



Photo above of members of the Denver, Colorado community partnership after the group model building session.

# Healthy Kids, Healthy Communities Group Model Building Facilitation Handbook



Photos above of group model building participants during the behavior over time graphs activity. Communities represented from left to right include Louisville, Kentucky; Portland, Oregon; and Cuba, New Mexico.

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# About this Handbook

This handbook was originally created to guide Evaluation Officers from Transtria LLC ([www.transtria.com](http://www.transtria.com)) through group model building exercises as part of the *Evaluation of Healthy Kids, Healthy Communities* funded by the Robert Wood Johnson Foundation. The evaluation was designed to assess policy, system, and environmental changes as a result of the efforts of 49 community partnerships participating in the national *Healthy Kids, Healthy Communities* program of the Robert Wood Johnson Foundation ([www.healthykidshealthycommunities.org](http://www.healthykidshealthycommunities.org)).

As Evaluation Officers traveled to *Healthy Kids, Healthy Communities* sites across the country to implement this process, they discovered that many people they spoke to wanted to learn more about group model building, a method they were using to gather data.

As the *Healthy Kids, Healthy Communities* evaluators observed a continually growing interest in this work, the handbook was expanded to meet the needs of different audiences in order to share it as a resource with others. Therefore, in addition to providing a step-by-step protocol for Evaluation Officers to ensure consistency in data gathering across communities, this handbook delivers:

- 1) an accessible introduction to some of the basic concepts of system dynamics and group model building; and
- 2) a guide for people who want to replicate the exercises they experienced in the *Evaluation of Healthy Kids, Healthy Communities* or to model their own sessions.

Part of what is so exciting about group model building is that it actively involves a wide range of participants in modeling complex systems, and it provides a way for different representatives (e.g., residents, elected officials, government agencies, community-based organizations, businesses) to better understand some of the dynamics in the community and how they may be related.

This handbook represents our first effort to respond to the demand for tools that can be used by communities. While we have tried to balance the accessibility of the document with the required diverse skills needed to conduct the exercises (e.g., facilitation, systems thinking, community organizing, translation), we realize that there are inevitably limitations to this manual and improvements that will arise as this approach is conducted and communicated across communities.

# About this Project

## Section I:

### [About this Project]

This section contains background information on the *Healthy Kids, Healthy Communities* initiative and an overview of system dynamics and the group model building process being used as an evaluation tool.

# About this Project

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**CO-PRINCIPAL INVESTIGATOR:** Ross Brownson, PhD, Washington University Institute for Public Health

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## Healthy Kids, Healthy Communities

*“Healthy Kids, Healthy Communities*, a national program of the Robert Wood Johnson Foundation, is helping dozens of communities across the country to reshape their environments to support healthy living and prevent childhood obesity” (Healthy Kids, Healthy Communities, 2009).

### [ A WIDESPREAD PROBLEM ]

In the United States, it is estimated that 32% of children aged 2-19 years are overweight or obese. This high rate of childhood obesity is due to several factors, including social, environmental, and policy contexts that influence physical activity and healthy eating (Koplan, Liverman, & Kraak, 2005). *“Healthy Kids, Healthy Communities* places special emphasis on reaching children who are at highest risk for obesity on the basis of race/ethnicity, income and/or geographic location” (Healthy Kids, Healthy Communities, 2009).

### [ DESIRED SOCIAL CHANGE ]

The primary goal of *Healthy Kids, Healthy Communities* is to implement healthy eating and active living system, policy, and environmental change initiatives that can support healthier communities for children and families across the United States. A policy intervention is a new or altered course of action influencing or determining decisions, laws, ordinances, resolutions, mandates, rules, regulations, or practices. An environmental intervention is a new or altered physical, social, economic, or communication environment. A system intervention engages individuals across sectors to create sustainable change at a community, regional, state, national, or global level.

### [ WHAT'S HAPPENING IN COMMUNITIES ]

*Healthy Kids, Healthy Communities* grantees include community partnerships in 49 different geographic areas (e.g., municipalities, counties, regions). Details about some of the popular strategies being implemented can be found in the “issue areas” section of the program’s website: [www.healthykidshealthycommunities.org](http://www.healthykidshealthycommunities.org).

# About this Project

## [ EVALUATING HEALTHY KIDS, HEALTHY COMMUNITIES ]

Currently, there is limited evidence to support best practices for intervention planning and decision-making at the local level for comprehensive environmental and policy strategies to prevent and reduce obesity. This, then, identifies the need for complementary, inclusive evaluation approaches to capture the various community partnership efforts to prevent and reduce childhood obesity.

The evaluation is intended to highlight successful plans, processes, and strategies for system, policy, and environmental changes to increase active living and healthy eating as well as challenges encountered or unsuccessful approaches. In addition, the methods and tools provide an opportunity to look at common structures and processes across the communities. The community-based approach is also intended to build capacity for conducting evaluation at the local level.

Note that the longer-term initiative reach and effectiveness associated with behavioral and health outcomes will not be empirically tested as part of this evaluation. Community partnerships will be provided with evaluation tools, resources, and technical assistance, including recommendations for ways to secure additional resources to conduct reach or effectiveness evaluations.

## [ AFTER THE EVALUATION PROCESS ]

This evaluation will inform research and practice related to the design, implementation, and evaluation of environmental and policy interventions targeting changes in community design and health. It will help to identify key partners to engage in the process to change community environments, resources needed, policy changes required, and specific changes to the environment that can increase access to active living and healthy eating opportunities.

Collectively, the evaluation findings may highlight successful changes to existing policies or effective new policies related to active living (e.g., increase in tax revenue to parks, new “Complete Streets” ordinance) and healthy eating (e.g., increase in fruit and vegetable availability in corner stores, use of EBT machines in farmers’ markets) as well as changes to the community environment (e.g., new food outlets or parks, improvements to existing streetscapes or food vendors).

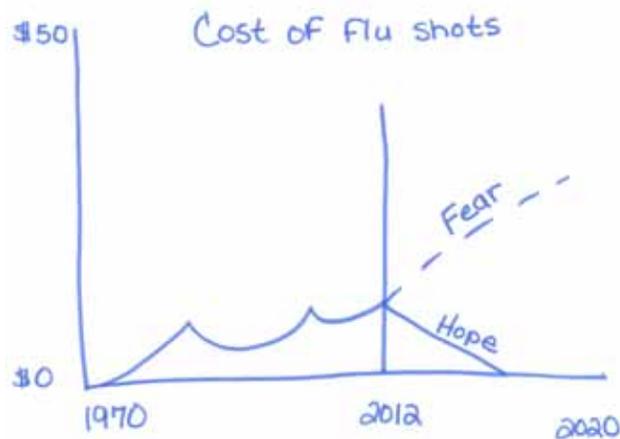
## System Dynamics

This manual draws on principles of system dynamics to understand communities. System dynamics was originally developed by Jay W. Forrester at the Massachusetts Institute of Technology to understand and solve problems in managing large organizations, but quickly started being applied to social problems such as urban growth and world population dynamics. System dynamics is “the use of informal maps and formal models with computer simulation to uncover and understand endogenous sources of system behavior” (Richardson, 2011, p. 241).

# About this Project

In system dynamics, system behavior is how a system (e.g., family, community, organization) changes over time. In the *Evaluation of Healthy Kids, Healthy Communities*, system behavior is about the past, current, and anticipated changes over time related to policies, environments, and collaborations in the community with respect to healthy eating and active living. These changes can be described using behavior over time graphs as shown in Figure 1 below. Behavior over time graphs are a useful tool for increasing specificity about changes in a community.

**Figure 1: Example of a behavior over time graph of the cost of flu shots in a community including the hoped for future behavior (solid line) and feared future behavior (dashed line)**



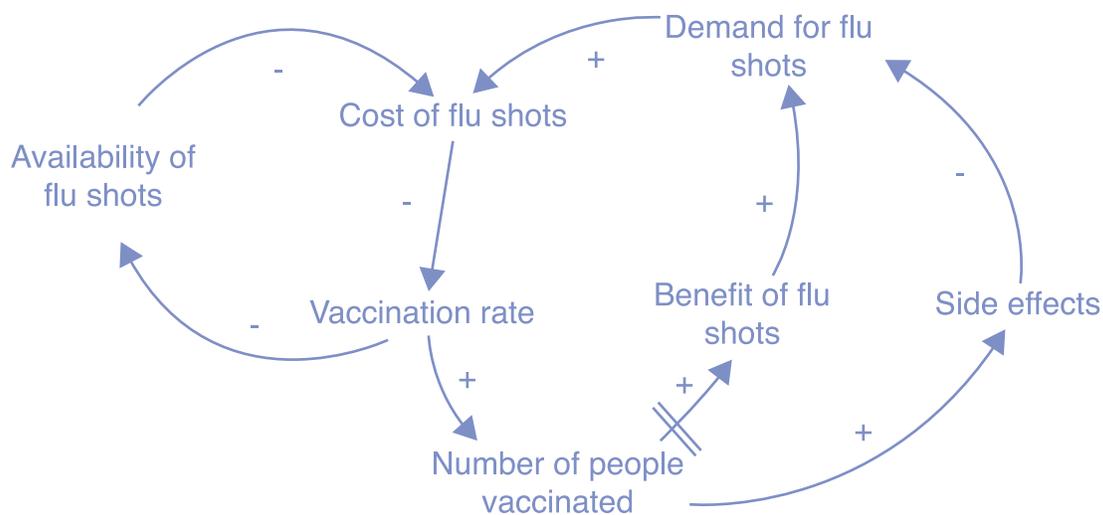
In system dynamics, the goal is to identify and understand the system feedback loops generating the dynamics of a community. Feedback loops are cause-effect relationships that form a circuit where the effects “feed back” to influence the causes.

The types of systems and the dynamics within the systems are complicated with many different elements interacting. Models provide a way to visualize all the interactions. The types of models used in this project are causal loop diagrams, also known as “CLDs.” These describe the system of feedback loops that might be underlying the behavior of a dynamic system. For example, Figure 2 shows a feedback system that might be causing the dynamics shown in Figure 1 with the cost of flu shots.

# About this Project

The words represent variables of quantities that can increase and decrease. It makes sense, for example, to think of the cost of flu shots going up and down just as it makes sense to think of the demand for flu shots going up and down. Hence, these variables change over time and are influenced by other variables as indicated by the lines with arrows.

**Figure 2: Example of a causal loop diagram illustrating the potential feedback loops that may be driving the cost of flu shots dynamics shown in Figure 1**



The lines with arrows represent causal relationships. For example, in Figure 2, “demand for flu shots increases or adds to the cost of flu shots if everything else remained constant,” and this is what is known about the system and how it behaves. The plus and minus signs on the arrows indicate whether or not the influence of one variable on another variable (1) increases/adds to (plus or “+” signs), or (2) decreases/removes from the other variable (minus or “-“ signs). For example, the link from demand for flu shots to cost of flu shots is a plus sign, indicating that an increase in the demand for flu shots leads to an increase in the cost of flu shots if everything else remains the same. Likewise, the link from availability of flu shots to cost of flu shots is a minus, indicating that increasing the availability of flu shots will decrease the cost of flu shots if everything else remains the same.

While some effects are almost immediate, others are delayed. For example, the side effects from a flu shot may be almost immediate compared to the perceived benefits of a flu shot. It might take one only a few days to develop side effects, but a year or so to realize that one didn’t get the flu this year. These delays are represented by double lines crossing the line with an arrow.

# About this Project

In Figure 2, there are three different feedback loops all influencing the cost of flu shots. The first feedback loop is: cost of flu shots → vaccination rate → availability of flu shots → cost of flu shots. The second feedback loop is: cost of flu shots → vaccination rate → number of people vaccinated → side effects → demand for flu shots → cost of flu shots. And, the third feedback loop is: cost of flu shots → vaccination rate → number of people vaccinated → benefits of flu shots → demand for flu shots → cost of flu shots.

What is important to notice in this example is that there are three different feedback loops all interacting simultaneously to influence the cost of flu shots. Some could be pushing the cost up while others are trying to push the cost down. Which feedback loop dominates the system's behavior at any given time is a more challenging problem to figure out, and ultimately, requires the use of computer simulations.

The goal for the *Healthy Kids, Healthy Communities* project is more modest than trying to figure out which feedback loop is actually driving the behavior of a community; rather, it is focused on trying to identify what the community system includes and how it influences environment, policy, and system changes. To accomplish that, group model building processes are used to develop the causal loop diagrams (CLDs).

## Group Model Building

*Healthy Kids, Healthy Communities* is evaluated, in part, by using group model building as a way to involve community stakeholders in the process of developing a model—specifically a causal loop diagram or map—to visualize and better understand their community and the pathways linking healthy eating and active living strategies.

Group model building (GMB) was developed in the early 1980's within the field of system dynamics as a way to involve stakeholders in the process of building system dynamics models (Andersen & Richardson, 2007; Andersen, Vennix, Richardson, & Rouwette, 2007; Richardson & Andersen, 2008; Vennix, 1996, 1999). Group model building is one form of participatory systems modeling, and uses a form of action research or community-based participatory research.

### [ GROUP MODEL BUILDING AS A COLLABORATIVE PROCESS ]

Group model building is a powerful method because it actively involves a wide range of participants in modeling a complex system. Decision-makers, community partners, and trained modeling partners each take part in the causal loop diagram development. This process leads to deeper and shared insights among participants while they create the causal loop diagrams that are grounded in community experience. Because of the broad involvement in creating the causal loop diagrams, this process promotes “buy in” to high-leverage prevention policy recommendations.

# About this Project

## [ GROUP MODEL BUILDING FOR HEALTHY KIDS, HEALTHY COMMUNITIES ]

Across active living and healthy eating strategies, several key resources influence success, including: local champions, partnerships, staff, elected and appointed officials, funding, advocacy, services, political influence, and social networks, among others. However, there is limited understanding in the field of the pathways from these resources to policy, system, and environmental changes in support of active living and healthy eating, as well as to reduce rates of childhood obesity.

Using group model building as part of the *Evaluation of Healthy Kids, Healthy Communities* helps to engage community partners in developing a common understanding and shared language for the ways these resources create community change. The causal loop diagrams complement each community partnership's workplan by mapping how the partnership's goals influence what is happening in the community, and how the resources interact within the system.

## [ BENEFITS OF GROUP MODEL BUILDING ]

The causal loop diagrams developed as part of the group model building process in this evaluation project can provide insight into the ways that changes in various strategies, policies, and activities are related and may impact the community. These diagrams represent data about the feedback structures within a community from the perspective of partners living and engaged in the community.

The resulting diagrams can be used by community partners in several ways, including: communicating prevention strategies and programs; revising or designing policy, system, and environmental strategies; and designing evaluation efforts.

## [ FIDELITY TO THE DATA GATHERING PROCESS ]

The step-by-step method described in this handbook is meant to be a tool for practical use during group model building sessions. As group model building sessions are taking place within numerous communities across the United States, it is important that facilitators follow the steps laid out in order to ensure consistency in the data-gathering process.

## [ OTHER BACKGROUND KNOWLEDGE AND SKILLS NEEDED FOR GROUP MODEL BUILDING ]

Group model building draws on knowledge and skills from system dynamics and systems thinking. Persons seeking to facilitate the group model building exercises described in this facilitation handbook should have some introductory training in systems thinking or system dynamics that includes the use of behavior over time graphs, causal loop diagrams, identifying feedback loops, and distinguishing reinforcing and balancing feedback loops.

# About this Project

## [ FACILITATION TIPS ]

Good facilitation is an essential part of a successful group model building session. Good facilitation helps keep the conversation going, encourages active participation from all members, keeps any one individual from dominating the conversation, and helps the group stay focused. Good facilitation also involves recognizing differences in opinion or experience and managing conflicts that can arise in groups around different agendas and individual personalities. Here are some tips on facilitating the group model building session.

- **Stay neutral and balanced.** Focus on staying neutral and balanced. Your role is not to advocate a particular position, but to facilitate a discussion where different opinions can be shared. Sometimes this means making sure everyone has a chance to speak and recognizing different opinions (e.g., paraphrasing the different points of view that have been raised). However, it can also mean interrupting someone who pushes his or her agenda and does not listen to others (e.g., “so you’re bringing up [state their position]; could you push that further and relate it to [another position that is raised by someone else]?”).
- **Connect with participants.** Before the session starts, connect with participants in the room. Whether you know the participants or not, greeting and establishing a connection with participants makes it easier to draw in participants later, and helps establish you as someone who can be neutral and fair with the participants in the room. As you are facilitating, it is important to continue to connect with participants. If you are summarizing or sharing information back with them, try to use participant’s names and stories to let them know you are listening.
- **Use physical space.** Arrange and use the physical space in the room to help manage conversation flow. For example, if someone is dominating the conversation and you need to bring in other speakers, walk toward the group and invite other opinions (e.g., “are there other thoughts on this?”). Likewise, if the group is having a great discussion and you want to encourage the conversation flow, step away from the group.
- **Engage everyone in the room.** Notice active and inactive participants. In some cases, it may be helpful to go around the room to get input from everyone when it appears that only a few people are responding and others defer to these individuals when new questions are raised.
- **Work the room during small group exercises.** Small group exercises are not a time to take a break. Work the room. The small group exercises are a great opportunity to connect with individual participants during the session (e.g., asking participants if the directions are clear, providing positive reinforcement to the groups).

# Before the Site Visit

## Section II:

### [Before the Site Visit]

When facilitators travel to the sites funded for *Healthy Kids, Healthy Communities*, there are a number of components to the visit. This section assists in general preparation for the group model building session on the site visit.

# Before the Site Visit

## Tasks to Complete

- 1) Have conversations with the Community Partnerships about the site visit (purpose, logistics)
- 2) Confirm dates of the site visit (at least one month in advance for travel arrangements)
- 3) Create a draft schedule and share with the community partnerships
- 4) Prepare for group model building session
  - Discuss individuals that should be involved*
    - Identify 10-15 people maximum (name and organization)
    - Suggest a combination of partners and community residents
    - Assess need for interpretation or translation services (one person can interpret and one person can translate the causal loop diagram)
  - Describe room needs*
    - Tables and chairs for participants (that can be moved around and rearranged)
    - Room available for set up and take down by Transtria staff (allow 60 minutes for set up and 60 minutes for take down and debrief)
    - Wall space for activities (at least 5' by 10' and double for session with translation)
    - Materials (scissors needed on site; evaluation team provides remaining materials)
  - Arrange for a meal or snack during the break*
    - Identify budget for the meal or snack
- 5) Discuss preferred payment method (on site, advanced)

# Before the Site Visit

## Materials for the Group Model Building Session

### Site Visit General Information

- Map to meeting location
- Phone number for project director and coordinator

### Overall Session Materials

- Group model building handbook
- Laptop and cord (be sure that Vensim PLE software is on the laptop)
- Camera plus charger or extra batteries
- Voice recorders and extra batteries
- Headsets (if needed by interpreters)
- Contact sheet for participants to sign
- Photo release forms
- Painters tape
- Masking tape

### Behavior Over Time Graphs Activity

- Ream of plain paper (8.5 x 11)
- Regular markers

### Causal Loop Diagramming Exercise

- Scissors to be obtained on site and used to cut the dry erase rolls in half
- Dry erase markers
- Erasers for dry erase boards
- Dry erase rolls (e.g., 2 rolls of 18 inches by 20 feet or similar dimensions)

# Before the Site Visit

## Involving Interpreters and Translators

Discuss potential language barriers for participants scheduled to be part of the group model building sessions with the project directors or coordinators. If interpreters (for the conversation) and translators (for the causal loop diagram) are needed, find out if the community has a preferred individual or whether someone needs to be identified. Be prepared to set aside funds for these services in advance.

- 1) Communicate with the interpreter and translator before the site visit about the following:
  - a. group model building session format/schedule;
  - b. technical terms from system dynamics and the group model building session (e.g., polarity, causality, feedback loop);
  - c. preference for simultaneous or consecutive interpretation;
  - d. use materials (headsets); and
  - e. payment.

On the site visit:

- 2) Have the interpreter position him/herself where you can hear him/her and close to those who do not speak English (if there's only a few, they can sit together).
- 3) Have the translator position him/herself close to the wall for the behavior over time graphs exercise to translate language in graphs, when necessary, and by the wall for the causal loop diagram (note: this person will need to arrive early to assist with translation of the introduction information posted on the wall and this person will need to translate variables from the behavior over time graphs during the break).
- 4) Let the interpreter know that he/she can pause the session to clarify or if things are moving too quickly. Assure him/her that the facilitator will try to speak in shorter sentences to facilitate interpretation.
- 5) Follow up with the interpreter and translator after the fact to thank them and coordinate payment for their services, if it is not already established.

## Section III:

### [Preparation at the Site Visit]

Once on site, but before beginning the group model building session, there are a number of preparations that need to take place in order to ensure a well-run session. This section details the logistics for these preparation steps.

# Preparation at the Site Visit

## Logistics for Preparation

Plan ahead to arrange the room and to acquire the necessary supplies before the group model building session in order to run a smooth session. Following are some suggestions for how to manage these logistics.

### [ PREP: SET UP THE ROOM (20 – 30 MINUTES) ]

**Purpose:** To establish a physical environment that allows participants to work independently and share their work with the larger group.

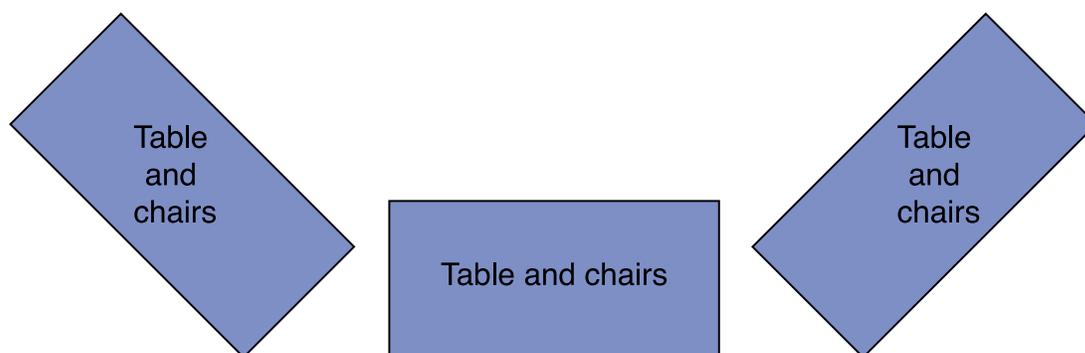
**Steps:**

- 1) Arrange the room so that everyone has table space so that they can create their behavior over time graphs. Make sure everyone can see the wall. The tables can be arranged in a U shape or there can be smaller tables if need be.
- 2) Identify two sections of the wall that can be used as follows: a) to display the behavior over time graphs in themes or categories; and b) to display the dry erase board used for the causal loop diagramming exercise.

[ Figure 3: Example of group model building room setup ]

Area for category

Area for model wall



# Preparation at the Site Visit

## [ PREP: ORGANIZE MATERIALS (20 - 30 MINUTES) ]

**Purpose:** To ensure that all needed materials are readily available.

**Steps:**

- 1) Ask the project director/coordinator to assist with convening and thanking participants for coming to the group model building session (provide introduction script to convener for a sample of language).
- 2) Distribute blank 8.5 x 11 paper (5-10 sheets / person), markers, and name tags for each participant.
- 3) Have paper and a marker ready for the facilitator to use for drawing an example behavior over time graph.
- 4) Tear off 2-inch pieces of painters tape (~30 to 45 pieces) and place them on the wall to the side of the space for the behavior over time graph display for use by the wall builder. Place the roll of painters tape near the wall for continued use.
- 5) Cut the dry erase rolls in half – approximately 10 feet wide – and place 3 rows on the wall for the causal loop diagram. Secure the bottom row first using the painters tape (reinforce it with masking tape as needed using caution to ensure that the tape does not harm the surface). Be conscientious of the height of the modeler to ensure that he/she is able to reach all three rows. Add the middle row next ensuring that there is about a 1 inch overlap with the bottom row and repeat for the top row. [Note: Walls with different surfaces (e.g., paint, tile, carpet, vinyl) may require additional tape to ensure that the dry erase board will stick to the surface. Place the dry erase markers and eraser nearby for the facilitator and modeler to use as needed.
- 6) Prepare a contact sheet for participants to provide their name and email address; this will allow the project director/coordinator to share the causal loop diagram with the participants after the session.
- 7) Ensure camera and digital recorder are readily accessible and the batteries are charged.
- 8) Fill in the facilitator step-by-step instructions in Section V with the appropriate names, organizational affiliations, and start/end times.
- 9) Decide who is responsible for monitoring the time and ensure that person can see a clock or has a watch. Decide what kinds of signals, and at what times, the timekeeper should communicate with the facilitator.
- 10) Know where the temperature controls are (if applicable) and decide who is responsible for making adjustments as needed.
- 11) Know where the restroom is and how to get drinking water, as needed.

# Preparation at the Site Visit

## Modeling Team Preparation

Each site visit involves participants from the community on the group model building team. It is important that all team members have context for the project and their roles, and that they have the resources they need to complete their assigned tasks.

### [ PREP: MEETING CONVENER / CLOSER (5 - 10 MINUTES) ]

**Purpose:** To open the session, welcome the participants, introduce the facilitator and modeler, provide additional context for the session as needed, and to close the session at the end. Ideally, the meeting convener / closer is a local partner (e.g., the project director or coordinator).

#### **Steps:**

- 1) Have the meeting convener/closer read the Quick Reference (Section IV) and relevant parts of Section V (e.g., Convening Group and Introductions: Meeting Convener, Next Steps and Closing: Meeting Closer).
- 2) Discuss the content of these pages with the meeting convener / closer to check for understanding of the project and his/her role. Answer any questions to ensure readiness to begin the session.

### [ PREP: PHOTOGRAPHER (5 - 10 MINUTES) ]

**Purpose:** To capture the spirit of the work done at the session through photos of the environment, group process, and products.

#### **Steps:**

- 1) Have the photographer read the Quick Reference (Section IV).
- 2) Discuss at what times (reference Detailed Agenda) the photographer should be capturing the work, what should be captured at those times, and where the photographer should stand to take those photos.
- 3) Ask the photographer to take pictures of the entire wall, the part of the wall displaying all of the behavior over time graphs, the part of the wall displaying the entire causal loop diagram, and close-up photographs of the graphs and parts of the diagram. Ask the photographer to check each photo to ensure that the focus, resolution, and contrast is adequate enough to read the words and symbols.

# Preparation at the Site Visit

## [ PREP: INTERPRETER AND TRANSLATOR (5 - 10 MINUTES) ]

**Purpose:** To ensure the content of the group model building session is accessible to all participants with respect to the dialogue and the graphs or diagrams displayed.

**Steps:**

- 1) Review and share the format and schedule for the day and decide where the interpreter and translator will be positioned (i.e., to hear the facilitator and participants, to translate the graphs and causal loop diagram as needed).
- 2) Discuss technical terms from system dynamics and the group model building session (e.g., polarity, causality, feedback).
- 3) Confirm the plan to use simultaneous or consecutive interpretation and materials (e.g., headsets) as well as the intention to speak in short sentences to facilitate interpretation.
- 4) Plan for a process for the interpreter to pause the session in order to clarify information or to indicate that things are moving too quickly.

# Quick Reference

## Section IV:

### [Quick Reference]

This section contains documents that can serve as a quick reference on the day of the group model building session. Team members should review this section to create a unified understanding of the context and structure for the session.

# Quick Reference

## Team Roles

In these sessions, each of the team roles is taken on by community representatives or staff from Transtria LLC.

### [ COMMUNITY REPRESENTATIVE ]

**Meeting Convener / Closer** - The meeting convener/closer introduces the purpose of the meeting and the facilitators at the beginning and provides a quick summary at the end of the meeting (e.g., next steps for the community partnership). He/she is familiar with the project and the meeting attendees, and he/she is usually a recognized leader within the group. He/she provides context for the overall session and process in the spirit of the work of the community partnership.

**Photographer** - The primary function of the photographer is to take pictures of the room set up, the facilitators and participants, and the results of the exercises. Additionally, the photographer may take pictures of the individuals during the session activities. (See the Photo Release form. Permission must be obtained from the participants).

### [ EVALUATION OFFICERS ]

**Community Facilitator** - The community facilitator is responsible for leading the group model building session. He/she is familiar with the problem being modeled, the local context and community norms related to the problem, and how to facilitate dialogue in cross-cultural situations. This substantive expert/facilitator should have strong group facilitation skills, training in system dynamics, and sufficient knowledge of the topic or community to anticipate and mediate questions, comments, or conflicts that might arise within the group model building session.

**Wall Builder / Modeler Facilitator** - The modeler facilitator is primarily responsible for grouping the behavior over time graphs into thematic categories and creating the causal loop diagram from the facilitated discussions in the session. At the end of the behavior over time graph exercise, he/she will explain the clusters he/she has created with the graphs. At the end of the causal loop diagram exercise, he/she will briefly summarize the diagram and related conversations. He/she is trained in system dynamics modeling with expertise in teaching and leading groups in the use of system dynamics. He/she should also have experience facilitating groups and leading group model building sessions.

# Quick Reference

## Detailed Agenda

Time	Activity	Goal	Brief Description
15 min	Convening group and introductions	Provide outline and goals of session and introduce modeling team and participants.	<p><u>Convener</u> opens session, states the purpose of session, and takes care of any housekeeping items.</p> <p><u>Convener</u> then introduces the community facilitator and hands the session off to them.</p> <p>The <u>community facilitator</u> introduces the modeling team and has the participants introduce themselves. They also take care of consent forms.</p>
60 min	Behavior over time graphs exercise	Participants create graphs on things that affect or are affected by policy, system, and environmental changes in the community.	<p><u>Community facilitator</u> leads participants in an exercise to create behavior over time graphs of “things that affect or are affected by policy, system and environment changes in this community”.</p> <p>Participants then share their behavior over time graphs.</p> <p>The <u>wall builder</u> organizes the behavior over time graphs into the category grid. At the end of the exercise, the <u>wall builder</u> reflects back to the group the category clusters, and dismisses group to lunch.</p>
30-60 min	Break	Participants take a break while the modeling team identifies variables to start the causal loop diagramming exercise.	The <u>modeling team</u> identifies a likely seed structure and reviews categories in preparation for the causal loop diagramming section.

# Quick Reference

Time	Activity	Goal	Brief Description
60 min	Causal loop diagramming exercise	Make connections between variables and identify feedback loops. Create a causal loop diagram representative of the community's "theory of change."	The <u>community facilitator</u> reconvenes the group after lunch and introduces the idea that in system dynamics the relationships between the variables identified in the behavior over time graphs form the structure of the system and produce the changes in the community. The goal of this portion of the session is to talk about these variables and how they are related in this community or region. The <u>community facilitator</u> then walks participants through the variables selected from the first activity that have been written on the dry erase rolls for the causal loop diagram activity. The <u>community facilitator</u> starts a discussion to elicit relationships across these variables (depicted through arrows) and to add new variables as they are identified. The <u>modeler facilitator</u> explains the arrows, polarities, and feedback loops as they are created during the conversation. In addition to facilitating the ongoing discussion, the <u>community facilitator</u> ensures that what participants are sharing is accurately represented in revisions to the causal loop diagram by the <u>modeler facilitator</u> .

# Quick Reference

Time	Activity	Goal	Brief Description
5-10 min	Structure and behavior review	Modeler reviews the structure that has been created and seeks validation that participant conversations have been accurately represented.	The <u>modeler facilitator</u> reviews the variables and structure, and highlights the group's emerging "theory of change." The emphasis is on making sure that all participants have a basic understanding of the variables and relationships that create the behaviors represented in the system, and that the causal loop diagram created reflects the group's causal assertions.
5 min	Review, next steps and closing of session	Facilitator and closer outline the next steps and close the session.	The <u>community facilitator</u> reviews the activities in the session, describes major products created, and begins a conversation about next steps. Specifically, the <u>community facilitator</u> explains how the products from this session will be used to create a clean, electronic version of the causal loop diagram, and he/she describes the plans for "reality checking" the feedback loops in the causal loop diagram with the community partners at a later date. The <u>closer</u> thanks participants for their contributions, identifies how and who will coordinate next steps, and, finally, closes the session.

# Group Model Building Session

## Section V:

### [The Group Model Building Session]

This section contains step-by-step instructions for the group model building session. Each set of instructions is tailored to the activities and responsible team members (see the tables at the beginning of each set of instructions). The instructions also contain suggested language, talking points, responses to challenging questions, and time management considerations.

# Group Model Building Session

## Convening Group and Introductions: Meeting Convener

5 MINUTES (START TIME: \_\_\_\_\_ / END TIME: \_\_\_\_\_)

Time	Activity	Team Members
15 min	Convening group and introductions	Meeting Convener, Community Facilitator
60 min	Behavior over time graphs	Community Facilitator, Wall Builder
30 – 60 min	Break / preparation	Modeling Team
60 min	Causal loop diagramming exercise	Community Facilitator, Modeler Facilitator
5 – 10 min	Structure and behavior review	Modeler Facilitator
5 min	Review, next steps and closing	Community Facilitator, Meeting Closer

**Purpose:** To welcome participants and to set their expectations for the session.

### Suggested Language:

- *Thank you all for coming today to talk with Transtria about our policy, system, and environmental work related to healthy eating, active living, and childhood obesity in our community.*
- *I would like to introduce our evaluation officer: \_\_\_\_\_ (name, title) and our modeler: \_\_\_\_\_ (name, title) They will be leading us through today's activity.*
- *As a reminder, we will be taking a break at \_\_\_\_\_ to eat, check email, etc. We will reconvene promptly at \_\_\_\_\_ to begin the last portion of the session.*
- *Thanks again for coming today. I will turn it over to \_\_\_\_\_ (name of evaluation officer) to start the session.*

# Group Model Building Session

## Convening Group and Introductions: Community Facilitator

10 MINUTES (START TIME: \_\_\_\_\_ / END TIME: \_\_\_\_\_)

Time	Activity	Team Members
15 min	Convening group and introductions	Meeting Convener, Community Facilitator
60 min	Behavior over time graphs	Community Facilitator, Wall Builder
30 – 60 min	Break / preparation	Modeling Team
60 min	Causal loop diagramming exercise	Community Facilitator, Modeler Facilitator
5 – 10 min	Structure and behavior review	Modeler Facilitator
5 min	Review, next steps and closing	Community Facilitator, Meeting Closer

**Purpose:** To welcome participants and to set their expectations for the session.

### Steps:

1) Thank you

- *Thank you for the warm welcome and thank you all for being here today.*

2) Who are we?

- *Transtria is a public health research and consulting firm based in St. Louis, Missouri. We have been funded by the Robert Wood Johnson Foundation to evaluate the Healthy Kids, Healthy Communities initiative. The evaluation team is comprised of several team members that have been traveling to the 49 funded communities in order to understand their experiences of healthy eating, active living, and childhood obesity as well as efforts to create positive change in their communities.*

# Group Model Building Session

## 3) Purpose

- *Today, we have two main activities that will offer insight into this group's common understanding of the policy, system, and environmental work going on in the communities you are serving related to healthy eating, active living, and childhood obesity. The first activity is called behavior over time graphs and we will spend about 60 minutes on this activity. In the first 10 minutes, we will ask you to create graphs individually that show your perceptions of the policy, system, and environmental changes in your community. Next, we will ask you to go around the room and share your graphs, allowing others in the room to hear and reflect on your stories tied to the graphs. After this first activity, we will take a break while our team will identify variables from some of the graphs to be placed on the dry erase rolls to start the next activity. For the second activity, we will spend about 60 minutes collecting your perceptions of the causal relationships between the variables, or ideas, that were generated from the graphs during the first activity. At the end of the session, we will have created a causal loop diagram (systems map), illustrating the complexity inherent in the work to improve healthy eating and active living as well as to prevent childhood obesity. These illustrations highlight feedback loops in the system to show how the variables are related and connected and potential leverage points in the system for new or ongoing intervention. These activities are replicated in all of the funded sites for Healthy Kids, Healthy Communities so we can begin to understand the cross-cutting themes in the communities' theories of change.*

## 4) Introductions

- *I'd like to ask you to introduce yourselves and how you have been involved with the work in your community [point to someone to begin introductions]. Great, thank you. It is helpful to know we have in the room.*

## 5) Housekeeping items

- *We have a few housekeeping items that we want to mention up front.*
  - *You will notice that there is a photo release form in front of you. To capture today's activities, one of us will be taking photos during the session and we want to have your consent to use these photos to illustrate the group model building process. If you are comfortable with us taking your photo for purposes of documentation of the session, please sign the form and pass it up front. If you are uncomfortable signing the release, please let us know now so that we don't take your picture. [Look around to ensure everyone is signing the form.]*
  - *We would also like to ask if we can have your permission to record today's conversation. We want to make sure that we capture all the stories that you share with us accurately. Please know that any information you share will not be linked back to you, individually; rather, the conversation will be summarized for the whole group. If it is okay with you to have the session recorded, can you please nod yes for me? [Look around to ensure everyone is nodding yes]. Great thank you. [Press record on the recorder; place in the middle of the room.]*
- *We are going to go through a few activities today to understand the policy, system, and environmental work going on in your community. [Refer to the writing on the wall.]*

# Group Model Building Session

## Behavior Over Time Graphs: Community Facilitator Steps

60 MINUTES (START TIME: \_\_\_\_\_ / END TIME: \_\_\_\_\_)

Time	Activity	Team Members
15 min	Convening group and introductions	Meeting Convener, Community Facilitator
<b>60 min</b>	<b>Behavior over time graphs</b>	<b>Community Facilitator, Wall Builder</b>
30 – 60 min	Break / preparation	Modeling Team
60 min	Causal loop diagramming exercise	Community Facilitator, Modeler Facilitator
5 – 10 min	Structure and behavior review	Modeler Facilitator
5 min	Review, next steps and closing	Community Facilitator, Meeting Closer

**Purpose:** To guide participants through activities that will help frame the problem of childhood obesity in this community, with an emphasis on policy, system, and environmental changes to support healthy eating and active living. This exercise is designed to generate causes or influences on the problem and how they have changed over time.

### Steps:

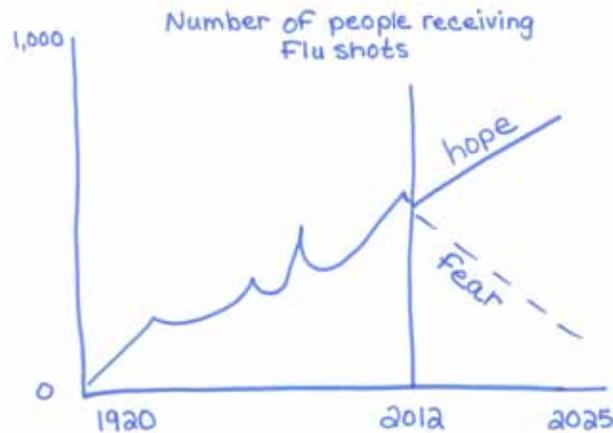
- 1) Point out sheets of white paper for each participant.
- 2) Introduce the exercise to the participants:
  - *Purpose of this exercise: To create behavior over time graphs to illustrate how you see things in the community changing as a result of the efforts of your policy, system, and environmental work related to healthy eating, active living, and childhood obesity prevention.*
- 3) Behavior over time graphs demonstration.
  - *For the first part of today's modeling session, we are going to develop and share behavior over time graphs. These are illustrations of how you see things in your community changing as a result of the efforts of your community partnership. I'm going to show you how we create the graphs, and then you will have some time to create as many graphs as you can in the time we have for the activity. After that, we will ask you to share your graphs with the group. We will use these behavior over time graphs later in the day to create our model. Let's begin with a demonstration of how to construct the graphs. We understand that this is new to many of you, so we just ask that you try your best. There are no right or wrong ideas and there is no judgment on drawing ability or content.*
  - *My demonstration will use a topic intended to be unrelated to the activities of your partnership. I have selected the number of people receiving flu shots as my variable or idea.*

# Group Model Building Session

- *I'm going to begin by taking one sheet of paper and drawing an X (horizontal) and Y (vertical) axis [indicate X and Y axes as drawing].*
- *Next, I'm going to label the graph in large letters so it can be read when we tape it up on the wall.*
- *Next, I'll fill in the values for time across the X, or horizontal, axis. Choose any time line that suits the story that you want to tell about your variable, or idea, and then add a vertical line at today's date. For this example, I'm going to use 1920, 2012, and 2025 to label my graph [hold up graph as you label it]. You can also use days, weeks, or months for the time frame instead of years.*
- *For the Y, or vertical axis, we would like you to provide a scale for your variable, or idea. For my example about the number of people receiving flu shots, I may decide to use a descriptive scale, such as low to high, or a number scale, such as counts of people or dollars spent on shots. I don't know the actual number of people receiving flu shots, so I'm going to make my best guess. For your graphs, you can use the scale you think is most appropriate for your variable, or idea, in order to tell your story of how it has changed over time [hold up graph as you label it].*
- *You do not have to be precise! Please remember that this is about your perceptions of what is going on relative to the variable you are describing.*
- *Now, I'm going to draw my perceptions of the number of people receiving flu shots from 1920 to today. The change over time starts at the Y axis and goes to the vertical line on the graph for today's date [hold up graph as you draw the line].*
- *After you get to today's date, draw a dashed line to show what you fear will happen after today [hold up graph as you label it and point out dashed line]. Then, draw a solid line to show what you hope will happen after today [hold up graph as you label it and point out solid line].*
- *For my graph, I think that the number of people receiving flu shots has fluctuated but increased over time to today. I think this may be because of more knowledge about the flu. I hope the number of people receiving flu shots goes up because I want people to be vaccinated. My fear is that the number of people receiving flu shots will go down as concerns increase about getting vaccinated. This is my story about the number of people receiving flu shots.*
- *To recap the graph, we have a large title, a time frame across the X axis, and a scale for the Y axis as well as a diagram that illustrates my perception of the behavior (flu shots) over time. Please be sure to only include one major variable, or idea, in each graph. We understand that different variables may influence each other and it may make sense to have more than one in a graph, but we want to hear about the unique story for each individual variable and how it has changed over time.*

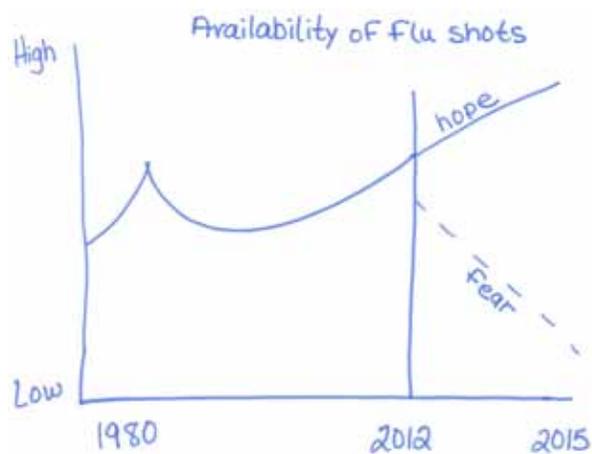
# Group Model Building Session

[ Photo: Sample behavior over time graph for number of people receiving flu shots. ]



- Another example graph can tell a story about the availability of flu shots. I think that in 1980 the availability of flu shots was low because you always had to get them at a hospital or clinic. Over time, I think that the availability has increased as more locations have been carrying the shots, such as universities, pharmacies, and worksites. I hope that the availability of flu shots continues to increase and I fear that it will decrease given the cost of providing the shots in the current economic climate.

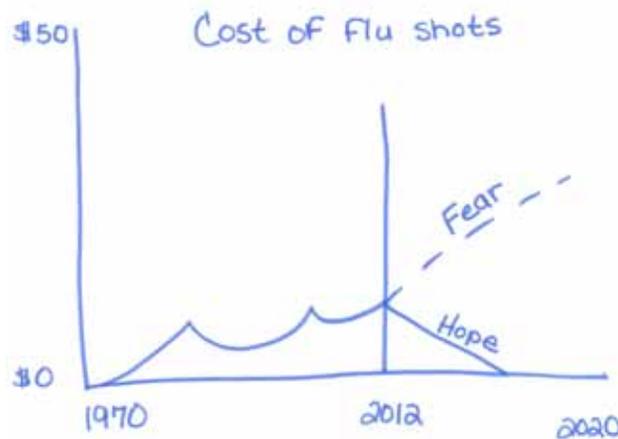
[ Photo: Sample behavior over time graph for availability of flu shots. ]



# Group Model Building Session

- Another example graph can tell a story about the cost of flu shots. I think that in 1970 the cost of flu shots was low. Over time, I think that the cost of flu shots has increased as there has become more of a demand for flu shots. I hope that the cost of flu shots decreases and I fear that the costs will continue to increase.

[ Photo: Sample behavior over time graph for cost of flu shots. ]



- 4) Give directions to the group to create their own behavior over time graphs.
- For today's exercise, we would like you to make graphs in response to this statement: "Things that affect or are affected by policy, system and environmental changes in your community. . ." (healthy eating, active living, and childhood obesity) [Again, refer to writing on wall.]
  - Remember, there are no right and wrong answers. We are looking for your thoughts on the work of your community partnership, what has changed over time, and what may change into the future.
  - Please be sure to include only one variable, or idea, in each graph on each page. We encourage you to make as many graphs as you can think of that are relevant or important to what your partnership is doing. You will have about 15 minutes.
  - Does anyone have any questions?

**Sample Question:** Can you give us an example of variables?

**Answer:** As you think about what affects or is affected by changes in your community, you may come up with variables, or ideas, related to people (e.g., changes in attitudes or behaviors, poverty, civic engagement), places (e.g., farmers' markets, parks), policies (e.g., tax changes, new regulations), partners (e.g., number of partners, diversity of partners, new partners), or other social, economic, or environmental influences. Again, some of these may affect the community partnership's efforts to create change and some may be affected by these efforts.

# Group Model Building Session

- 5) It is important to establish norms for creating behavior over time graphs. Walk around the room looking closely at the graphs created by participants. When you identify the first graph that was constructed correctly, ask the participant if you can use his/her graph as an example. Hold up the graph for all participants to see and walk through each element of the graph (i.e., one variable or idea, X and Y axes, time frame across the bottom, scale along the side, line to indicate today, hope and fear for the future). As you continue to walk around the room, be sure to mention the importance of placing one variable or idea per graph and help participants as needed. If participants get stuck or the group begins to run out of steam, then provide reminders to think about things that affect and things that are affected by the community partnership's efforts. Allow 15 minutes.
- 6) Reconvene the group.
- *Now, we would like to ask you to share your behavior over time graphs.*
  - *Please arrange your graphs in priority order (i.e., those graphs with the greatest effect on, or those graphs demonstrating variables, or ideas, that were most affected by, the community partnership's efforts should come first).*
  - *When we go around the room, please share your favorite one first.*
  - *Tell us the title of your graph and your understanding of how things have changed over time, including any theory/thoughts you have as to why it is behaving or changing in this way.*
  - *As you are describing your graph, remember to think about how this graph relates to the statement we first started with, "things that affect or are affected by policy, system and environmental changes in your community. . ."*
  - *If someone before you shares a graph that looks just like yours, then go to your next favorite.*
  - *If, however, you have a similar graph, but a different shape, please go ahead and talk about your variable, and your perception of its behavior over time.*
  - *If you think of a graph you feel is really important while people are describing their graphs, you can draw it quickly and present it.*
  - *While you are talking, I will hold up the behavior over time graph so everyone can see it, then I'll pass it on to \_\_\_\_\_ (Wall Builder), who will then tape it up on the wall.*
  - *After a while, you'll notice that there are clusters of graphs and \_\_\_\_\_ (Wall Builder) will tell us why he/she clustered the graphs the way he/she did when we are done sharing new graphs.*
  - *Questions?*
  - *Let's begin. Can we start with YOURS? [Choose someone who drew a graph correctly.]*

# Group Model Building Session

- 7) Continue to move the discussion forward while the participants are describing their graphs.
  - *As we go around the group, you may think of a new graph while other people are describing their graphs. Please feel free to draw and share your new graph.*
  - *Does anyone have another graph related to your policy and environment work (Healthy Kids, Healthy Communities strategies)?*
- 8) After the second or third round of sharing graphs, the community facilitator should probe for categories that are missing that may have been mentioned in participants' stories.
- 9) With 5 minutes left, let the participants know that the session is close to wrapping up.
  - *We are about to finish up. Does anyone have any variables, or ideas, on their remaining graphs that we have not addressed?*
- 10) Once the participants have finished describing their graphs, ask the wall builder to explain the categories of graphs on the wall.
- 11) Excuse the group for their break.

# Group Model Building Session

## Behavior Over Time Graphs: Wall Builder Steps

60 MINUTES (START TIME: \_\_\_\_\_ / END TIME: \_\_\_\_\_)

Time	Activity	Team Members
15 min	Convening group and introductions	Meeting Convener, Community Facilitator
<b>60 min</b>	<b>Behavior over time graphs</b>	<b>Community Facilitator, Wall Builder</b>
30 – 60 min	Break / preparation	Modeling Team
60 min	Causal loop diagramming exercise	Community Facilitator, Modeler Facilitator
5 – 10 min	Structure and behavior review	Modeler Facilitator
5 min	Review, next steps and closing	Community Facilitator, Meeting Closer

**Purpose:** To organize the variables/ graphs shared by the participants into broad themes, or categories, to stimulate further discussion in the next activity.

### Steps:

- 1) As the community facilitator asks participants to share their behavior over time graphs, the wall builder/ modeler facilitator will tape the graphs to the wall by grouping or clustering the graphs into the categories in Table 1.

**Table 1: Main categories for wall building**

Healthy eating behavior		Social determinants of health	Industry, national, and state policies/funding
Community healthy eating environments	Community active living environments	Policy	Partnership and community capacity
School healthy eating environments	School active living environments		
Obesity and long term outcomes		Physical activity behavior	Programs and promotions (education and awareness)



# Group Model Building Session

[ Table 2: Full category examples ]

Category	Examples
Healthy eating behavior	<ul style="list-style-type: none"> <li>• Average calories consumed per day</li> <li>• Food selection</li> <li>• Food preparation</li> <li>• Portion size</li> <li>• Increase consumption of healthy foods</li> <li>• Decrease consumption of unhealthy foods</li> </ul>
Active living behavior	<ul style="list-style-type: none"> <li>• Active transportation</li> <li>• Sports and leisure activities</li> <li>• Activities of daily living</li> <li>• Type of activity</li> <li>• Increase frequency of activity</li> <li>• Increase intensity of activity</li> <li>• Increase duration of activity</li> <li>• Decrease sedentary activity</li> </ul>
Obesity and long term outcomes	<ul style="list-style-type: none"> <li>• Health outcomes</li> <li>• Obesity</li> <li>• Diabetes</li> <li>• Cardiovascular disease</li> </ul>
Healthy eating environments	<ul style="list-style-type: none"> <li>• Corner stores</li> <li>• Farmers' markets</li> <li>• Access to healthy foods and beverages</li> </ul>
Partnership and community capacity	<ul style="list-style-type: none"> <li>• Community organizing</li> <li>• Advocacy</li> <li>• Sustainability</li> <li>• Community champion</li> <li>• Leadership development</li> <li>• Cultural competence</li> <li>• Workgroups, Councils</li> </ul>
Active living environments	<ul style="list-style-type: none"> <li>• Miles of trails</li> <li>• Sidewalk conditions</li> <li>• Parks and playgrounds</li> </ul>

# Group Model Building Session

Category	Examples
Policies	<ul style="list-style-type: none"><li>• Joint use agreements</li><li>• Vending machine policies</li><li>• Nutrition and physical activity standards in child care settings</li></ul>
Social determinants of health	<ul style="list-style-type: none"><li>• Access to healthcare</li><li>• Insurance coverage</li><li>• Employment</li><li>• Education</li><li>• Income</li><li>• Housing</li></ul>
Programs and promotions (Education and awareness)	<ul style="list-style-type: none"><li>• Walking school bus program</li><li>• Cooking classes</li><li>• Farmers' market media</li><li>• Knowledge of obesity risk factors</li></ul>
Industry, national, and state policies and funding	<ul style="list-style-type: none"><li>• Healthy food financing</li><li>• National Surface Transportation Legislation</li><li>• Soda tax</li><li>• Grant funding to support obesity prevention</li></ul>

# Group Model Building Session

## Causal Loop Diagramming Exercise: Community Facilitator Steps

Note: During the break, the modeling team will identify a likely seed structure from the variables identified in the behavior over time graphs. The team will review the categories of variables and select 9-12 representative variables to place on the dry erase board to start the causal loop diagramming section.

**60 MINUTES (START TIME: \_\_\_\_\_ / END TIME: \_\_\_\_\_)**

Time	Activity	Team Members
15 min	Convening group and introductions	Meeting Convener, Community Facilitator
60 min	Behavior over time graphs	Community Facilitator, Wall Builder
30 – 60 min	Break / preparation	Modeling Team
<b>60 min</b>	<b>Causal loop diagramming exercise</b>	<b>Community Facilitator, Modeler Facilitator</b>
5 – 10 min	Structure and behavior review	Modeler Facilitator
5 min	Review, next steps and closing	Community Facilitator, Meeting Closer

**Purpose:** To create a causal loop diagram with variables identified during the behavior over time graphs activity by making causal connections between the variables, adding new variables elicited during group discussion, and identifying feedback loops within the system.

### Steps:

1) Open the session.

- *Recap from the first session: We just spent 60 minutes drawing and discussing behavior over time graphs relevant to policy, system, or environmental changes in this community. Now, we want to examine how these variables are related to each other. In order to do this, we want to specifically describe causal relationships between the variables. Please keep in mind that we are interested in your perceptions of causal relationships. Your ideas or thoughts do not have to be backed up with data. Over lunch, we selected variables from the graphs you created and we have written them on the dry erase board. You'll notice that not every graph is represented here for the sake of simplicity. These "seeds" or starter variables will help to start the next discussion and we can add variables from the other graphs or new variables not yet discussed.*
- *Purpose: But for now, we want to answer the question: "How are these variables related?" In other words, does one of these variables influence one or more of the others? If so, how?*
- *Let's go around the room and have each one of you make at least one connection to get us started.*

# Group Model Building Session

2) As soon as the first relationship is suggested, prompt:

- *So you say X influences Y. In what way does X impact Y?*

**Sample Question/Comment:** *Someone says that something affects everything.*

**Reply:** *Yes, this variable may influence multiple variables, but the pathways of influence may look different for each causal relationship between variables. For example, the variables may be directly related or there may be other intervening variables that influence this relationship. We want to understand all of these direct and indirect connections or relationships between variables. So, can you pick one or two variables and describe the pathway of influence?*

3) As participants suggest connections, ensure that the modeler facilitator has sufficient time to draw the arrows and polarities. For instance, interrupt as necessary to give the modeler facilitator time to keep up with the participants' responses. In addition, observe the dry erase board frequently to make sure that the visual representation accurately reflects the connections that participants are identifying.

4) If a feedback loop has not been created 15 minutes into the exercise, the community facilitator should point out that the relationships between the variables can work both ways (without indicating a specific relationship).

5) Identify whether there are missing variables from the categories in the behavior over time graphs activity. Strive to include all variables within feedback loops. Prompt participants:

- *Are we missing categories or variables from the behavior over time graphs activity that still need to be added?*
- *Do each of the variables have arrows leading to and from the variable? If not, it may be helpful to identify these missing relationships.*

6) Reflect with the group.

- *Does this causal loop diagram reflect the scope of policy, system, and environmental changes in your community related to healthy eating and active living?*

7) Solicit insights that have been developed during the modeling.

- *What insights have you gained from this group model building process?*

# Group Model Building Session

## Causal Loop Diagramming Exercise: Modeler Facilitator Steps

Note: During the break, the modeling team will identify a likely seed structure from the variables identified in the behavior over time graphs. The team will review the categories of variables and select 9-12 representative variables to place on the dry erase board to start the causal loop diagramming section.

**60 MINUTES (START TIME: \_\_\_\_\_ / END TIME: \_\_\_\_\_)**

Time	Activity	Team Members
15 min	Convening group and introductions	Meeting Convener, Community Facilitator
60 min	Behavior over time graphs	Community Facilitator, Wall Builder
30 – 60 min	Break / preparation	Modeling Team
<b>60 min</b>	<b>Causal loop diagramming exercise</b>	<b>Community Facilitator, Modeler Facilitator</b>
5 – 10 min	Structure and behavior review	Modeler Facilitator
5 min	Review, next steps and closing	Community Facilitator, Meeting Closer

**Purpose:** To create a causal loop diagram with variables identified during the behavior over time graphs activity by making causal connections between the variables, adding new variables elicited during group discussion, and identifying feedback loops within the system.

### Steps:

- 1) The community facilitator will open the session and ask participants to begin making connections.
- 2) Connect variables as participants suggest causal relationships. These connections are made with arrows showing the direction of causality (e.g., X causes Y has an arrow from X to Y). Add new variables and arrows as participants make new connections. For each arrow, a polarity – or a “+” or “-“ sign – should indicate how the variables are related. If Y increases when X increases or if Y decreases when X decreases, then these variables change in the same direction and this is indicated by a “+” sign. On the other hand, if Y decreases when X increases or if Y increases when X decreases, then these variables change in opposite directions and this is indicated by a “-“ sign.

# Group Model Building Session

- 3) Describe the notation to the participants as it is first introduced on the dry erase board in order to facilitate understanding of the arrows, polarities, and feedback loops.
  - (1st arrow drawn) *We represent causal relationships with different types of notation. Arrows designate the direction of the relationship, such as X leads to Y (for X and Y, use relevant variables from the relationship under discussion).*
  - (1st polarity drawn) *We also assign pluses and minuses to these arrows. For example, if more of X leads to more of Y, we indicate that with a “+” sign, indicating change in the same direction. This can also be true if less of X leads to less of Y; the variables still change in the same direction and receive a “+” sign. However, if more of X leads to LESS of Y or less of X leads to MORE of Y, we use a “-” sign indicating change in opposite directions. Therefore, the pluses and minuses refer to change in the same or opposing directions and these do not indicate positive or negative relationships.*
  - (1st feedback loop drawn) *We just created a feedback loop. This occurs when X leads to more of Y, and, in turn, Y leads to more of X. (This last sentence will have to be tailored to the actual feedback loop that gets drawn. For example, it may have more than two variables and it may have different polarities between variables).*
- 4) The community facilitator will ensure that the connections that participants are identifying are being correctly represented.
- 5) It is important to establish a feedback loop early in this exercise (5-10 minutes into exercise). This helps to create group norms to identify and discuss the variables and causal relationships in terms of systems of feedback loops. If appropriate, it may also be helpful to introduce the concepts of balancing and reinforcing loops.
  - (Reinforcing loop drawn) *In this feedback loop, more of X leads to more of Y, which, in turn, leads back to more of X. It can also be read as less of X leads to less of Y, which, in turn, leads back to less of X. This is called a reinforcing loop as these variables will continue to increase or decrease unless there is some outside influence acting on them. This can be considered a vicious or virtuous cycle. (This last sentence will need clarification using the variables in the feedback loop. The virtuous cycle is when the reinforcing loop produces positive outcomes and the vicious cycle produces negative outcomes).*
  - (Balancing loop drawn) *In this feedback loop, more of X leads to more of Y, which, in turn, leads back to LESS of X. It can also be read as less of X leads to less of Y, which, in turn, leads back to MORE of X. This is called a balancing loop as the relationship between these variables will result in relatively stable levels of the variables.*
- 6) The community facilitator will reflect with the group and solicit insights that have been developed during the modeling.

# Group Model Building Session

## Structure and Behavior Review: Modeler Facilitator

5-10 MINUTES (START TIME: \_\_\_\_\_ / END TIME: \_\_\_\_\_)

Time	Activity	Team Members
15 min	Convening group and introductions	Meeting Convener, Community Facilitator
60 min	Behavior over time graphs	Community Facilitator, Wall Builder
30 – 60 min	Break / preparation	Modeling Team
60 min	Causal loop diagramming exercise	Community Facilitator, Modeler Facilitator
<b>5 – 10 min</b>	<b>Structure and behavior review</b>	<b>Modeler Facilitator</b>
5 min	Review, next steps and closing	Community Facilitator, Meeting Closer

**Purpose:** To review the structure that has been created and seek validation that participant conversations have been accurately represented.

**Steps:**

- 1) Review the diagram structure to reinforce variable relationships and concepts of system dynamics, including feedback loops.
- 2) Review the categories associated with the community partnership’s “theory of change.” Identify categories that have been more and less developed through the exercise to identify opportunities for ongoing dialogue and reflection.
- 3) Seek to ensure that the causal loop diagram reflects the group’s consensus causal assertions. Make changes or record conflicting ideas as needed.

# Group Model Building Session

## Review, Next Steps and Closing: Community Facilitator

5 MINUTES (START TIME: \_\_\_\_\_ / END TIME: \_\_\_\_\_)

Time	Activity	Team Members
15 min	Convening group and introductions	Meeting Convener, Community Facilitator
60 min	Behavior over time graphs	Community Facilitator, Wall Builder
30 – 60 min	Break / preparation	Modeling Team
60 min	Causal loop diagramming exercise	Community Facilitator, Modeler Facilitator
5 – 10 min	Structure and behavior review	Modeler Facilitator
<b>5 min</b>	<b>Review, next steps and closing</b>	<b>Community Facilitator, Meeting Closer</b>

**Purpose:** To provide participants with next steps in the process and close the session.

### Steps:

- 1) Thank participants for their contributions.
- 2) Describe next steps in the group model building process:
  - *The evaluation team will use this causal loop diagram as part of our overall evaluation efforts. The first step is to clean up the diagram. We will compare what we have on the dry erase board to the transcribed notes from the conversations to make sure that everything that was said is captured in the causal loop diagram. We will also transfer the causal loop diagram into Vensim, a computer program specially designed for displaying these diagrams. This version will look a little cleaner. The Vensim version of the model will be shared with representatives of your community partnership and you can download a version of Vensim for free in order to view the diagram. When we share the causal loop diagram, we will review the entire diagram as well as the major feedback loops. We will work with <Project Director or Coordinator> to schedule this session.*
- 3) Describe examples of ways to use the information and provide an opportunity for participants to ask any additional questions.
  - *You created this causal loop diagram, so it is your model. You can use this in whatever way you want to. Others have used the causal loop diagram in some of the following ways: presented it to school board members or other decision makers, used it to generate discussions and create awareness in the community, used it to plan how to disrupt vicious feedback loops, developed evaluation measures from it, and incorporated it into grants.*
  - *Are there any questions? We will be around for a while if you want to ask questions.*
- 4) Turn the floor over to the meeting closer.

# Group Model Building Session

## Review, Next Steps and Closing: Meeting Closer

5 MINUTE (START TIME: \_\_\_\_\_ / END TIME: \_\_\_\_\_)

Time	Activity	Team Members
15 min	Convening group and introductions	Meeting Convener, Community Facilitator
60 min	Behavior over time graphs	Community Facilitator, Wall Builder
30 – 60 min	Break / preparation	Modeling Team
60 min	Causal loop diagramming exercise	Community Facilitator, Modeler Facilitator
5 – 10 min	Structure and behavior review	Modeler Facilitator
5 min	<b>Review, next steps and closing</b>	<b>Community Facilitator, Meeting Closer</b>

**Purpose:** To provide participants with next steps in the process and close the session.

### Suggested Language:

- *Thank you for coming today.*
- *I am available for future questions and feedback about this process.*

Provide any other closing remarks or relevant information about next steps in the community.

### CLEAN-UP ROOM (20 – 30 MINUTES)

**Purpose:** To clean up materials used during the session and to rearrange the room so that it looks the same as it did before the session.

### Steps:

- 1) Take photos at the end of the session of the causal loop diagram.
- 2) Remove each behavior over time graph including the tape used for sticking the graph to the wall. Stack the graphs and provide them to the community facilitator.
- 3) Take down all dry erase rolls that contain the causal loop diagram. Each piece should be rolled up tightly. Write the name of the community and the order of the position of the roll that contains the causal loop diagram (e.g., top, middle, bottom).

# After the Site Visit

## Section VI:

### [After the Site Visit]

Once the group model building session ends, there is still work to do. This section provides instructions about follow-up action steps.

# After the Site Visit

## Next Steps

After the site visit, the evaluation team transfers the causal loop diagram into Vensim (a computer program) and creates a presentation to share the causal loop diagram back with the project director/ coordinator and/or other participants from the session.

### [ STEP 1: VENSIM CAUSAL LOOP DIAGRAM ]

The evaluation team converts the dry erase board causal loop diagram that was created on-site with the community and puts it into modeling software called Vensim PLE. This software is free and can be downloaded here: <http://www.vensim.com/download.html>.

### [ STEP 2: CLEAN UP ]

The evaluation team transcribes the conversations from the group model building exercises and uses these notes along with the original drawing (saved on dry erase rolls) to verify that the Vensim causal loop diagram contains:

- Feedback loops discussed
- Accurate direction of arrows
- Polarities

During the clean up process, one person should be reviewing the Vensim causal loop diagram and one person should be reviewing the dry erase board causal loop diagram to verify the information.

Note: If there is a discrepancy between the Vensim causal loop diagram and dry erase board causal loop diagram, document that in the Vensim comments section. Refer back to the notes to ensure the model accurately represents the story told.

# After the Site Visit

## [ STEP 3: VALIDATING THE MODEL ]

The evaluation team prepares a presentation to share back with participants from the group model building session to validate the model that was generated. This validation process follows these agenda items:

- Overview of session - An example agenda and pictures are reviewed during the presentation.
- Themes from graphing exercise - The themes that the evaluation team identified from the behavior over time graphs exercise to begin the causal loop diagramming exercise are discussed.
- Review the causal loop diagram - This is an opportunity for participants to review the model that was generated and provide feedback.
  - Causal loop diagram components are discussed including variables, polarity, and directionality.
  - The causal loop diagram is shared with participants and the evaluation team highlights key variables and feedback loops from the diagram.
  - The evaluation team asks participants to reflect on the session, the diagram, and the overall process, including the following questions:
    - Causal Loop Diagram Reflections*
      - Does the causal loop diagram accurately capture the discussion? Why or why not?
      - What are some strengths of the causal loop diagram?
      - What are some weaknesses of the causal loop diagram?
    - Reflections on the Process*
      - What worked well?
      - What did not work well?
  - Next Steps - The evaluation team discusses next steps with the participants focusing on the *Evaluation of Healthy Kids, Healthy Communities* and the community.

# Appendix

## Appendix

This appendix contains forms that need to be photocopied for participants.

# Appendix

## Photo Release

I hereby grant Transtria LLC permission to use my photograph in any and all of its publications and in any and all other media, including website pages, whether now known or hereafter existing.

I will make no monetary or other claim against Transtria LLC or the Robert Wood Johnson Foundation for the use of the interview and/or the photographs/video.

I understand and agree that these materials will become property of Transtria LLC and will not be returned.

I am 18 years of age and am competent to contract my own name, or have a parent/guardian who can sign on my behalf. I have read this release before signing below and I fully understand the contents, meaning and impact of this photo release.

---

(Participant signature)

(Date)

---

(Participant printed name)

(Date)

---

(Parent/Guardian signature)

(Date)

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(Parent/Guardian printed name)

(Date)



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# Transtria LLC and the Social System Design Lab at Washington University in St. Louis



**Healthy Kids,  
Healthy Communities**  
Supporting Community Action to  
Prevent Childhood Obesity



**Washington University in St. Louis**

GEORGE WARREN BROWN SCHOOL OF SOCIAL WORK

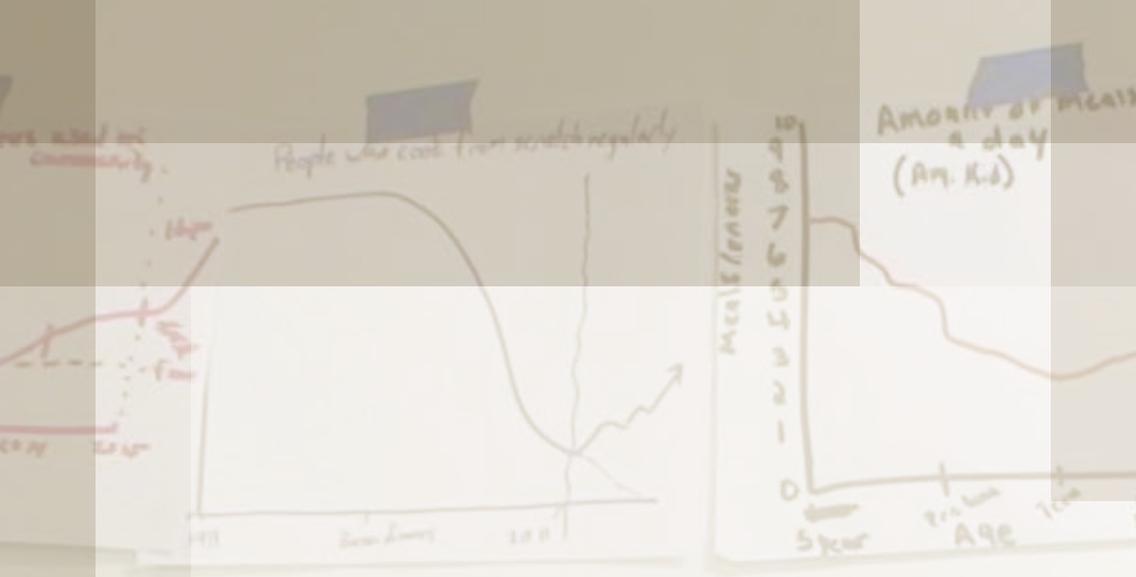


Photo above of a participant creating a behavior over time graph from Somerville, Massachusetts community partnership.



Photo above of members of the Baldwin Park, California community partnership after the group model building session.

For more information about the *Evaluation of Healthy Kids, Healthy Communities*, please contact Laura Brennan ([laura@transtria.com](mailto:laura@transtria.com)) or Allison Kemner ([akemner@transtria.com](mailto:akemner@transtria.com)).

