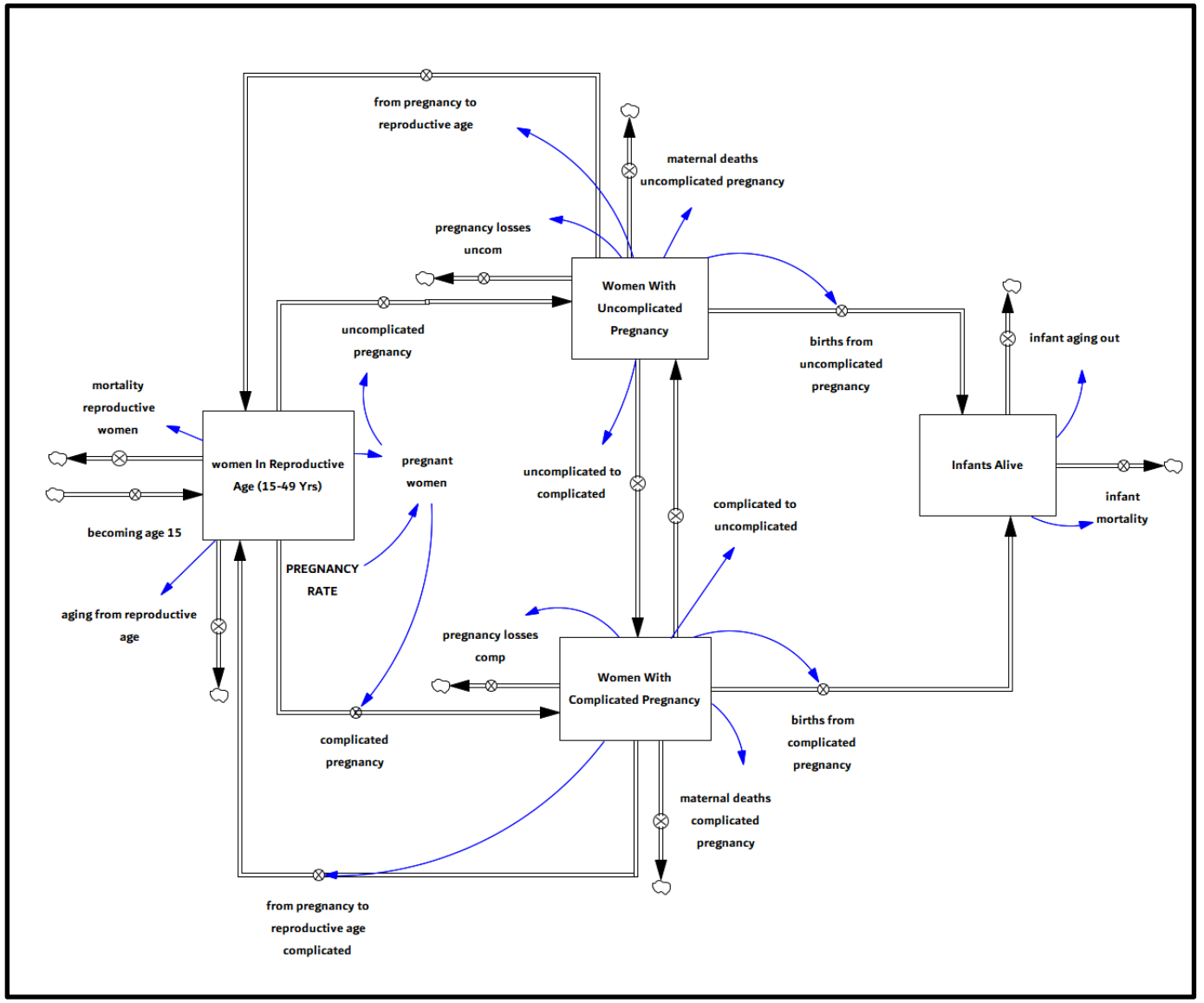
SESSION 2: INTRODUCING THE SEED STRUCTURE

A preliminary quantitative SD model, on the topic of interest, was presented to the participants.

The model included

- **Stocks:** women in reproductive age, pregnant women, infants alive.
- **Flows:** births, deaths.

Output: Participants became familiar with core SD concepts such as accumulations and rates of change.



SESSION 3

SESSION 3: FINALIZING THE CLD

Objective: Improve accuracy and completeness of the causal map refined in Session 2.

Participants revisited the full causal map to confirm

- Variables accurately represent lived experiences.
- Links reflect realistic causal relationships.
- Social and structural determinants are properly embedded.

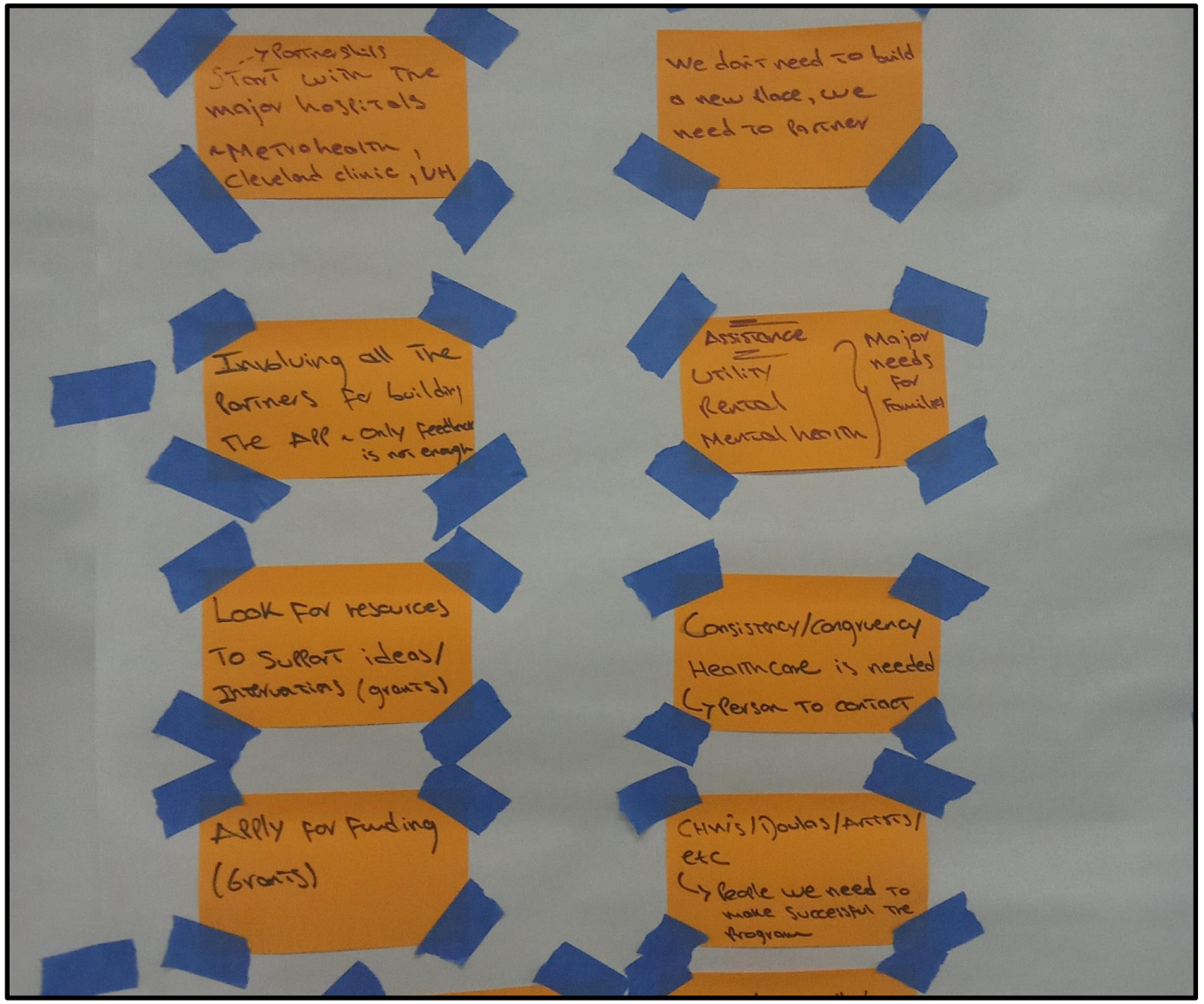
Output: Specific suggestions for improvement on the previous causal map.

SESSION 3: EXPLORING FIRST YEAR CLEVELAND (FYC) APP

Participants analyzed the **FYC App** as a potential tool to reduce infant mortality by improving access to resources.

Focus areas

- What information and services the App currently includes.
- What resources are missing.
- How pregnant women and mothers currently find help.
- Which touchpoints affect trust and adoption of the App.



SESSION 3: CO-DESIGNING FYC APP STRATEGIES AND STRATEGY PRIORITIZATION

Strategies to Strengthen the FYC App

- Make the App a one-stop shop for all maternal and infant resources.
- Provide personalized recommendations (based on location and needs).
- Build community trust through validation and familiar messengers.
- Integrate CHWs, doulas, and clinics directly into the App.
- Improve accessibility (language, visuals, ease of navigation).

How Participants Prioritized Strategies

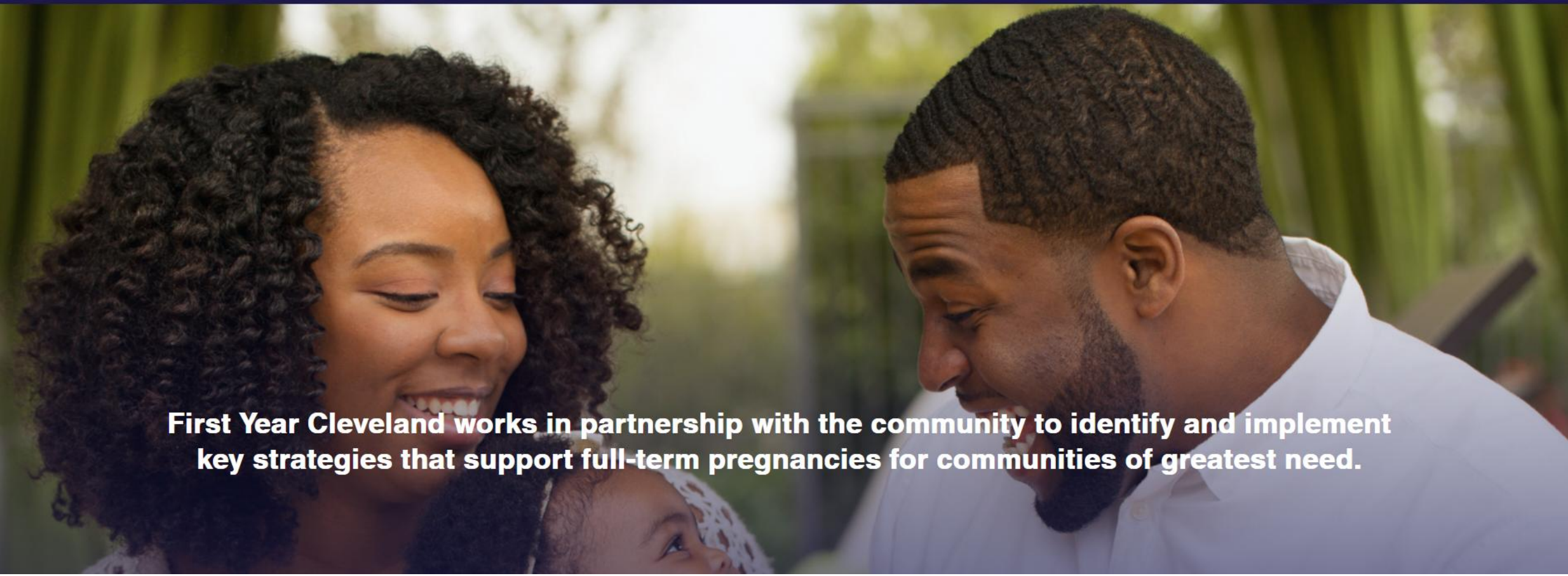
- Expected impact on reducing infant mortality.
- Feasibility with current community resources.
- Alignment with existing local programs.
- Capacity for pilot testing and real implementation.
- Required partnerships and timing considerations.

First Year Connects Resource App is LIVE! Check it out here.

Basic Needs Mini-Grant Applications accepted through July 15, 2026 Click here for details.

FIRST YEAR CLEVELAND

Home | About Us | Connector | Protector | Activator | Resource App | Donate

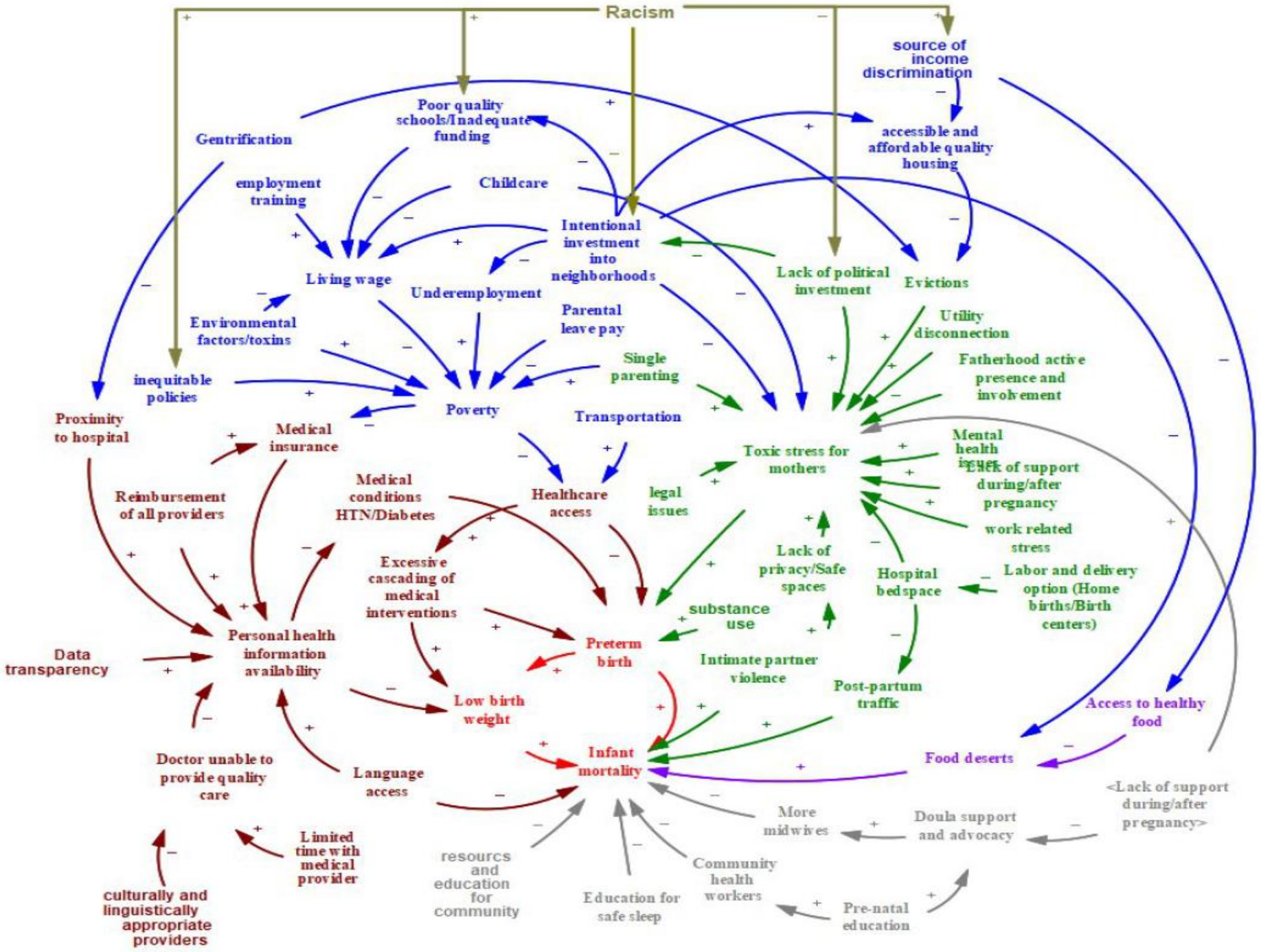


SESSION 4

SESSION 4: DISCUSSING IMPLEMENTATION PATHWAYS

The final session focused on:

- Presenting the final CLD.
- Confirming top intervention strategies.
- Identifying responsible partners.
- Mapping operational steps, required resources & barriers.
- Integrating strategies with the county's existing initiatives.
- Consolidating the basis for the simulation model.



Main Outcomes

Healthcare Factors

Economic Factors

Social Factors

Food system Factors

Community Capacity

All Factors Influencing Infant Mortality

FEEDBACK STRUCTURES DRIVING INFANT MORTALITY

- **Structural Disinvestment (R1):** Racism → economic instability → poverty → limited healthcare access → adverse birth
- **Stress Amplification (R2):** Housing instability and economic strain → toxic maternal stress → preterm birth/low birth weight → infant mortality → community trauma and reduced trust.
- **Healthcare Fragmentation (R3):** Limited culturally appropriate care and poor coordination → mistrust and reduced engagement → unmanaged chronic conditions → adverse outcomes.
- **Resource Visibility (B1):** Increased community education and CHW/doula engagement → improved navigation and service uptake → improved maternal well-being → reduced adverse outcomes.

TOP INTERVENTION STRATEGIES

- Strengthening cross-sector coordination and navigation support.
- Expanding culturally and linguistically appropriate care.
- Enhancing doula and community health worker integration.
- Addressing housing stability and eviction prevention.
- Improving access to healthy food and safe community environments.
- Increasing transparency and accessibility of maternal health resources.

CONCLUSIONS

- Infant mortality disparities in Cuyahoga County are shaped by interconnected structural, economic, healthcare, and psychosocial conditions, rather than isolated clinical risks.
- Structural racism operates as an upstream driver, influencing neighborhood conditions, economic insecurity, healthcare access, and cumulative stress across the life course.
- Systems mapping makes feedback loops visible and helps identify key leverage points for coordinated, community-centered action across sectors.

THANK YOU!