

Program theory and logic models

Evaluation resources from Wilder Research

All human service programs are designed to make a difference in the lives of people or to improve our society. But how? This resource guide discusses program theory and logic models. Program theory explains why a program is expected to work and a logic model illustrates a program theory. At the end of this section, there are a number of examples and worksheets that can help you develop a program theory and logic model.

When you set out to design or redesign a program, you are choosing among many options. For example, if you want to prevent alcohol use among teens, how do you decide which activities to include? Since you can't do everything that might help, which services are most important? Which ones need to be combined with other services in order to be most effective? These questions all get at your underlying program theory. A program theory explains how and why a program is supposed to work. Spelling out that theory can be one of the most important things you do for the success of your program. It provides a logical and reasonable description of why the things you do – your program activities – should lead to the intended results or benefits (Appendix A).

Clarity and plain language are essential. Can you explain it to your neighbor, or to your third cousin at a family reunion? Don't assume that your funders or staff members are any more sophisticated in their need for a clear description. Not only will a clear program theory help others see the sense of your program, it will help you make sure you are actually providing the package of services that have the best possible chance of helping participants. And when it comes to evaluating your results, a clear program theory makes it much easier to choose the most appropriate outcomes (results) to measure.

Some ATOD prevention programs sound promising, but do not result in the desired changes for participants. Of course, this could be because a good theory is not being carried out well, but in some cases, the problem is the theory itself. Make sure that your theory not only looks clear and makes sense on paper, but that it is based on good underlying evidence about what makes programs successful and how people really change. To avoid a shaky theory that leads to disappointing results, go deeper than common assumptions about how certain activities lead to outcomes. Instead, consider the available theories and research evidence that support these connections. In this way, you can be more confident in the underlying strength of your service delivery model. If you're not sure what the current research is showing, take some time to find out. Talk with colleagues in the field about what evidence they've seen lately. Look online or in a

library for recent information. Review material presented at the best conferences in your field to see what the latest research and evaluation studies are showing.

The if-then connection

Program theories can often be captured in a series of “if-then” statements – **IF** something is done with or for the program participants, **THEN** something should change.

For example, a program to reduce aggression based on social learning theory could have an underlying theory like this: “**IF** program mentors model strategies for avoiding alcohol, tobacco, or other drugs in social situations and provide opportunities for participants to practice these strategies, **THEN** participants will develop skills in avoiding using these substances.”

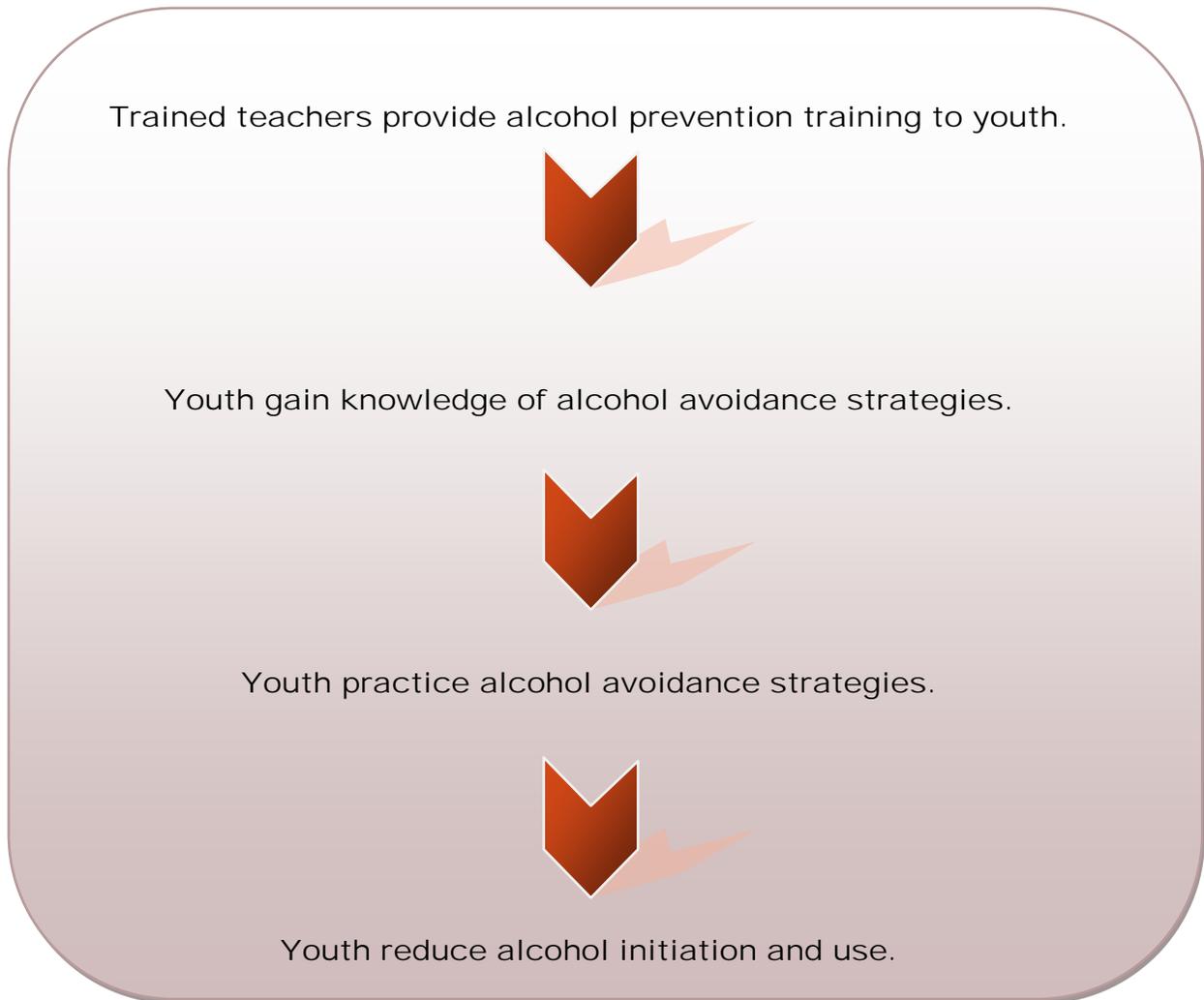
A program theory should also spell out why you expect the changes to happen. Between the “if” and the “then,” there should be some solid evidence or some well-established connection supporting the idea that your service package will accomplish your program goals.

A good program theory also reflects the fact that change happens in stages. For example, many programs have a goal of changing some type of behavior. However, there are usually several things that have to happen first. People usually change their behavior after first learning some new information, developing a new skill, or changing their attitude about something.

Sample outline for a program theory

- **IF** a certain set of resources (such as staff, equipment, materials) are available, **THEN** the program can provide a certain set of activities or services to participants.
- **IF** participants receive these services, **THEN** they experience specific changes in their knowledge, attitudes, or skills.
- **IF** individuals change their knowledge, attitudes, or skills, **THEN** they will change their behavior and usual practice.
- **IF** enough participants change their behavior and practice, **THEN** the program may have a broader impact on the families or friends of participants or on the community as a whole.

For example, a school-based ATOD prevention program could have the following theory:



As a result of the reduced alcohol use of individual youth, alcohol problems in schools will decline.

Here's how to start

To develop a program theory, select one of your activities and answer the following three questions (Appendix B):

- IF the activity is provided, THEN what – realistically – should be the result for participants?
- WHY do you believe the activity will lead to this result? (In other words, what is your assumption about how this kind of change occurs? Are you drawing from an established theory used by others?)
- What evidence do you have that the activity will lead to this result (such as previous results from your own or other programs, published research, or consistent feedback from participants)?

Repeat the same three questions for each activity or service that you provide. Don't worry; you don't need to develop a theory for everything! Administrative tasks, such as training staff or doing paperwork, typically are not included in a program theory. These activities, while a necessary part of running a program, are usually not the important services that produce change in participants. Focus on the main services you provide – the ones you most count on to promote positive results.

How does a theory differ from a logic model?

A program theory is similar in concept to logic models, which have become increasingly popular in human services programs over the past several years. In simple terms, a logic model is a picture of your theory – a drawing that shows how one thing leads to the next, like a flow chart.

A logic model uses short phrases to represent things that you explain in more detail in the program theory. Another key difference is that, while a logic model can just use an arrow to show that one thing leads to the next, your program theory needs to lay out the evidence to show *why* you believe one thing will lead to the next. A logic model is one commonly-used tool for illustrating an underlying program theory. Most often, it is presented in the form of a flow chart that illustrates the linkages between program components and outcomes.

The following components are usually included:

- *Inputs*: any resources or materials used by the program to provide its activities (e.g., money, staff, volunteers, facilities, equipment, supplies)
- *Activities*: any services or treatments provided by the program
- *Outputs*: amount of activity provided, described in quantifiable terms (e.g., number of classes taught, number of people served, amount of educational materials distributed, number of hours of service delivered)
- *Outcomes*: any characteristics of the participants that, according to the program theory, are expected to change as a result of the participant's receiving services

Sample logic models are attached at the end of the section (Appendix C & D). The model is read as follows:

- The first column lists the resources needed by the program to provide services.
- The second column lists the actual activities/services provided by the program.
- The third column lists the quantifiable products or outputs of the services provided.

Beginning with the fourth column, the model illustrates the outcomes of the program for participants. The number of outcome columns varies depending on the underlying logic. One frequent approach is to have the following three columns, but there may be more or less:

- The fourth column usually describes the immediate impacts or results of these activities. They should be read as “if the activities are provided, then these outcomes should result.” Immediate impacts typically refer to changes in **knowledge, skills, or awareness**, as these types of changes typically precede changes in behaviors or practices.
- The fifth column typically describes **intermediate outcomes**. They should be read as “if the immediate outcomes occur, then the intermediate outcomes should result.” Intermediate outcomes usually refer to **behavioral changes** that follow the immediate knowledge and awareness changes. As we move from immediate to intermediate outcomes, the direct impact of the activity and accountability of the program decrease.
- The sixth column describes the **long-term outcomes**. They should be read as “if the intermediate outcomes occur, then the long-term outcomes should result.” These outcomes usually refer to more **global changes**, such as community impacts. Again, at this level, the direct impact of the activity and accountability of the program decrease.

Why should I develop a logic model?

The logic model is not just an interesting picture. If they're developed thoughtfully, they can be used for multiple purposes, including:

- Describing the program to current or potential funders.
- Illustrating the important features of your program approach to other stakeholders, such as participants, collaborating agencies, or legislators; some programs have incorporated the logic model into program brochures and displayed them at their agency.
- Training new program staff about the program theory and approach – some programs have used the logic model as the basis of their training, so that new staff understand how the program works and their role in promoting positive benefits for participants.
- Controlling ‘program drift’ – some programs have reviewed the model periodically to ensure that the services that they are providing are still consistent with the program’s intended purpose and approach.
- Providing a basis for developing an evaluation design – once the logic model is developed, you can use it to decide which participant outcomes are the most important ones to measure.
- Facilitating program management – the logic model may be useful in helping programs plan their services and identify the resources or inputs that are necessary.

How to build a logic model

We have discussed what a well-built logic model can do for your program. Here are the four steps to develop a high-quality model (Appendix E).

1. Review and clarify the links between activities and outcomes.

When you developed a program theory, you spelled out the major services that you provide and the intended benefits of those services. Review this list and make sure the connections between each activity and its outcomes are crystal clear and logical.

Consider the order in which results should occur. What would be the first changes experienced by participants? How would these initial changes promote other, more long-term changes? Hint: Behavior change is rarely the first result. People usually need to change their knowledge, attitudes, or skills before they start to change behavior. Likewise, moving farther down the line, community change usually cannot occur until enough individuals (or the right individuals) change their behavior or practices.

2. Add inputs and outputs for each activity.

Inputs are the resources and raw materials that go into your program. Consider the resources that you need to operate your program, such as funding, staff, or volunteers. Some programs may require a facility, transportation services, educational materials, and other resources. You do not need to be overly precise in the logic model regarding the amount of each resource that is needed.

Outputs quantify the services you provide. Remember: Outputs are different from outcomes. While outcomes describe the actual impact (the change that results), outputs simply describe the amount of service provided. Outputs are most often expressed in numbers, such as the number of people who participate in an activity or the hours of service received.

3. Construct a draft model.

The model may end up being simple or complicated, but should accurately reflect the complexity of your program. Use arrows to show the connections between your inputs and your activities, between your activities and outputs, and between your outputs and each sequence of outcomes. Remember that one activity could lead to multiple outcomes, or that multiple activities could lead to only one outcome. A logic model template is provided in Appendix E to aid in this process.

4. Review and revise.

Answer the following questions (Appendix G). If your answer to any question is “not sure” or “no,” go back to the model and consider making revisions. It usually takes multiple revisions of the model before it reaches its final form.

- Does the logic model include all of the program’s most important activities or services?
- Do the outcomes represent changes that are important to your program’s participants? Likewise, does the model contain the outcomes of greatest interest to your stakeholders, such as staff or funders?
- Are the outcome goals plain enough to be understood by any stakeholders who might review your logic model? Are the goals realistic?
- Are the connections between your inputs, activities, outputs, and outcomes realistic? Are they reasonable based on existing research, theory, or other evidence?

Challenges and possible solutions

Oftentimes stakeholders may have doubts or concerns about developing a logic model process. There may be concerns about the time and resources needed or the usefulness of the product. To help alleviate these fears, we have listed some of the most common challenges to the logic model effort and suggested some possible solutions.

Challenge: “We’ve had trouble developing a logic model because our key stakeholders (staff, funders, etc.) cannot agree on the right services or outcomes to include.”

- Although it might be difficult, keep key stakeholders involved, including staff, program participants, collaborators, or funders. Involving stakeholders does not mean they need to be involved with all tasks and they do not need to have sign-off authority. Their role can be as simple as inviting them to review materials or help you think through some of your stickier questions or issues.
- Focus on the process, not the product. Take time to explore the reasons for disagreement about what should be captured in the logic model. Look for the assumptions, identify and resolve disagreements, and build consensus. Agencies that work through disagreements about the logic model typically end up with a stronger model with which everyone can be satisfied.

Challenge: “We’re not really interested in developing a logic model, but our funder requires it.”

- Look for examples of how other organizations have used logic models in meaningful and interesting ways. Many agencies have gone into the process with skepticism or lack of interest, but ultimately found the process valuable.
- Try to focus on the fun and interesting aspects of the process. Building a logic model provides an opportunity – all too rare in the everyday provision of services – to discuss what it is about your work that is most meaningful, and to renew your appreciation for the ways your program can change lives and communities. Focusing on the importance of this discussion – rather than seeing it as just a task to complete – can increase engagement in the process.

Challenge: “I just want to get my logic model finished. I don’t want to spend much time on it.”

- Logic models that are rushed often end up displaying faulty logic, insufficient evidence, or models copied from other programs that don’t quite fit yours. Keep asking yourself “IF-THEN-WHY” questions to make sure that the model is sound. IF you provide a service, THEN what should be the impact for participants? WHY do you think this impact will result? What evidence do you have to support that connection?

- Make it more interesting by seeking a range of evidence. If you already know the published research by heart, look for additional types of evidence, such as theoretical frameworks, unpublished evaluation results, or experiences reported by program participants.
- If possible, recruit a facilitator from outside your agency who is trained and experienced in logic model development.

Challenge: “The goal of my program is to change an entire community, not just to influence the lives of a small group of participants.”

- Think through each step that must occur. For instance, how does each activity impact individuals? In what ways does their behavior change? What has to occur in order for these individual changes to result in widespread community change?
- Consider issues or events outside the control of your agency that may promote or impede the change you are seeking. If needed, develop strategies for monitoring or documenting these issues.

Challenge: “My logic model is so complicated that nobody can understand it.”

- Focus on the most important activities and outcomes. The model does not need to describe everything that you do; it should show the services and goals that are the most important to you.
- Avoid jargon. Describe your activities and outcomes in ‘real life’ language that is understood by a wide range of stakeholders. Try it out on someone unfamiliar with your work – a neighbor, a relative.
- Cut back on detail. Be specific enough to clearly explain what will happen as a result of your activities, but without excessive detail.

Challenge: “I’m nervous about developing a logic model because it might make funders hold us more accountable for our results”

- Only include (and subsequently measure) outcomes that are realistic. If you do not want to be held accountable for something, it must not be an essential outcome goal. Outcomes are not hopes or wishes, but reasonable expectations.
- Incorporate time frames into the logic model, to show stakeholders the amount of time it will take to achieve long-term goals. Example: If you have only one or two years to show impact, you should not measure outcomes that may take longer to

emerge. Instead, measure the intermediate steps toward those outcomes – the results that your program can reasonably expect to achieve.

- Remember that a logic model should be a dynamic tool that can and should be changed as needed; it is not a rigid framework that imposes restrictions on what you can do.

Benefits of developing logic models

Taking the time to work through the process carefully and thoughtfully can be a very worthwhile endeavor. It can help you:

- Build consensus and clarity among your staff and other stakeholders about your essential program activities and expected outcomes.
- Identify opportunities for program improvements (such as by promoting discussion of best strategies for achieving desired results).
- Spell out the beliefs and assumptions that underlie your choice of activities and intended outcomes.
- Promote evidence-based thinking in program management and evaluation.
- Assess your program's likelihood of success and identify factors that could impact success. For instance, how do the manner, amount, and quality of activities affect the likelihood of achieving the outcomes?
- Increase your understanding of program performance by clarifying the sequence of events from inputs through outputs through outcomes.
- Educate funders regarding realistic expectations.

Wrap up

Program theories are underlying rationales for programs, describing how and why a program should lead to the intended outcomes. Identifying and assessing the strength of the program theory are critical for increasing the likelihood that programs will be effective. Logic models can be a useful tool for illustrating program theories in a way that is understandable to a wide array of stakeholders. A well thought out logic model can have a number of benefits to programs, including guiding stakeholder engagement, program management, and evaluation of outcomes. Remember:

- Work with stakeholders to develop a sound program theory, or a theory that explains how and why the program is supposed to work.
- Logic models are pictures of program theories. A logic model connects activities of a program with the expected outcomes of a program in a clear, logical fashion.
- Logic models can be very useful in describing a program to potential participants and funders, and can be helpful in identifying key concepts for program evaluation.

For more information

Everything you want to know about logic models <http://www.insites.org/documents/logmod.htm>

Logic Models and how to build them <http://www.uidaho.edu/extension/LogicModel.pdf>

Theory of change assistance and materials <http://www.theoryofchange.org/>

Logic Model Development Guide <http://www.wkkf.org/Pubs/Tools/Evaluation/Pub3669.pdf>

Community Tool Box (Logic Models) http://ctb.ku.edu/tools/en/sub_section_main_1877.htm

Logic Model Builder (Requires you to set up a free account):

<http://www.childwelfare.gov/preventing/developing/toolkit/>

Using a logic model for evaluation planning, (also includes a Logic Model Worksheet):

<http://captus.samhsa.gov/western/resources/bp/step7/eval2.cfm#b>

How to build your program logic model:

<http://captus.samhsa.gov/western/resources/bp/step7/eval3.cfm>

Developing a logic model: Teaching and training guide

<http://www.uwex.edu/ces/pdande/evaluation/pdf/lmguidecomplete.pdf>

Appendix

Appendix A: Determining project goals

Think about the activities or services that you will be providing through this project. One of our first steps in creating a program evaluation is to think through the outcomes that you hope will result from these activities.

1. In what ways would you like the lives of participants to be different/improved after they receive services? How will you know if you have accomplished your goals? How will participants' knowledge, attitudes, feelings, or behavior be different?

2. In what ways would you like the community to be different/improved as a result of your program activities? How will you know if you have accomplished your goals? How will the community be different?

3. What do stakeholders feel about these goals? Are these goals in line with the mission of the program?

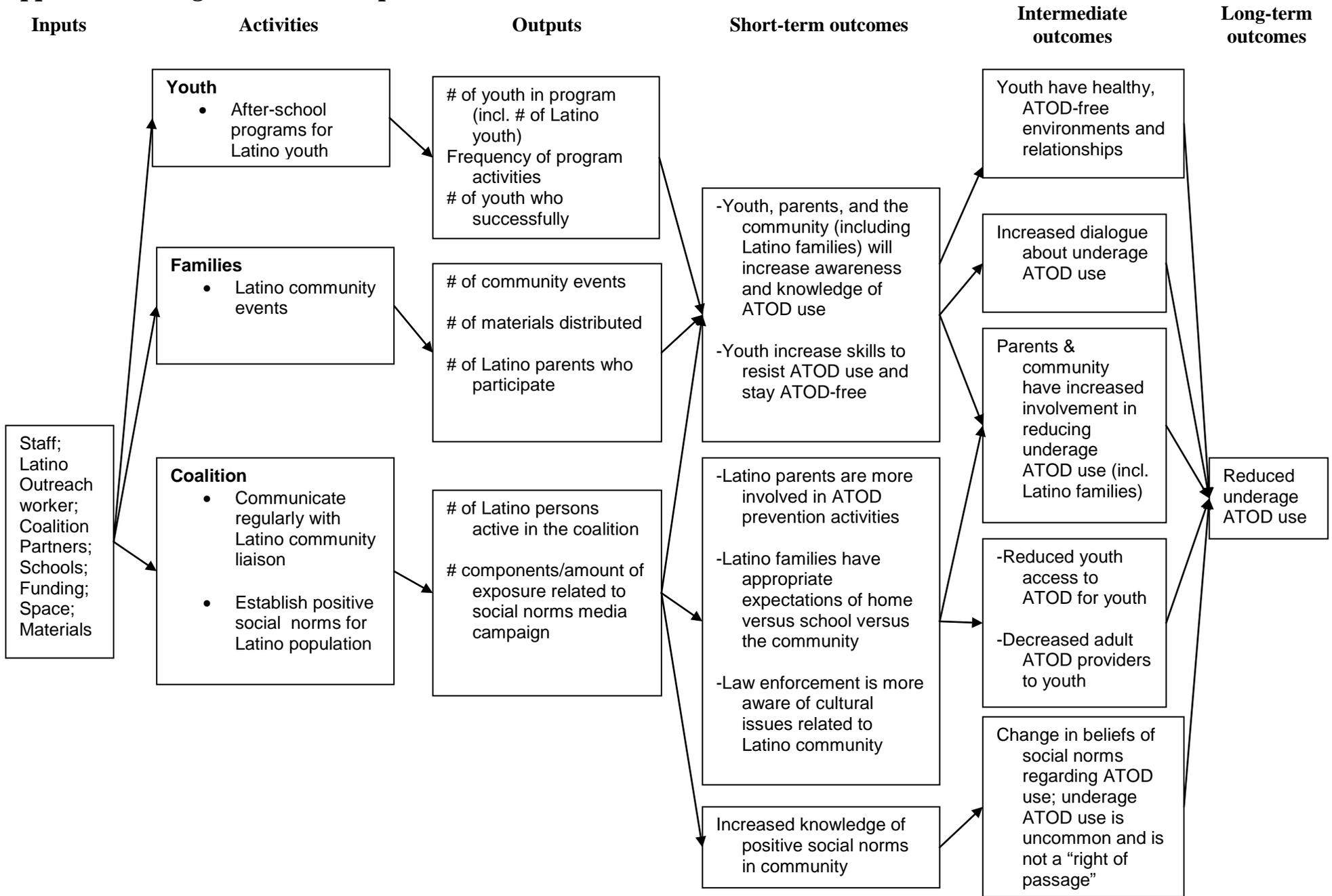
Appendix B: Program theory development

Working with stakeholders, identify the major activities of your program. Then, as a group, determine the result of each activity. Use evidence from other programs or your own program to answer why you believe each activity will have that effect.

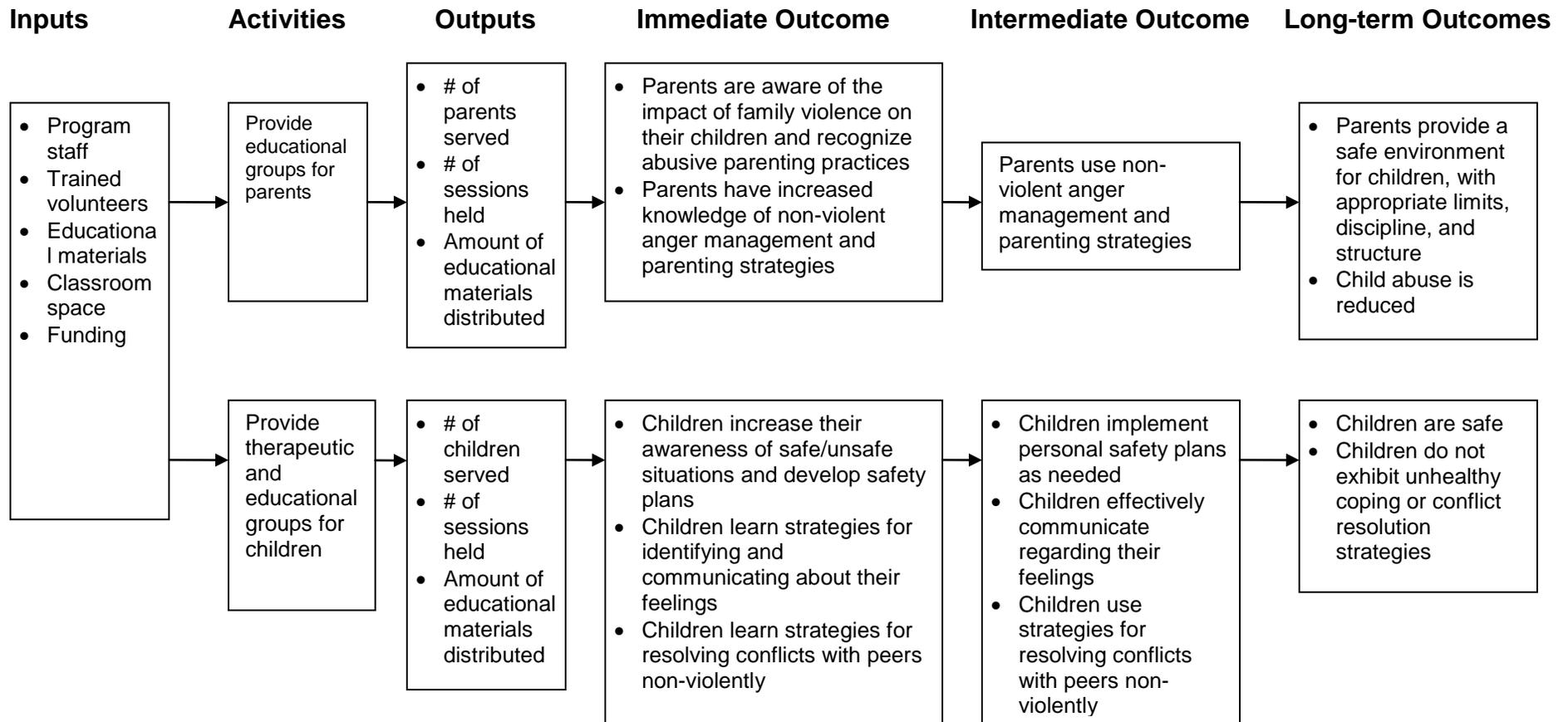
Program Theory Development

Activity	IF the activity is provided, THEN what should be the result for participants?	WHY do you believe the activity will lead to this result?	What evidence do you have that this activity will lead to this result (data from your own or other programs, published literature, etc.)?

Appendix C: Logic Model example 1



Appendix D: Logic model example 2



Appendix E: How to build a logic model

Work with stakeholders to identify the outcomes associated with each activity on your program. It is often easier to think about the outcomes you expect and then to go back and think about how to measure them using outputs. After identifying the outputs, think about what inputs you need to include to produce the outputs.

How to build a logic model

Activity	Inputs	Outputs	Immediate outcomes (changes in knowledge, attitudes)	Intermediate outcomes (changes in behaviors or practices)	Long term outcome/ Overall Impact
			Yes	Unsure	No

Consider the following:

- Does each of these activities refer to services provided directly to participants? Administrative functions of the program, such as hiring staff or preparing budgets, are certainly an important part of providing community programming and should be reflected in your work plans. However, administrative activities that are not expected to lead directly to changes for participants should not be included in an evaluation design.
- Does your list contain any redundancies (i.e., same basic activity described in several different ways)? If so, eliminate duplicate activities. In designing your evaluation, we want to consider your core activities without redundancies.

Of those activities listed, which do you feel are most important in terms of either the potential for impact on the participants or the level of resources that are devoted to the activity?

Appendix F: Logic model template

Note: not all boxes need to be filled. This is simply a template.

INPUTS	ACTIVITIES	OUTPUTS	SHORT TERM OUTCOMES	INTERMEDIATE OUTCOMES	LONG TERM OUTCOMES	
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Appendix G: Logic model checklist

Review your logic model by answering the following questions. If the answer to any question is “unsure” or “no,” go back to the model. Consider revising the model. Please note that often it takes multiple revisions of the logic model before it reaches its final form.

Logic model checklist

	Yes	Unsure	No
Do the outcomes represent meaningful benefits or changes for participants?			
Will the outcomes help you communicate the benefits of your program?			
Are your outcome goals clear and understandable?			
Are your outcome goals realistic?			
Are the outcomes participant-focused, rather than program-focused?			
Does your model include the outcomes of greatest importance to your key stakeholders?			
Is it reasonable, based on research, theory, or common-sense, that the program can influence outcomes in a substantial way?			
Does the model include all important program activities that participants receive?			
Does the model make appropriate connections between inputs, activities, outputs, and outcomes?			

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451 Lexington Parkway North
Saint Paul, Minnesota 55104

651-280-2700

www.wilderresearch.org



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