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Collecting High Quality Outcome Data: Part 2

Learning Objectives

By the end of this module, learners will be able to:

- Describe steps to implement data collection

- Recognize data quality

Key concepts are illustrated using a variety of program measurement scenarios.

Module Overview

- Implementing data collection

  - Developing a data collection schedule

  - Training data collectors

  - Pilot testing instruments

- Ensuring data quality

  - Reliability

  - Validity

  - Minimizing bias

- Summary of key points; additional resources

Implementing Data Collection

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After identifying a data source, method and instrument:

1. Identify data collection participants

2. Set a schedule for collecting data

3. Train data collectors

4. Pilot test the data collection process

5. Make changes

6. Implement data collection

Method: Process or Steps Taken to Systematically Collect Data	
Survey	Written questionnaire completed by respondent
Interview	Interviewer poses questions and records responses; face-to-face or via telephone
Observation	Observer records behavior or conditions using via checklist or other form
Standardized Test	Used to assess knowledge of academic subjects (reading, math, etc.)

FOR BEST RESULTS make key decisions about how to implement data collection BEFORE program startup!

Step 1: Identifying data collection participants

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- **Brainstorm a list of all the relevant players in the data collection process. This includes:**

  - Clients/beneficiaries
  - National service participants

  - Staff members
  - Host site staff
  - Other stakeholders

Identifying Stakeholders in the Data Collection Process

Stakeholder	Roles and Responsibilities	Involvement
1. Program Director	Train data collectors Review data for quality and completeness Aggregate and analyze data Report results	Oversee all aspects of planning for data collection Draft data collection plan Review plan with stakeholder; adjust and finalize
2. AmeriCorps Members	Participate in data collection training Complete tracking sheets for service activities Submit completed tracking sheets to program staff	Participate in pilot testing of tracking sheets Provide feedback on experience of collecting data using the new tools
3.		

Step 2: Creating A Data Collection Schedule

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- Identifies who will collect data, using which instrument, and when

- Share with team to keep everyone informed

- Include stakeholders in planning

- Include dates for collecting, analyzing, and reporting data

- Select a format

DATA COLLECTION SCHEDULE

Program Name: _____ *Program Director:* _____

Data To Be Collected	Training Data Collect	Data Analysis Schedule	Report Due Dates	Reflection Meeting Dates And Attendees
Instrument: _____ Method: _____ Data Source: _____ Data Collectors: _____	Training Date(s): _____ Data Collection Dates: Date (1): _____ Date (2): _____ Date (3): _____	Date (1): _____ Date (2): _____ Date (3): _____ Date (4): _____		

Step 3: Training Data Collectors

- Determine best person(s) to collect data

- Provide written instructions for collecting data

- Explain importance and value of data for program

- Walk data collectors through instrument

- Practice or role play data collection

- Review data collection schedule

- Explain how to return completed instruments

Step 4: Pilot Testing for Feasibility and Data Quality

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1. Try out instruments with a small group similar to program participants

2. Discuss instrument with respondents

3. Analyze pilot test data to ensure the instrument yields the right information

Questions for Debrief

How long did it take to complete?

What did you think the questions were asking you about?

Were any questions unclear, confusing, or difficult to answer?

Were response options adequate?

Did questions allow you to say everything you wanted to say?

Steps 5 & 6: Make Changes & Implement Your Plan

Make Changes

- Based on pilot test analysis:

  - Improve instrument

  - Strengthen process

Implement Your Plan

- Perform periodic quality control checks

Ensuring Data Quality: Key Criteria

- **Criteria for collecting high-quality, useful outcome data:**

  - Reliability

  - Validity

  - Minimizing Bias

Reliability

- **Reliability**: The ability of a method or instrument to yield consistent results under the same conditions.

- Requires that instruments be administer the same way every time:

  o Written instructions for respondents

  o Written instructions for data collectors

  o Train and monitor data collectors

Reliability

- Design instruments to improve reliability

  o Use clear and unambiguous language so question meaning is clear.

Unclear language

"How has the availability companionship services altered your capacity with respect to attending visits with medical practitioners in a timely manner?"

Clear language

"How has use of companionship services affected your ability to get to medical appointments on time?"

Reliability

- Design instruments to improve reliability
  - o Use attractive, uncluttered layouts that are easy to follow.

Cluttered layout

"What grade are you in?"

☐*6th grade* ☐*7th grade* ☐*8th grade*

Uncluttered layout

"What grade are you in?"

   ☐ *6th grade*

   ☐ *7th grade*

   ☐ *8th grade*

Ensuring Reliability

For Surveys

- Avoid ambiguous wording that may lead respondents to interpret the same question differently.

For Interviews

- Don't paraphrase or change question wording.

- Don't give verbal or non-verbal cues that suggest preferred responses.

For Observation

- Clearly define the behavior or conditions to be observed.

- Carefully train and monitor observers to ensure consistency in how they interpret what they see.

Validity

- **Validity** is the ability of a method or instrument to accurately measure what it is intended to measure.

  - Instrument measures the same outcome identified in theory of change

  - Instrument measures relevant dimensions of outcome (attitude, knowledge, behavior, condition)

  - Instrument results corroborated by other evidence

Ensuring Validity Example

- Academic engagement (attachment to school)
  - Instrument should measure same type of outcome – in this case, **attitudes** - as intended outcome
  - Instrument should measure the outcome dimensions targeted by intervention, including feelings about:

    - Teachers   - Being in school

    - Students   - Doing schoolwork

  - Students showing improvement in attitudes towards school should not exhibit contradictory behavior

Minimizing Sources of Bias

- **Bias** involves systematic distortion of results stemming from how data are collected and how instruments are designed.

    - Who: Non-responders = hidden bias

    - How: Wording that encourages or discourages particular responses

    - When and Where: Timing and location can influence responses

    - Bias can lead to over- or under-estimation of program results

7 Ways of Minimizing Bias

1. Get data from as many respondents as possible

2. Follow up with non-responders

3. Take steps to reduce participant attrition

4. Work with program sites to maximize data collection

7 Ways of Minimizing Bias
(continued)

5. Pilot test instruments and data collection procedures

6. Mind your language

7. Time data collection to avoid circumstances that may distort responses

Measurement Scenarios

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Explore these measurement scenarios to see how programs address issues of reliability, validity, and bias.

Academic Engagement

Reading Ability

Housing

Exercise Habits

I'm done!

Capacity Building

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Academic Engagement

Did students in the mentoring program increase their attachment to school?	
Output	Number of disadvantaged youth/mentor matches that were sustained by the CNCS-supported program for at least the required time period (ED4A)
Outcome	Number of students in grades K-12 that participated in the mentoring or tutoring or other education program who demonstrated improved academic engagement (ED27)
How Measured	Pre/post survey of students to gauge attachment to school
Outcome Target	90 (of 100) students in grades 6-8 that participate in the after-school program for 9 months will improve academic engagement, defined as feelings of attachment to school.

Reading Ability

Did students in the tutoring program improve their reading skills?	
Output	Number of students that complete participation in CNCS-supported K-12 education programs (ED2)
Outcome	Number of students with improved academic performance in literacy and/or math (ED5)
How Measured	Standardized tests in oral reading fluency and reading comprehension (pre/post)
Outcome Target	160 (of 200) students that complete 12 weeks of reading tutoring will improve oral reading fluency and reading comprehension.

Reading Ability—Reliability, Validity, Bias

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Did students in the tutoring program improve their reading skills?	
Outcome	Number of students with improved academic performance in literacy and/or math (ED5)
How Measured	Standardized tests in oral reading fluency and reading comprehension (pre/post)
Reliability	Are standardized tests administered in a consistent manner?
Validity	Do standardized tests accurately reflect students' reading abilities? Are the tests we're using designed to measure the specific improvements our intervention is designed to produce?
Bias	How do we ensure that results be not affected by some schools being unable to administer the tests to student participants?

Housing

Did individuals who received counseling and referrals move into safe, healthy, affordable housing?	
Output	Number of economically disadvantaged individuals, including homeless individuals, receiving housing services (O5)
Outcome	Number of economically disadvantaged individuals, including homeless individuals, transitioned into safe, healthy, affordable housing (O11)
How Measured	Tracking Sheet (for follow-up calls and/or home visits)
Outcome Target	70 (of 80) economically disadvantaged individuals will transition to safe, healthy, affordable rental housing within 9 months of receiving counseling and application assistance.

Housing—Reliability, Validity, Bias

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Did individuals who received counseling and referrals move into safe, healthy, affordable housing?	
Outcome	Number of economically disadvantaged individuals, including homeless individuals, transitioned into safe, healthy, affordable housing (O11)
How Measured	Tracking Sheet (for follow-up calls and/or home visits)
Reliability	How do we measure "affordable housing" in light of differences in individuals' financial circumstances?
Validity	How do we know that individuals who we help transition to housing attain a stable housing situation?
Bias	Some individuals with housing needs tend to be transient. How can we collect outcome data from all of these individuals during the 9-month follow-up period?

Exercise Habits

Did children in the physical fitness program improve exercise habits?	
Output	Number of children and youth engaged in in-school or afterschool physical education activities with the purpose of reducing childhood obesity (H5)
Outcome	Number of children that increase physical exercise
How Measured	Participant survey (pre-mid-post)
Outcome Target	70 (of 80) children will report increased engagement in physical exercise compared to when they entered the program.

Exercise Habits—Reliability, Validity, Bias

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Did children in the physical fitness program improve exercise habits?	
Outcome	Number of children that increase physical exercise
How Measured	Participant survey (pre-mid-post)
Reliability	How reliably can children remember their physical exercise for a period covering days or even weeks?
Validity	How do we measure increased physical exercise? Is it sufficient to look at how frequently children exercise or do we also need to consider the duration and intensity of exercise? How do we keep children from reporting what they think program staff want to hear?
Bias	How can we be sure that changes children's exercise habits are due to the program rather than to a change in weather (i.e., availability of outdoor activities)?

Capacity Building—Recruiting Volunteers To Serve More People

Did volunteer recruitment efforts allow the program to serve more people in key focus areas?	
Output	Number of community volunteers recruited by CNCS-supported organizations or national service participants (G3-3.1)
Outcome	Number of new beneficiaries that received services as a result of capacity building efforts in: Disaster Services, Economic Opportunity, Education, Environmental Stewardship, Healthy Futures, and/or Veterans and Military Families (G3-3.18)
How Measured	Tracking sheet measuring number of people served by volunteers (pre-post comparison)
Outcome Target	100 new beneficiaries will be served.

Capacity Building—Reliability, Validity, Bias

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	Did volunteer recruitment efforts allow the program to serve more people in key focus areas?
Outcome	Number of new beneficiaries that received services as a result of capacity building efforts in: Disaster Services, Economic Opportunity, Education, Environmental Stewardship, Healthy Futures, and/or Veterans and Military Families (G3-3.18)
How Measured	Tracking sheet measuring number of people served by volunteers (pre-post comparison)
Reliability	How can the program ensure that everyone follows the same criteria for counting someone as having been served by a volunteer?
Validity	How can the program ensure the accuracy of data showing the number of people served by volunteers?
Bias	How can the program ensure that information is captured for everyone who was served by a volunteer?

Summary of key points

Steps to implement data collection include identifying the players involved in data collection, creating a data collection schedule, training data collectors, pilot testing instruments, and revising instruments as needed.

- A data collection schedule identifies who will collect data, using which instrument, and when.

- Training data collectors by walking them through the instrument and role playing the process.

- Pilot testing involves having a small group of people complete an instrument and asking them about the experience.

Summary of key points

Reliability, validity, and bias are key criteria for data quality.

- Reliability is the ability of a method or instrument to yield consistent results under the same conditions.

- Validity is the ability of a method or instrument to measure accurately.

- Bias involves systematic distortion of results due to over- or under-representation of particular groups, question wording that encourages or discourages particular responses, and by poorly timed data collection.

Additional resources

- CNCS Priorities and Performance Measurement

  o https://www.nationalserviceresources.org/npm/home

- Knowledge Network instrument-formatting checklist

  o http://www.nationalservice.gov/resources/files/Instrument_Development_Checklist_and_Sample.pdf

- Practicum Materials

  o http://www.nationalservice.gov/resources/npm/core-curriculum