



# Beyond Rigor: The Right Data

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Included here are a variety of things that can be done to help make the data collected responsive to project/program, stakeholder, and funder goals and needs.

## Demographic Informations

**Tip:** Discuss with stakeholders the demographic information to be collected. Consider providing stakeholders with a fairly comprehensive list of demographic possibilities and have stakeholders select their top priority categories.

**Rationale:** Evaluators often ask for demographic information on race, ethnicity, sex, educational level, disability, and age but these are only a few of the different categories of available demographic data. Discussing which demographic data to collect with stakeholders helps ensure data collected is important to those involved. Sample demographic categories from the U.S. Census Bureau's American Community Survey include: Age, Sex, Hispanic or Latino(a) ancestry, Race, Household relationships, Homeowner or Renter, Ancestry, Disability, Grandparents as caregivers, Educational level, Income, Occupation, Industry, Class of worker, Labor force status, Language spoken at home, Place of birth, Citizenship, Year of entry into U.S., School enrollment, Educational attainment, and Veteran status.<sup>1</sup>

**Tip:** Unless there is a specific reason not to, use the standard census categories for race/ethnic status and include a separate open-ended question which allows respondents to self identify.



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**Rationale:** Using the standard census categories<sup>2</sup> allows for some comparability across studies while having participants self identify. Using an open-ended response allows participants to provide the evaluator with information about their salient race/ethnicity. Collecting data at this level of granularity allows for greater flexibility in aggregation.

**Tip:** When asking adults about disability status and type of disability, consider asking the time of onset of the disability.

**Rationale:** Program impacts may be quite different for people who have been disabled from birth or early childhood and those who first experienced a disability later in life.

**Tip:** Since there are several different “standard” sets of categories used for people with disabilities, select the set that best reflects the target population(s) and also ask an open-ended question which allows respondents to self identify.

**Rationale:** Using the set of categories that is best targeted toward your population(s) allows for some comparability across studies. The categories<sup>3</sup> listed under the Individuals with Disabilities Education Act (IDEA) targets people under 21 and are used primarily in education. The somewhat different categories<sup>4</sup> listed under the Americans with Disabilities Act (ADA) target all individuals with disabilities and are used for areas of employment, public services, and public accommodations (including many areas related to colleges and universities). The World Health Organization has an International Classification of Functioning, Disability, and Health (ICF)<sup>5</sup> that might best be used if comparisons are being made across populations across different countries.

**Tip:** Participant demographic characteristics should be broken out by characteristics that are important to the study, such as gender, race/ethnicity, and disability status as long as confidentiality can be guaranteed. Data should be reported multi-demographically as in the number of White women with and without disabilities, White men with and without disabilities, Black women with and without disabilities, and so on.

**Tip:** Results should be broken out by demographic characteristics that are important to the study unless to do so would threaten confidentiality.

**Rationale:** Breaking out demographic characteristics by such categories as gender, race/ethnicity, and disability allows for better descriptions of the population and provides guidance as to whom the results may apply. While small cell sizes may be problematic in statistical analysis, as long as confidentiality is not compromised, they are not a problem for reporting.

**Tip:** If the numbers of participants in different groups are small, report the data as numbers as well as percentages.

**Rationale:** When subgroup sizes are small, reporting numbers as well as percentages makes the actual size of the subgroup more clear.

## Outcomes

**Tip:** When evaluating a stable, well-developed project/program, review rather than develop proposed project/program outcomes and objectives. Determining project/program design, objectives, and outcomes is not the responsibility of the evaluator.

**Rationale:** Evaluators who become involved in the development, design, and rationale of a proposed project/program run the risk of compromising their external status and credibility. It is not the evaluator's project/program. The evaluator is the reviewer, validator, and critical friend who collects data and provides evidence for the purpose of making judgments about the project/program.

**Tip:** When evaluating a project/program that is in its early stage and is in flux, consider using more developmental evaluation principles.

**Rationale:** "In developmental evaluation the evaluator is part of the team that is working to conceptualize, design and test new approaches. The evaluator's primary role is to bring evaluative thinking into the process of development and intentional change—to introduce 'reality testing' into the process. The evaluation helps to discern which directions hold promise and which ought to be abandoned and suggests what new experiments should be tried."<sup>6</sup>

**Tip:** Work with project/program staff to develop a logic model that starts with the proposed outcomes and maps those outcomes to proposed activities.

**Rationale:** Traditionally, logic models start with inputs and activities and move to the outcomes. Millar et al.,<sup>7</sup> suggested that this tends to cause the program staff to focus on what is being done rather than what needs to be done. McCawley<sup>8</sup> provided program staff and evaluators with a series of questions that can be used to develop an "outcomes first" logic:

1. What is the current situation that we intend to impact?
2. What will it look like when we achieve the desired situation or outcome?
3. What behaviors need to change for that outcome to be achieved?
4. What knowledge or skills do people need before the behavior will change?
5. What activities need to be performed to cause the necessary learning?
6. What resources will be required to achieve the desired outcome?

**Tip:** Work with project/program staff to have them provide a rationale as to why their proposed activities should lead to their proposed outcomes. Explore possible alternative hypotheses.

**Rationale:** Without an explicit research or logic-based rationale as to why the activities will lead to the proposed outcomes, there is no reason to assume the proposed outcomes can be achieved with those activities and little reason to do the evaluation or the

program. The principal investigator should be able to draw on research to provide guidance as to which strategies should be more important and/or more impactful and why.

**Tip:** Review the proposed metrics and measures to ensure that not only do they document changes in areas such as numbers of underrepresented STEM students graduating or numbers of women going on to graduate school in the sciences, they also document any individual or institutional changes that could have contributed to changes in numbers.

**Rationale:** For projects/programs to increase the diversity of the STEM workforce, documentation of changes in numbers or percent of students or others attaining goals is necessary but not sufficient. A major role of evaluations of these types of projects/programs is to explore indicators of individual and/or institutional changes that may be behind increases in numbers and/or percentages. These indicators will vary depending on the project/program but they will most likely fall into one or more of three categories: engagement, capacity, and continuity.<sup>9</sup> While the evaluation needs to evaluate the end products, it also needs to document the process.

**Tip:** Operationally define the outcomes prior to conducting the evaluation and check to see if participants and project/program staff agree with those definitions.

**Rationale:** Different definitions of outcomes, such as career success, can lead to different results and conclusions. When career success was defined by income, graduates of Historically Black Colleges and Universities (HBCUs) were not found to be more successful than Black graduates from predominately White institutions. When career success was defined by the Duncan Socioeconomic Index, which gives credit not only for wages, but for working in high-prestige professions, HBCUs graduates were found to be more successful.<sup>10</sup>

**Tip:** Use interviews, focus groups, and/or open-ended questions to document possible positive and negative unintended project/program outcomes.

**Rationale:** It has long been recommended that evaluators document unintended as well as intended conditions and outcomes.<sup>11</sup> The unexpected can have a strong influence on evaluation results. For example, increased anxiety and absenteeism were unintended outcomes for students with disabilities after high stakes graduation tests were introduced.<sup>12</sup>

## **Stakeholder Goals and Objectives**

**Tip:** Collect information about the goals and objectives of participants as well as project/program staff and funders and then determine the degree of overlap of goals among different stakeholders.

**Tip:** Collect data on participant goals and expectations at enrollment so that the goals and expectations of dropouts and non-completers are also collected.

**Tip:** If there is not a great degree of overlap in goals across stakeholder groups, make clear whose goals are and are not to be included in the evaluation and why.

**Rationale:** Traditionally, funder and project/program leader goals drive the evaluation and participant goals may not be known.<sup>13</sup> Since goal disparities between participants who remain in a project/program and staff may be smaller than goal disparities between staff and those who leave, it is important to collect data from dropouts and non-completers. If groups have different goals and that is not addressed, the evaluation may conclude a project was successful when it wasn't for one or more stakeholder groups. Or an evaluation might conclude a project did not meet its goals, when it did meet the goals of some stakeholder groups.

## Funder Requirements

**Tip:** Collect data that can be used to answer questions raised by the funder.

**Rationale:** While much evaluation is done over STEM programs, often that evaluation focuses on issues that are easily measured such as:

- the number of program participants;
- the number of times a program has been replicated;
- participants' feelings about a program; and
- participants' perceptions of personal change because of being in a program.

These types of data can be useful but are somewhat peripheral to improved STEM achievement and participation in STEM careers. These types of data say nothing about project/program impact or about the degree to which a project/program meets its or the funders goals.<sup>14</sup>

**Tip:** Use funder requirements to determine, at least in part, the data to be collected under the evaluation.

**Rationale:** If a funder has a theory of change and specifies the strategies that need to be included in a project/program, the evaluation may only need to focus on the quality of the implementation and the numerical outcomes. However, if principal investigators have flexibility in the strategies they select, the evaluation may also need to include data to assess individual and/or institutional changes that may be behind numerical outcomes.

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<sup>1</sup> US Department of Commerce. Census Bureau American Community Survey: Questions on the form and why we ask. [http://www.census.gov/acs/www/about\\_the\\_survey/questions\\_and\\_why\\_we\\_ask/](http://www.census.gov/acs/www/about_the_survey/questions_and_why_we_ask/)

<sup>2</sup> U.S. Census Bureau (2011). American Community Survey. OMB Number 6070-0810. <http://www.census.gov/acs/www/Downloads/questionnaires/2012/Quest12.pdf>

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- <sup>3</sup> Oregon Department of Education: Office of Student learning and Partnerships. IDEA Eligibility Categories. <http://www.ode.state.or.us/search/results/?id=200>
- <sup>4</sup> US Department of Justice. (July, 2009). A guide to disability rights laws. <http://www.ada.gov/cguide.htm#anchor62335>
- <sup>5</sup> World Health Organization. (2003). ICF checklist. <http://www.who.int/classifications/icf/training/icfchecklist.pdf>
- <sup>6</sup> Gamble, J. A. A. (2012). *A developmental evaluation primer*. Montreal: The J.W. McConnell Family Foundation. p 18. [http://c.ymcdn.com/sites/www.plexusinstitute.org/resource/dynamic/forums/20120210\\_111107\\_20889.pdf](http://c.ymcdn.com/sites/www.plexusinstitute.org/resource/dynamic/forums/20120210_111107_20889.pdf)
- <sup>7</sup> Millar, A., Simeone, R. S. & Carnevale, J. T. (2001). *Logic models: a systems tool for performance management*. *Evaluation and Program Planning*, 24, 73–81. [http://www.fammed.wisc.edu/medstudent/locus/curr/Logic\\_Model\\_Millar\\_et\\_al.pdf](http://www.fammed.wisc.edu/medstudent/locus/curr/Logic_Model_Millar_et_al.pdf)
- <sup>8</sup> McCawley, P. (ND). *The Logic model for program planning and evaluation*. University of Idaho. <http://www.uiweb.uidaho.edu/extension/LogicModel.pdf>
- <sup>9</sup> Jolly, Eric, Campbell, Patricia B. & Perlman, Lesley K. (2004). *Engagement, capacity and continuity: A trilogy for student success*. Fairfield, CT: GE Foundation. <http://www.smm.org/ecc/>
- <sup>10</sup> Price, G. N., Spriggs, W., & Swinton, O. H. (2011). The relative returns to graduating from a Historically Black College/University: Propensity score matching estimates from the national survey of Black Americans. *The Review of Black Political Economy*, 38(2): 103-130. doi: 10.1007/s12114-011-9088-0
- <sup>11</sup> Stake, R. (1967). The countenance of educational evaluation. *Teachers College Record*, 68, 523-540.
- <sup>12</sup> Nelson, J. R. (2006). *High stakes graduation exams: The intended and unintended consequences of Minnesota's Basic Standards Tests for students with disabilities (Synthesis Report 62)*. Minneapolis, MN: University of Minnesota, National Center on Educational Outcomes. <http://www.cehd.umn.edu/NCEO/onlinepubs/Synthesis62/Synthesis62.pdf>
- <sup>13</sup> Fingeret, H. A. (1990). Let us gather blossoms under fire. Paper presented at a Conference on Literacy for a Global Economy: A Multicultural Perspective, El Paso, TX. (ED 323 819)
- Fingeret, H. A. (1991). Literacy in the USA: The present issues. Paper presented at the Future of Literacy and the Literacy of the Future Conference, Hamburg, Germany. (ED 340 924).



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