

# Building Evaluation Capacity

*Collecting and Using Data in Cross-Project Evaluations*

**GUIDE II**

Patricia B. Campbell

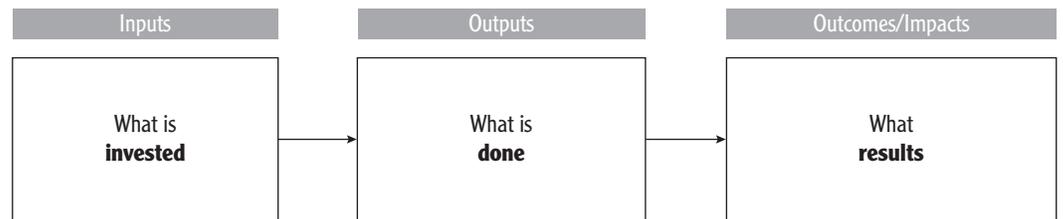
Beatriz Chu Clewell

JANUARY 2008

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**THE URBAN INSTITUTE**

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The Urban Institute's Program for Evaluation and Equity Research (PEER) focuses on education research. PEER staff conduct studies in the fields of educational attainment, educational access, minorities in mathematics and science, teacher education, teacher recruitment and retention, and educational assessments.

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## Building Evaluation Capacity:

### Collecting and Using Data in Cross-Project Evaluations—Guide II

The national trend toward increasing the accountability of the public sector, which gave rise to the enactment in 1993 of the Government Performance and Results Act (GPRA), has placed added emphasis public agencies' ability to report accurately and consistently on performance and results. The more recent No Child Left Behind Act, with its calls for scientific evidence in education research, and the current Campbell Collaborative, which seeks to improve social science research through a focus on random assignment in studies in social, behavioral, and educational arenas, are indications that this trend is growing. Evaluation capacity building (ECB), a system for enabling organizations and agencies—both public and private—to develop the mechanisms and structure to facilitate evaluation to meet accountability requirements, is a concept whose time has come.

One of the most important ways that ECB differs from mainstream evaluation is that ECB is continuous and sustained rather than episodic. Other characteristics are that it is context-dependent, operates on multiple levels, is flexible in responding to multiple purposes (requiring continuous adjustments and refinements), and requires a wide variety of evaluation approaches and methodologies (Stockdill, Baizerman, and Compton 2002).

This project's goal was to develop a model to build evaluation capacity in three organizations: the National Science Foundation (NSF), the National Institutes of Health (NIH), and the GE Foundation. Specifically, the project's intent was to test the feasibility of developing models to facilitate the collection of cross-project evaluation data for programs within these organizations that focus on increasing the diversity of the STEM workforce. To help standardize the model, we chose programs with a similar goal: increasing the participation and success of underrepresented groups<sup>1</sup> in STEM fields of study and careers. A description of each program used to test the model appears in Guide I, appendix A.

ECB [Evaluation Capacity Building] is the intentional work to continuously create and sustain overall organizational processes that make quality evaluation and its uses routine. (Stockdill, Baizerman, and Compton 2002, 14).

## Programs within Three Funding Agencies

### National Science Foundation:

#### *ADVANCE*

Division of Human Resource  
Development (HRD)

#### *Alliances for Graduate Education in the*

#### *Professoriate (AGEP)*

Division of Human Resource  
Development (HRD)

#### *Louis Stokes Alliances for Minority Participation (LSAMP)*

Division of Human Resource  
Development (HRD)

### National Institutes of Health:

#### *Minority Access to Research Careers (MARC)*

Division of Minority Opportunities  
in Research (MORE)

#### *Minority Biomedical Research Support (MBRS)*

Division of Minority Opportunities  
in Research (MORE)

### GE Foundation:

#### *Math Excellence*

## Why Cross-Project Evaluation?

Several government agencies as well as private foundations target broad programmatic areas for funding. For example, NSF's Division of Human Resource Development (HRD) within the Education and Human Resources (EHR) Directorate, strives to address NSF's agency-wide commitment to broaden the participation of underrepresented groups and institutions in STEM fields. Within NIH, the National Institute of General Medical Science's (NIGMS) Division of Minority Opportunities in Research (MORE) supports research and research training programs whose goal is to increase the number of minority biomedical and behavioral scientists. Within these two broad programmatic areas—HRD and MORE—several programs are funded that address the same or similar goals and the same or similar target populations (i.e., AGEP, LSAMP, ADVANCE at NSF, MARC and MBRS at NIH).

In this era of accountability, programs are frequently asked to provide evidence that they are reaching their goals. However, assessing broad program effectiveness is often difficult without aggregating similar data across individual projects to determine the overall effect of the program. Cross-project evaluation in the interest of evaluating a program depends on each project collecting uniform data so that data may be aggregated across projects.

In addition to meeting accountability requirements, being able to report on program level outcomes—*Has this program produced the intended results?*—brings other benefits. For example, it strengthens funders' ability to make informed funding decisions—*Should we continue to put money into this program?*—and has the potential to improve the knowledge base of what works (and what works for whom) by providing a larger database allowing for disaggregation of data—*Who benefits the most from this intervention? Who doesn't?*

The goal of cross-project evaluation is most often to provide data for a summative evaluation by assessing the program's overall success in meeting its goals as measured by the success of individual projects in contributing to those goals. This report, therefore, will focus on the role of cross-project evaluation in summative evaluation.

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The two guides target three groups of potential users:

- *Funders of program evaluations.* These can be staff in the program area or staff in an evaluation center within an organization. They are responsible for writing requests for proposals (RFPs) to solicit proposals to evaluate programs, monitoring the evaluations, and working with the evaluators to convey the results of the evaluation to the organization and the public.
- *Those involved in program evaluation.* These are typically evaluators who receive contracts from funding agencies or organizations to design and carry out cross-project evaluations within a program to assess the overall effectiveness of the program.
- *Those involved in project evaluation.* These project evaluators focus on designing and collecting data to evaluate individual projects. They work directly with the projects and typically report their data to the project director or principal investigator of the project.

These guides provide guidance for developing a model to guide procedures for building the capacity and ability of an organization (or an area within an organization) to conduct cross-project evaluations. They can also be used by evaluators responsible for assessing the effects of a program area to conceptualize cross-project evaluation and organize data collection and analysis. Finally, they can help evaluators of individual projects to understand their role in contributing to the larger cross-project evaluation.

Two basic assumptions underlie the evaluation approach used and the evaluation knowledge and expertise the targeted audience possesses. The evaluation approach (i.e., the goals and procedures of evaluation) presented here is the “goal-oriented approach” (Stecher and Davis 1990), which determines program success based on fulfillment of program-specific goals. We deemed this the most appropriate evaluation approach because of the purposes for which cross-project evaluations are typically used: to justify or inform funding decisions. For example, a program of funding is established to address an identified need through implementing projects that, by carrying out specified activities, promise to produce specific results. Cross-project evaluation, by determining whether or not the projects have achieved these results, justifies—or not—the decision to establish a funding initiative. The question the evaluation addresses—*Has this program fulfilled its goal?*—is therefore an appropriate one.

Because its target audience consists of evaluators, the guide assumes that readers will have a basic knowledge of evaluation principles and procedures. The guide, therefore, will not contain detailed instructions for implementing routine evaluation tasks.<sup>2</sup> The expectation is that users of these guides will gain an appreciation of the value of conducting cross-project evaluations; learn how to design such an evaluation; become aware of the special issues inherent in collecting and reporting cross-project data; and understand the many uses of cross-project data in decisionmaking.

The two guides discuss the following areas relevant to cross-project evaluation:

#### Building Evaluation Capacity I: Designing a Cross-Project Evaluation

1. Evaluation design, including identification and operationalization of program goals, building of logic models, and indicator setting; and
2. Selection of indicators to be measured and appropriate measures for these indicators;

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## Building Evaluation Capacity II: Collecting and Using Cross-Project Evaluation Data

1. Data collection: formats and scheduling;
2. Ensuring data quality;
3. Use of comparison data;
4. Reporting and displaying data; and
5. Using cross-project data.

Building Evaluation Capacity II concerns data—its collection, reporting, and use. The first section lays out the multiple issues involved in data collection: the strengths and weaknesses of formats that can be used in data collection; data-collection scheduling; data quality and methods of ensuring it; data unique to individual projects; and confidentiality and the protection of human subjects in data collection. Other sections of this report concern ways of building data-collection capacity among projects; rationales, sources, and measures of comparison data; issues inherent in the reporting and displaying of data; and the uses to which cross-project data might be put.

### **Data-Collection Formats**

Each major data-collection format—electronic, paper, fax, telephone, and in person—may be appropriate based on the situation and the available resources. The following describes the different formats, including their strengths and weaknesses and when each should be used.

#### **Electronic Formats**

In most cross-project evaluations, electronic data collection is the most efficient and cost-effective way to collect data. This can be done in several ways, using a variety of different formats, each with its own strengths and weaknesses.

#### **Online Data-Collection Systems**

Using survey-generating software, surveys or other measures targeting individuals are put up on a web site. Individuals from whom data are to be collected submit their data to the site. The entered data are stored on the server for later retrieval or sent as an email to the evaluation team.

An online data-collection system can be done in-house by the evaluation team if the necessary technical skills are available. Otherwise, commercial vendors can help develop the surveys and measures, put them online, host the web site, and send the data to the evaluation team.

#### **Strengths of Online Data-Collection Systems**

The following is an overview of the strengths of this format:

- *Cost-effective.* Costs are significantly less than e-mail, phone, or mail contact with individuals.

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- *Easy data entry.* The data entry can be done automatically.
  - *Automatic updates.* Data can be automatically put into an existing database, allowing at least some analysis to be automatically updated.
  - *Complete data.* The requirement that certain fields be completed can be enforced.
  - *Automatic data checking.* Some data checking can be done automatically. Each entry can be compared against established parameters and immediately rejected if not within the parameters.
  - *Verified skip patterns.* Any “skip patterns” (i.e., if the answer to question 15 is yes, go to question 25) can be enforced.
  - *Password-free.* If the expectation is that the survey or measure will be completed in one sitting and that the data will be taken off the web and quickly and automatically put into a database, log-ins and passwords are not necessary.
  - *Possible to edit.* Changing the surveys or measures to, for example, add questions based on early results is relatively easy and cost-effective.
  - *Simple to publicize.* Live links to the survey or measure can be put in appropriate web sites and e-mail lists (sometimes called LISTSERVs) to encourage target audiences to participate in the data collection, as long as checking is done for multiple entries.

#### Weaknesses of Online Data-Collection Systems

The following is an overview of the weaknesses of this format:

- *Requires web access.* To enter data, people must have access to a computer and the web. If data are collected from a group of participants, then they each need individual access to the web.
- *Integration with paper.* If individual participants complete paper forms and project staff enter multiple paper forms, using the online system is cumbersome and more time-consuming than entering them into, for example, a spreadsheet software data entry form.
- *Limited length.* This format is not useful for surveys or measures that are too long to be completed in one sitting or that require data that might not be immediately available. If respondents must save their work and return to the online form, not only are project log-ins and individual passwords needed, the software involved becomes much more complex and is not generally available.
- *Unrestricted access.* If there are no log-ins and passwords, there is a danger of participants entering data more than once and individuals not involved with the projects submitting phony data.
- *Best for new data only.* Online data-collection systems tend to be inefficient ways of collecting data that already exist in an electronic format because, in most cases, the data have to be reentered.

Online data-collection systems are especially useful when data are being collected from many individuals or institutions and the surveys or measures being used are relatively

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short. Online data-collection systems are less useful when existing data, rather than new data, are being collected or when people must see the data they previously entered.

### **Downloadable Data-Collection Templates**

A data-collection template, usually based on Microsoft Excel or Microsoft Access, is made available as a downloadable file on a web site. Project staff download the template, complete it, and either e-mail the file to the evaluation team or upload it to the web site. If the files are to be uploaded to the web site, a file transport protocol (FTP) is needed.

Data-collection templates can also be sent to participating projects as e-mail attachments or can be sent on digital media through the mail. In a variation of this format, project staff can submit their own databases. While this tends to be easier for individual project staff, the possibility of incompatible formats and data may cause problems for the evaluation team.

Asking a sample of staff from different projects about the software they can access and feel comfortable using helps ensure project staff can actually use the template. In the GE Foundation's Math Excellence and the National Science Foundation's (NSF) Alliances for Graduate Education and the Professorate's (AGEP) cross-project data-collection efforts, staff from school districts, colleges, and universities chose Microsoft Excel as the software that would be easiest for them to use. In NSF's Louis Stokes Alliance for Minority Progress (LSAMP), participants who were surveyed were given the choice of responding via a variety of methods: easy-to-use web-based surveys, paper and pencil, and telephone interviews.

### **Strengths of Downloadable Data-Collection Templates**

The following is an overview of the strengths of this format.

- *Cost-effective.* Costs are significantly lower than e-mail or regular mail contact with individuals.
- *No data entry by the evaluation team.* Individual project staff, not the evaluation team, do the data entry.
- *Automatic data checking.* Some data checking can be done automatically. Each entry can be compared against established parameters and immediately rejected if it is not within the parameters.
- *Easy to manipulate.* If the template is set up appropriately, existing data can be pasted into the template. For example, if a template is set up in Excel, then rows and columns from existing Excel files could be copied and pasted in. Similarly, data in a Microsoft Access database can be converted into Excel format and vice versa. With the assistance of technical staff, a variety of transformations can be made.
- *Password-free.* Log-ins and passwords are not needed unless the template is individualized by project.
- *Multiple ways to deliver.* Project staff whose virus protection software doesn't allow them to download Excel files or files with macros from e-mails can download templates from the web.

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### Weaknesses of Downloadable Data-Collection Templates

The following is an overview of the weaknesses of this format.

- *Possible delivery problems.* Spam filters in some institutions don't allow individuals to even receive e-mails that contain data-collection templates.
- *Possible user errors.* Even if cells are locked or protected, because they feel it would be more convenient or more clear, some users will "break" in and change the format and the parameters.
- *Technical competence required.* There is a need to develop "data loading" and data cleaning programs specific to the data-collection templates. Using scripts written in Perl or similar programs, the process of taking data from a template, checking them for accuracy, and loading them into a common database may be automated. However, developing and implementing such software is a not a task a programming novice should undertake.

Downloadable templates for data collection are useful when the data to be collected already exist and can be electronically imported. Downloadable templates are also useful when those submitting the data must be able to check previously submitted data for completeness and accuracy. Downloadable templates may not be a good choice for data collection when new data are being collected or when those submitting the data have little technical knowledge.

### Paper or Fax Formats

Print surveys or other measures are distributed and completed, then returned to the evaluation team. The distribution and return can be done by mail, by fax, or in person.

- Paper copies are sent to individual participants, usually with stamped, addressed return envelopes.
- Responses are returned to the evaluation team.
- The evaluation team enters the data.

### Strengths of Paper or Fax Formats

The following is an overview of the strengths of these formats.

- *Simple for respondents.* Respondents need no access to technology and no technical skills.
- *Flexible for projects.* Participating projects need no access to technology and no technical skills.

### Weaknesses of Paper or Fax Formats

The following is an overview of the weaknesses of these formats.

- *Time-intensive.* Distributing the measures by mail or by fax requires additional time for data collection.

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- *Difficult to distribute.* Mail carrier services are expensive and cheaper options, such as bulk mail, do not provide information on the whether the data-collection instruments were delivered or received.

Paper or fax formats are useful when data are being collected from participants without access to or knowledge of technology. Often paper formats can be used with other data-collection formats to increase response rates.

## **Telephone Data Collection**

Survey or interview questions are asked of participants by phone. Participants are generally contacted by mail or e-mail, asked to participate in a telephone interview or survey, and asked to select a convenient time for the call. Participants can also be called “cold” and asked if they would be willing to answer questions right at that moment or at a more convenient time. The interviewer asks the questions and either records the participants’ responses or enters them electronically.

### **Strengths of Telephone Data Collection**

The following is an overview of the strengths of this format.

- *Simple for respondents.* Respondents need no access to technology and no technical skills.
- *Higher response rates.* If telephone numbers are accurate, response rates can be higher than paper or electronic data-collection efforts.
- *Wide-ranging questions.* More complex open-ended questions can be asked.
- *Easy clarification.* Respondents can be asked to expand upon or clarify their responses.
- *More inclusive.* Data can be collected from nonliterate participants.

### **Weaknesses of Telephone Data Collection**

The following is an overview of the weaknesses of this format.

- *Relatively expensive.* The format is very resource and time intensive.
- *Alienation of respondents.* Respondents may not like being called.

The live phone conversation can be a useful format to use to follow-up with nonrespondents or when more complex, open-ended questions are being asked.

## **Collecting Data in Person**

Individuals or teams of evaluators either go to project locations or project staff come to them. If a site visit is being conducted, evaluation team members go to the project location. Among the tasks they may do there are interview participants and other

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stakeholders, observe project operations, validate data already submitted, and collect additional data.

### **Strengths of Collecting Data in Person**

The following is an overview of the strengths of this format.

- *Simple for respondents.* Respondents need no access to technology and no technical skills.
- *High response rates.* In-person visits generate high response rates.
- *Wide-ranging questions.* More complex open-ended questions can be asked.
- *Easy clarification.* Respondents can be asked to expand upon or clarify their responses.
- *Variety of data.* Different types of data can be collected, including observational data.

### **Weaknesses of Collecting Data in Person**

The following is the primary weakness of this format.

- *Very expensive.* Collecting data in person is extremely resource and time intensive.

Collecting data in person is a useful format to use when there is no other way to get the data needed.

### **Summary**

Table 1 summarizes the formats of data collection and their strengths and weaknesses.

## **Scheduling Data Collection**

The funder's deadline for data collection results is one of the most important factors to consider when scheduling data collections. Ideally, knowing a funder's needs and timelines allows the evaluation team to work backwards and schedule data collection so that there is time to collect and analyze the data, write up the results, and still meet the funder's deadlines. This is not always easy or even possible. For example, the timeline may indicate that institutional data from colleges and universities should be collected at the beginning of the academic year. However, most institutions don't have current data that early in the year; even when they do, they tend to be too busy to give the data to an outside agency.

At the precollege level, data collection scheduled during March and April tends to be doomed to failure. March and April are when state standardized tests are given and few districts allow other student data collection during that period. And even though pre-college students take state standardized tests in the spring, test results are often not available until the fall or even the following winter, further impacting timelines. Of course, for cross-project evaluations, data-collection schedules should be synchronized across projects, so that all projects submit data collected for the same time period.

**Table 1.** Summary of Data-Collection Formats

Format	Description	Strengths	Weaknesses	Summary
Online Data Collection Systems	Individuals who are surveyed use online forms to submit data over the internet	<ol style="list-style-type: none"> <li>1. Cost-effective</li> <li>2. Respondents enter own data</li> <li>3. Automatic updates</li> <li>4. Ensure data completion</li> <li>5. Automatic data checking</li> <li>6. Verified skip patterns</li> <li>7. Password-free</li> <li>8. Possible to edit</li> <li>9. Simple to publicize</li> </ol>	<ol style="list-style-type: none"> <li>1. Requires web access</li> <li>2. Integration with paper</li> <li>3. Limited length</li> <li>4. Unrestricted access</li> <li>5. Best for new data only</li> </ol>	Useful when collecting data from many individuals or institutions and when surveys or measures are relatively short. Less useful when gathering existing data or when respondents need to see entire survey instrument.
Downloadable Data Collection Templates	An electronic file (usually Microsoft Excel or Access) is provided to each project. Projects complete the data entry and return the electronic file of records to the evaluation team, who merge files for analysis.	<ol style="list-style-type: none"> <li>1. Cost-effective</li> <li>2. Respondents enter own data</li> <li>3. Automatic data checking</li> <li>4. Easy to manipulate</li> <li>5. Password-free</li> <li>6. Multiple ways to deliver</li> </ol>	<ol style="list-style-type: none"> <li>1. Possible delivery problems</li> <li>2. Possible user errors</li> <li>3. Requires technical competence from respondents</li> </ol>	Useful when data to be collected already exist and may be electronically imported, or when respondents need to double-check data they have previously submitted. Less useful when new data are being collected or respondents have little technical knowledge.
Paper or Fax Forms	Print surveys or questionnaires are distributed and completed, then returned to the evaluation team.	<ol style="list-style-type: none"> <li>1. Easy for respondents</li> <li>2. No technical skills required</li> </ol>	<ol style="list-style-type: none"> <li>1. Time-intensive</li> <li>2. Difficult to distribute</li> </ol>	Useful when data are collected from participants without access to or knowledge of technology. Can be used in conjunction with other formats to increase response rates.
Telephone Data Collection	Survey or interview questions are asked of participants by phone. Interviewer either tape records respondents' answers or enters them electronically.	<ol style="list-style-type: none"> <li>1. Easy for respondents</li> <li>2. Higher response rates</li> <li>3. Complicated questions are possible</li> <li>4. Easy clarification</li> <li>5. More inclusive</li> </ol>	<ol style="list-style-type: none"> <li>1. Relatively expensive</li> <li>2. May annoy participants</li> </ol>	Live phone conversations can be useful when following up with non-respondents or when more complex, open ended questions are being asked.
Collecting Data in Person	Individuals or teams of evaluators go to project locations to interview participants and other stakeholders, observe project operations, validate submitted data, and collect new data	<ol style="list-style-type: none"> <li>1. Easy for respondents</li> <li>2. High response rates</li> <li>3. Wide-ranging questions</li> <li>4. Easy clarification</li> <li>5. Variety of data</li> </ol>	<ol style="list-style-type: none"> <li>1. Very expensive</li> </ol>	Collecting data in person is a useful format when there is no other way to get the data that are needed.

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Another area to consider is the expected time for impact. If pre- and post-data are being collected, then the period that needs to elapse between the two data collections, needs to be decided early in the process. If pre- and post-data can be collected within the same academic year, the task is much easier for participating projects, but that may not be enough time for impact to occur.

## Data Quality

The old adage “garbage in, garbage out” applies even more strongly to cross-project evaluators than to the computer programmers who coined it. If the quality of the data is not high, then the cross-project evaluation is at best useless, and at worst, dangerous. The following areas can effect data quality.

### Response Rates

A good response rate is key to the validity of the data collected and the results generated. What constitutes an acceptable response rate varies by project. For example, a “good” response rate for a survey sent out cold to people with whom the sender has no connection is much lower than the response rate from students taking achievement tests. Whether data are collected from the entire population or a sample of that population also matters.

For cross-project evaluations, data should be collected from all projects involved. Each data set collected from an individual project should have a response rate at or above 50 percent. Data sets with response rates below 50 percent should not be used.

There are many ways to improve response rates, but the most effective one is to involve the funder. The funder must make it clear to each project that participation in the cross-project data collection is required. Unless project staff understand that providing the requested data is a criterion for continued funding, response rates will not be acceptable.

If response rates are below 90 percent, it is appropriate to test for response bias, comparing the respondents and the nonrespondents on data available for both groups. Any significant differences between respondents and nonrespondents should be reported and should be a part of the analysis and the conclusions. If the data were collected from a population, it should be noted that there is limited generalizability beyond those from whom the data were collected.

### Electronic Controls

If the data are being collected electronically, automated data checking procedures can be incorporated into the template to improve the quality, including the following:

- *Specify data type.* Prohibit text when a response should be numerical. Error messages can be shown on the screen explaining that that answer must be numerical.
- *Specify data range.* Only allow data to be entered within the appropriate range (i.e., if it is a 1–5 scale, only 1, 2, 3, 4, or 5 is accepted). Error messages can be shown on the screen describing the acceptable range.

- 
- *Perform calculations.* Automate all computations to reduce or eliminate respondent computation errors.
  - *Prohibit contradiction.* Do not allow impossible situations. For instance, a school should not have more students graduate than are enrolled. Error messages can be shown on the screen explaining the problem.
  - *Flag for follow-up.* Highlight potentially anomalous situations such as very large increases or decreases in the numbers of students in a year. E-mail or telephone follow-up can then be done with respondents to check the accuracy of that particular subset of data.

## Data Validation

Data should be validated with more than just electronic controls. Some cross-project evaluations have the institution, perhaps a college provost or a district superintendent, certify that the data are accurate. Others, with more resources, randomly select portions of the data and have their staff do the validation.

If the data are being collected multiple times, another process can be used to check the data. Each project's data-collection template includes data that the project has already submitted. When new data are added, the project staff are asked to check previously entered data for accuracy, fill in missing data, and add more recent data. Scripts can be written in Perl or other programming languages to place data into each project's data-collection template automatically.<sup>3</sup>

## Cleaning Data

Data cleaning is the process of going through the submitted data, looking for inaccuracies, inconsistencies, misunderstandings, duplications, and anomalies. It may be the most painful and time-consuming part of the data quality and data management process. Creating, testing, and retesting all data forms and templates to make them as clear and as easy to understand and complete as possible is the most important step in making the data-cleaning process less painful. However, some confusion is almost guaranteed and, particularly if the data-collection template is in Microsoft Excel, as indicated earlier, some projects will change the form—even when cells are locked and protected. Scripts can be written in Perl or other programming languages to look automatically for obvious changes.

Most data cleaning must be done by hand, although some automation may be possible. For example, if names and individual identification numbers (ID) need to be matched across forms, the preliminary matching can be automated, but secondary matching for such anomalies as name shortenings (Susan to Sue, David to Dave), typos, and inconsistent use of initials need to be checked by hand. This data cleaning can be eliminated if a name or ID is entered only once and from that point on, names and IDs are checked from a list rather than reentered as a text field. This can be problematic when there are many entries. There may be privacy issues involved because respondents would be able to see other respondents' identifying data.

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## **Data Unique to Individual Projects**

Common cross-project data are at the core of any cross-project evaluation. However, to understand the results of analysis of common cross-project data, understanding the context under which individual projects operate and how individual project goals map into the cross-project or program goals is important. Interviews with individual projects using a standard protocol can help analysts understand project context and learn about possible extraneous variables (e.g., a new administration, a hurricane, budget cuts) that may affect project outcome data.

Many projects collect their own participant data in addition to the data collected across projects and want that data to be included in the cross-project evaluation. This is often not feasible because the cross-project evaluation team cannot control the quality of the measures or data-collection procedures used, which can lead to validity and reliability problems, especially if different projects use different procedures and measures. However, using unique data in case studies or program overviews to describe the variety of projects funded is possible. Data unique to individual projects can also be used to look for unintended outcomes and, as a result, identify possible common cross-project data to be collected in future years or for future evaluations. Collecting and assessing data unique to individual projects is not cheap and, as in many other areas, decisions about collecting individual project data will largely be based on available resources.

## **Protection of Human Subjects**

### **Is an IRB Required?**

If the cross-project evaluation uses federal funds, then an institutional review board (IRB) must approve the evaluation protocols and designs. Every institution receiving federal funds for research is required to have an IRB for the work being funded. The role of the IRB is to protect human subjects, with a particular emphasis on assuring privacy and the confidentiality of the data collected, the potential risk to subjects, and subjects' informed consent to participate in the evaluation or research. IRB criteria tend to be more stringent when people under age 18 are involved. People under 18 cannot give informed consent. Consent for people under 18 can only be given by a parent or guardian.

### **Non-IRB Procedures**

Regardless of whether the funding for the evaluation is from federal sources, it is always a good plan to have the study reviewed for the protection of human subjects. More information about the protection of human subjects can be found in a free, web-based course from the National Cancer Institute that presents information about the rights and welfare of human participants in research (<http://cme.cancer.gov/clinicaltrials/learning/humanparticipant-protections.asp>). The two-hour tutorial is designed for those conducting research with human participants. It satisfies the National Institutes of Health (NIH) human subjects training requirement for obtaining federal funds.

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When data collection is done at the request of the federal government, the Office of Management and Budget (OMB) must approve any measures that you might use. A description of the OMB clearance process can be found on the web at [http://thefdp.org/OMB\\_Clearance.pdf](http://thefdp.org/OMB_Clearance.pdf) (Kraemer 2006).

## **Privacy Considerations**

Protection of human subjects includes the protection of their privacy, which in turn includes the privacy of the data they provide. Ideal privacy is when the data collected are anonymous; however, that is not possible when individuals must be tracked over time or linked to groups. In those cases, an individual's data need to be confidential, and access to any individually identifiable data must be minimal. Through the use of unique project identifiers (UPID), it is possible to collect data over time that can be tracked but is anonymous as far as the cross-project evaluator is concerned.

There are several ways this can be done. One of the best methods uses a mathematical algorithm known as a "one way hash," which is a tool used to make web sites and e-mails more secure. Each time an individual's ID is entered, a series of mathematical transformations are made to generate a UPID. The same ID generates the same UPID each time the ID is entered. Mathematicians and cryptologists have found that is almost impossible to go backward and regenerate the student ID from the UPID. However, for this procedure to work each time data are entered, the same student ID must be entered in exactly the same format. Ronald Rivest of the Massachusetts Institute of Technology has developed a one-way hash algorithm called MD5 that can be used for this purpose. *An Illustrated Guide to Cryptographic Hashes* provides more information (<http://www.unixwiz.net/techtips/iguide-crypto-hashes.html>) (Friedl 2007).

## **Confidentiality in Data Collection and Storage**

Confidentiality is important in data collection. If, for example, data are being collected about student feelings about their professors, for the protection of the students and the quality of the data, the data-collection process needs to be set up so that the professor never sees any individually identifiable data.

Data storage is an issue as well. If confidential, rather than anonymous, data are collected, the stored electronic data need to be password protected, and paper data need to be stored under lock and key. Generally, it is best for cross-project evaluators to generate UPIDs for each subject and store the data under the UPID rather than under such identifiers as an individual's name or, especially, social security number. The key that links the subject's name or other identifiable data should be stored separately from the data, and that key should be destroyed when it is no longer needed.

## **Building Project Data-Collection Capacity**

The current low level of data-collection capacity among educational institutions from local school districts through major research universities is a depressing reality. Cross-project

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evaluations have found participating universities not knowing how many women students they graduate each year, participating school districts having databases that show students taking math courses that the district insists do not exist, and projects collecting data from minors for years without their institution's IRB approval or even knowledge.

The overestimation of the data-collection capacity of participating projects is one of the most costly mistakes a cross-project evaluation team can make. One way to avoid this error is to begin any cross-project evaluation with a data-collection-capacity needs assessment. A survey or an interview can be used to determine, for each project, the data currently being collected, the format in which they are stored, and what technical facilities are available, including the types of software to which project staff have access and use. Advisory boards made up of a diverse sample of projects can also help provide information on the current state of data-collection capacity.

Among the steps that can be used to increase project data-collection capacity are the following:

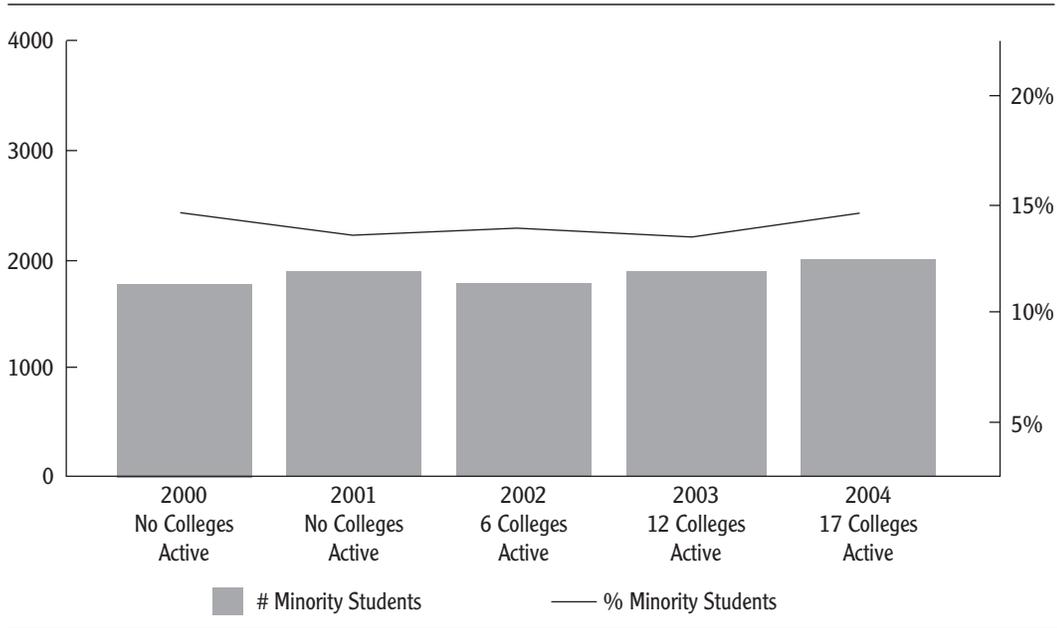
- *Training at cross-project meetings.* In-person training on the data-collection effort at cross-project meetings is cost-effective, but often those attending the meetings are not the same people who will be collecting the data.
- *Training with project staff.* On-site training with project staff responsible for data collection allows the evaluation team to work with those collecting the data and allows the training to be adapted to meet individual project needs; however, it is very time and resource intensive.
- *Online training.* Web-based training on how to collect the data is cost-effective and allows interactivity; however, it is often difficult to motivate people to access the training.
- *Training at collection.* Training incorporated as part of the data-collection template can be set up to strongly encourage (or even force) data collectors to go through it and can answer frequently asked questions.
- *Ongoing training.* Training on an ongoing basis can fix problems from the early rounds of data collection.

Regardless of the other strategies used to build project data-collection capacity, technical and content troubleshooting by phone and e-mail must be available to appropriate project staff on an ongoing basis.

## **Making Comparisons**

In recent years, a great deal of attention has been paid to the use of comparison groups. While there can be a number of issues related to using comparison groups, the following example indicates their value in increasing the accuracy of conclusions and the usefulness of recommendations. Figure 6 provides data on the number and percentage of newly enrolled underrepresented minority engineering students in 17 colleges of engineering, each of which had a grant to increase the diversity of their students. As the number and percentage of minority students stay relatively constant, one might conclude—based on

**Figure 6.** Program Data without Comparison Group



the graph—that there had been little change and that the program was not having much of an impact.

However, as Figure 7 shows, when data from a matched group of schools are added to the graph, the interpretation is quite different. In the matched group, the number and percentage of underrepresented students consistently declined over time in the comparison schools, while remaining constant and even slightly increasing in the project schools (Campbell and Carson 2006). As this example illustrates, when data are contextualized against a matched group of comparison institutions, the reader can make more accurate conclusions about a program’s success.

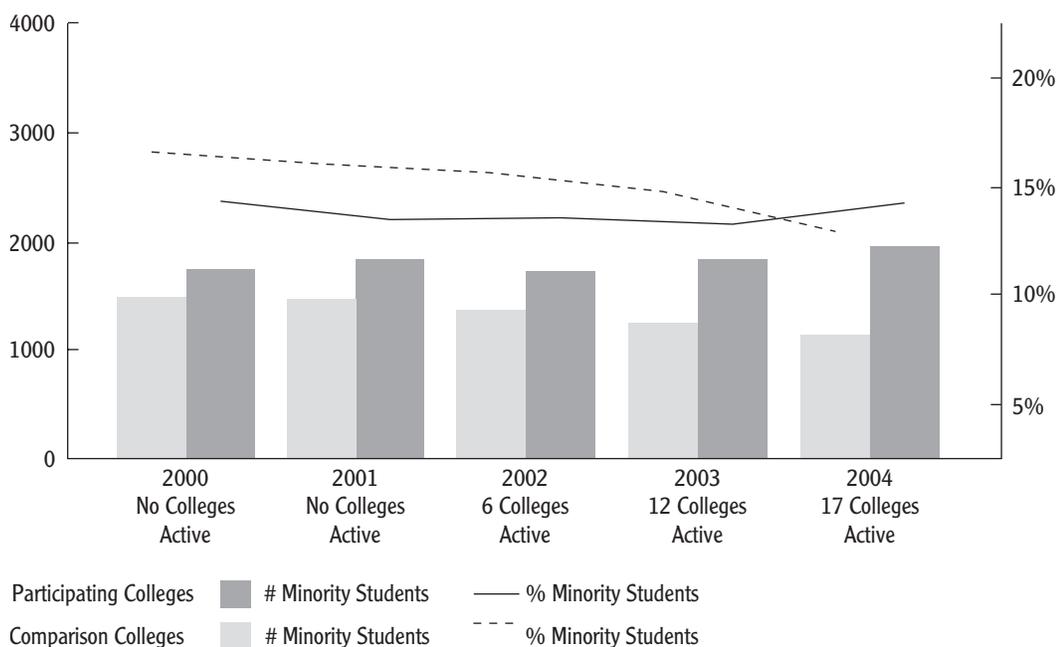
### Sources of Comparisons

Few disagree with the value of comparison groups, but there are concerns about the difficulty in finding good comparison groups. The following provides some sources for institutional comparison groups at the precollege and college levels. Appendix A provides a listing of potential sources of comparison data.

### Within the Cross-Project Evaluation

In many ways, the easiest comparisons to make are across projects within the same cross-project evaluation. There are a variety of pitfalls in this type of comparison, including a lack of comparability in strategies, resources, and institutions. There are some ways that projects, working with similar institutions in the same cross-project evaluation, can be used as comparison groups. For example, to look at possible impacts of teacher mentoring, projects

**Figure 7. Program Data with Matched Comparison Group**



*Note:* The conclusions drawn from the same cross-project evaluation are quite different once matched comparison groups are included.

using mentoring with teachers can be compared with a matched group of projects also in the cross-project evaluation that don't use mentoring with teachers.

### **Within a State or District (Precollege)**

At the school level, it is possible to find achievement data for matched schools.<sup>4</sup> Currently, all 50 states and the District of Columbia have web-based report cards for their districts and for the public schools within those districts. Designed by the individual state departments of education, data in these report cards vary by state. Most, however, include student achievement test scores on standardized mathematics and language arts/reading tests disaggregated by race/ethnicity and sometimes by sex, disability, socioeconomic status, and English proficiency. Achievement data, for grade and subject area tested by a state, are not provided for individual students. If the number of students in a specific subgroup is small enough (the exact number varies by state) no data are provided for that subgroup on that particular test. The data are available at no cost and, in many states, can be downloaded as Excel files. A list of state web sites can be found in the appendix B.<sup>5</sup>

The U.S. Department of Education also provides web-based school-level data on all public schools, including school location, student enrollment by grade, student demographic characteristics, the number of classroom teachers, and the percentage of students eligible for free or reduced-price lunches. These data can be downloaded from the National Center for Educational Statistics Common Core of Data (<http://nces.ed.gov/ccd/>).

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For school-level cross-project evaluations, comparison schools can be selected using the Common Core of Data. Comparison schools must be from the same state as the participating school. States have different performance standards and assessments, which makes meaningful comparisons between schools in different states impossible. Whenever possible, comparison schools should be within the same school district as well. Having schools within the same district means that both sets of schools are subject to similar policies, have the same district administration, and operate under similar teacher and staff contracts. If using district schools for comparison purposes is not possible, comparison schools can be selected from districts that are comparable in terms of areas such as socioeconomic status, size, location, and overall achievement levels.

### **Nationally (College and Graduate Level)**

At the college level and above, National Science Foundation's WebCASPAR database (<http://caspar.nsf.gov>) provides free and easy access to a large body of statistical data resources for science and engineering at U.S. academic institutions.<sup>6</sup> WebCASPAR emphasizes science and engineering, but its data resources also provide information on other fields and higher education in general. Through WebCASPAR, institutional-level data on students can be found using the results of such surveys as the Integrated Postsecondary Education Data System (IPEDS) and the Survey of Earned Doctorates.

The Engineering Workforce Commission (<http://www.ewc-online.org/>) provides summary data on engineering and technology degrees and enrollments and on engineer salaries to the general public. In addition, it provides data to members of the American Association of Engineering Societies for individual colleges since 2000 on bachelor's, master's, and doctorate degree enrollees and recipients, broken out by sex and race/ethnicity for U.S. students and by sex for foreign students. A listing of other sources of online comparison data at the college level and beyond for science, engineering, technology, and mathematics can be found in appendix B.

For institutional-level cross-project evaluations, comparison institutions can be selected using the Carnegie Foundation for the Advancement of Teaching (<http://www.carnegiefoundation.org/classifications/>). Institutional matches can be made based on Carnegie Classification, geographic location, private/public designation, size, and profit/nonprofit status.

### **Comparison Measures**

If state or national databases are used for comparisons, then the dependent variables or measures used in the cross-project evaluation need to reflect those in the national databases. Even for such a variable as new enrollment in science, technology, engineering, and mathematics (STEM), the cross-project definition of STEM must reflect the definition used in the database, and the data collection has to be over the same period. For example, even the number of new enrollees may have several different definitions. Some may define new enrollees as those entering during the academic year while others may define new enrollees as those entering in the fall. The questions asked must be the same

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as well. For example if comparisons are being made with National Assessment of Educational Progress (NAEP) attitude data, then the cross-project students must be asked the exact same questions as were the NAEP students with the exact same choices of answers.

## Reporting Data

Determining who gets what data in what format when is not an easy task. The following takes a look at some data-reporting issues confronting cross-project evaluations.

### Raw Data

If projects submit their data using data-collection templates, they are usually urged to keep copies of the data files. However, if they submit data using other formats, such as web-based forms or paper forms, they most likely do not keep copies of the raw data; data that they may want or need later. If it is decided, by the funder or the evaluation team to return the raw data to individual projects, then the evaluation team needs to decide when the raw data will be returned (e.g., at set intervals like each semester, each year, or upon request) and to whom. If the raw data are to be returned to projects regularly, scripts can be written in Perl or other programming languages to do this automatically.<sup>7</sup>

In some cases, it is useful to return the raw data in the data-collection format, which can allow projects the opportunity to review and correct previously submitted data. Confidentiality, however, should always be a concern. In the GE Foundation's Math Excellence cross-project evaluation, teachers could submit pre-, post-, and follow-up data on the web. Before their raw data was sent to the projects, identifying data was replaced with a made-up ID number. That way project staff could do their own pre- and post analysis while preserving individual teacher confidentiality.

Confidentiality is an issue at the project level as well. If project-identifiable data are to be submitted to funders, project staff need to know this in advance. No individually identifiable data should ever be released. Often funders are more interested in project compliance with submitting raw data than in the raw data. Providing funders with this information periodically can increase response rates.

### Data Summaries

Unless project staff plan to do further analysis, data summaries tend to be more useful than raw data. For example, as part of NSF's AGEP evaluation-capacity-building grant, along with the raw data, each AGEP alliance receives a summary that allows project staff to look at their data and that of their partners. Table 2 provides an example of a data summary.

These types of simple analysis can be done automatically. A Microsoft Excel template can be set up that automatically computes such variables as sums, means, standard deviations, and frequencies. A function, such as refresh data, can be used to update it.

**Table 2.** AGEP Enrollment Data Summary

	Mean number of students			Change	
	<i>Pre AGEP</i>	<i>Early AGEP</i>	<i>Mid AGEP</i>	<i>Pre AGEP to Mid AGEP</i>	
	1996–97 to 1998–99	1999–2000 to 2001–02	2002–03 to 2004–05	Number	Percent
Alliance Institution I	86	97	116	30	35%
Alliance Institution II	24	23	45	21	45%

### Time to Possible Project Impact

Regardless of who gets what data, the format in which data are reported needs to be sensitive as to whether enough time has passed for the project to have had impact. Within a cross-project evaluation, the time to possible project impact will vary, even with projects funded at the same time. In the GE Foundation’s Math Excellence cross-project evaluation, the time from project funding to possible impact on student achievement ranged from 5 to 29 months (with an average of 16 months). In the following example, although the project started in the fall of 2003, the date of first possible impact was not until the spring of 2005.

A program, designed to increase seventh grade mathematics achievement, was introduced in fall 2003 in schools in a state where eighth graders, but not seventh graders, are tested in mathematics. No possible project impact on test scores would be detectable until the spring 2005 administration of the mathematics test, when the students who had been in seventh grade in the 2003–2004 school year would take the eighth grade mathematics achievement test.

At the undergraduate and graduate-school levels, date of possible project impact is greatly dependent on the outcome variable. While time to possible impact on applicants might be as little as four months, if the outcome variable is PhD completion, for example, the time to possible project impact could be more than six years! Usually the time of first possible impact will need to be computed individually for each project.

When multiyear data are reported across projects, it is important to indicate, as in the table 3, the number of projects each year in which there could be impact on the outcome variable:

**Table 3.** Middle School Students at or above Grade Level in Math (1999–2004 for 30 Project Middle Schools)

	1999 (0*)	2000 (0*)	2001 (3*)	2002 (3*)	2003 (11*)	2004 (30*)
30 Middle Schools	32%	34%	36%	41%	44%	46%

\*Number of middle schools for which any change could be due to participation in the Program subject to the cross-project evaluation.

## Displaying Data

Reporting and displaying data are two sides of the same coin.<sup>8</sup> Even minor changes in how data are displayed can have implications for the conclusions drawn. The following provides examples of the impact of presenting data in different ways.

As the following example indicates, the interpretation of the data can vary based on whether mean change is displayed versus the percentage of people changing. Table 4 shows that after participating in the program, teachers and professors were more apt to use student-centered pedagogical techniques.

However, even though the data are the same, table 5 shows a different interpretation of the results. A majority of the teachers are changing in the desired direction but more than a third are changing in undesired ways.

### Means of Individuals versus Means of Individuals by Project

The earlier data were presented by computing means and frequency counts for individual instructors. Since the number of participating instructors varied across projects, the results may be different when they are computed based on a project's means or summaries rather than individual means or summaries; although, in this case, the results were very similar. Tables 6 and 7 report the data averaged across projects rather than individually.

The question is not whether one method is better than the other; the question is which method better suits your needs. Regardless of which computation is used, it is important to indicate the choice in the table, graph, or text.

### Effect Size

Including the statistical significance of reported results is useful. However, statis-

**Table 4.** Change in Individual Instructor Use of Student-Centered Pedagogical Techniques

	Mean	SD
Pre	2.3	0.5
Post	2.2	0.5

Notes: Scale: 1 = almost always to 4 = never, N: 547

**Table 5.** Number and Percentage of Individual Instructors Changing Their Use of Student-Centered Pedagogical Techniques

	Positive change	No change	Negative change
Number	301	54	192
Percent	55%	10%	35%

**Table 6.** Change in Instructor Use of Student-Centered Pedagogical Techniques, Averaged across Projects

	Mean	SD
Pre	2.3	0.5
Post	2.2	0.5

Note: Scale: 1 = almost always to 4 = never; N = 547; instructors in 30 projects

**Table 7.** Change in the Percentage of Instructors Changing Their Use of Student-Centered Pedagogical Techniques, Averaged across Projects

	Positive change	No change	Negative change
Percent	59%	8%	33%

Note: N = 30 projects

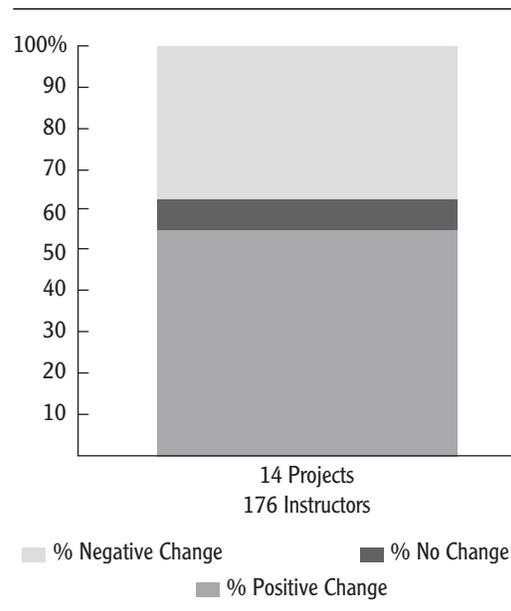
tical significance represents the probability that an observed difference exists and is not due to chance. It does not say anything about the size or meaningfulness of a result. Another measure might be included: effect size. The effect size, which can only be computed over statistically significant differences, shows how big the difference is. Effect sizes greater than 0.4 are considered large; between 0.2 and 0.4, moderate; and less than 0.2, small (Glass, McGaw, and Smith 1981). More on effect sizes and how to compute them can be found at <http://www.coe.tamu.edu/~bthompson/effect.html>(Thompson 1997).

### Level of Disaggregation

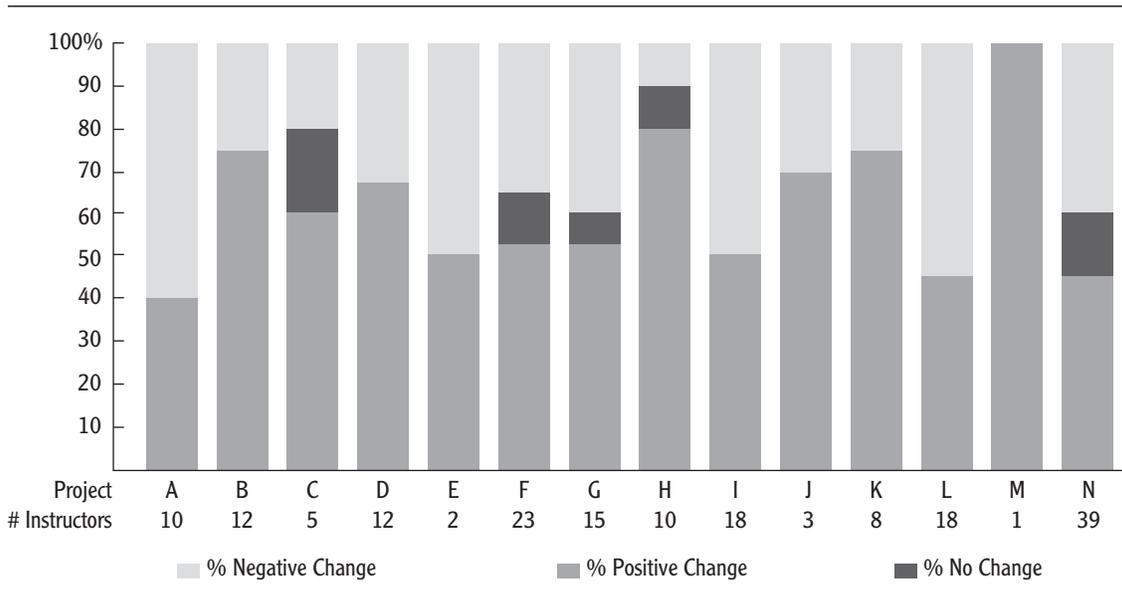
Looking at overall cross-project impact is useful for seeing the big picture but it doesn't allow you to see the variability by project. As figures 8 and 9 indicate, even though the data are the same, the interpretation is quite different based on the level of disaggregation.

Figure 9 shows that some projects are more effective than others in producing positive change. (On a side note, including the number of instructors in each project is important, as we're disaggregating data into groups with small *N*s.) Notice that although Project M reports

**Figure 8.** Instructor Change in Pedagogical Approach



**Figure 9.** Instructor Change in Pedagogical Approach, by Project



100 percent positive change, it also had only one participating instructor.

The same data from the previous disaggregated chart can also be presented in a table (table 8). In general, tables are more space effective but do not have the same visual impact as a well-constructed chart.

The previous examples show data disaggregated by project, disaggregating them by other variables may also prove useful. In table 9, cross-project data are reported based on the type of professional development that instructors received. Presenting data in this way allows the reader to draw conclusions about the effectiveness of the type of intervention received.

The most important consideration when choosing how to present data is the story you would like to tell—tables and graphs are only as useful as the thought behind them.

**Table 8.** Number and Percentage of Instructors Changing Their Use of Student-Centered Pedagogical Techniques, by Project

	Number of instructors	% Positive change	% No change	% Negative change
Project A	10	40	0	60
Project B	12	75	0	25
Project C	5	60	20	20
Project D	12	67	0	33
Project E	2	50	0	50
Project F	23	52	13	35
Project G	15	53	7	40
Project H	10	80	10	10
Project I	18	50	0	50
Project J	3	67	0	33
Project K	8	75	0	25
Project L	18	44	0	56
Project M	1	100	0	0
Project N	39	44	15	41
<i>Totals</i>	<i>176</i>	<i>54</i>	<i>7</i>	<i>39</i>

### Line versus Bar Graph

The type of graph used can make a difference in how data are understood, as the following example shows. In figures 10 and 11, the same data are reported in a bar graph and a line graph.

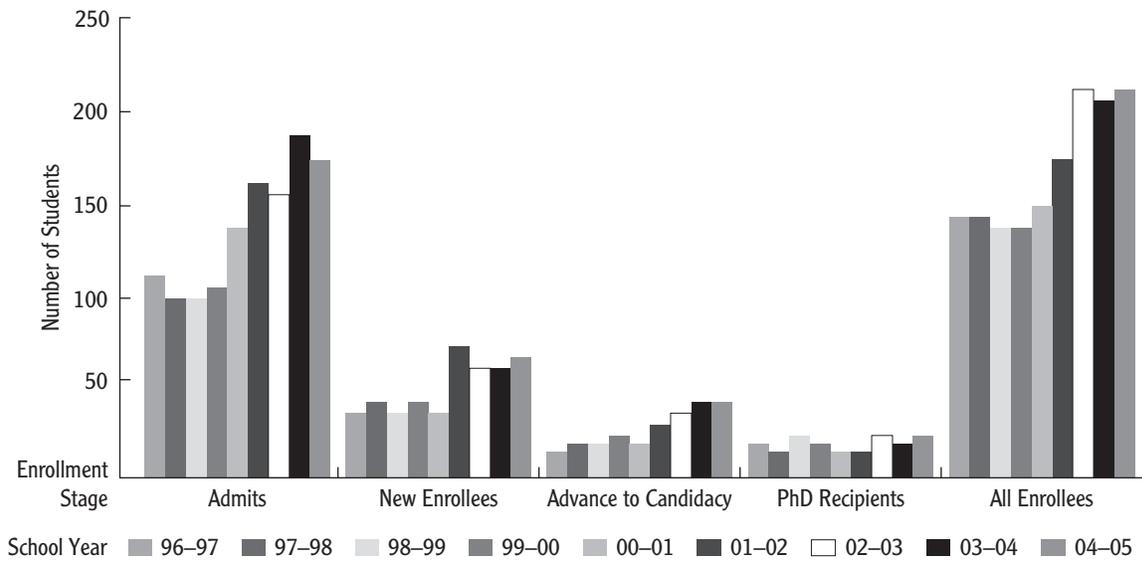
In general, when you want to emphasize how data changes over time, a line graph is the most appropriate choice. Bar graphs are better suited for when you wish to highlight differences between groups.

Notice how the bar graph in figure 10 looks very crowded. The 10 years represented by the bars is probably too many. Crowded bars make it difficult to see the story being told, especially when your document is printed in black and white.

**Table 9.** Percentage Change in Instructors' Use of Student-Centered Pedagogical Techniques Based on Project Professional Development

Pedagogical approach	% Positive change	% No change	% Negative change
Professional development only	46	11	44
Professional development & curriculum change	66	8	26
Curriculum change only	70	10	19

**Figure 10. Underrepresented Student Enrollment Status**

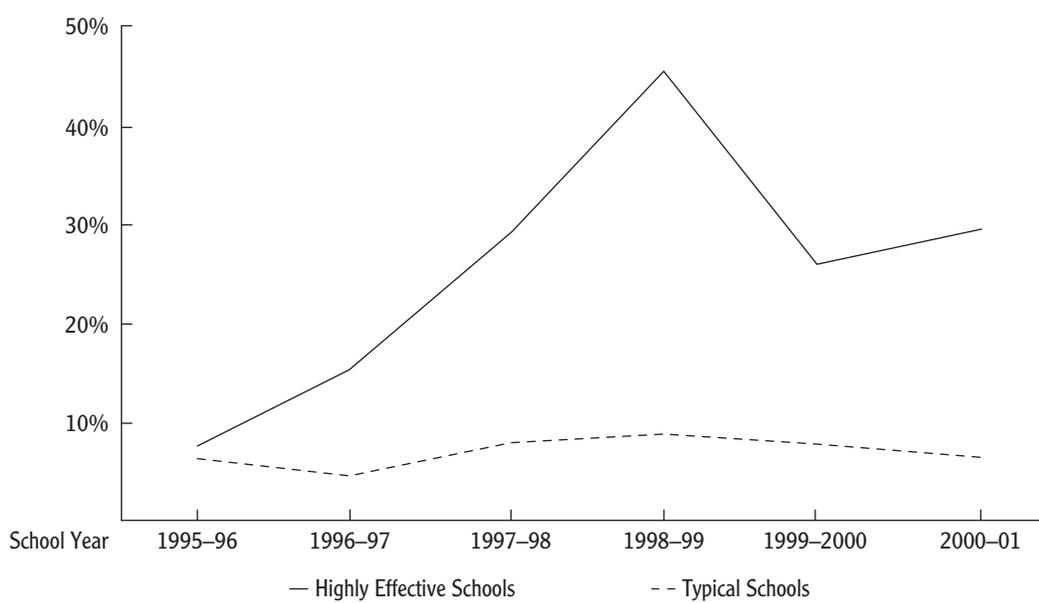


**Figure 11. Underrepresented Student Enrollment Status**



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**Figure 12.** Percentage of Students at or above Grade Level in Math



### Context versus Confusion

The context, or conditions surrounding a project, can also be helpful in understanding volatile data. For example, examine the chart above (figure 12). Highly effective schools were making substantial math gains until a large dip in 1999–2000. What might explain this gap? When there are particular circumstances in a given year—either positive, like a new program, or negative, such as a large budget cut—including this with the graph can help readers not just see the trend but understand what might be behind it.

In this case, following the 1998–99 school year, the district faced a number of challenges, including multiple changes of superintendents, threatened state takeover, privatization of some district schools, threatened strikes, and threatened removal of teacher certifications. As figure 12 indicates, these changes appear to have a greater impact on student achievement in the highly effective schools than in their typical peers.

### Using Cross-Project Data

The use of data varies with the type of user. Typical users of cross-project data fall into three categories:

- funding agencies
- program areas
- individual projects

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## **Funding Agencies**

Funding agencies use cross-project data in aggregating outcomes across areas of the agency, such as divisions or directorates, to comply with reporting obligations to a governing body, such as the federal government or a board of trustees. Another way that funding agencies may use cross-project data is in making decisions about the allocation of funding agency-wide. If a particular program area has shown success in meeting its goals (contributing to the agency's overall goals), the agency may decide to allot more funds to that program area.

Agencies may also use these data for public-relations purposes or to publicize their mission. For example, an agency or foundation that has been particularly successful in achieving a particular goal might wish to disseminate evaluation reports or other publications that describe this success.

## **Program Areas within an Agency**

Program areas use cross-project data for purposes similar to those of funding agencies or foundations, but on a smaller scale. For example, a program directorate such as National Institute of General Medical Sciences (NIGMS) at NIH might wish to report cross-project data for programs such as Minority Access to Research Careers (MARC) or Minority Biomedical Research Support (MBRS) as part of NIH's overall reporting responsibility to the Department of Health and Human Services. MARC, on the other hand, might wish to use evaluation data showing the effectiveness of its projects to justify additional funding from NIH, especially if it is competing for funds with other programs.

Some uses of cross-project data are unique to program areas. Program areas can use these evaluation data to plan their funding agendas and decide on programmatic emphases. For example, evaluation data from NSF's ADVANCE program might reveal that institutional transformation grants are reforming policies and practices for junior faculty women but not helping senior faculty women advance in their careers. The program might wish to revise its funding strategy to target institutional changes that advance the careers of senior women faculty. Another use of these data at the programmatic level is to conduct analyses that contribute to the research base. Programs that collect cross-project data will be able to accumulate large enough samples to allow for the disaggregation of data by demographic or other characteristics to analyze and answer difficult questions about intervention, such as "what works for whom?" and "what specific strategies yield the biggest outcomes?"

## **Individual Projects**

The most obvious use of project-level data is for reporting outcomes to the funder. Projects might also wish to report these data to their advisory boards or host institutions. Individual projects can use these data, if they provide evidence of success, as a way of generating additional funds from either the original funder or another funder. These projects can also use the data required for reporting to the program to evaluate individual projects and can add components to the evaluation that will inform project-level decisionmaking. Individual projects can use cross-project evaluation data when comparing

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project-level outcomes with those of the program as a whole. Too often, individual projects see the requirement for contributing project-level data to a cross-project evaluation as an unpleasant chore. Many project staff do not realize how these data might be used to improve their projects or obtain additional or continued funding.

## Conclusion

In putting together this evaluation template, the authors have attempted to provide the basic tools for researchers to conduct cross-project evaluations. We hope that this work will strengthen the resolve of funding agencies to require this type of evaluation for programmatic areas; facilitate the designing and implementing of cross-project evaluations for evaluators; and help individual projects to commission project evaluations that will collect data to feed into the cross-project evaluation process. Conducting this type of evaluation should be part of the accountability plans of all funding agencies that wish to gain a perspective of the true impact of their funding decisions and contribute to the knowledge base of effective interventions.

## Notes

1. Women, African Americans, Latinos, and American Indians.
2. The authors refer those seeking information on routine evaluation tasks to the NSF “User Friendly Guides” listed in the references.
3. Developing and implementing such software is not difficult, but it is not a task a programming novice should undertake.
4. Some federal precollege databases can only be accessed with a license. Information about obtaining a license can be found at <http://nces.ed.gov/pubsearch/licenses.asp>.
5. State web-site URLs may change. If a particular URL is no longer in operation, using a search engine with the name of the state followed by “report card” should provide the new URL. In addition, two sites, School Matters (<http://www.schoolmatters.com/>) and Just 4 the Kids (<http://www.just4kids.org>) provide school-level data from most states.
6. There are federal databases at the college level and beyond that can only be accessed with a license. Information about these sites and about how to obtain a license can be found at <http://nces.ed.gov/pubsearch/licenses.asp>.
7. Developing and implementing such software is not difficult but programming novices should not undertake such a task.
8. Edward Tufte’s works, including *The Visual Display of Quantitative Information*, *Envisioning Information*, and *Visual Explanations: Images and Quantities, Evidence and Narrative* (<http://www.edwardtufte.com/tufte/>), are excellent resources on displaying data. From the perspective of what not to do, there is nothing better than Darrell Huff’s classic *How to Lie with Statistics* (1954).

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## Appendix A. Comparison Databases

Federal Data Sources	NCES: Baccalaureate and Beyond (B&B)	NCES: Beginning Postsecondary Students (BPS)	NCES: Common Core of Data (CCD)	NCES: Early Childhood Longitudinal Study (ECLS)
URL	<a href="http://nces.ed.gov/surveys/b&amp;b">http://nces.ed.gov/surveys/b&amp;b</a>	<a href="http://nces.ed.gov/surveys/bps/">http://nces.ed.gov/surveys/bps/</a>	<a href="http://nces.ed.gov/ccd/">http://nces.ed.gov/ccd/</a>	<a href="http://nces.ed.gov/ecls/">http://nces.ed.gov/ecls/</a>
Available in DAS- <a href="http://nces.ed.gov/dasol/index.asp">http://nces.ed.gov/dasol/index.asp</a>	yes	yes	no	no
<b>Availability</b>				
Public Access	for online analysis	for online analysis	online data tool, full raw data	reports/limited dataset
Restricted Use (fees/permission needed)	raw data requires license	raw data requires license	n/a	raw data requires license
<b>Data Format</b>				
Web Download	with license	with license	yes	with license
Other Electronic	generate tables/correlations	generate tables/correlations	generate tables/correlations	CD of Data
<b>Student Demographic Variables</b>				
Race/Ethnicity	x	x	x	x
Sex	x	x	x	x
Disability	x	x	district-level	x
Citizenship	x	x		
<b>Data Level</b>				
National	x	x	x	
State			x	
Institution			x	
Student	x	x		x
<b>Student Population</b>				
Pre-College College		x	x	x
Graduate School	x	x		
Employment	x	x		

(continued)

## Appendix A. Continued

Federal Data Sources	NCES: Baccalaureate and Beyond (B&B)	NCES: Beginning Postsecondary Students (BPS)	NCES: Common Core of Data (CCD)	NCES: Early Childhood Longitudinal Study (ECLS)
Survey Population	bachelor's degree recipients	first time college students	K-12 Districts and Schools	1998–99 kindergarten cohort
First Year	93 cohort, 97/03 follow-ups	90 cohort, 92/94 follow-ups	1986–87	1998–99
Most Recent Year Available	2001 cohort, ongoing	96 cohort, 98/2001 follow-ups	2003–04	03–04 (5th grade), still ongoing
<b>Other Variables</b>				
<b>Attitudes Variables</b>				
Course-taking Variables	x	x		
Degrees	x	x	x	
Employment Variables	x	x	staffing information	
Enrollment	x	x	x	
Field of Major Content Area/Discipline	x	x		
Retention Variables	x	x		
Revenues/Resources	x	x		x
Student Achievement Variables	x	x		x

Federal Data Sources	NCES: Integrated Postsecondary Education Data System (IPEDS)	NCES: National Assessment of Educational Progress (NAEP)	NCES: National Education Longitudinal Study (NELS-88)	NCES: National Postsecondary Student Aid Study (NPSAS)
URL	<a href="http://www.nces.ed.gov/ipeds/">http://www.nces.ed.gov/ipeds/</a>	<a href="http://nces.ed.gov/nationsreportcard/">http://nces.ed.gov/nationsreportcard/</a>	<a href="http://nces.ed.gov/surveys/nels88/">http://nces.ed.gov/surveys/nels88/</a>	<a href="http://nces.ed.gov/surveys/npsas/">http://nces.ed.gov/surveys/npsas/</a>
Available in DAS- <a href="http://nces.ed.gov/dasol/index.asp">http://nces.ed.gov/dasol/index.asp</a>	yes	no	yes	yes
<b>Availability</b>				
Public Access	for online analysis	for online analysis	for online analysis	for online analysis
Restricted Use (fees/permission needed)	raw data requires license	raw data requires license	raw data requires license	raw data requires license
<b>Data Format</b>				
Web Download	yes	with license	with license	with license
Other Electronic	generate tables/correlations	generate tables/correlations	generate tables/correlations	generate tables/correlations
<b>Student Demographic Variables</b>				
Race/Ethnicity	x	x	x	x
Sex	x	x	x	x
Disability			x	x
Citizenship				x
<b>Data Level</b>				
National		x	x	x
State		x		
Institution	x			
Student			x	x

(continued)

## Appendix A. Continued

Federal Data Sources	NCES: Integrated Postsecondary Education Data System (IPEDS)	NCES: National Assessment of Educational Progress (NAEP)	NCES: National Education Longitudinal Study (NELS-88)	Postsecondary Student Aid Study (NPSAS)
<b>Student Population</b>				
Pre-College		x	x	
College	x		x	x
Graduate School	x		x	x
Employment			x	
<b>Survey Population</b>				
	US postsecondary institutions	4th, 8th, 12th grade students	1988 8th grade cohort	first time college students
First Year	1986 (2002 for full online avail.)	1992	1988	1987
Most Recent Year Available	2004	2003–04	90/92/94/2000 follow-ups	2004 (every 3–4 years)
<b>Other Variables</b>				
Attitudes Variables			x	
Course-taking Variables			x	
Degrees	x		x	x
Employment Variables			x	
Enrollment	x		x	x
Field of Major Content Area/ Discipline			x	x
Retention Variables				x
Revenues/Resources	x	x	x	x
Student Achievement Variables		x	x	x

Federal Data Sources	NSF: National Survey of Recent College Graduates (NSRCG)	NSF: Survey of Earned Doctorates (SED)	NSF: Survey of Doctorate Recipients (SDR)	NSF: Scientists and Engineers Statistical Data System (SESTAT)
URL	<a href="http://www.nsf.gov/statistics/srvyrecentgrads/">www.nsf.gov/statistics/srvyrecentgrads/</a>	<a href="http://webcaspar.nsf.gov/">http://webcaspar.nsf.gov/</a>	<a href="http://nsf.gov/statistics/srvydoctoratework">nsf.gov/statistics/srvydoctoratework</a>	<a href="http://srsstats.sbe.nsf.gov">http://srsstats.sbe.nsf.gov</a>
Availability				
Public Access	national estimates	national estimates	national estimates	national estimates
Restricted Use (fees/permission needed)	license for individual records	license for individual records	license for individual records	license for individual records
Data Format				
Web Download	no	no	no	no
Other Electronic	generate tables	generate tables	generate tables	generate tables
Student Demographic Variables				
Race/Ethnicity	x	x	x	x
Sex	x	x	x	x
Disability	x		x	x
Citizenship	x	x	x	x
Data Level				
National	x	x	x	x
State		x		
Institution		x		
Student				

(continued)

## Appendix A. Continued

Federal Data Sources	NSF: National Survey of Recent College Graduates (NSRCG)	NSF: Survey of Earned Doctorates (SED)	NSF: Survey of Doctorate Recipients (SDR)	NSF: Scientists and Engineers Statistical Data System (SESTAT)
<b>Student Population</b>				
Pre-College				
College	x			
Graduate School	x	x	x	x
Employment	x		x	x
Survey Population	S&E bachelor degree recipients	census of doctorate recipients	longitudinal follow-up of doctorate recipients	data from SDR, NSRCG, NSCG. before 1993 non-comparable
First Year	1993	1958	1993	1993
Most Recent Year Available	2003 (every 2 years)	2003	2003 (every 2 years)	2003 (every 2 years)
<b>Other Variables</b>				
Attitudes Variables	x		x	x
Course-taking Variables	x		x	x
Degrees	x	x	x	x
Employment Variables	x	x	x	x
<b>Enrollment</b>				
Field of Major Content Area/Discipline		x		
<b>Retention Variables</b>				
Revenues/Resources	x	x	x	x
Student Achievement Variables	x			x

State Data Sources	Alabama	Alaska	Arizona	Arkansas	California	Colorado
<b>Subjects Available</b>						
Content Area 1	math	math	math	math	math	math
Content Area 2	reading	language arts	AP English	English	english	writing
Content Area 3	writing		computer science			reading
<b>Data Availability</b>						
Public Access	yes	yes	yes	yes	yes	yes
Restricted Use (fees/permission needed)	no	no	no	no	no	no
<b>Data Format</b>						
Web Download	no	no	no	no	no	no
Other Electronic	pdf	pdf	pdf	no	pdf	pdf
Printable	yes	yes	yes	yes	yes	yes
<b>Demographic Variables</b>						
Race/Ethnicity	x	x	x	x	x	x
Sex	x		x	x	x	
Disability	x	x	x	x	x	x
<b>Citizenship</b>						
LEP (Limited English Proficient)	x	x	x			
SES (Free/Reduced Lunch)	x	x	x	x	x	x

(continued)

## Appendix A. Continued

State Data Sources	Alabama	Alaska	Arizona	Arkansas	California	Colorado
<b>Data Level</b>						
National						
State	x	x	x	x	x	x
Institution (School)	x	x	x	x	x	x
Student						
<b>Student Population</b>						
Pre-College	x	x	x	x	x	x
College						
Graduate School						
Employment						
<b>Years Covered</b>						
First Year	1999–2000	2003–04	1996	1999–2000 2004	1998	2002
Most Recent Year Available	current	current	current	current	current	current
<b>Other Variables</b>						
Achievement	x	x	x	x	x	x
Retention (Drop-out/Graduation Rates)	x	x	x	x	x	x

State Data Sources	Delaware	Florida	Georgia	Hawaii	Idaho	Illinois Board of Education
<b>Subjects Available</b>						
Content Area 1	math	math	math	math	math	math
Content Area 2	language arts	reading	English	reading	reading	reading/writing
Content Area 3	social studies		reading		language usage	science/social science
<b>Data Availability</b>						
Public Access	yes	yes	yes	yes	yes	yes
Restricted Use (fees/permission needed)	no	no	no	no	no	no
<b>Data Format</b>						
Web Download	no	no	no	no	no	no
Other Electronic	no	pdf	no	pdf	no	pdf
Printable	yes	yes	yes	yes	yes	yes
<b>Demographic Variables</b>						
Race/Ethnicity	x	x	x	x	x	x
Sex		x	x		x	x
Disability	x	x	x		x	x
<b>Citizenship</b>						
LEP (Limited English Proficient)	x	x				x
SES (Free/Reduced Lunch)	x	x		x		x

(continued)

## Appendix A. Continued

State Data Sources	Delaware	Florida	Georgia	Hawaii	Idaho	Illinois Board of Education
<b>Data Level</b>						
National						
State	x	x	x	x	x	x
Institution (School)	x	x	x	x	x	x
Student						
<b>Student Population</b>						
Pre-College	x	x	x	x	x	x
College						
Graduate School						
Employment						
<b>Years Covered</b>						
First Year	2002–03	2000	2001–02	2002	2002	2002
Most Recent Year Available	current	current	current	current	current	current
<b>Other Variables</b>						
Achievement	x	x	x	x	x	x
Retention (Drop-out/Graduation Rates)	x			x		x

State Data Sources	Indiana	Iowa	Kansas	Kentucky (CATS)	Kentucky (School Reports)	Louisiana
<b>Subjects Available</b>						
Content Area 1	math	math	math	math	math	math
Content Area 2	language arts	reading	language arts	language arts	language arts	english language arts
Content Area 3			science/social science	science/social science	science/social science	
<b>Data Availability</b>						
Public Access	yes	yes	yes	yes	yes	yes
Restricted Use (fees/permission needed)	no	no	no	no	no	no
<b>Data Format</b>						
Web Download	no	no	no	no	MS Word	no
Other Electronic	html/web	html/web	html/web	pdf	pdf, html/web	html/web
Printable	yes	yes	yes	yes	yes	yes
<b>Demographic Variables</b>						
Race/Ethnicity	x	x	x	x		x
Sex	x		x	x		x
Disability	x	x	x	x		x
<b>Citizenship</b>						
LEP (Limited English Proficient)	x		x	x		x
SES (Free/Reduced Lunch)	x	x	x	x		x

(continued)

## Appendix A. Continued

State Data Sources	Indiana	Iowa	Kansas	Kentucky (CATS)	Kentucky (School Reports)	Louisiana
<b>Data Level</b>						
National						
State	x	x	x	x	x	x
Institution (School)	x	x	x	x	x	x
Student						
Student Population						
Pre-College	x	x	x	x	x	x
College						
Graduate School						
Employment						
<b>Years Covered</b>						
First Year	1999–2000	2002	2003	2003	1999–2000	1996–97
Most Recent Year Available	current	current	current	current	current	current
<b>Other Variables</b>						
Achievement	x	x	x	x	x	x
Retention (Drop-out/Graduation Rates)	x		x	x	x	x

State Data Sources	Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri
<b>Subjects Available</b>						
Content Area 1	math	math	math	math	math	math
Content Area 2	english	english language arts	english language arts	reading	reading	communication arts
Content Area 3	biology/government		science/social science	writing	lanugage	science/social studies
<b>Data Availability</b>						
Public Access	yes	yes	yes	yes	yes	yes
Restricted Use (fees/permission needed)	no	no	no	no	no	no
<b>Data Format</b>						
Web Download	no	no	no	no	no	no
Other Electronic	html/web	html/web	html/web	html/web	html/web	text
Printable	yes	yes	yes	yes	yes	yes
<b>Demographic Variables</b>						
Race/Ethnicity	x	x		x	x	x
Sex	x	x		x	x	
Disability	x			x	x	
<b>Citizenship</b>						
LEP (Limited English Proficient)	x	x		x	x	x
SES (Free/Reduced Lunch)	x	x		x	x	x

(continued)

## Appendix A. Continued

State Data Sources	Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri
<b>Data Level</b>						
National						
State	x	x	x	x	x	x
Institution (School)	x	x	x	x	x	x
Student						
<b>Student Population</b>						
Pre-College	x	x	x	x	x	x
College						
Graduate School						
Employment						
<b>Years Covered</b>						
First Year	2002	1998	2003–04	2001	1997–98	2000
Most Recent Year Available	current	current	current	current	current	current
<b>Other Variables</b>						
Achievement	x	x		x	x	x
Retention (Drop-out/Graduation Rates)	x	x		x		x

State Data Sources	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York
<b>Subjects Available</b>						
Content Area 1	math	math	math	math	math	math
Content Area 2	writing	reading	reading	language arts literacy	reading	language arts science
Content Area 3						
<b>Data Availability</b>						
Public Access	yes	yes	yes	yes	yes	yes
Restricted Use (fees/permission needed)	no	no	no	no	no	no
<b>Data Format</b>						
Web Download	no	no	no	no	no	no
Other Electronic	html/web	html/web	html/web	html/web	pdf	pdf
Printable	yes	yes	yes	yes	yes	yes
<b>Demographic Variables</b>						
Race/Ethnicity	x	x	x	x	x	x
Sex		x		x		x
Disability	x			x		x
<b>Citizenship</b>						
LEP (Limited English Proficient)	x	x	x	x	x	x
SES (Free/Reduced Lunch)	x	x	x	x	x	x

(continued)

## Appendix A. Continued

State Data Sources	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York
<b>Data Level</b>						
National						
State	x	x	x	x	x	x
Institution (School)	x	x	x	x	x	x
Student						
<b>Student Population</b>						
Pre-College	x	x	x	x	x	x
College						
Graduate School						
Employment						
<b>Years Covered</b>						
First Year	2002–03	2002	2002–03	2003	2002–03	1998–99
Most Recent Year Available	current	current	current	current	current	current
<b>Other Variables</b>						
Achievement	x	x	x	x	x	x
Retention (Drop-out/Graduation Rates)			x	x	x	

State Data Sources	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island
<b>Subjects Available</b>						
Content Area 1	math	math	math	math	math	math
Content Area 2	reading	reading	language arts	english/language arts	english	english/language arts
Content Area 3		science			science	
<b>Data Availability</b>						
Public Access	yes	yes	yes	yes	yes	yes
Restricted Use (fees/permission needed)	no	no	no	no	no	no
<b>Data Format</b>						
Web Download	no	no	no	no	no	no
Other Electronic	pdf	pdf	pdf	pdf	pdf	pdf
Printable	yes	yes	yes	yes	yes	yes
<b>Demographic Variables</b>						
Race/Ethnicity	x	x	x	x	x	x
Sex					x	x
Disability	x	x		x		
<b>Citizenship</b>						
LEP (Limited English Proficient)	x	x		x	x	x
SES (Free/Reduced Lunch)	x	x	x	x	x	x

(continued)

## Appendix A. Continued

State Data Sources	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island
<b>Data Level</b>						
National						
State	x	x	x	x	x	x
Institution (School)	x	x	x	x	x	x
Student						
<b>Student Population</b>						
Pre-College	x	x	x	x	x	x
College						
Graduate School						
Employment						
<b>Years Covered</b>						
First Year	1996–97	1998	1997	2000	1997–98	1998
Most Recent Year Available	current	current	current	current	current	current
<b>Other Variables</b>						
Achievement	x	x	x	x	x	
Retention (Drop-out/Graduation Rates)			x			x

State Data Sources	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia
<b>Subjects Available</b>						
Content Area 1	math	math	math	math	math	math
Content Area 2	reading	reading/language arts	writing	writing	reading	English/Reading
Content Area 3			reading	reading		
<b>Data Availability</b>						
Public Access	yes	yes	yes	yes	yes	yes
Restricted Use (fees/permission needed)	no	no	no	no	no	no
<b>Data Format</b>						
Web Download	no	no	no	no	no	no
Other Electronic	html/web	html/web	pdf, html/web	pdf	html/web	pdf
Printable	yes	yes	yes	yes	yes	yes
<b>Demographic Variables</b>						
Race/Ethnicity	x	x	x	x		x
Sex	x		x	x	x	x
Disability	x	x	x			x
Citizenship		x				
LEP (Limited English Proficient)	x	x	x			x
SES (Free/Reduced Lunch)	x		x		x	x

(continued)

## Appendix A. Continued

State Data Sources	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia
<b>Data Level</b>						
National						
State	x	x	x	x	x	x
Institution (School)	x	x	x	x	x	x
Student						
Student Population						
Pre-College	x	x	x	x	x	x
College						
Graduate School						
Employment						
<b>Years Covered</b>						
First Year	2003	2004–05	1993–94	2002–03	2001–02	2002
Most Recent Year Available	current	current	current	current	current	current
<b>Other Variables</b>						
Achievement	x	whether met benchmark	x	x	x	x
Retention (Drop-out/Graduation Rates)	x	whether met benchmark	x		x	

State Data Sources	Washington, D.C.	West Virginia	Wisconsin	Wyoming
<b>Subjects Available</b>				
Content Area 1	math	math	math	math
Content Area 2	reading	english/language arts	reading	Language Arts
Content Area 3				
<b>Data Availability</b>				
Public Access	yes	yes	yes	yes
Restricted Use (fees/permission needed)	no	no	no	yes
<b>Data Format</b>				
Web Download	no	no	no	svg from adobe
Other Electronic	html/web	pdf	html/web	no
Printable	yes	yes	yes	yes
<b>Demographic Variables</b>				
Race/Ethnicity	x	x		x
Sex	x	x		
Disability	x	x		
<b>Citizenship</b>				
LEP (Limited English Proficient)	x	x		x
SES (Free/Reduced Lunch)				x

(continued)

**Appendix A. Continued**

State Data Sources	Washington, D.C.	West Virginia	Wisconsin	Wyoming
<b>Data Level</b>				
National				
State	x	x	x	x
Institution (School)	x	x	x	x
<b>Student</b>				
Student Population				
Pre-College	x	x	x	x
College				
<b>Graduate School</b>				
Employment				
<b>Years Covered</b>				
First Year	2003	1997–98	1998–99	2001–02
Most Recent Year Available	current	current	current	current
<b>Other Variables</b>				
Achievement	x	x	x	x
Retention (Drop-out/Graduation Rates)	x		x	

## Appendix B. State Web Sites

State	URL
Alabama	<a href="http://www.alsde.edu/html/reports_menu.asp">http://www.alsde.edu/html/reports_menu.asp</a>
Alaska	<a href="http://www.eed.state.ak.us/DOE_Rolodex/AYP/2004/search.cfm">http://www.eed.state.ak.us/DOE_Rolodex/AYP/2004/search.cfm</a>
Arizona	<a href="http://www.ade.az.gov/srcs/find_school.asp?rdoYear=2004">http://www.ade.az.gov/srcs/find_school.asp?rdoYear=2004</a>
Arkansas	<a href="http://arkansased.org/testing/test_scores.html">http://arkansased.org/testing/test_scores.html</a>
California	<a href="http://star.cde.ca.gov/">http://star.cde.ca.gov/</a>
Colorado	<a href="http://reportcard.cde.state.co.us/reportcard/CommandHandler.jsp">http://reportcard.cde.state.co.us/reportcard/CommandHandler.jsp</a>
Connecticut	<a href="http://www.csde.state.ct.us/public/der/ssp/sch0001/school.htm">http://www.csde.state.ct.us/public/der/ssp/sch0001/school.htm</a>
Delaware	<a href="http://issm.doe.state.de.us/profiles/">http://issm.doe.state.de.us/profiles/</a>
Florida	<a href="http://schoolgrades.fldoe.org/">http://schoolgrades.fldoe.org/</a>
Georgia	<a href="http://reportcard.gaosa.org/yr2004/k12/">http://reportcard.gaosa.org/yr2004/k12/</a>
Hawaii	<a href="http://arch.k12.hi.us/index.html">http://arch.k12.hi.us/index.html</a>
Idaho	<a href="http://www.sde.state.id.us/ipd/reportcard/SchoolReportCard.asp">http://www.sde.state.id.us/ipd/reportcard/SchoolReportCard.asp</a>
Illinois Board of Education	<a href="http://webprod1.isbe.net/ereportcard/publicsite/getsearchcriteria.aspx">http://webprod1.isbe.net/ereportcard/publicsite/getsearchcriteria.aspx</a>
Illinois Interactive Report card	<a href="http://iirc.niu.edu/">http://iirc.niu.edu/</a>
Indiana	<a href="http://mustang.doe.state.in.us/SEARCH/search.cfm">http://mustang.doe.state.in.us/SEARCH/search.cfm</a>
Iowa	<a href="http://www.iowaschoolprofiles.com/">http://www.iowaschoolprofiles.com/</a>
Kansas	<a href="http://online.ksde.org/rcard/">http://online.ksde.org/rcard/</a>
Kentucky Commonwealth Accountability Testing System (CATS)	<a href="http://app1.kde.state.ky.us/secure%5Fcats%5Freports%5F03/">http://app1.kde.state.ky.us/secure%5Fcats%5Freports%5F03/</a>
Kentucky School Report Card	<a href="http://apps.kde.state.ky.us/report_card/">http://apps.kde.state.ky.us/report_card/</a>
Louisiana	<a href="http://www.doe.state.la.us/lde/pair/1639.html">http://www.doe.state.la.us/lde/pair/1639.html</a>
Maine	<a href="http://www.state.me.us/education/profiles/profilehome.htm">http://www.state.me.us/education/profiles/profilehome.htm</a>
Maryland	<a href="http://www.mdreportcard.org/">http://www.mdreportcard.org/</a>
Massachusetts	<a href="http://profiles.doe.mass.edu/home.asp?mode=0&amp;view=&amp;mcasyear=&amp;ot=5&amp;o=0">http://profiles.doe.mass.edu/home.asp?mode=0&amp;view=&amp;mcasyear=&amp;ot=5&amp;o=0</a>
Michigan	<a href="http://www.michigan.gov/mde/0,1607,7-140-22709-,00.html">http://www.michigan.gov/mde/0,1607,7-140-22709-,00.html</a>
Minnesota	<a href="http://education.state.mn.us/MDE/Data/Data_Downloads/Accountability_Data/Assessment_MCA_II/MCA_II_Excel_files/index.html">http://education.state.mn.us/MDE/Data/Data_Downloads/Accountability_Data/Assessment_MCA_II/MCA_II_Excel_files/index.html</a>
Mississippi	<a href="http://www.mde.k12.ms.us/acad/osa/testdata.html">http://www.mde.k12.ms.us/acad/osa/testdata.html</a>
Missouri	<a href="http://www.dese.mo.gov/commissioner/statereportcard/">http://www.dese.mo.gov/commissioner/statereportcard/</a>
Montana	<a href="http://data.opi.state.mt.us/IRISReports/">http://data.opi.state.mt.us/IRISReports/</a>
Nebraska	<a href="http://reportcard.nde.state.ne.us/">http://reportcard.nde.state.ne.us/</a>
Nevada	<a href="http://www.nevadatestreports.com/">http://www.nevadatestreports.com/</a>
New Hampshire	<a href="http://www.measuredprogress.org/nhprofile/">http://www.measuredprogress.org/nhprofile/</a>
New Jersey	<a href="http://education.state.nj.us/rc/">http://education.state.nj.us/rc/</a>
New Mexico	<a href="http://www.ped.state.nm.us/div/acc.assess/accountability/2004.school.desig.report.html">http://www.ped.state.nm.us/div/acc.assess/accountability/2004.school.desig.report.html</a>

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## Appendix B. Continued

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State	URL
New York State Education Department	<a href="http://www.emsc.nysed.gov/irts/reportcard/">http://www.emsc.nysed.gov/irts/reportcard/</a>
North Carolina	<a href="http://www.ncreportcards.org/src/main.jsp">http://www.ncreportcards.org/src/main.jsp</a>
North Dakota	<a href="http://www.dpi.state.nd.us/dpi/reports/profile/index.shtm">http://www.dpi.state.nd.us/dpi/reports/profile/index.shtm</a>
Ohio	<a href="http://www.ode.state.oh.us/GD/Templates/Pages/ODE/ODEDefaultPage.aspx?page=1">http://www.ode.state.oh.us/GD/Templates/Pages/ODE/ODEDefaultPage.aspx?page=1</a>
Oklahoma	<a href="http://www.schoolreportcards.org/reports.htm">http://www.schoolreportcards.org/reports.htm</a>
Oregon	<a href="http://www.ode.state.or.us/search/results/?id=116">http://www.ode.state.or.us/search/results/?id=116</a>
Pennsylvania	<a href="http://www.paprofiles.org/">http://www.paprofiles.org/</a>
Rhode Island	<a href="http://www.infoworks.ride.uri.edu/">http://www.infoworks.ride.uri.edu/</a>
South Carolina	<a href="http://www.myscschools.com/reports/">http://www.myscschools.com/reports/</a>
South Dakota	<a href="https://sis.ddncampus.net:8081/nclb/index.html">https://sis.ddncampus.net:8081/nclb/index.html</a>
Tennessee	<a href="http://www2.state.tn.us/k-12/ayp05.asp">http://www2.state.tn.us/k-12/ayp05.asp</a>
Texas	<a href="http://www.tea.state.tx.us/perfreport/aeis/index.html">http://www.tea.state.tx.us/perfreport/aeis/index.html</a>
Utah	<a href="http://www.schools.utah.gov/assessment/Default.aspx">http://www.schools.utah.gov/assessment/Default.aspx</a>
Vermont	<a href="http://crs.uvm.edu/schlprt/">http://crs.uvm.edu/schlprt/</a>
Virginia	<a href="http://www.pen.k12.va.us/VDOE/src/SOLassessments.shtml">http://www.pen.k12.va.us/VDOE/src/SOLassessments.shtml</a>
Washington	<a href="http://reportcard.ospi.k12.wa.us/default.aspx">http://reportcard.ospi.k12.wa.us/default.aspx</a>
Washington, D.C.	<a href="http://www.k12.dc.us/dcps/data/dcdatabase.html">http://www.k12.dc.us/dcps/data/dcdatabase.html</a>
West Virginia	<a href="http://wvde.state.wv.us/data/report_cards/">http://wvde.state.wv.us/data/report_cards/</a>
Wisconsin	<a href="http://www.dpi.state.wi.us/sig/usetips_data.html">http://www.dpi.state.wi.us/sig/usetips_data.html</a>
Wyoming	<a href="https://wdesecure.k12.wy.us/stats/wde_esc.show_menu?school_year=2002-03">https://wdesecure.k12.wy.us/stats/wde_esc.show_menu?school_year=2002-03</a>



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