

# Using community-engaged systems science to inform food service delivery among Hollywood Food Coalition's Community Exchange Program: A case study for informing complex systems within the cancer care continuum

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## R25 "Modelers and Storytellers: Transdisciplinary Training to Advance Community Health Intervention Research"

### Background

**Community-engaged systems science:** study of how interconnected social, organizational, and environmental factors shape community outcomes and how modifying system structures or feedbacks can drive equitable, sustainable change [1]

**Transdisciplinary research:** integrates academic, practitioner, and community expertise, going beyond interdisciplinary collaboration to co-produce actionable knowledge that addresses complex real-world problems. [2]

#### Codefined System Challenge

Hollywood Food Coalition (HoFoCo) operates a food recovery and distribution network, called Community Exchange, serving 38+ partner organizations across Los Angeles County. As the network grew, HoFoCo identified a need to understand:

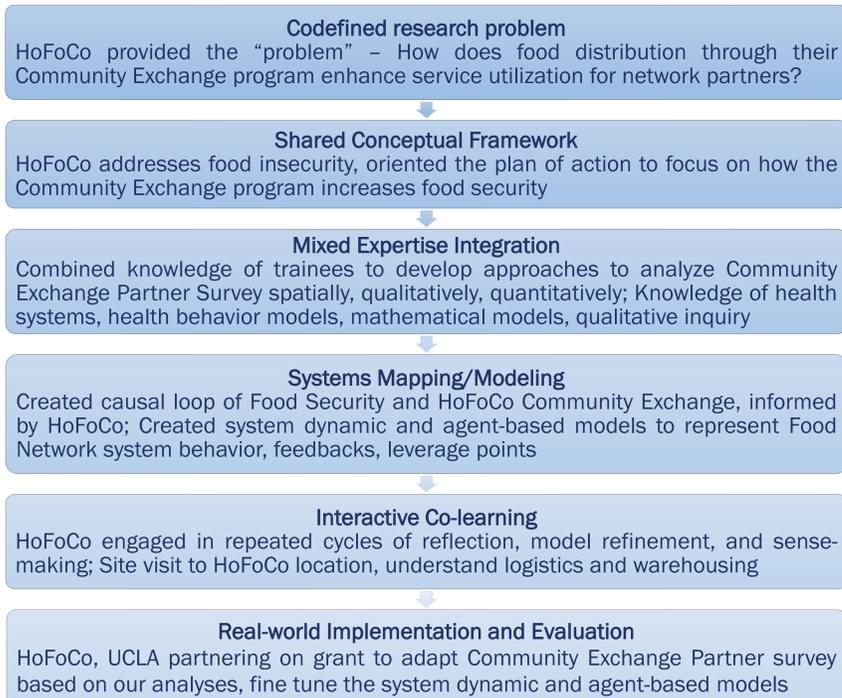
- Who is being reached
- Effect on the use of partner services because of being part of the Community Exchange
- How food recovery activities strengthen trust, capacity, and service delivery across partner organizations

#### Community-Engaged Systems Science

We applied the community engaged systems science method to co-define the problem, integrate multiple data sources and methods of analysis, and interpret findings with community partners.

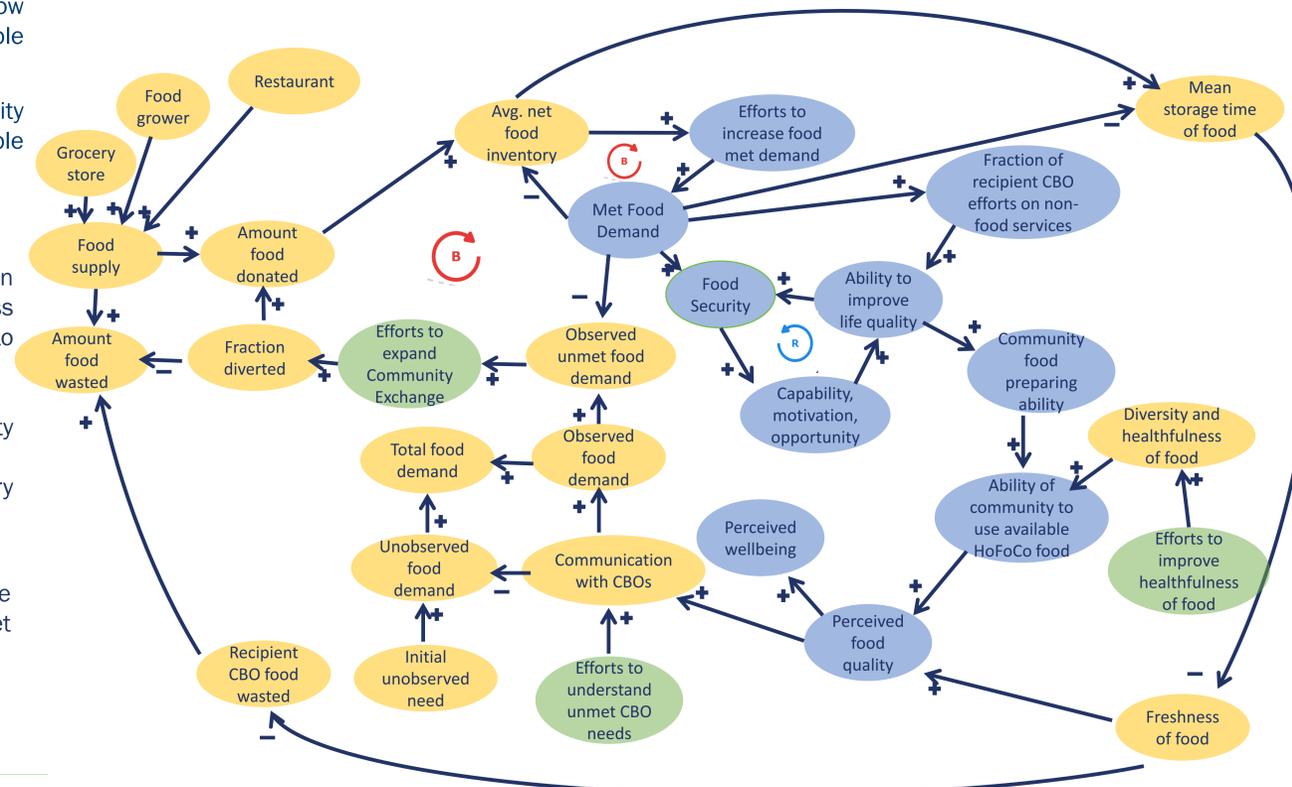
### Methods

Transdisciplinary System Science Methodology [2]



### Results

#### HoFoCo Food Distribution Food Security Causal Loop



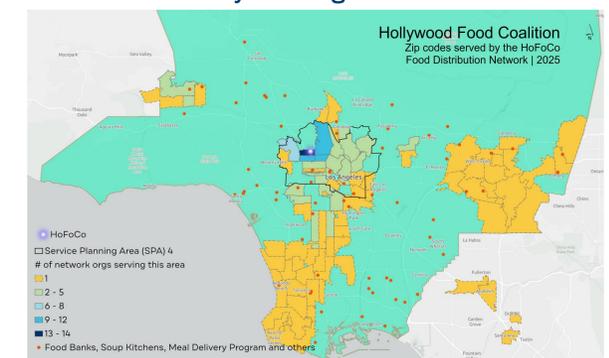
#### HoFoCo Community Exchange Partner Survey (n=36)

- ~17,200 people served monthly
- 36% of organizations run by volunteers
- Services provided by network: Food (46%), housing (40%), advocacy/legal (6%), spiritual (3%), mental health (2%), other (6%)
- 86 impact stories from qualitative analysis

#### Qualitative Themes about HoFoCo Community Exchange:

- Nutrition* – reliable access supports stability
- Empowerment* – partners gain autonomy through shared resources
- Community* – network participation strengthens relationships
- Emotion* – dignity and trust shape engagement
- Distribution* – coordination improves reach

#### HoFoCo Community Exchange Service Area



### Discussion: Shifting from Activity-Informed Engagement to Systems-Informed Engagement

#### Examples of traditional styles community engagement in cancer research

- Engagement informs activities within existing system structures
- Engagement with community partners framed to provide contextual insights – what does the CAB think of this?
- Research problems are often specified prior to engagement
- Individual-level interventions intended to improve population outcomes through extrapolation [3,4]

#### A different approach through Community-Engaged Systems Science

- Engagement identifies and modifies system barriers and leverage points
- Engagement with community partners directly shapes analytic models and implementation decisions
- Research problems are co-defined with community partners
- System-level interventions designed to shape outcomes across all service users

Community-Engaged Systems Science reframes community engagement in cancer research from supporting predefined, individual-focused interventions to shaping system-level understanding of how services are organized, constrained, and delivered across the cancer care continuum.

References: [1] Carey, G., Malbon, E., Carey, N., Joyce, A., Crammond, B., & Carey, A. (2015). Systems science and systems thinking for public health: a systematic review of the field. *BMJ open*, 5(12), e009002. [2] Parrott, R., & Kreuter, M. W. (2011). Multidisciplinary, interdisciplinary, and transdisciplinary approaches to health communication: Where do we draw the lines? In *The Routledge handbook of health communication* (pp. 33-47). Routledge. [3] Keeler, H. J., Itoate, R., Fitzpatrick, B. J., Hymel, E., Kabayundo, J., Napti, K., Schmidt, C. M., & Watanabe-Galloway, S. (2025). Community engagement in the context of cancer: Scoping review of definitions and measures to inform program-level analysis. *Cancer Causes & Control*, 36(11), 1431-1462. <https://doi.org/10.1007/s10552-025-02026-y>; [4] Wright, D., Foster, R., Miles, P., Duffield, N., Rickard, S., Frankland, J., Calman, L., & Foster, C. (2025). Communities against cancer: A qualitative study assessing the effectiveness of a community engagement initiative in improving cancer awareness for marginalized communities. *BMC Public Health*, 25, Article 2011. <https://doi.org/10.1186/s12889-025-23179-9>; [5] Ulbri, P., Sanghera, A., Avripas, S., & Johnson-Turbe, A. (2025, July). The Community-Engaged Research Framework. NORC at the University of Chicago. <https://www.norc.uchicago.edu/research/library/community-engaged-research-framework.html>