Complexity-Aware Methods

Evaluations provide data that enable evidence-informed decision making. An evaluation can reveal if a health program or health system achieves its intended purpose and whether one approach works better than another.

Many evaluation designs and methods help to answer questions about the performance of programs. A typical evaluation design involves establishing intervention and control groups and randomizing subjects to the two groups. This and other evaluation designs carry us a long way toward answering questions about delivering effective health services. The methods the designs employ may be baseline and follow-up quantitative surveys.

But these designs can't answer all the important questions. Sometimes a comparable control group doesn't exist, or randomization isn't ethical. Sometimes there are too many variables, all affecting one another. Often, when an evaluation design won't work, the problem is complexity—a dynamic that is defined in one or more of the following ways:

- Many interacting variables
- Nonlinear chains of causation
- Feedback loops
- Unpredictability
- Susceptibility to context (cultural, political, structural, and environmental)

When we can't use traditional evaluation designs and methods, we need some other source of scientific guidance on which approach to take or which program to pursue. Methods that are "complexity-aware" enable us to address the inherent complexity in modern development programs, where environments are dynamic, multiple stakeholders intervene, and programs have many sectors of activity.

Several complexity-aware methods serve in these instances, including some offered as guidance from the United States Agency for International Development (USAID) and others applied by MEASURE Evaluation, which is funded by USAID. These are:

- **Sentinel indicators**. This method uses a proxy indicator to stand for the incidence of change, for good or ill, that calls for further study.
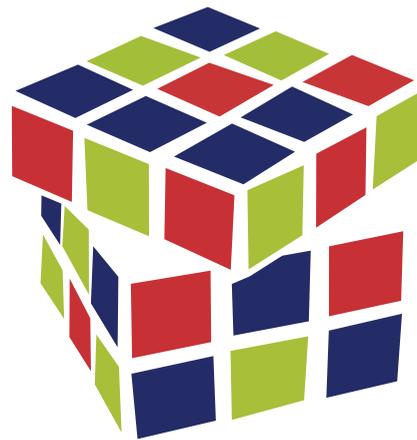
Complexity in evaluations requires appropriate design, adaptations for difficult settings, and experience in applying a variety of research methods.

- **Stakeholder feedback**. This method seeks to uncover different perspectives of program stakeholders to form a holistic picture of a program's impact.

- **Process monitoring of impacts**. With this method, evaluators identify the processes that would be necessary to achieve the desired impacts and then monitor if and how those processes are functioning.

- **Most significant change**. This method involves surveying diverse program stakeholders and participants with open-ended queries to gather their observations of important changes resulting from a program.

- **Outcome harvesting**. This is a participatory method that poses questions to gather perspectives on outcomes, without presupposing what those outcomes ought to have been.

- **Causal loop diagrams** illustrate how factors of an activity affect one another. For example, a decrease in funds will result in fewer staff. Several analytic techniques can be applied to test the relationships.

- **Network analysis** studies people or organizations and how their relationships or interactions affect an activity. For example, a comprehensive understanding of how organizations are (or are not) working together for client referrals helps identify service gaps and opportunities to leverage resources already deployed.

- **Modeling**. Modeling can improve and extend results from evaluations when used to generalize results from a specific population to other similar populations; to extrapolate intervention effectiveness to simulate intervention scale-up; and

to evaluate long-term effectiveness in the presence (or absence) of other factors, such as concurrent interventions or policy changes.

- **Mixed-methods** research involves collecting, analyzing, and integrating quantitative and qualitative research in the same study or series of studies, on the assumption that this combination of methods can answer a given research question better than either approach alone can do.

MEASURE Evaluation integrates complexity-aware methods in our work to answer evaluation questions in complex contexts and increase understanding of the behavior of people, institutions, and systems. Here are some examples:

- A **network analysis** of organizations providing care for people with HIV in Addis Ababa, Ethiopia: The network approach revealed where to strengthen coordination among the care providers, and thus how to provide better care with the resources the community already had.

- A **mixed-methods** approach in Nepal: Both quantitative and qualitative methods, including the most-significant-change method, helped assess whether gender considerations were effectively integrated in health services to ensure that women and children could access and benefit from the health system.

- A **systems barrier assessment** in several countries: This study explored what might prevent the shift of services from health facilities to community health workers, as a way to expand HIV testing and antiretroviral distribution.

- An evaluation using the **most-significant-change** approach: In Uganda, we used this qualitative method in a mixed-methods approach to assess the impact of multiple interventions in a program for orphans and vulnerable children affected by HIV.

- An evaluation using the **synthetic control method**: This method was intended for an evaluation of an intervention in 56 local government areas in Tanzania. In the absence of a counterfactual group, we proposed to "create" a synthetic district, by combining weighted characteristics of several government areas

outside the intervention, for purposes of comparison with the intervention sites. We are applying this design now in a study in Uganda.

In all cases, which design or method to use depends on which approach is best to answer the question of interest. We've learned much in deploying these methods over time:

- They still require upfront investments in terms of time and funding during the design and planning phase.

- Communicating results and limitations can be tricky.

- Securing general acceptance of result validity poses issues to overcome.

The benefits, in our view, are significant. These methods are tools that evaluators can use to manage the complexity they face in the myriad contexts where they work.

With these complexity-aware methods, MEASURE Evaluation is able to answer the tougher questions in global health through the combination of sound evaluation design, experience in difficult settings, and the depth of our methods tool box.