Practitioners GUIDE

Mathematica
Progress Together

AmeriCorps

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Making the Most of Data

Data are multipurpose and offer many opportunities to organizations. Many organizations that help improve people's lives collect valuable information on participants in their programs and on how an intervention is being implemented, but they often use the data only for monitoring the intervention and reporting the results to funders. However, organizations can also use data to provide a thorough understanding of how their intervention operates, to improve upon it, and to show how it affects the participants they serve. This more robust application of data can make an intervention more efficient, generate strong evidence for its effectiveness, and create additional opportunities for funding.[1,2] Several resources in the Further Reading section describe how the use of data can strengthen interventions. Maximizing data for these particular uses requires a system—a management information system or some other computerized process for collecting, analyzing, and reporting data—to standardize the data items and the methods of collecting them.

This guide highlights issues for organizations to consider when using, collecting, and managing their data. Based on the literature and site visits with selected Corporation for National and Community Service (CNCS) grantees (see the "About the Series" box for more information), we describe how organizations use data to determine the ways in which an intervention being implemented is effective and the ways it is not, to help organizations improve program implementation, and to provide evidence to funders about effectiveness. Furthermore, this guide (1) highlights factors that organizations should consider when assessing whether an existing data system is meeting organizational needs, and (2) provides guidance for obtaining a system or modifying an existing one to meet those needs. This will help organizations enhance their data collection capabilities and make the most of the valuable data they collect.

WAYS DATA CAN HELP ORGANIZATIONS

Organizations can use their data in a wide range of activities to help improve programs and provide evidence of their effectiveness. Based on information gathered during site visits to CNCS grantees, we observed that organizations typically collect data to demonstrate they are meeting the performance requirements set by their funders. In addition, organizations might take on the increased burden of data collection to achieve their goals, but realize few benefits from it. These organizations may be losing an opportunity to capitalize on the data they have worked hard to collect and use them for program improvement. Although unlocking this potential can be challenging, as we will describe, the potential benefits may be great.

Based on conversations with practitioners during site visits, we list several data usage activities that organization personnel can consider implementing. Some of them may be related to funding requirements, and others can be important when organizations are considering scaling their interventions. For example, when expanding an intervention into new locations, it may be especially important to use data to monitor implementation and to identify ways to improve processes

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for providing services in the new locations. Alternatively, it may be very important for organizations to conduct research about the intervention's effectiveness to determine whether the expansion is successful at helping participants achieve good outcomes.

- **Performance monitoring and reporting.**[3] As we learned through site visits, and as discussed in some of the resources in the Further Reading section, this was the most common use of data. Personnel can monitor organization milestones or program outputs (enrollments, intervention completion, the numbers and types of services provided, etc.), participant outcomes, or costs. These could be reported internally to organization personnel (for example, at weekly personnel meetings or in regular reports to organizational leadership) or externally to broader audiences and funders.

- **Continuous quality improvement (CQI).**[4] This is an ongoing process or cycle that uses data to evaluate the strengths and challenges of an intervention and to create and test ideas for its improvement (the Further Reading section contains an introduction to CQI). Organization personnel can use the performance monitoring and reporting data, as well as other implementation data (such as interviews with personnel), to inform the CQI process. Organizations may consider tracking additional data to monitor the implementation and success of their ideas about improvement. For example, a data system may have to include a decision log or keep track of personnel satisfaction results to monitor whether program improvements are well received by the personnel.

- **Research and evidence of effectiveness.** In addition to efforts related to program implementation, organizations can use data for a variety of research purposes, such as assessing participant outcomes, to expand the evidence about the effectiveness of their programs. These research efforts can range from (1) those that are fairly simple to conduct, such as comparing measures of how participants are faring after their involvement with the program to how they were doing beforehand; to (2) those that are more complex and provide persuasive evidence about the effectiveness of services, such as through a randomized controlled trial like those used in the medical field to test the effectiveness of drugs. To conduct this research, programs can implement simple surveys (one upon enrolling into the program and one after completing it) or work with a local evaluator, who can help organizations identify a comparison group or

conduct rigorous randomized designs. Whether organizations conduct research themselves or work with a local evaluator, a data system can be used to track survey completion or responses and even to conduct random assignment or keep track of a comparison group.

CHOOSING (OR IMPROVING) A DATA SYSTEM

Organization leaders may discover that their existing data system does not have the functionality required to collect the data needed to support their intervention improvement or research efforts. In this instance, leadership needs to decide whether it is possible to find a new system or enhance their current one. The Further Reading section contains a resource on developing and enhancing data systems.[5] Based on prior experience and conversations with organization leadership and practitioners, when choosing or upgrading a data system, organizations should aim to have one that:

Meets current and future needs. When evaluating a current or potential data system, organization leaders must consider how it meets their current data collection needs. In addition to maximizing the types of data the organization collects, a data system has to be able to accommodate future needs and how they may evolve over time. Organization leadership may need to consider how they may scale the delivery of the intervention and whether the data system can be easily adapted to capture new data, support use at a larger scale (for example, more sites and users), or be easily replicated.

Maximizes integration and minimizes redundancy. When assessing new systems or enhancements, organization leaders might consider prioritizing systems that integrate with existing systems. This integration could take many forms, such as easily importing data into an existing system. This could remove redundancies, such as double-entry or reliance on additional paper-based forms, reduce burden on the personnel, and increase the use of the system.

Is easy to access. Regardless of whether an organization is implementing a new system or enhancing a current one, the system should allow personnel to enter the data easily and access them readily. Ensuring that the system is user-friendly for the persons entering the data will help them consistently and accurately capture the data they need. This ease of use fosters trust in the data quality, which encourages continued use. Further, the system must be user-friendly for the personnel accessing and

interpreting the data. This could take the form of system-generated, easily interpretable reports, such as tables or graphs, or data that are easily exportable in an analysis-ready format (for example, Microsoft Excel). If the data are not easily accessible, additional organization personnel may be required to retrieve, analyze, and interpret the data contained within the system; such added requirements often detract from system use. As organization leaders think about ease of access, they will also need to consider data security needs, especially when working with partners in delivering or assessing the intervention.

Reflects organizational capacity and resources. Organization leaders often face a choice between developing their own system (home-grown) or purchasing from a third party manufacturer (off-the-shelf). It is also possible to purchase third-party software and customize it yourself or pay the developer to customize it for you. If an organization chooses to develop its own system or do in-house customization of an off-the-shelf system, its leadership must ensure that they have the appropriate personnel. Organization leaders may want to consider starting with an off-the-shelf system until they understand all of their data needs to inform the development of a home-grown one in the future.

Organizations might need database developers and/or programming experts to undertake this task. They might also need personnel who can create training and support materials, such as user manuals. If personnel lack these qualifications, purchasing an off-the-shelf system is an option because it might come with the needed programming personnel and training/user support. However, off-the-shelf systems might not be customizable to the extent of a homegrown system. They also might entail additional licensing or usage costs.

Potential Pros and Cons of "Homegrown" vs. "Off-the-shelf" Systems		
Home-grown	Pros	• Fully customizable to match needs
	Cons	• Needs continuous programming and database support personnel • Must develop own user manuals and trainings
Off-the-shelf	Pros	• Previously developed and tested product • Built in user-supports
	Cons	• Licensing and/or customization costs • Potential lack of customizability • If system is not user-friendly, a remedy might be problematic

WORKFORCE NEEDS AND TRAINING

Organization leadership should provide training to and monitoring of their frontline personnel, who regularly use the data system.[6] Some resources in the Further Reading section discuss how training is an essential implementation factor and helps personnel implement the intervention successfully. As noted above, organization leaders should consider the capabilities of their current personnel when evaluating their data system. Similarly, leaders should also consider the qualifications of the personnel who use the system day to day. By reviewing the qualifications of current frontline personnel, organization leadership can design training and support methods to encourage the consistent and accurate use of the data system. Based on site visits, we identified several ways to support such consistent and accurate use:

Hands-on training. Personnel need formal, standardized training on how to use the data system. This training likely should include a mix of lecture, practical examples, and hands-on practice within the actual system. This may also include reviewing the data dictionary to ensure a common understanding of the data points in the system. The training may also have to be repeated to account for personnel turnover.

Regular monitoring. Once trained, personnel must be supervised and monitored to ensure they are using the system consistently and accurately. The system may include user or usage data that can help program personnel track who is using the system, when they are using it, and what data they are entering. Programs should set up a process to review these usage data regularly and provide feedback to personnel.

Additional trainings. Monitoring and supervision may identify personnel who need additional training or support on using the system. In these instances, a booster or refresher training or more supervised use (for example, job shadowing) may be needed. In addition, as new features are added, personnel should receive additional trainings and updated support materials.

FURTHER READING

[1] National Implementation Research Network, "Implementation drivers and data systems" (https://nirn.fpg.unc.edu/module-1/implementation-drivers/organizational)

[2] National Implementation Research Network, "Decision support data systems" (https://nirn.fpg.unc.edu/module-2/decision-support-data-system)

[3] US Department of Education, "Performance monitoring: Collecting and Using Data to Measure Progress, Improve Results" (https://www2.ed.gov/about/inits/ed/implementation-support-unit/tech-assist/performance-management-collecting-data.pdf)

[4] Office of Adolescent Health, "Continuous Quality Improvement" (https://www.hhs.gov/ash/oah/sites/default/files/cqi-intro.pdf)

[5] Mathematica, "Developing and enhancing data systems" (https://www.mathematica-mpr.com/download-media?MediaItemId=%7B3AB264C7-53C9-4652-A328-8DA5E211E314%7D)

[6] National Implementation Research Network, "Implementation drivers: training" (https://nirn.fpg.unc.edu/module-2/training)

REDCap, Free, web-based customizable data system: (https://www.project-redcap.org/)

ABOUT THE SERIES

The Corporation for National and Community Service (CNCS) supports the scaling of effective interventions that it funds. CNCS engaged Mathematica Policy Research to conduct the Scaling Evidence-Based Models project (contract GS10F0050L/CNSHQ16F0049). As part of that project, Mathematica developed a series of guides to help practitioners assess their scaling efforts critically, collect evidence on the effectiveness of their interventions, and increase the likelihood of effective scaling of successful interventions.

Each guide provides a succinct, but non-exhaustive, overview of a topic relevant to practitioners. The guides are based on implementation science research, as well as information collected during site visits conducted by Mathematica staff with three CNCS-funded grantees during fall 2018. As part of the effort, Mathematica staff reviewed program documents (such as manuals and grant applications) and conducted in-depth interviews with organizational leaders and frontline personnel, partner personnel, AmeriCorps members, and other stakeholders. More in-depth information on the topic of this guide can be found through references in the Further Reading section.

FOR MORE INFORMATION

For more information, contact Scott Richman, director of the Scaling Evidence-Based Models project, at srichman@mathematica-mpr.com.

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