ISSUES&ANSWERS REL 2007–No. 016

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Getting the evidence for evidence-based initiatives: how the Midwest states use data systems to improve education processes and outcomes

ies NATIONAL CENTER FOR EDUCATION EVALUATION AND REGIONAL ASSISTANCE
Institute of Education Sciences
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Getting the evidence for evidence-based initiatives: how the Midwest states use data systems to improve education processes and outcomes

June 2007

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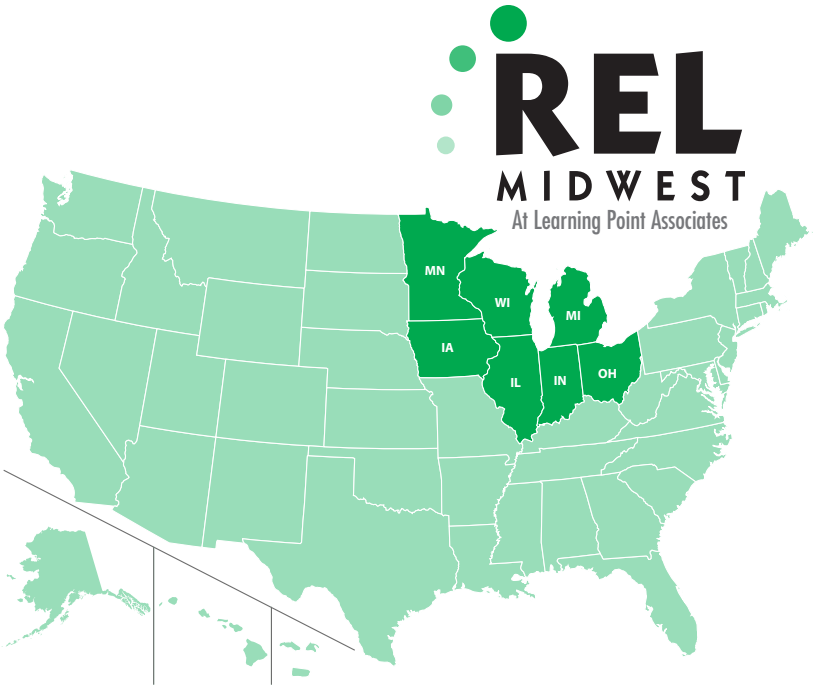

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Summary

Getting the evidence for evidence-based initiatives: how the Midwest states use data systems to improve education processes and outcomes

States in the Midwest Region are developing innovative approaches to collecting and providing access to high-quality data in order to improve educational decisionmaking. Additional capacity-building and increased technical assistance at the state and local levels would enhance this work.

Educational improvement through data-based decisionmaking using high-quality data is a longstanding goal of policymakers and practitioners, and ensuring the quality of the evidence available to inform such decisions is a key part of the No Child Left Behind Act of 2001. The evidence-based education that such initiatives promote involves the "integration of professional wisdom with the best available empirical evidence in making decisions about how to deliver instruction." A wealth of data at the school, district, state, and federal levels should in principle provide an empirical basis for developing educational policies, practices, and research proposals and designs.

The states in the Midwest Region are developing innovative practices for identifying and addressing information priorities within their states and for meeting federal requirements. These exemplary practices involve establishing longitudinal student-level and teacher-level data collections and linking data across the educational information system. Other practices include incorporating key data elements that can leverage other data resources to identify problems that could constrain student achievement and using accountability systems to target educational resources more efficiently and effectively.

Midwest states also face challenges in meeting these goals. Data collection staff and resources for training at the local level are limited, and many states do not have enough staff with the skills and experience necessary to analyze the data. Keeping the duplication of data collection to a minimum is also a constant challenge. Finally, federal and state regulations often constrain states' ability to collect key data elements.

Given these challenges and constraints, responding to states' information needs and aspirations may best be achieved through a

two-pronged approach. First is to establish regional benchmarks and provide guidelines for states wishing to use local data to develop indicators for purposes of comparison. Second is to respond to specific state requests for analytic resources and develop associated training materials. Both tasks have the explicit goals of providing immediate utility and building capacity for the future. Each may usefully be addressed by the regional educational laboratories—singly, in combination, and with external partners.

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Educational improvement through data-based decisionmaking using high-quality data is a longstanding goal of policymakers and practitioners, and ensuring the quality of the evidence available to inform such decisions is a key part of the No Child Left Behind Act of 2001 (NCLB). The evidence-based education that such initiatives promote involves the "integration of professional wisdom with the best available empirical evidence in making decisions about how to deliver instruction." A wealth of data at the school, district, state, and federal levels should in principle provide an empirical basis for developing educational policies, practices, and research proposals and designs. But the objectives of data-based decisionmaking in education have not been fully realized.

Major factors contributing to this situation include data quality problems, outdated or incompatible systems and processes, organizational cultures that do not support data use for educational improvement, insufficient capacity to use multiple datasets efficiently, and a variety of organizational, logistical, and regulatory restrictions on making data—particularly individual-level student and teacher data—accessible to multiple audiences (Bernhardt, 2004; Massell, 2001; Streifer, 2004; U.S. General Accounting Office, 2005). There is thus a need to:

- Assist state education agencies in enhancing the quality of state data.
- Build capacity to leverage data to inform decisions and enhance strategic planning.
- Provide technical and analytic assistance to states.

This report describes the results of the first year of the REL Midwest Task 1.2 fast response project, *Using Multiple Levels of Data to Address Educational Issues in the Region,* which seeks to address these needs (see box 1). Information obtained from the states in this study helps to define exemplary practices, common data problems, and analytic opportunities in the Midwest Region.

EXEMPLARY PRACTICES

The states in the Midwest Region clearly embrace—and several have

BOX 1

Objectives of the study

The objectives for this task were to:

- Conduct a needs assessment to document current and expected priority information needs of each state in the Midwest Region, including information that would enable states to move beyond compliance with reporting requirements toward more proactive strategic planning.
- Develop and complete data inventories for each state in the Midwest Region to document the structure of the state's educational data system and identify issues related to data quality, collection, and reporting.

The approach was twofold (see appendix A). First, key state education agency officials were interviewed about their state's data system, including pressing requirements and current challenges. Second, state data inventories were completed to provide an overview of each state's educational data system. To reduce the burden on respondents, these inventories were completed using information publicly available in print and online formats. In addition, federal agency staff were contacted to provide additional perspectives for contextualizing issues identified in the state education agency interviews, especially for federal-based initiatives, such as statewide longitudinal data systems (SLDS), the Education Data Exchange Network (EDEN), and data use and accessibility issues associated with state regulations and the Family Educational Rights and Privacy Act (FERPA).

developed—innovative practices for identifying and addressing information priorities within their states and for meeting federal requirements. Frequently these meet or exceed the additional steps that the Data Quality Campaign describes as fundamental to developing robust longitudinal data systems.[2] Often they go beyond traditional practice, developing, adapting, or adopting innovative approaches to collecting, ensuring the quality of, and providing efficient and timely access to data for a range of planning and decisionmaking purposes. Many are what the Federal Emergency Management Agency characterizes as *exemplary*—ideas, projects, programs, techniques, or methods that have "worked in one place and may be worthy of adopting elsewhere."[3]

Typically these exemplary practices involve establishing longitudinal student-level and teacher-level data collections, linking data across the educational information system, including key data elements that can leverage other data resources to assist in the early identification and treatment of problems that have the potential to constrain student achievement, and using accountability systems to target educational resources more efficiently and effectively.

Establishing individual-level longitudinal data systems

All states in the Midwest Region have—or are in the process of establishing—individual-level student or teacher longitudinal data systems.

In Michigan the Center for Educational Performance and Information, established in 2000, collects individual-level student data through the Single Record Student Database, one of five elements of the Michigan Education Information System data warehouse system.

Iowa's Project EASIER (Electronic Access System for Iowa Education Records) allows the electronic transfer of individual student data from school districts to the Department of Education to compile state and federal reports—and the exchange of student records between school districts when students transfer between schools in the state. The Department is working with postsecondary institutions to accomplish the electronic transfer of high school transcripts to postsecondary institutions.

Indiana's Student Test Number system, operational since the 2002/03 school year, has been used to collect a variety of student-level longitudinal

data, including demographic information, enrollment, special program participation, dropout, graduation, and other achievement data.

Since the 2004/05 school year Wisconsin has assigned unique statewide student identifiers, providing the capacity to link student-level records across all the state's student-level databases.

Minnesota also assigns unique student identifiers, and in 2005 received—along with the states of Michigan and Wisconsin and the Wisconsin Center for Education Research—a federal Statewide Longitudinal Data Systems (SLDS) grant to support developing a comprehensive multistate longitudinal data system.

In Ohio a third party vendor assigns unique statewide student identifiers to public school students; these identifiers can be linked to individual students only at designated data acquisition points, protecting student privacy while enabling longitudinal tracking of student performance across the state using data submitted through Ohio's Education Management Information System. In 2006 the Ohio Department of Education in collaboration with local education agencies, regional information technology centers, and other entities received funding from the SLDS program to support the Data-Driven Decisions for Academic Achievement (D3A2) project, increasing to four the number of states in the Midwest Region that have received SLDS funding (of 14 awards under that program to date).

In 2005/06 Illinois began to implement the state Student Information System, which assigns unique student identification numbers to each public school student in the state. This system also collects and stores demographic, graduation, dropout, and other information. Although the Illinois Student Information System does not store any information on teachers, its Teacher Service Record collects information on current positions and assignments for all teachers currently employed in the state.

Clearly, all states in the region recognize the importance of access to individual-level data longitudinally. Typically the establishment of student-level systems is given priority over teacher/staff systems, although many states have made significant strides in this realm as well. As noted above, several have obtained outside funding to support the development of student-level longitudinal data systems; others have worked to develop student-level systems by reallocating resources. Several states have also taken steps to begin what are generally envisaged as multi-year efforts to establish data warehousing systems (Iowa, Minnesota, Michigan, Ohio). Others are eager to move in this direction (Indiana, Illinois), building steps to achieve this goal into their strategic plans and making requests for funding to state legislative bodies. With the establishment of such data enclaves, states in the Midwest Region will move closer to attaining a series of shared objectives: to link data at the state level and to make it easier for local entities to add value with their own local data to enhance decisions about educational policies and practices not only at the state level but also at the district, school, and classroom levels.

Linking data across the educational information system

Implicit in the attainment of the state's most proactive objectives for their data is the ability to link data from multiple sources. An obvious (but for many states currently unattainable) goal is the ability to place students in their classrooms with their teachers—that is, to link student and teacher data. Several states hold multiple years of student-level demographic, enrollment, and achievement data—all of which can be linked—but have no system to easily link teacher with student data. Obstacles to establishing these links include addressing teacher unions' concerns with the confidentiality of individual teacher data.

An obvious (but for many states currently unattainable) goal is the ability to place students in their classrooms with their teachers

Another common objective is to extend the utility of preK–12 data by developing links with

postsecondary education data systems. While several states have plans in place or are developing strategies to address this priority, constraints include:

- The absence of a common identifier across student-level K–12 and postsecondary record-keeping systems.
- The absence of a suitable data warehousing infrastructure. Several states are conducting reviews to identify opportunities to develop systems to gather such data; the results of these reviews may well prove valuable to other states in the region and the country overall.

Another common objective is to enrich existing data collections with additional data elements, such as course-taking and course-completion data for students, and for teachers, details of their pre- and post-certification training and professional development activities. The former can prove essential in understanding how particular forms of instruction and course-sequences affect educational outcomes; the latter can be important in identifying and targeting effective professional development practices.

Frequently states seek education data not just for themselves but for individual teachers and their principals, enabling practitioners to see what best practices are characteristic of their schools, the factors promoting their use, and their ultimate outcomes

Developing diagnostics

The goal of developing mechanisms and procedures to link student with teacher or student preK–12 with student higher education data is to identify, diagnose, and intervene to remediate situations that, unchecked, are likely to lead to undesirable student learning outcomes. Frequently states seek this information not just for themselves but for individual teachers and their principals, enabling practitioners to see what best practices are characteristic of their schools, the factors promoting their use, and their ultimate outcomes. States seek to forge preK–12 links with postsecondary data in order to highlight high school experiences and clarify which high schools are better at preparing their students for college—and why. They expect to link student with teacher data to identify teacher professional development practices that do (and do not) lead to improved student achievement and to outstanding instructors and instructional practices. Another goal is to link teacher preparation with teacher mobility and attrition data in an effort to understand why instructors from some of the best teacher preparation programs and courses decide to leave the teaching profession at various stages in their careers. States also seek to enhance student-level record systems with course-taking and course-completion data to assist district officials and teachers in understanding the relationship between classes, courses, and performance.

Several states have identified key data elements that will help with early identification of problems (for example, course-taking and course-completion, family involvement, and school climate). In some cases this data already exists within the state system and simply needs to be reported; in others, additional data collection may be required.

Using accountability data

Several states seek to go beyond the accountability requirements of the No Child Left Behind Act and other state and federal mandates, using accountability data to monitor progress and target resources more efficiently and effectively. Examples include initiatives to:

- Identify schools that are making significant progress (such as moving students from the bottom to the next quartile), even if they are not necessarily moving all students to proficiency or making adequate yearly progress.
- Identify how funds are being allocated (such as supporting teacher professional development).
- Establish the differences such resources are making on intermediate and final educational outcomes (such as the impacts of professional development activities on the career development

of individual teachers, on particular categories of teachers, and on the educational attainment of their students).

- Target resources more efficiently (say, on individualized education programs and limited English proficient activities and programs).
- Use achievement data in a more timely fashion (supporting continuous assessment within the classroom).

CHALLENGES AND CONSTRAINTS

The foregoing exemplary practices notwithstanding, efforts to address information needs across the Midwest Region are frequently hampered by a combination of factors. Common challenges include analytic capacity, staff, and other resource constraints; data burden; and concerns with the implications of the Family Educational Rights and Privacy Act and related state and federal regulations.

Analytic capacity, staff, and resource constraints

Several states commented on the difficulty of conducting noncompulsory analyses of existing data given current staff resources. Some states have had to cut staff—accomplishing more tasks with fewer resources. Others have tackled the challenges of moving to individual-level data collection using resources originally designed for aggregate data collection. A common challenge is to recruit and retain skilled analysts given salary differentials in public education and other sectors. Turnover at the local level also contributes to state-level resource constraints. When training in the use of new data collection and reporting systems is accomplished by reallocating state education agency officials' time to serve as local trainers, high turnover at the school and district level has implications for state education agency staff. Such problems could be resolved by hiring additional skilled analysts or providing additional professional development for existing staff. Another option is to provide external analytic capacity.

Data burden

States in the region seek to provide both state and local actors with specific information to guide policy development and practice. Several initiatives are already in place and others are in the planning stage. Even so, many of these aspirations have yet to be realized. Factors currently affecting the ability of states to collect the data necessary to meet these objectives include:

- An inability to provide resources to local officials (at the school or district level), on whom considerable extra burden is placed with a move from aggregate to individual reporting of data elements.
- The absence of a legal authority to collect additional data.

Avoiding duplication in data collection. One way to reduce the burden is to restrict (if not eliminate) duplicative data collections. A key strategy for achieving this objective in several states in the region is establishing data warehouses and integrating records in databases that can be queried to extract information for multiple purposes. Such systems can be stimulated by a state education agency data culture (Michigan's educational data mission is "to collect once, store once, and use many times"). Or they can be pursued in response to legislative mandate (Michigan's Public Act 180 of 2003 authorizes the Center for Educational Performance and Information to coordinate data collection in an effort to reduce districts' reporting burden and prevent duplicate data collections). The expected result: more efficient and effective data collection, storage, querying, and reporting capacities. An added

A key strategy for reducing data burden is establishing data warehouses and integrating records in databases that can be queried to extract information for multiple purposes

benefit of such a strategy is the reduced likelihood of introducing inaccurate data into the system (assuming appropriate quality control and reasonability checks are in place to ensure the validity of data as it is added to the system).

Data burden is also an issue when requests to report the same data in multiple forms (as in compliance with multiple federal collections and in response to state and district officials' and other stakeholders' information requests). Initiatives already under way at the federal level to address some of these issues (such as streamlined collection of CCD and compliance data through EDEN) may free some scarce staff resources for reallocation to other state data needs and aspirations.

Establishing legislative authority to collect data. Another significant challenge to leveraging the full benefits of data already collected is the inability to enrich that information with additional data that could be used to develop causal inferences regarding the factors contributing to various student learning outcomes. Key here are statutory requirements that can preclude the collection of data at the state level without specific legislative authority. An example is Indiana, a local control state. The state constitution provides that any authority not specifically given to the central government reverts to the local level—in the case of education, the school boards are the legal entities controlling the educational system. As a result, all educational data reporting is completely voluntary unless specifically required by a state board rule or state law. Similarly in Michigan data collection activities must be state or federally mandated; the state has no authority to collect data not required for compliance with such mandates.

A culture is developing within states and across the region in support of sharing data to inform decisionmaking at multiple levels in the educational system while minimizing the burden of multiple collections

Implications of the Family Educational Rights and Privacy Act and state regulations

While acknowledging the important protections under the Family Educational Rights and Privacy Act and other federal (such as the Protection of Pupil Rights Amendment, PPRA[4]) and state regulations, several states underscored the constraints such regulations place on their ability to extract the full value of the data they already collect for other purposes. Concerns here include the ability to return to districts and schools data collected and processed by the state, and the ability of K–12 and higher education institutions to share data while still protecting the rights of both students and their families. A culture is developing within states and across the region in support of sharing data to inform decisionmaking at multiple levels in the educational system while minimizing the burden of multiple collections. States support allocating resources to these efforts—but remain concerned that these goals are unachievable given FERPA and other regulations.

ANALYTIC POSSIBILITIES

Given the challenges and constraints, responding to states' expressed information needs and aspirations may best be achieved through a two-pronged approach. First is to establish regional benchmarks and provide guidelines for states wishing to use local data to develop comparable indicators for purposes of comparison. Second is to respond to specific state requests for analytic resources and develop associated training materials. Both tasks have the explicit goals of providing immediate utility and building capacity for the future. Each may usefully be addressed by the regional educational laboratories—singly, in combination, and with external partners. Here are suggestions for steps that REL Midwest might usefully take to provide additional analytic support to the states in this region.

Providing regional benchmarks

In the absence of long-standing longitudinal student or teacher data at the state level, it can be challenging to undertake the trend analyses required to establish appropriate benchmarks for establishing performance objectives, assessing and understanding factors influencing outcomes, and

selecting or developing interventions to enhance performance. Initiatives under way in several states in the Midwest Region to develop statewide longitudinal data systems will provide the data necessary to develop key state-level indicators in the future. While such systems continue to mature, several priority information needs and aspirations can be addressed through analyses of major secondary sources—alone or in combination with existing state data. Examples include:

- Providing benchmarks for monitoring growth in student achievement (including comparisons across similar types of students, and for students enrolled in similar types of schools) both nationally and in the Midwest Region.
- Providing benchmarks for monitoring states' performance relative to other states in the Midwest Region, nationally, and internationally.
- Providing benchmarks to assist states in assessing the performance of specific subgroups or subpopulations of students.
- Identifying teacher professional development and other factors associated with teachers' job satisfaction and high growth in student achievement.

Responding to requests for analytic resources: Addressing immediate information needs while building capacity for the future

This study suggests numerous areas where states would benefit from access to analytic resources that would assist them in resolving information needs to move beyond compliance with federal and other reporting requirements toward more proactive strategic planning for educational process, system, and outcome improvements. One example is creating an "at-risk" profile for high school students. A second is using existing data dictionaries to create metadata structures. A third is identifying key outcomes associated with various teacher professional development activities and opportunities and factors affecting teacher mobility and retention rates (say, by district).

Another source of support would be to develop associated training materials that would provide professional development capacity building resources to interested states. Such training materials might specify the data elements and required data quality, methodologies, analytic approaches, and procedures for resolving specific information requirements using available state data. They might also specify the procedures for resolving similar information requirements using data states anticipate having access to in the future, as longitudinal data systems mature and technical and regulatory issues affecting the ability to link data from multiple sources for particular purposes are resolved.

Facilitating a comprehensive, systematic approach to realize the objectives of data-driven decisionmaking

The No Child Left Behind Act is a push toward creating the individual-level accountability data systems that can be used to inform decisions on educational policies and practices at the federal, state, district, school, and classroom levels. The states seek to do much more than meet such compliance requirements. They recognize the exciting and important opportunities individual-level longitudinal data systems create to be proactive, to identify at-risk populations, to target interventions earlier, and to monitor their impacts, quickly adjusting policies and programs as required.

Many states in the region, having already gone far beyond recognizing these opportunities, are developing plans and committing resources to achieve them. With different opportunity structures and different experiences addressing these issues, they have the potential to provide considerable practical experience to each other. State education agency officials in the region have much in common in their objectives for their educational data systems. This analysis suggests important opportunities exist to capitalize on the states' commitments to data-driven decisionmaking and enhance their opportunities to realize its potential by thinking about these issues more comprehensively and systematically.

NOTES

1. See "Evidence-Based Education (EBE)," June 9, 2003 presentation by Grover J. (Russ) Whitehurst, then Assistant Secretary, Educational Research and Improvement, United States Department of Education, available online at http://www.ed.gov/offices/OERI/presentations/evidencebase.ppt (link verified March 9, 2007).

2. See "Fundamentals in Designing State Longitudinal Data Systems," online at http://www.dataqualitycampaign.org/survey_results/fundamentals.cfm.

3. See *Partnerships in Preparedness: A Compendium of Exemplary Practices in Emergency Management, Volume II – May 1997*, available online at http://www.fema.gov/emergency/managers/partnr02.shtm.

4. See http://www.ed.gov/policy/gen/guid/fpco/ppra/index.html.

APPENDIX A
METHODS

Instrumentation developed for the needs assessment portion of this study included an in-depth interview protocol and informed consent forms. The protocol was designed for administration in personal (face-to-face or telephone) interviews of approximately 90-minutes duration with senior state education agency officials. Respondents are asked to: (1) describe data collection processes and reporting practices within the region, (2) identify state education agencies' pressing information needs, and (3) identify data and other information resources which would be most beneficial to the state in utilizing data to enhance proactive strategic planning. Specific topics addressed in the interview include: respondents' roles and responsibilities in defining state data needs; questions states would like their educational data to address; states' most pressing information needs; any challenges states may currently be facing or anticipating in addressing these information needs; the extent to which states may be experiencing common challenges faced by large data collection and information processing systems; and resources available to address state information needs. Instrumentation was developed and interviews and analyses were conducted by senior researchers at Michigan State University and NORC at the University of Chicago.

The original proposal called for one senior state education agency official from each of the seven states to be interviewed. REL Midwest Executive Director Steven Cantrell introduced this study to chief state school officers, five of whom identified individuals to serve as respondents for this study. Four states (Illinois, Indiana, Iowa, and Wisconsin) identified one respondent; a fifth (Ohio) identified two respondents. Two states (Michigan and Minnesota) did not specify respondents; senior laboratory staff offered guidance in identifying appropriate contacts in each of these state agencies. A total of eight interviews were conducted. While facilitating expedited data collection in keeping with the timeframe of Task 1.2 studies (surveying 10 or more individuals with identical questions would have required approval from the Office of Management and Budget in keeping with the provisions of the Paperwork Reduction Act), a resulting limitation of the study is that in most states interviews were conducted with a single person. Each person was invited to participate on the basis of acknowledged expertise in the area (respondents were typically identified by their chief state school officers as the most knowledgeable state education agency officials on the topics addressed in the in-depth interviews); the perspectives provided were those of that individual. All instrumentation and procedures pertaining to these interviews were reviewed and approved by NORC's Institutional Review Board (IRB Protocol Number 061002).

The data inventories were designed to provide information on the data collection activities in each of the states, including what types of data are collected; how often the data are collected; the agencies and staff involved in collecting, maintaining, and providing access to the data; where the data are stored and made accessible; when data elements were first collected; and whether elements were subsequently re-coded or re-defined in ways that might influence longitudinal analyses. The data inventories were completed using a two-step process. Results from the Survey of State Data Collection Issues Related to Longitudinal Analysis, conducted by the Data Quality Campaign and the National Center for Educational Accountability[1] served as the initial resource for information on the types of data collected by and available for state use. This survey of state education officials has been conducted since 2003 and includes questions on ten components the Data Quality Campaign characterizes as essential to building a state longitudinal student data system (see http://www.dataqualitycampaign.org/essential_elements.cfm):

- A unique statewide student identifier.
- Student-level enrollment, demographic and program participation.

TABLE A1

Student and teacher data elements about which information is recorded in the state data inventories

	IL	IN	IA	MI	MN	OH	WI
Student data elements							
Demographic data							
Gender	✓	✓	✓	✓	✓	✓	✓
Date of birth	✓	✓	✓	✓	✓	✓	✓
Ethnicity	✓	✓	✓	✓	✓	✓	✓
Race	✓	✓	✓	✓	✓	✓	✓
Low-income status	✓	✓	✓	✓	✓	✓	✓
Special population data							
English proficiency status	✓	✓	✓	✓	✓	✓	✓
Disability status	✓	✓	✓	✓	—	✓	✓
Economic disadvantage	✓	✓	✓	✓	✓	✓	✓
Migrant status	✓	✓	✓	✓	—	✓	✓
Enrollment data							
School	✓	✓	✓	✓	✓	✓	✓
Mobility	✓	✓	✓	✓	✓	✓	✓
Attendance	—	✓	✓	✓	✓	✓	✓
Curriculum data							
Courses completed	—	—	✓	—	—	✓	✓
Course numbering system	—	✓	✓	—	—	✓	✓
MS courses for HS credit	—	—	—	—	—	✓	—
Dual enrollment courses	—	—	✓	—	—	✓	—
Achievement data							
State test scores	✓	✓	✓	✓	✓	✓	✓
Data permanently stored	✓	✓	✓	✓	✓	✓	✓
Untested student records	✓	✓	✓	✓	✓	✓	✓
Special program data							
Early childhood	✓	✓	✓	✓	—	✓	✓
Individualized education	✓	✓	✓	✓	—	✓	✓
Special assistance	✓	✓	✓	✓	—	✓	✓
Honors courses	—	✓	—	✓	—	✓	✓
College test score data							
SAT scores	—	—	—	✓	—	—	—
ACT scores	—	—	✓	✓	—	—	✓
AP exam scores	—	—	—	—	—	—	✓
Attainment data							
HS graduate	✓	✓	✓	✓	✓	✓	✓
Type of diploma	—	✓	✓	✓	✓	✓	✓
School dropout	✓	✓	✓	✓	✓	✓	✓
Dropout follow-up	—	✓	✓	✓	—	—	—
Dropout vs. transfer	✓	✓	—	✓	—	✓	—

TABLE A1 (CONTINUED)
Student and teacher data elements about which information is recorded in the state data inventories

	IL	IN	IA	MI	MN	OH	WI
Follow-up standards	—	—	✓	—	✓	—	✓
Teacher data elements							
Demographic data	✓	✓	✓	✓	✓	✓	✓
Qualifications data	✓	✓	✓	✓	✓	✓	✓
Professional development	—	—	—	✓	—	—	—
Mobility data	—	—	—	✓	—	✓	—
Attrition data	—	—	—	✓	—	✓	—

- Capability to match student test scores over time.
- Information on untested students.
- A teacher identifier system to match teachers to students.
- Student-level transcription information.
- Student-level college readiness test scores.
- Student-level graduation and dropout data.
- Capability to match student records between P-12 and higher education systems.
- A state data audit system.

Responses to the most recent survey[2] (circa September 2006) were cross-checked with information available on state education agency web sites and obtained from state education agency officials. Additional items with no counterpart on the NCEA survey (for example, when data elements were first collected, agencies and staff involved in their collection, changes in data definitions and/or response categories over time) included in the state data inventories developed for this study were similarly populated using publicly available documentation (including instrumentation, coding protocols, and management information systems state education agencies make available online). The resulting inventories provide complementary information about student special population status, student mobility, student special program participation, teacher demographics, teacher certification and qualifications, teacher professional development, teacher mobility, and teacher attrition.

Table A1 illustrates the type of information recorded in the state data inventories with respect to student and teacher data elements collected by the seven states in the Midwest Region. Specifically, each cell containing a check mark (✓) indicates a data element about which information was obtained and is recorded in each state's inventory.

The inventories also provide additional information on data quality control procedures, links to related online resources (such as education management information system manuals, data collection instruments, and data dictionaries), and contact information for key state education agency officials. Key information from the state data inventories is summarized in the individual state reports appearing in appendices B–H. States in the Midwest Region can access their full inventory through a password-protected web site; instructions for accessing this site are in Appendix I.

Notes

1. The National Center for Educational Accountability (NCEA, online at http://www.just4kids.org/en/) is a non-profit, non-partisan organization and national sponsor of Just for the Kids "which provides school, district, and other education leaders with essential system

performance and best practice information they need to make sound decisions" (http://www.just4kids.org/en/jftk/). The Data Quality Campaign (DQC, online at http://www.dataqualitycampaign.org/), managed by the NCEA, "was created in 2005, with support from The Bill & Melinda Gates Foundation, as a way for many organizations who were working on separate but similar campaigns regarding educational data systems to come together to ensure coordinated and unduplicated efforts towards reaching their common goals." DQC's mission is "to provide support for and advocacy on behalf of organizations that create, collect, and use education data in an effort to improve student achievement," (see http://www.dataqualitycampaign.org/about_us/).

2. The 2006 DQC-NCEA survey instrument is available online at http://www.dataqualitycampaign.org/files/Survey-Sample_2006_111306.pdf; results are available in a variety of formats on the DQC web site via http://www.dataqualitycampaign.org/survey_results/.

APPENDIX B
ILLINOIS

Information needs assessment

Data collection and quality assurance procedures

The Data Analysis & Progress Reporting Division of the Illinois State Board of Education (ISBE) has primary responsibility for collecting education data in Illinois. This division also is responsible for analysis, report writing, and submitting performance reports to the U.S. Department of Education. The division administrator is aided by approximately eleven staff members and is supported by the Data Systems Division, which maintains the data collected.

The division began implementing the Student Information System (SIS) in 2005/06. The SIS is meant to consolidate and build on a multitude of other data collection efforts within the ISBE. All but three school districts (including Chicago) are participating in the SIS, which should be fully implemented by 2008/09.

The data are audited both by the ISBE Internal Audit Division and by the federal government. The Illinois' Auditor General and Comptroller's Office also take yearly random samples of ISBE data collection efforts from the district level up through online processing to see how the data are edited, checked for errors, processed, analyzed, and disseminated. The ISBE does not currently designate staff with specific responsibility for monitoring data quality, nor is state staff given specific training in data collection practices and reporting.

More information about ISBE data collection can be obtained on the SIS web site at http://www.isbe.state.il.us/sis/default.htm.

Defining state data needs

How Illinois defines data needs

Data needs in Illinois are largely defined either by state or federal mandates or requirements. The Governor, Illinois General Assembly, and nine member State Board of Education set state requirements for data collection. The Data Analysis & Progress Reporting Division works closely with the various grant program managers to ensure that required data are collected and with the Governmental Relations Department to ensure that state and federal requirements are met. Preliminary discussions also are under way with the Illinois Board of Higher Education and Department of Human Services to collect and share data.

Information and data priorities

A pressing need in Illinois is to compile all the available information into a data warehouse and streamline the process of warehousing data. The latter would simplify data collection efforts and increase the accuracy of data collected, while the former would make the information more useful since it could be queried, or mined at least, to address various types of questions. The most important of these questions include whether or not students are actually learning, at what rate, and with which teachers.

Data currently available can be used to address questions concerning populations of students such as schools or districts. Student performance data can be put in the context of the teaching resources and finances available at the school or district level. Recent studies have looked at the relationship between school poverty levels and performance.

The remainder of this section reviews the kinds of questions the state of Illinois would most like its educational data to address in the short-term and looking further to the future, and highlights the information needs which senior state education agency officials currently consider to be particular priorities. Existing challenges which may affect the state's ability to achieve these objectives moving forward are discussed below.

Establishing benchmarks. Comparing Illinois with the rest of the nation is a high priority, especially

given current plans for ranking states at the federal level. Other priorities that relate to No Child Left Behind include the performance of limited English proficient (LEP) students and the performance of individualized education program (IEP) students. Although compiling data on these subgroups has created some unexpected tensions among students and parents, the ISBE needs this data to focus resources on the students that really need the help.

Tracking progress. Measuring progress in student learning is a top priority in Illinois. However, the state has had difficulty obtaining assessment results in a timely fashion. A new vendor did not pass along final 2005/06 test results for grades 3 through 8 in time to do School Report Cards, nominate blue ribbon schools to the federal government, upload state data to EDEN, and report on Reading First results or create other reading improvement reports. The vendor was fined, and external firms were hired to monitor and assist the vendor to make sure that the testing system is in place and running smoothly.

The ISBE would like more information about teacher training, which most districts do not collect or collect only in relation to district-wide professional development efforts. Teacher unions in Illinois also resist efforts to link teachers to learning outcomes. Better data on graduation rates also is a priority and is part of the SIS. Previous calculations relied on cohort analysis of self-reported data from the local school districts. Being able to track students through college is under consideration, but FERPA requirements may limit the ability of the ISBE to share student information with the Illinois Board of Higher Education (IBHE).

Documenting outcomes and their causes. As noted above, tracking students through college and linking outcomes to teachers are areas of interest to the ISBE, but significant barriers prevent the collection of such data. Lower priority issues in the Division include data on dropout rates, which have remained stable, or on curriculum development, which largely is under local school control. An outcome currently being studied is district and school implementation of the Illinois learning standards for reading and mathematics. High schools feel less pressure to implement these standards as long as they are performing well on state tests.

Enhancing capacity to use existing data resources. The ISBE currently collects data using the IWAS system. Hardware limitations on the analysis of existing data include lack of a mainframe computer for the division and outdated PCs with insufficient processing power. More staff in data systems and analysis would be helpful, although the state caps employment and hiring priorities often are set by the assistant superintendents. Offering competitive salaries also is an issue even if a division is authorized to hire.

Utilization of data would be greatly improved if all information collected throughout the ISBE were warehoused in a single relational database. The school Report Card, for example, combines eleven different data files controlled by four different divisions. As mentioned above, the ISBE is exploring the cost of constructing a data warehouse but has not allocated funds to build it.[1]

Understanding state data challenges

Educational data are being used in new ways in Illinois since the passage of NCLB. District, schools, and students face real consequences if their assessments fall short of federal standards. At the state level this means that decisions ranging from the provision of supplemental educational services to restructuring entire schools are tied directly to educational data, making the collection and accuracy of this information a top priority for everyone involved. As a result, the Data Analysis & Progress Reporting Division has much more responsibility and more demands in terms of data collection and reporting. The audiences have become more varied too, as has the type of data reported (e.g. disaggregated by student subgroups such as LEP and IEP).

Overall, this new emphasis on data has positively affected the educational process by allowing districts to see which groups of students are

underperforming so that they can focus limited resources to try to bring about improvement. There have been some unintended negative consequences, however. Some districts blame IEP students for schools not making adequate yearly progress, while teachers are made to feel like failures when their school is designated as "failing." Illinois also is having trouble meeting all of the new federal reporting requirements on time. Part of the problem is that large school districts like Chicago have understaffed data collection efforts and suffer from extremely high student turnover, meaning that required data are six to eight months late. District staff turnover is a problem too given the very intensive training recently provided to those who are responsible for submitting data to the state. Whatever the causes, Illinois may end up withholding funds from districts if the federal government starts fining states for not submitting their data on time.

Without the SIS in place, other challenges currently facing the ISBE include redundancy in data collection efforts and inconsistencies in the treatment of missing data. Enrollment or "housing" data, for example, is collected separately several times over the course of a school year, meaning that reports will use different data depending on when they are produced. Efforts to get the Illinois General Assembly to modify the data collection timeline were unsuccessful. The treatment of missing data is a problem since multiple contractors may collect the same data, such as assessment, using different methods of coding. This is a problem because the state has to follow up with districts in order to get them to submit the data that is coded as missing.

Implementation of the Student Information System along with a data warehouse would address many of Illinois' data collection challenges. This would allow the state to make more decisions about schools and students based on solid information rather than on hearsay. For example, better data on the number of LEP students in the state would let legislators know how much of the budget needs to be earmarked for programs to help those kids. So the return on investing in educational data in Illinois would be more data-driven policy decisions.

State data inventory

Illinois' educational data system

Responsibility for collecting data in the Illinois State Board of Education falls under the Data Analysis & Progress Reporting Division and the Student Assessment Division, both of which are under the Department for Teaching & Learning Services for All Children.

Table B1 gives contact information for the heads of the two divisions primarily responsible for collecting and warehousing data.

Key data elements

According to the 2006 NCEA Survey of State P-12 Longitudinal Data Systems (see

TABLE B1

Key contacts for more information on Illinois' data processes and files

These data collection activities . . .	. . . are currently the responsibility of:
Analyzing data for policy and planning, and coordinating annual reporting on progress related to Board goals and legislative requirements	Connie Wise, Division Administrator 217-782-3950 cwise@isbe.net
Developing and administering tests that measure the performance of students and schools against the Illinois Learning Standards	Becky McCabe, Division Administrator 217-782-4823 rmccabe@isbe.net
Developing a data warehouse	Terry Chamberlain, Data Systems Administrator 217-782-4313 tchamber@isbe.net

http://www.dataqualitycampaign.org/survey_results/state.cfm?st=Illinois), Illinois is one of six states nationwide to have only one to three of the elements deemed essential to building a robust longitudinal student data system. Starting in 2006, the state assigns a unique student identification number which is used to collect and store student demographic data and the school in which the student was enrolled. However, Illinois does not (1) currently match individual students' test records from year to year, (2) match teacher data to student data, (3) collect and maintain student-level course completion data, (4) permanently store student-level college readiness test scores, (5) track graduates into postsecondary education, or (6) have an audit system that ensures the validity of reported data. In contrast to the NCEA Survey, online research determined that Illinois does seem to collect student-level graduation and dropout data, which would give the state a fourth essential element.

The remainder of this section provides an overview and highlights of student and teacher data currently collected and archived by the state of Illinois. For additional information, see the web site of the Student Information System that is currently under construction as a data warehouse for the ISBE at http://www.isbe.net/sis/default.htm.

Student data

Demographics. The ISBE began collecting individual student demographic data in the 2005/06 school year. The data are collected at least twice yearly and include information on student gender, date of birth, ethnicity, low-income status, English language proficiency, disability status, and migrant status.

Enrollment. The ISBE began collecting individual student enrollment data in the 2005/06 school year. The data are collected at least twice yearly and include information on where a student is enrolled and the dates of enrollment. Student mobility is indicated by "entry" and "exit" enrollment data. These data are permanently stored.

Course-taking. The ISBE does not collect any data on the courses that a student completes.

Special program participation. The ISBE began collecting data on student participation in special programs in the 2005/06 school year. The data are collected at least twice yearly and include information on early childhood program participation, individualized education program information, and special assistance programs (e.g. 21st Century, Reading 1st, Title I). Illinois does not collect data on honors or AP program participation.

Achievement. The ISBE has been collecting student achievement data since the 1999/2000 school year. Standardized state tests include the Illinois Standards Achievement Test (ISAT) and the Prairie State Achievement Examination (PSAE). Collection of data on untested students began in the 2006/07 school year; these data are stored. Illinois does not collect and store student-level college-readiness test scores (e.g. ACT, SAT).

Graduation and dropout data. The ISBE began collecting student-level graduation data in the 2005/06 school year, though not by type of diploma received. The state also began collecting individual student dropout data during the same year, including the ability to categorize departing students as "dropouts," "transfers," or "missing." Illinois does not collect information on where "dropouts" went.

Teacher data

Demographics. The ISBE has been collecting data on individual teacher demographics at least since the early 1960s, including school ID, gender, ethnicity, subject assignment(s), position title, salary, and time spent on administrative duties. This information is collected on the Teacher Service Record and includes social security numbers.

Certification, qualifications, and professional development. The ISBE has been collecting data on teacher qualifications at least since the 2004/05 school year, including years of experience (by

location), college attended, and highest degree obtained (and where). Illinois does not collect data on teacher professional development.

Mobility and attrition. Illinois does not collect data on teacher mobility or teacher attrition.

Linking state data

The ISBE began assigning a unique student ID number in the 2005/06 school year. This ID number will be used to link student-level records across all state databases. Illinois also began assigning a unique teacher ID number at the same time, although the state does not have the ability the match teacher records with student records.

Data quality assurance

The ISBE has procedures in place to ensure that a student (or teacher) is not assigned more than one ID number and that two students do not receive the same ID number. The state also collects student demographic data before administering standardized tests and has an audit system for checking the accuracy of information submitted.

Note

1. See http://www.isbe.net/board/meetings/sept06meeting/fac.pdf for a September 2006 "Data Warehouse Requirements and Feasibility Study."

APPENDIX C
INDIANA

Information needs assessment

Data collection and quality assurance procedures

The Division of Educational Information Systems (EIS) in the Center for Information Technology is responsible for school data and web services and the network for IDEAnet, the Official Web site of the Indiana Department of Education (see http://www.doe.state.in.us/htmls/divisions.html). Indiana's EIS has been described as a service provider to the Department of Education, eliminating silos that can develop when separate collections occur in multiple sub-units. EIS supplies the expertise for the development and maintenance of data collection systems. The expertise regarding the business rules of each data element resides in the program area or appropriate division of the department. Data are stored in a relational database (an internally-built XML-enabled collection system written in .NET and stored in an Oracle database), providing enhanced capacity to cut the data multiple ways and produce new reports in response to individual offices' information needs.

The Division of School Assessment assists schools and school corporations in implementing ISTEP+ (Indiana Statewide Testing for Educational Progress); assists "educators, parents, and members of the general public in the interpretation of individual and group achievement data"; provides "technical assistance in matters of psychometrics and research"; and works closely with the division of EIS through structured relationships and informally (see http://www.doe.state.in.us/assessment/welcome.html). The Center for Assessment and Research is a primary internal departmental consumer of Indiana state educational data. Under the direction of Assistant Superintendent Wesley Bruce, this Center produces a variety of summative statistics tracking student educational progress and attainment over time, including statistics produced in compliance with state and No Child Left Behind accountability requirements. The Center maintains both informal daily and more structured, formal relationships with EIS colleagues to ensure data are collected and analyzed appropriately for compliance and other informational purposes.

The director of the Division of School Data Reporting in the Office of the Superintendent works with local school and district personnel and staff across the Indiana Department of Education to ensure the responsive, "consistent, timely, accurate, reliable, understandable, and usable" reporting of data through a variety of mechanisms, including the Accountability System of Academic Progress (ASAP) web site, and other online resources and media. The director also coordinates the department's "participation in school assessment data research and development projects," and facilitates "the alignment and standardization of school data reporting across various media" (see http://www.doe.state.in.us/datareporting/welcome.html).

Data quality is a primary, daily function of EIS. The director of School Data Reporting works in an oversight role on data quality—often serving as a liaison between schools and EIS. Identifying any problems that may exist with reported information is a primary role of the Data Collection and Reporting team within EIS. At the time of writing, two programmer analysts, a senior analyst, and a manager were responsible for writing the systems and enhancements to the system; an additional four individuals were responsible for various collection and operations activities (e.g., to ensure files transact, that tools are appropriately deployed, that data are reported on schedule, that data reported but not processed due to problems with data layout are resolved). The team also provides help-desk/trouble-shooting and other services. Regional and local training are provided through a training facility available to the state education agency and regional education agency service centers. Such training is typically provided by staff directly responsible for data collections (e.g., the Associate Superintendent over all the education information systems, or the lead in operational data collection) as time and opportunity allow, rather than by dedicated trainers.

With the establishment of the Student Test Number (STN) (further to the Indiana General Assembly's Public Law 221), Indiana is able to collect student-level, longitudinal data.[1] The system became operational in the 2002/03 school year. Currently four years worth of longitudinal data are available for select data elements.[2]

Defining state data needs

How Indiana defines data needs

Data needs are defined primarily through a combination of state and federal legislation and regulations. Indiana is a local control state; the state constitution provides that any authority not specifically given to the central government reverts to the local level—in the case of education, the school boards which are the legal entities controlling the educational system. Any data reporting beyond that required by state law or state board rule is voluntary.

Legislative mandates may specify the granularity and frequency with which data must be collected, the ways in which it must be coded, the duration for which it must be maintained, and/or the methods by which it must be analyzed in order to be in compliance with various reporting requirements. An example is the new state formula for calculating graduation rates adopted by the Indiana General Assembly in 2003, and subsequently codified at IC 20-26-13 (see http://www.ai.org/legislative/ic/code/title20/ar26/ch13.html#IC20-26-13-10). The new method for calculating high school graduation rates capitalized on the state's ability, through the Indiana Student Test Number (STN) system, to track individual students' progress through the educational system. Other legislative requirements include provisions of Indiana Public Law 221 (P.L. 221). Passed two years prior to the federal No Child Behind Act of 2001, P.L. 221 established a comprehensive accountability system that, among other things, places schools "into one of five categories based upon 'improvement' and 'performance' data from the Indiana Statewide Testing for Educational Progress-Plus (ISTEP+)" with "category placements for all of the state's public and accredited nonpublic schools" adopted by the Indiana State Board of Education for the first time in August 2006.[3]

Data needs can be construed as somewhat narrowly defined—100 percent of the state's data is collected for required reports and purposes. At the same time, the establishment of unit level collections creates new opportunities to analyze data in new and multiple ways, so the same raw data can serve many information needs or aspirations. Considerable effort has been expended to ensure data can be returned back to schools, school districts, and policy makers as information, including through the Indiana Accountability System for Academic Progress (ASAP) web site. While Indiana has a longstanding tradition of making data available to users outside the department, previous systems for querying elements to extract information from databases required greater understanding of the structure of the data and software suitable for performing query and extract functions. The ASAP system is the result of an effort to take advantage of more advanced tools to display data in ways more useful to end-users, including a question-driven front-end and pre-defined graphical and tabular displays. ASAP includes a number of tools designed to assist schools in the development of triennial school improvement plans and annual reviews and revisions of those plans, and to serve anticipated information needs of teachers and parents.[4]

Information and data priorities

The state department of education uses data both to comply with legislative reporting requirements and to inform decisionmaking at a variety of levels in the state educational system. As noted above, legislative reporting requirements can specify data needs and methods of analysis; they can also provide more general guidelines for the collection and reporting of information. With the establishment of unit record systems and student-level data collections, a new range of opportunities exists to not only use data to inform decisionmaking at the

state level but also locally, returning data "back to schools." The EIS also enhances service-delivery units' ability to focus on their core service delivery missions, rather than associated data collection activities. The more innovative uses of state data are a key state education agency priority, and a strategic plan has been developed in line with this mission to make the department a better customer of its data.

This has implications for the collection, analysis, and reporting of information. From one perspective, it has been suggested that the EIS will never be "finished" but will continue to develop. From another vantage point, information "needs" can be construed as fluid, flexible, and dynamic; iteratively re-defined to enable anticipatory, proactive, strategic decisionmaking. Not all the data necessary to make maximum use of data already collected are reported; for example, student-level course-taking data is not currently available. With the addition of this information, it would be possible to leverage the student-level system Indiana has developed to answer additional questions about schools' effectiveness and students' progress through the education system.

Indiana has developed a strategic plan, articulating a medium-term vision to guide development of its educational information system. Key information and data priorities are identified in the "State Profile" section of the Indiana Accountability System for Academic Progress (ASAP, online at http://www.doe.state.in.us/asap/welcome.html).

The remainder of this section reviews the kinds of questions the state of Indiana would most like its educational data to address in the short-term and looking further to the future, and highlights the information needs which senior state education agency officials currently consider to be particular priorities. Existing challenges which may affect the state's ability to achieve these objectives moving forward are discussed below.

Establishing benchmarks. In keeping with the goal of leveraging existing data to proactively inform decisionmaking, state officials identified several issues that could usefully be informed through new data analyses, in some cases supplemented or enabled by new data collections. The new cohort graduation rate, for example, raises questions about similarities and differences between students in the cohort of the class of 2006 who graduated on time, and those who did not. It has been suggested that information about who did not graduate could be used to form an Indiana at-risk profile, with the potential to identify students in seventh and eighth grade who, based on information already available about those who did not complete high school on time, may be at risk and might benefit from various interventions. Even the currently available point information might be able to identify key characteristics of students in the 2006 cohort who did versus those that did not graduate (such as mean age differences, whether one is significantly over age for grade, average mobility across the groups) that could be used to identify potentially at-risk students; in successive years, trend data might refine such profiles.

While there is an interest in being able to compare Indiana's progress with the rest of the nation, different states often have different definitions and/or operationalizations of key constructs; building metrics that would facilitate cross-state comparisons is an interesting but potentially challenging task. Of greater interest is the ability to inform and evaluate status within the state. Comparisons over time are thus particularly meaningful; e.g., are fewer students dropping out? Are more students completing school on time? Are students well prepared for the postsecondary world? Is the state doing everything it can to ensure that students receive the kinds of supports they require to succeed educationally?

Tracking progress. Access to course completion data was identified as a high priority. This information was described as critical to understanding the relationship between classes, courses, and performances. Currently, with basic demographic information and student-level test results there are outcome data but essentially no evidence of what

treatments have been. With data on which students were enrolled in which courses, and which courses were successfully completed by which students, as well as information on patterns of services used and electives taken, it may be possible to more effectively identify schools that are doing a good job, and schools that may need assistance—judgments one is limited in making solely on the basis of annual achievement test data.

With respect to its state accountability system, Indiana is considering changing a metric—chosen in 1999/2000 to be the "percent of students passing"—to scale score growth. Such a change would be consistent with P.L. 221, which includes both a status and a growth piece. The performance of all students sets a starting point, although the system expectation is that schools are only accountable for those students they actually served for most of the school year. With the ability to follow students longitudinally, it should be possible to identify (and acknowledge) schools on the basis of their ability to move students relative to previous performance. So, for example, effectiveness might include moving all students in a school upward on a distribution, acknowledging that educationally a student who moves from the bottom quartile to the next quartile is learning more than expected in a single year—a significant achievement, even if it does not take the student to proficiency.

As part of its interest in enabling schools and districts to leverage data collected at the state level, Indiana is interested to establish and has submitted a request for funding for a data warehouse. An underlying consideration is the enhanced ability for the state to provide data back to the schools. One option would be to provide schools with direct access to data in a real-time (e.g., web-enabled) manner, allowing access through tiered security consistent with FERPA. Funding (notably for additional staff resources) is a key challenge to establishing such a data warehouse. Indiana is a local control state, with over 20 versions of student information systems being used by local entities. Additional resources would enable the state to build on the XML infrastructure already established,[5] such as creating data dictionaries to make connections between individual databases.

The resource considerations associated with the move to a statewide longitudinal data system are considerable. Whereas previously the aggregate data collection system was collecting thousands of pieces of information, the state is now collecting millions of pieces of information; however it has gone to the student level with the same resources it used previously to collect aggregate data. Obtaining resources to build out the system is a significant endeavor as well as a priority. Additional resources would be required to realize another potential goal—establishing a direct connection between the current K–12 and the postsecondary education data systems.

Information on teacher professional development is another priority. The current teacher licensure system requires ongoing professional development. While the state provides approximately $13 million in funds for professional development, there is no electronic tie to specify what development individual teachers receive from those funds. Many of the core elements necessary to such a system are already available (such as licensing information, a database of teachers connected to schools), but there is not currently a connection for teachers as users to sort and review their own individual employment histories.

Commenting on the priority attached to obtaining information for curriculum development, a state education agency official underscored the importance of collecting course information for students—including the desirability of providing a mechanism to directly link performance on tests (SAT, AP, and state tests) with courses that students have taken. A major challenge to making this information available is the associated (additional) burden in such fairly complex data collection efforts. The ability to link to post secondary education data was described as another priority for Indiana. Key considerations here include a common format across record-keeping systems, access to course completion information, and a suitable identifier.

Understanding state data challenges

Resolving issues associated with the burden data collections can place on local school districts was identified as perhaps the biggest challenge for the state of Indiana; the state can program data collections, but this creates a burden on local districts to deliver on those collections—and with the move from collecting aggregate to student-level data, this is acknowledged to require a significant effort at the local level. For this reason the state has worked to phase in the roll-out of new collections over time, providing schools with six months to one year's notice of changes to existing or the implementation of new collections so that they have adequate time to make modifications to their data systems. Financial resources also are a consideration in this regard, as the state provides an architecture in which data is to be delivered to the state rather than a common data system. The state does not have additional funds to provide help to modify such collection systems, although local units can work with a 13-member advisory committee consisting of various personnel from school corporations to design reports and streamline data collection. Such resource considerations are anticipated to be important in planning for the collection of student-level course completion data.

As noted above, currently the state of Indiana has only aggregate data about student course information, and no information on course completion. Collecting course taking data at a student level is expected to be a substantial undertaking, involving not only the collection of student-level data but also the ability to connect student and teacher data (for example to monitor outcomes associated with highly qualified teachers), and requiring the development of mechanisms to combine information on courses delivered on a quarter system, a trimester system, and a traditional semester system—all systems that exist in the state of Indiana.

Indiana is not experiencing any difficulties complying with federal reporting requirements, although the commitment of resources necessary to satisfy these requirements was mentioned. It was estimated that significantly less than one-tenth of an FTE (0.02) might previously have been devoted to reporting under CCD (in part because aggregate data was collected by the state in a way that was easy to report). Currently the state has one full-time programmer dedicated to EDEN, and that person requires supplemental time from others of no less than 0.5 FTE. Such reallocations limit the staff capacity available to move forward with additional enhancements to the state's student-level data collections. The availability of additional resources to enhance student-level data systems (beyond the limited number of grants available to support statewide longitudinal data systems—possibly to include funds the state could pass on to local entities moving from aggregate, essentially semi-paper electronic collections of paper documents to enter information directly into a relational database) would be welcomed.

Inconsistencies in data definitions over time were felt to pose no more than small, typically insignificant challenges for the state of Indiana. In November 2006 the state was awarded an NCES Special Task Order for the development of a data dictionary; this project is expected to begin in February or March 2007. It was noted that as the system evolves additional data is periodically collected, and that in such instances it may be difficult (or impossible) to conduct certain analyses retrospectively. As an example, Indiana previously collected annual mobility data on students at the end of the school year, but not the date at which students moved. With the move to the calculation of cohort graduation rates, a question arose regarding how to address instances of students who were both mobile and dropouts in the same year; (nine such instances arose out of a 2006 graduation cohort of approximately 79,000). As a result, a date field has been added to every mobility record. Such new data is extremely helpful moving forward, but limits the kinds of comparisons that can be made looking backward. Similarly, inconsistencies in data definitions across data sets have proved challenging in the past, although these were observed to be typically associated with the prevalence of multiple definitions outside of rather than within

the state. Within the state, Indiana has built its current data collection system from the ground up, so is not troubled with such differences in data definitions internally.

Inconsistencies in coding procedures (across items, data sets, and/or over time) or the intervals between data collections are not issues for the state of Indiana. Inconsistencies in the treatment of missing data were described as more problematic, particularly in the startup of the student-level data collection system. For example, in the first year of collection, information on the student's prior grade level was not available; as a result, it was not possible to take advantage of capacity in the system to set flags to check student retention status. Some such 'start-up' issues persisted beyond year one, as data collections have been phased-in, not rolled-out simultaneously. Steps taken to address the challenge of defining and coding missing data include creating special reports listing-out students with missing (or inconsistent, or incomplete) data for schools or districts to complete. Reasonability checks are also built into the system so that, for example, it is not possible for schools to submit conflicting attendance reports. Other reasonability checks are longitudinal (precluding the recording of a student as 'graduating' two years in a row). On balance, the system is 'smarter' and continues to evolve in ways that minimize challenges associated with missing data. The only resource identified as potentially beneficial to address remaining issues was additional staff resources. Indiana's student-level data collection system has been built with existing staff (such as the state has moved from an aggregate to a student-level system with the same staffing). Additional funds have been requested from the legislature (to enable a move to a state-level data warehouse); it is an open issue whether or not these resources will be forthcoming.

Data entry errors, while described as fairly isolated—(infrequent, in the context of the hundreds of millions of records passed every year)—are still characterized as problematic in as much as any errors are unacceptable. To help ameliorate such difficulties, the state describes specific roles and responsibilities with respect to student data collection (for principals, teachers, staff responsible for data entry, and central office staff), including how to look for such errors and ensure the data submitted are as complete as possible. Despite these efforts some problems remain, in part due to issues of transition in schools (e.g., staff turnover, described as significant, with approximately 28 percent of the positions directly responsible for the statewide test at the district level occupied by different individuals than the previous year).

Recognizing and addressing these issues requires a system with more support built into it, and more 'help desk' functionality. Indiana has established an advisory committee of local individuals who help both design and roll-out collections, including piloting all collections. The state works to provide easily accessible roles and responsibilities documents, and to provide reports that look similar to older aggregate reports, providing a high-level view of data in a more familiar format to those who work to ensure the validity of data submitted. In part as a result of initiatives such as these, overall, data entry issues have not impaired Indiana's ability to use data resources in an effective manner. On a 'wish list' for the future is the possibility of putting together a 'dashboard' to provide individuals responsible for approving data with an overview (e.g., of what data has been reported, when it was reported, what it looks like) without requiring them to deal with the operational system used to submit data, or to understand how the data system itself 'works.'

Staff capacity presents a potential challenge to speedy responses from the state education agency to requests for information; currently there is no committed resource to respond to data requests and extra staff capacity is not a characteristic of the system, so new requests are likely to involve reassignment of staff to write and quality-control the queries necessary to extract data. Steps taken to address such challenges include applying for relevant grants and attempting to anticipate additional information needs to produce proactively a full range of reports with the greatest possible functionality.

State data inventory

Indiana's educational data system

The 2006 strategic plan describes seven core values and five 'strategic goal areas' for the Indiana Department of Education.[6] Goal IV, "the Department of Education will have the information and processes to provide timely, accurate, and professional service," aligns closely with the core value statement that the Indiana Department of Education "must make policy and program decisions based on timely, accurate data" (Indiana Department of Education, 2006: 2 & 6). Three objectives are articulated under Goal IV; under each objective specific action items are identified as follows (see table C1).

Table C2 identifies key contacts available to provide additional information on Indiana's data processes and files. Included in this table are the Objective Sponsors for the three objectives falling under Goal IV of the 2006 strategic plan.[7]

The Indiana Accountability System for Academic Progress (ASAP) web site provides a portal for accessing: (1) information on academic standards, accountability, accreditation, best practices, professional development, and school improvement, (2) school data, and (3) state profile information. Among other things ASAP's academic standards pages provide information on the Indiana academic standards and resources for courses in advanced life science, agriculture education, business and marketing, dance, English/language arts, family and consumer sciences, health, mathematics, music, physical education, science, social studies, technology education, theatre, visual arts, and world language (see http://www.doe.state.in.us/asap/academicstandards.html). The accountability pages include: information on assessments that are required as primary indicators of improvement and performance, and used to monitor student success; the definition of school performance and improvement under P.L. 221; and the identification of students who are eligible for inclusion in the non-mobile cohort whose achievement is tracked in school improvement indicators (see http://www.doe.state.in.us/asap/accountability.html). The accreditation pages describe the "quality assurance process that confirms that an Indiana school is meeting minimum standards in student performance, legal standards, and school improvement planning" (see http://www.doe.state.in.us/asap/accreditation.html). The best practice page provides links to "current research-based strategies involving a variety of areas within the learning environment" (see http://www.doe.state.in.us/asap/bestpractice.html).

Accessible from the professional development page are information on the requirements of a professional development program (a "required component of the school improvement plan"), the core principles for professional development, and

TABLE C1
Goal IV objectives and action items

Objective 1: Improve the availability of information to employees "Centralize and share internal information in a simple and effective way." "Create an internal program to promote a culture that values information sharing."
Objective 2: Improve the quality and availability of information to constituencies "Create a centralized support center to respond to external inquiries and visits." "Implement outreach activities to increase general public's knowledge of critical instructional areas."
Objective 3: Improve the quality of services to constituencies "Create an inventory of DOE services to constituencies." "Align services provided to constituencies with the DOE's Vision and Mission." "Develop and implement a plan to improve services to schools based on an assessment of serviced utilization and outcomes."

Source: Indiana Department of Education Strategic Plan, September 2006 (online at http://www.doe.state.in.us/strategicplan/docs/IDOE-StrategicPlan-Complete.pdf); see p. 17.

TABLE C2
Key contacts for more information on Indiana's data processes and files

These activities . . .	. . . are currently the responsibility of:
Center for Assessment and Research	Wesley D. Bruce Assistant Superintendent Center for Assessment and Research Phone: (317) 232 9050 E-mail: wbruce@doe.state.in.us
Educational Information Systems	Anne Brinson Associate Superintendent Division of Educational Information Systems Phone: (317) 232 0808 E-mail: abrinson@doe.state.in.us
School assessment The Division of School Assessment "assists Indiana school corporations and schools in the implementation of the Indiana Statewide Testing for Educational Progress (ISTEP+)," assists "educators, parents, and members of the general public in the interpretation of individual and group achievement data," and provides "technical assistance in matters of psychometrics and research" (see http://www.doe.state.in.us/assessment/welcome.html)	Michele Walker Director, Division of School Assessment Phone: (317) 232 9050
School Data Reporting The Director of School Data Reporting works with staff across the Indiana Department of Education and with local school district & building personnel to ensure data are consistent, timely, accurate, reliable, understandable, & usable; and coordinates Departmental "participation in school assessment data research and development projects" (see http://www.doe.state.in.us/datareporting/welcome.html)	Mary Tiede Wilhelmus Director of School Data Reporting Phone: (317) 232 9177 E-mail: mtw@doe.state.in.us
Strategic plan Goal IV objectives 1 & 2 "Improve the availability of information to employees" "Improve the quality and availability of information to constituencies" (see pages 6 and 7 of the Strategic Plan online at http://www.doe.state.in.us/strategicplan/docs/IDOE-StrategicPlan-Complete.pdf)	Kevin McDowell Office of the Superintendent Phone: (317) 232 6676
Strategic plan Goal IV objective 3 "Improve the quality of services to constituencies" (see pages 6 and 7 of the Strategic Plan online at http://www.doe.state.in.us/strategicplan/docs/IDOE-StrategicPlan-Complete.pdf)	Robert Marra Phone: (317) 232 0570

criteria for approving the professional development program (see http://www.doe.state.in.us/asap/prodev.html). From the school improvement plan home page information is available on required and optional components of an Indiana school improvement plan, and information that can assist schools in their improvement planning processes (see http://www.doe.state.in.us/asap/sip.html).

The school data section of the ASAP web site "provides informational, demographic, and achievement data about Indiana schools" that can be disaggregated and graphically displayed, and compared to similar schools (see http://www.doe.state.in.us/asap/data.html). The state profile section provides "information about state level demographics, assessment results and Indiana's latest initiatives that impact education" (see http://www.doe.state.in.us/asap/welcome.html and http://www.doe.state.in.us/asap/stateprofile.html).

Key data elements

Student data

Demographics. A variety of student-level demographic information has been collected since 2005/06, including gender, date of birth, race and

ethnicity. Data on free/reduced lunch eligibility has been collected annually at the student level since 2002/03. Key demographic information is submitted to the Indiana Department of Education in the STN Lookup Data (DOE-STN) data collection (a "required collection for all public schools, accredited nonpublic school, charter schools and freeway schools") in order to "populate the Student Test Number (STN) Lookup System."[8] Included here are student gender, birth date, and race/ethnicity; all are required fields. Student socioeconomic status (SES) is recorded in the annual Pupil Enrollment report (DOE-PE) according to whether or not the student is approved for free or reduced lunch. This field is coded 1=student approved for free meals/milk, 2=student approved for reduced price meals, or 3=student not approved for free or reduced meals/milk (see DOE-PE, Version 07.24.06, http://www.doe.state.in.us/stn/pdf/2006-07-24-pupil-enrollment.pdf).[9] The Additional Student Information (DOE-AD) report collects specific information required to "complete the information on student groups" which is "used for federal and state reporting"; included here is a 'Homeless' field used to record whether individual students were "considered homeless at any time during the school year while attending this school" (see DOE-AD, Version 12.14.06, http://www.doe.state.in.us/stn/pdf/2006-12-14-ad.pdf). Students are considered homeless "if they lack a fixed, regular, adequate, nighttime residence." 'Homeless' is a required field in the DOE-AD report.

A variety of demographic information is recorded in the Language Minority report (DOE-LM), which gathers "student information on language minority and immigrant students"; fields of interest include 'Language Minority Status', 'Non-U.S. Origin (Immigrant)', 'Country of Origin', and 'Native Language Code' (see http://www.doe.state.in.us/stn/pdf/2006-10-03-lm.pdf).[10]

Enrollment. Another field included in the STN Lookup Data collection is the state assigned school ID (school number) indicating the "school number where the student is located or last known school." These files are scheduled for submission on or near the 15th of each month, with records "including updated student information and/or information for students who are entering the educational experience for the first time," (see http://www.doe.state.in.us/stn/pdf/2006-05-30-stn-lookup-data.pdf). More detailed enrollment information is captured in the Pupil Enrollment Report (DOE-PE), a collection required for public schools, accredited nonpublic schools, charter schools, and freeway schools in order to provide student enrollment information as of October 1st each school year. The student census obtained in this data collection is used "for disbursement of state grants and Adequate Yearly Performance (AYP)." Six required fields are reported during this data collection: school number; student test number (STN); grade level;[11] socio-economic status; language minority status; and 'retained'—a field recording whether or not the student was retained in the same grade as the previous year (see DOE-PE, Version 07.24.06, http://www.doe.state.in.us/stn/pdf/2006-07-24-pupil-enrollment.pdf). Also useful here is information contained in the Dropout and Mobility Report (DOE-DM); this report is discussed in detail in the section on *Graduation and Dropout data*, below.

Course-taking. A list of subjects (and levels) taught in the 2006/07 school year is available in the "Subject and Level Code List for DOE-CP" (see http://doe.state.in.us/stn/pdf/cp_codebook.pdf). Individual student-level course-taking and course-completion data are not currently collected at the state level.

Special program participation. The Programs and Services report (DOE-PS), a required data collection for all students served by public schools, accredited nonpublic schools, charter schools, and freeway schools, was designed "to gather program and services information that students receive throughout the school year" for federal and state reporting; this report was retired in the 2005-06 data collection year (see DOE-PS, Version 12.01.05, http://www.doe.state.in.us/stn/pdf/2005-12-01-ProgServices.pdf). Key fields in that report included: 'Special Education Participant' which indicates whether or not students have an individualized education plan (IEP); for special education participants two fields indicating the student's primary and secondary

eligibility classifications ('Primary Exceptionality' and 'Secondary Exceptionality'); 'Special Education Placement Type' to indicate the type of program in which special education students participate; 'Special Education Referral' to record whether or not students were referred for special education evaluation but not placed in a program; 'Section 504 Plan' to indicate students served by such plans; and 'ESEA Title I Participant' to record whether or not students were Title I participants at any time during the pertinent school year. Effective December 1, 2007, Special Education data are collected via the DOE-SE (http://www.doe.state.in.us/stn/pdf/2006-11-14-se.pdf). 'Gifted and Talented' data are collected via the Additional Student Information data collection (i.e., DOE-AD).

The Title I (DOE-TI) report is designed "to gather Title I services a student receives, or is eligible to receive, throughout the school year" in the fall, spring, and summer in "public, accredited nonpublic schools, charter schools, and neglected institutions that have Title I funding," (see DOE-TI, Version 08.14.06, http://www.doe.state.in.us/stn/pdf/titleI.pdf). Relevant fields include 'ESEA Title I Program' used to record which Title Program is providing services to a student; and a range of fields used to record whether or not students receive Title I instruction in particular areas.

The annual Pupil Enrollment collection (DOE-PE) reports information on student language minority status (also referred to as limited English proficient, LEP, ESL, or ELL). Two proficiency codes are allowable to describe language minority students: 1=fluent English proficient (FEP), and 2=limited English proficient (LEP), with the field left blank for those who are not language minority students (see DOE-PE, Version 07.24.06, http://www.doe.state.in.us/stn/pdf/2006-07-24-pupil-enrollment.pdf).

Information on students receiving Special Education services and the services that they receive is reported in the Special Education (DOE-SE) data collection. A required collection for both public and charter schools, DOE-SE data are reported in October and April for informational purposes, and in December to be reconciled with "CODA data to determine final counts for funding." Information reported in this data collection include: school number; corporation of legal settlement; student test number; grade level; primary and secondary exceptionality;[12] special education placement type; socioeconomic status; the type of facility providing special education services when that facility is not a public school, nonpublic school, or charter school; and the service site state assigned number "for Neglected Institutions and Health Facilities where the student received Special Education services" (see DOE-SE Version 11.14.06, http://www.doe.state.in.us/stn/pdf/2006-11-14-se.pdf).

The LEP/ISTEP+ report (DOE-LEP1) is used to "gather student information on all first year LEP [limited English proficient] students enrolled in the school corporations implementing the ISTEP+ Flexibility for first year LEP students" (see DOE-LEP1, Version 10.10.06). As detailed there, "School corporations are required to administer ISTEP+ math and science assessments to LEP students who have been enrolled in U.S. schools for less than one year. . ."; the LEP/ISTEP+ records, for "first year limited English proficient (LEP) students exempted from English/Language Arts portion of ISTEP+" the date the student was first enrolled in U.S. school (see DOE-LEP1, Version 10.10.06, http://www.doe.state.in.us/stn/pdf/2006-10-10-lep-istep.pdf).

The Language Minority report (DOE-LM) requires public schools, accredited nonpublic schools, charter schools and freeway schools to report a range of data on language minority and immigrant students including in the field "Instructional Program" the "English Language education instructional program" providing service to individual students. The DOE-LM is also used to record, for language minority and/or immigrant students whether individual students are "officially considered to be participating in a Special Education Program" (in the field 'Special education Participant'); whether or not students "participate in a Gifted and Talented program" (in the 'Gifted & Talented Participant' field); and the Title 1 program providing service to the students

(in the field 'ESEA Title I Program') (see DOE-LM, Version 10.03.06, http://www.doe.state.in.us/stn/pdf/2006-10-03-lm.pdf).

The Additional Student Information (DOE-AD) report collects specific information required to "complete the information on student groups" which is "used for federal and state reporting"; included here is a required field, 'High Ability (G/T),' used to record whether individual students participating "in the Gifted and Talented program show high ability" in one of four areas (see DOE-AD, Version 12.14.06, http://www.doe.state.in.us/stn/pdf/2006-12-14-ad.pdf).

The Homebound/Hospitalized report (DOE-HB) is a "required collection for public, accredited non-public schools, charter schools and freeway schools" designed to "gather information on students that receive instruction at home or at a hospital due to injury or illness" at any time during a specified collection period "for federal and state reporting" (see DOE-HB, Version 05.30.06, http://www.doe.state.in.us/stn/pdf/2006-05-30-homebound.pdf).

Achievement. Student-level test data has been collected annually since 2002-03. Relevant data sources and instrumentation, rubrics and revisions are available online.[13] Information is also collected and maintained on untested students in tested grades, although not the reason why students were not tested. Current policy provides that student-level data should be destroyed after five years (see http://www.doe.state.in.us/istep/welcome.html). Another indication of achievement is the 'Type of Graduate" data recorded on the Graduate Report (DOE-GR) for graduating students receiving diplomas or other documents (e.g., Indiana Academic Honors Diplomas, Core 40 Diplomas, and Certificates of Achievement provided to Special Education Students "not capable of earning a diploma, but who completed the public school educational program prescribed in the student's IEP," see DOE-GR Version 06.23.06, http://www.doe.state.in.us/stn/pdf/doe_gr.pdf). Also of interest here may be the 'Post Graduate Information' field on the DOE-GR, a required field to indicate the type of higher education (if any) each student is pursuing as of the autumn following graduation (October 2006 for the 2005/06 academic year).

English language proficiency data is also collected for select students. Specifically, the Language Minority report (DOE-LM) requires public schools, accredited nonpublic schools, charter schools and freeway schools to report a range of data on language minority and immigrant students, including English proficiency-level data from testing done in the current school year. Key fields here include 'Language Minority Status' and 'English Language Proficiency Level.'[14] Recorded in the 'Instrument Used' field is "the instrument used to measure the English proficiency level" (see DOE-LM, Version 10.03.06, http://www.doe.state.in.us/stn/pdf/2006-10-03-lm.pdf).

Graduation and dropout data. The Graduate Report (DOE-GR), a "required collection for public schools, accredited non-public schools and charter schools that have students in grade 12" counts pupils the reporting school "issued a diploma or a document . . . in the prior school year regardless of the pupil's resident corporation." The 'Type of Graduate' field on this report records the type of diploma or document each graduating student received (see DOE-GR Version 06.23.06, http://www.doe.state.in.us/stn/pdf/doe_gr.pdf). With respect to dropout data, the Dropout and Mobility Report (DOE-DM), a "required collection for students in grades 7-12 that are being educated in public schools, accredited non public schools, charter schools, and freeway schools," includes a 'Dropout or Mobility Code' used to record the primary reason for student dropout or student mobility (see DOE-DM, Version 09.14.06, http://www.doe.state.in.us/stn/pdf/doe_dm.pdf). For students who drop-out, the DOE-DM report also records the 'Dropout Date' and the student's last known address (all required fields for those who drop out).

Teacher data

Demographics. The Certified Employee data collection is designed "to gather certified employee information" for those "employed as of October 1 of

the academic school year" (see Certified Employee, Version 10.06.06, http://www.doe.state.in.us/stn/pdf/2006-10-06-ce.pdf). A variety of demographic information is reported in this data collection; fields of interest include 'Ethnicity,' 'Gender,' and 'Birth Date'.

Certification, qualifications, and professional development. As noted above, the Certified Employee report collects information on those employed as of the first of October for the academic school year (see Certified Employee, Version 10.06.06, http://www.doe.state.in.us/stn/pdf/2006-10-06-ce.pdf). Relevant fields reported in the Certified Employee collection include: 'Degree'; 'Total Years Experience'; 'First Year Teacher'; 'Prior Year Employment' (with 12 allowable codes indicating, among other things, whether individuals were employed in schools of the reporting corporation in certified or non-certified positions, in other Indiana public school corporations, in a public school outside the state of Indiana, in a college or university, in business or industry, in the military or governmental service, as a homemaker, or were attending a college or university in or out of state); 'Total Percent of Time Employed' (in the reporting corporation); whether an individual serves as a 'Special Populations Employee'; and 'Highly Qualified Teacher' to indicate whether an employee has been "determined as a highly qualified teacher in a position during this school year." A companion data collection, the Certified Positions report, is "a required collection for public schools, accredited non-public schools and charter schools" that gathers "the positions on certified employees as of October 1 of the academic school year" (see Certified Positions, Version 10.12.06, http://www.doe.state.in.us/stn/pdf/2006-10-12-cp.pdf). Relevant fields recorded in the Certified Positions collection include: 'Subject' and 'Level' taught; 'Periods per Week'; 'Number of Pupils'; and, for special education teachers, 'Special Education Classroom Settings.'

Mobility and attrition. Teacher mobility and attrition data are not currently collected, although of potential interest here is the field 'Contract Days' ("number of days employed in this school corporation during the period of July 1 to June 30") collected in the Certified Employee report (see Version 10.06.06, http://www.doe.state.in.us/stn/pdf/2006-10-06-ce.pdf).

Linking state data

Indiana's Student Test Number (STN) is employed in the collection of a variety of student-level data with potential for the ability to link data across collections (see http://www.doe.state.in.us/stn/welcome.html).

Data quality assurance

Numerous quality control checks are embedded in Indiana Department of Education data collection activities. For example, should two or more schools claim the same student in the annual Pupil Enrollment collection (DOE-PE), the resulting conflict must be resolved before the end of the collection period.[15] Similarly, conflicts in reports on students receiving Special Education services are to be settled by the reporting corporations (see DOE-SE, Version 11.14.06, http://www.doe.state.in.us/stn/pdf/2006-11-14-se.pdf).

Notes

1. As described in the March 2002 edition of the Indiana Department of Education's Student Test Number News (available online at http://www.doe.state.in.us/stn/pdf/STNnews_mar.pdf), the student test number (STN) requirement "was created by the Indiana General Assembly through Public Law 221 and, specifically, says: 'the department shall assess improvement in the following manner: Compare the results for a school by comparing each student's results for each grade with the student's prior year results. . .'" For additional information on the STN, see the Department of Education's STN web site, at http://www.doe.state.in.us/stn/welcome.html.

2. Additional reporting requirements have been added over time.

3. Indiana Department of Education Public Law 221 (P.L. 221) Fact Sheet, (http://www.doe.state.in.us/pl221/docs/PL221%20Fact%20Sheet-8-9-06.pdf). For additional information see the P.L. 221 home page on IDEAnet, the Official Web site of the Indiana Department of Education (at http://www.doe.state.in.us/pl221/welcome.html).

4. See http://www.doe.state.in.us/asap/welcome.html.

5. XML is supported, although the majority of schools submit data in CSV format.

6. The strategic plan, released by Superintendent of Public Instruction Suellen Reed in October 2006, "offers nearly 60 recommendations for aligning, guiding, strengthening and improving the agency's efficiency and performance," (see "Reed Unveils Agency-Wide Strategic Plan: Outlines Vision for Better Supporting Indiana Students and Schools," IDOE News Release http://www.doe.state.in.us/reed/newsr/2006/10-October/strategic-plan.html). The 2006 *Indiana Department of Education Strategic Plan* is available online at http://www.doe.state.in.us/strategicplan/docs/IDOE-StrategicPlan-Complete.pdf .

7. As described in the Indiana Department of Education strategic plan, the Objective Sponsor assumes a project-specific, "high-level, ad-hoc leadership role" with responsibility for: "defining the project's key objectives and constraints; securing the commitment of human and financial resources; securing commitment of key constituents; providing EMC [Indiana Department of Education Executive Management Council]-level guidance and direction to the project team; removing barriers to success; approving changes to scope, cost, and duration; approving and signing off on all deliverables; championing the project internally and externally, as required; monitoring and reporting progress on project goals and metrics; and developing implementation timelines for each strategic objective," (p. 12).

8. This data is entered through the secure STN Application Center; see STN Lookup Data (DOE-STN), Version 05.30.06; retrieved online from http://www.doe.state.in.us/stn/pdf/2006-05-30-stn-lookup-data.pdf,18 Dec 2006.

9. The same codes were allowed for the 'Socio-economic Status (SES)' field on the Programs and Services report (DOE-PS); (see DOE-PS, Version 12.01.05, http://www.doe.state.in.us/stn/pdf/2005-12-01-ProgServices.pdf). SES is also reported in the quarterly Special Education (DOE-SE) data collection; see DOE-SE Version 11.14.06, http://www.doe.state.in.us/stn/pdf/2006-11-14-se.pdf.

10. 'Language Minority Status' is also a field on the Title I report, as is 'Migrant Student' status (see DOE-TI, Version 08.14.06, http://www.doe.state.in.us.stn.pdf/titleI.pdf).

11. Grade level is also reported in other collections; e.g., the Additional Student Information (DOE-AD) report (see DOE-AD, Version 12.14.06, http://www.doe.state.in.us/stn/pdf/2006-12-14-ad.pdf); the Homebound/Hospitalized report (see DOE-HB, Version 05.30.06, http://www.doe.state.in.us/stn/pdf/2006-05-30-homebound.pdf); the Language Minority (DOE-LM) report (see DOE-LM, Version 10.03.06, http://www.doe.state.in.us/stn/pdf/2006-10-03-lm.pdf); the Programs and Services (DOE-PS) report (see DOE-PS, Version 12.01.05, http://www.doe.state.in.us/stn/pdf/2005-12-01-ProgServices.pdf); the quarterly Special Education (DOE-SE) data collection (see DOE-SE Version 11.14.06, http://www.doe.state.in.us/stn/pdf/2006-11-14-se.pdf0; and the Dropout and Mobility Report. As the latter collection is only required for students in grades 7 through 12, allowable codes for the 'Grade Level' field in the Dropout and

Mobility report are 07 through 13 (where 13=Grade 12+/Adult); (see DOE-DM, Version 09.14.06, http://www.doe.state.in.us/stn/pdf/doe_dm.pdf).

12. Allowable codes include: 01=multiple disabilities, 02=orthopedic impairment, 03=visual impairment, 04=hearing impairment, 05=emotional disability (full time), 06=emotional disability (other), 07=learning disability, 08=developmental delay (ages 3–5A only), 09=communication disorder, 10=mild mental disability, 11=moderate mental disability, 12=severe mental disability, 14=deaf-blind, 15=autism spectrum disorder, 16=traumatic brain injury, 17=other health impairment, and for secondary exceptionality 99=no secondary exceptionality; see DOE-SE Version 11.14.06, http://www.doe.state.in.us/stn/pdf/2006-11-14-se.pdf.

13. See http://www.doe.state.in.us/istep/ProgramManual.html and http://www.doe.state.in.us/istep/publications.html. Rubrics and revisions are available at http://www.doe.state.in.us/istep/2002/02grd8_rubricmemo.html.

14. 'Language Minority Status' is also a required field on the Pupil Enrollment Report (DOE-PE) (see DOE-PE, Version 07.24.06, http://www.doe.state.in.us.stn/pdf/2006-07-24-pupil-enrollment.pdf).

15. As described in DOE-PE, version 07.24.06, in such cases "it is up to the schools to decide which school will report the pupil. If two or more schools report the same pupil then the pupil will be excluded from the enrollment count of all schools until the pupil is reported by a single school," (http://www.doe.state.in.us/stn/pdf/2006-07-24-pupil-enrollment.pdf).

APPENDIX D
IOWA

Information needs assessment

Data collection and quality assurance procedures

Student information is gathered using the Electronic Access System for Iowa Education Records (EASIER). Multiple software programs have been developed to meet EASIER specifications, allowing schools to upload student files directly to the system. The state maintains approximately 28 servers, including eight different SQL servers. Distribution is carried out using Access programs that have been written to specifically allow agency staff to obtain, create, and distribute information.

Auditing procedures depend on the nature of the data. Financial data are audited locally by each school district. Each school district is also audited externally by the state. Enrollment, for example, is audited down to the individual student's residential status in order to establish school districts' budgets and funding. Additional audits are run on teacher data, including their licensing, assignment, salary, and demographic information. Non-certified staff are reviewed in a similar manner. Each year about 20 percent of the districts also receive site visits by consultants who review schools' data profiles, look for potential problems, and discuss how the districts perceive their data and future goals.

Staff throughout the Iowa Department of Education focus on data collection and maintenance. Staff in the curriculum and student areas carry out applied research and evaluation, as well as collaborating with state and federal program employees within their areas. Staff rely on a number of resources to determine data definitions, including handbooks and course classifications published by the National Center of Education Statistics (NCES) and materials issued by the National Forum of Education Statistics.

Iowa has designated staff responsible for monitoring data quality. The state also uses several methods to train all staff (and vendors) involved in data collection and reporting. Staff members receive ongoing statistical training in SAS, and the department has formed a SAS users group that also includes private industry. The state created the Iowa Communications Network (ICN), a two-way audio-video conference system. Training is conducted via the ICN in the summer and fall, and in addition a one-day data conference is held. NCES funding has supported five regional meetings, and Iowa personnel participate in the NCES Fellows Program.

Defining state data needs

How Iowa defines data needs

The Division of Financial and Information Services is responsible for collecting student, financial, and staff data and for defining data elements and collection methodologies. Personnel within the Division who focus on staff, curriculum, and students create the definitions for their areas of expertise. Federal requirements also dictate data definitions, and much of the state's data collection is now conducted to meet EDEN reporting requirements.

Information and data priorities

Iowa's primary goal with respect to education data collection is to improve student achievement as measured by the Iowa Tests of Basic Skills (ITBS), the Iowa Tests of Educational Development (ITED), and other local assessments. The department also collects data to meet regulatory and accreditation responsibilities, including federal reporting requirements that must be met as part of the accountability component of No Child Left Behind (NCLB). The department strives to make education data available to those who need it, including schools and policy makers. As a result of NCLB, the data collected by the state is better able to inform policy decisions.

Questions that the state's educational data can address include: whether student achievement

is improving; which schools are achieving their goals; the characteristics of students; trends in enrollment; changes in program demand; where students go after graduation; and the distribution of revenue and expenditures. Generally the department is able to respond to information requests, although queries regarding academic calendars and hours or days of instruction cannot be answered with currently available data.

The remainder of this section reviews the kinds of questions the state of Iowa would most like its educational data to address in the short-term and looking further to the future, and highlights the information needs which senior state education agency officials currently consider to be particular priorities. Existing challenges which may affect the state's ability to achieve these objectives moving forward are discussed below.

Establishing benchmarks. Iowa would like to gather more information on students' transitions to postsecondary education and is in discussions with state universities and community colleges. While many of these institutions already report students' information back to the local school districts, this is not a mandatory procedure. The department is looking into developing a postsecondary data warehouse that will allow it to illuminate high school experiences and clarify in which high school content areas students are better prepared for college. Results could then be sent back to the high schools to help them improve their programs. A first committee meeting regarding this issue took place in November 2006, and a report was delivered to the legislature.

Iowa recognizes the importance of understanding the characteristics of their students, including enrollment and population changes. Some examples of this type of student information include data gathered on the Hispanic population and students who receive free or reduced price lunches.

The biggest challenges for Iowa are not necessarily the need for more data, but the reporting and application of the data the state already collects. Currently, the most challenging data collections are the adequate yearly progress and the No Child Left Behind requirements. These data are difficult to clean, and the software used to determine a school's position is exceptionally complex. Iowa also seeks a better longitudinal data system and is exploring options for building a data warehouse to help address these issues (see http://www.iowa.gov/educate/content/view/44/310/1/5/).

Tracking progress. Iowa seeks better information regarding teacher professional development, although the state already maintains basic teacher demographic information and a database that records what classes teachers are teaching and their licensure information. All of this data is gathered and cross-referenced with information obtained by school improvement consultants and the school districts. However, the state does not currently keep records regarding continuing education completed by teachers. Similar records could also be kept on paraprofessionals working in the schools.

Iowa is also interested in more information on whether students are completing a core curriculum, and further defining what the core curriculum encompasses. Obtaining this data is a current priority, and the information will be collected beginning in the 2007/08 school year.

Defining who is a dropout remains problematic, although Iowa's implementation of unique student identifiers for all students has greatly improved the accuracy of dropout rates. The department now compares students reported as dropouts by the school districts with student enrollment data from throughout the state. If a student has simply transferred to another school district, the department can alert the student's original school district. In this way many school districts found they were reporting their dropout rates higher than they actually were.

Like many other states, Iowa has had trouble calculating accurate graduation rates using estimates based on ninth grade attendance data, as these students can enroll, drop out, transfer, or take

more than four years to complete high school. Iowa expects to report a more accurate graduation rate using data drawn from their unique student identifiers beginning in 2008.

Documenting outcomes and their causes. The department is interested in producing maps of school districts and the areas individual schools serve on which variables such as achievement, tax revenues, or free and reduced-price lunches could be overlaid; such graphical representations could be particularly helpful to policy makers. Relevant geographic applications have been identified, but these cannot be employed with existing data, staff, and software resources.

In addition to developing more data on postsecondary patterns, the department would like more information on the experiences of children before they enter kindergarten. Evidence shows that thriving preschools can have a tremendous effect on the overall school system.

Enhancing capacity to use existing data resources. Funding for additional staff members would be the most helpful resource for enhancing Iowa's educational data system. The department also would be interested in purchasing a series of audits and business rules produced by the Center for Data Quality (C4DQ). These programs are run against existing files and indicate how clean the data are. Currently, the software licenses cost approximately $50,000 to $60,000, which the department is unable to provide at this time.

While the available products are sufficient for the state's purposes at the moment, staff will need more training as new products are issued and more data are collected and reported. Some members of the department are already able to attend national and regional meetings; it would be desirable to provide similar opportunities at the district and school levels. Iowa also would like to set up a data academy, such as the one created in Ohio, to help train local district staff in data quality issues. Participants would receive award certificates for completing a series of courses at the academy.

Understanding state data challenges

The collection of consistent educational data has had considerable impact within the Iowa Department of Education. State education agency staff are able to provide legislators, school districts, and the general public with a picture of the educational situation in Iowa that is based on actual data. Such data have become an integral part of understanding the condition of education in the state and have had a significant impact on the state's education policies. As a result there is growing demand for educational data to be easily accessible to both policy makers and parents, although concerns about student privacy are a serious issue.

The department is able to collect needed data in a timely fashion, although resource constraints present some challenges in analyzing it. The number of staff in the department has been cut in half since the early 1990s even though the volume of work has increased. On the technology side, the state finds it difficult to train staff in new software products and to meet growing expectations about the accessibility of data on the Internet. A data warehouse and the implementation of SIF would help the department make the data more available.

Generally, Iowa has not had problems complying with federal reporting requirements, though the requirements themselves are sometimes inconsistent over time and/or with state requirements. The Office of English Language Acquisition, for example, has not always used consistent definitions, and the Office of Civil Rights requests information on special education children by their disability whereas Iowa classifies these children by the services they receive. Reporting difficulties may arise under EDEN as the state will need to solicit more detailed information than is currently collected. Iowa, along with other states, has requested funding to create a staff position to help facilitate data collection for federal EDEN reports.

Iowa encounters some problems in coding procedures, but fewer today than in the past. By insisting on standard coding statewide, the state has

eliminated many of the problems that previously occurred, although coding is still a concern (e.g., as the federal government requires more multiple reporting on race and ethnicity). Another area where coding problems occur is Iowa's uniform course classification system. To alleviate these issues, Iowa would benefit from more financial support to enhance data quality training. Hiring a data steward or coordinator in every school district would be another means to reduce coding errors, and to help eliminate the problem of missing data, which often are in fact incomplete data as districts find it increasingly difficult to submit information on time.

The state has set data collection schedules, thus experiences no problems associated with inconsistencies in the intervals between data collection. Data entry errors are not a serious problem either since the state provides data quality training to district staff so that they can use software to catch data entry errors. The department is able to respond to information requests promptly, and all staff are trained in SAS. The ability to provide information would be enhanced by the establishment of a data warehouse; this was described as an ideal mechanism for staff and the general public to have access to state data, and even be able to pull their own information and create their own tables. Such a warehouse also would make it easier to match records, although Iowa's unique student identifier program and the EASIER database have made this fairly straightforward.

Although inconsistencies in data definitions have been challenging for Iowa, the department has developed a single data dictionary to catch anomalies in definitions as the state consolidates data collections. Iowa also has alleviated definition inconsistencies by the implementation of a student record system whereby districts upload set data elements with well-defined, consistent codes directly to the state. This system also alleviates the problem of inconsistencies in data definitions over time. However, the state does maintain some unique data sets, particularly the special education data set which is kept outside the Department of Education.

Iowa currently bases its data definitions on NCES standards, but then develops its own data element dictionaries. The state is waiting to see how successful North Dakota is in its grant-funded project to allow states to modify codebooks and handbooks to fit the state's definition. If the project is successful, local school districts might be able to make similar adjustments. Iowa also would like to move from data dictionaries to using metadata if funding becomes available. Secondary analysis of datasets should be possible with the available documentation; however, department staff and resources are fully occupied analyzing data that need to be reported.

State data inventory

Iowa's educational data system

Information on Iowa's educational data system, processes, and files can be obtained from the individuals listed in table D1.

Key data elements

The remainder of this section provides an overview and highlights of student and teacher data currently collected and archived by the state of Iowa. For additional information see http://www.iowa.gov/educate/content/view/346/299/.

Student data

Demographics. Gender, date of birth, ethnicity/race, and low-income status (identified as free and reduced lunch) are collected by BEDS at the student level. These data elements, however, are accessible to the public only at the district and/or building level at the Iowa Department of Education's education statistics web site. For additional information see:

- http://www.dataqualitycampaign.org/survey_results/state.cfm?st=Iowa
- http://www.iowa.gov/educate/component/option,com_docman/task,cat_view/gid,129/Itemid,55/

TABLE D1
Key contacts for more information on Iowa's data processes and files

These data collection activities . . .	. . . are currently the responsibility of:
Basic Educational Data Survey (BEDS): The BEDS is a survey tool used to collect staffing, student and policy data from all K-12 public schools and accredited nonpublic K-12 schools.	Bureau of Planning, Research, & Evaluation Betsy Lundy 319-358-6206 betsy.lundy@iowa.gov Marlene Dorenkamp 515-281-5507 marlene.dorenkamp@iowa.gov
Project EASIER (Electronic Access System for Iowa Education Records): Project EASIER is the initiative for ensuring effective methods for data collection. Specifically, Project EASIER involves transferring individual student records into a data repository, thereby resulting in timely data transfer and access for schools, postsecondary institutions and the Iowa Department of Education.	Bureau of Planning, Research, & Evaluation Coleen McClanahan Project EASIER Manager 515-281-7509 coleen.mcclanahan@iowa.gov
Iowa Student Number (ISN): The ISN is used to identify every public school student from grades K though 12. The State ID System assigns the ISN, which is then used to submit data via Project EASIER.	Bureau of Planning, Research, & Evaluation Carla Schimelfenig 515-281-3111 Carla.Schimelfenig@iowa.gov
EDEN For additional information on the Education Data Exchange Network see http://www.ed.gov/about/offices/list/oig/auditreports/a11e0003.pdf)	Office of the Director Judy Jeffrey, Director 515-281-3436 judy.jeffrey@iowa.gov
State education agency submissions	Office of the Director Judy Jeffrey, Director 515-281-3436 judy.jeffrey@iowa.gov

- http://www.iowa.gov/educate/component/option,com_docman/task,cat_view/gid,131/Itemid,55/
- http://www.iowa.gov/educate/content/view/44/310/1/2/
- http://ia-sb.org/humanresources/beds_%20presentation.ppt

Student special population status. The data for English proficiency status (ELL status), disability status (IEP indicator, Section 504 indicator, etc), economic disadvantage status (free lunch indicator and reduced-price lunch eligible indicator) and migrant status (migrant indicator) are collected at the student level by BEDS; however, the data accessible to the public on the education statistics web site is provided only at the district and/or building level for all the student special population status categories, except for disability status. For additional information see:

- http://www.dataqualitycampaign.org/survey_results/state.cfm?st=Iowa
- http://www.iowa.gov/educate/component/option,com_docman/task,cat_view/gid,130/Itemid,55/
- http://www.iowa.gov/educate/component/option,com_docman/task,cat_view/gid,393/Itemid,55/
- http://www.iowa.gov/educate/component/option,com_docman/task,cat_view/gid,342/Itemid,87/
- http://www.iowa.gov/educate/content/view/44/310/1/2/

- http://ia-sb.org/humanresources/beds_%20presentation.ppt

Enrollment. School, enrollment data, and mobility data (as identified as expulsion data) attendance data are collected by BEDS at the student level. The data are stored permanently by the state for use in subsequent years to determine continuous enrollment. These data elements, however, are accessible to the public only at the district and/or building level at the Iowa Department of Education's education statistics web site. For additional information see:

- http://www.dataqualitycampaign.org/survey_results/state.cfm?st=Iowa
- http://www.iowa.gov/educate/index.php?option=com_docman&task=cat_view&gid=129&Itemid=55
- http://www.iowa.gov/educate/content/view/44/310/1/2/

Course-taking. Iowa collects student-course taking and completion records at the student level using BEDS. Each course is designated a course number that is maintained throughout the system. Middle school and summer school classes taken for high school credit are not included in the course completion data. However, dual enrollment courses that meet high school requirements, but are taken from colleges and universities, are counted in the data collection. For additional information see:

- http://www.dataqualitycampaign.org/survey_results/state.cfm?st=Iowa
- http://www.iowa.gov/educate/content/view/44/310/1/1/
- http://www.iowa.gov/educate/content/view/44/310/1/2/

Special program participation. Early childhood program participation, individualized education program information, special assistance programs and honors programs/courses data are collected by BEDS at the student level. For additional information see:

- http://www.dataqualitycampaign.org/survey_results/state.cfm?st=Iowa
- http://www.iowa.gov/educate/index.php?option=com_docman&task=cat_view&gid=118&Itemid=55
- http://www.iowa.gov/educate/component/option,com_docman/task,cat_view/gid,517/Itemid,55/
- http://www.iowa.gov/educate/component/option,com_docman/task,cat_view/gid,342/Itemid,87/
- http://www.iowa.gov/educate/content/view/44/310/1/2/

Achievement. According to The Annual Condition of Education Report 2005 (p. 113), 4th, 8th and 11th grade students take the Iowa Tests of Basic Skills (ITBS) and the Iowa Tests of Educational Development (ITED). Reading comprehension and math are assessed for grades three through eight and eleven, and science is currently assessed for 8th and 11th graders. High school seniors take the ACT, SAT and AP exams. For additional information see:

- http://www.dataqualitycampaign.org/survey_results/state.cfm?st=Iowa
- http://www.iowa.gov/educate/component/option,com_docman/task,cat_view/gid,519/Itemid,55/
- http://www.iowa.gov/educate/content/view/44/310/1/2/

Graduation and dropout data. Using BEDS, Iowa collects student-level graduation data by diploma type. Dropout data are also collected and stored.

Furthermore, the state records where departing students go for grades 7–12, even if the students are not reenrolling or graduating. Iowa does not keep evidence to clarify if the students are dropouts, transfers or missing students. There are not standards for the percent of departing students that a district should be able to locate. For additional information see:

- http://www.dataqualitycampaign.org/survey_results/state.cfm?st=Iowa
- http://www.iowa.gov/educate/component/option,com_docman/task,cat_view/gid,518/Itemid,55/
- http://www.iowa.gov/educate/component/option,com_docman/task,cat_view/gid,516/Itemid,55/
- http://www.iowa.gov/educate/content/view/44/310/1/2/

Teacher data

Demographics. Teacher demographic data, including teacher and administration salaries, experience and age, may be collected from the area education agencies and districts once a year. For additional information see:

- http://www.iowa.gov/educate/index.php?option=com_docman&task=cat_view&gid=95&Itemid=55

Certification, qualifications, and professional development. The state of Iowa maintains data for teacher certification and qualifications but does not collect data on teacher professional development. For additional information see:

- http://www.iowa.gov/educate/index.php?option=com_docman&task=cat_view&gid=95&Itemid=55

Mobility and attrition. Neither teacher mobility nor teacher attrition data are collected by the state.

Linking state data

All students in Iowa are assigned a unique statewide student number, which is collected by BEDS. These identifiers are used to link student-level records throughout the state's databases. Likewise, Iowa teachers also receive a unique statewide teacher number. Iowa does not match records across teachers and students. (For additional information see http://www.dataqualitycampaign.org/survey_results/state.cfm?st=Iowa).

Data quality assurance

Iowa relies on separately collected and verified databases for the student demographic information. According to the Data Quality Campaign, the state does have procedures to prevent two different individuals from receiving the same ID. Iowa also has procedures to prevent the same student from obtaining/receiving a different ID when she/he changes districts. Likewise, the state has procedures established to prevent teachers from being assigned two IDs. The state audits and performs statistical checks on data submitted by the school districts. Currently, the state does not have an established system to investigate the accuracy of data flagged by the statistical checks. However, they have established certain criteria to help determine when data submitted by the school districts are prone to be in error. Iowa does not impose consequences on school districts that do a poor job gathering or submitting data, nor on school districts that do not accurately account for missing students.

APPENDIX E
MICHIGAN

Information needs assessment

Data collection and quality assurance procedures

In Michigan the collection, management, and reporting of educational data from K-12 entities are coordinated by the Center for Educational Performance and Information (CEPI). Responsibilities of this Center include to: "coordinate the collection of all data required by state and federal law . . . in the most efficient manner possible in order to reduce the administrative burden on reporting entities"; "establish procedures to ensure the validity and reliability of the data and the collection process"; "develop state and model local data collection policies, including . . . policies that ensure the privacy of individual student data"; "provide data in a useful manner to allow state and local policymakers to make informed policy decisions"; and "provide reports to the citizens of this state to allow them to assess allocation of resources and the return on their investment in the education system of this state" (see Section 388.1694a of the State School Aid Act of 1979[1]).

CEPI has identified as its mission "to become the single source for the most comprehensive, accurate and useful information about the performance of Michigan's public schools and students" (see http://www.michigan.gov/cepi/0,1607,7-113-985-3493--,00.html). The Center works with the Department of Information Technology to determine efficient and effective mechanisms for complying with state and federal data requirements, including using tools provided by the National Center for Education Statistics (NCES) to enhance data collection. CEPI manages the Michigan Education Information System (MEIS), a "data warehouse system used by school districts to submit data to the state and by CEPI to combine, store, and report that data" (see http://www.michigan.gov/cepi/0,1607,7-113-986---,00.html). The MEIS is comprised of Microsoft-based software providing tools for collecting, maintaining, and reporting data. Within the MEIS, the School Code Master (SCD) contains the directory of school information used to link the MEIS datasets: a Single Record Student Database (SRSD), including "discrete information about individual students such as age, gender, race and ethnicity, and program participation"; a Registry of Educational Personnel (REP), that collects "basic employment elements relating to school personnel, such as certification and degrees held, school and grade/subject assignment, length of service, and salary"; a School Infrastructure Database (SID), including "information about safety practices and incidences of crime in public schools, Title I Schoolwide Programs and Dual Enrollment"; a Financial Information Database (FID), including "information from districts' annual financial reports, balance sheets, revenues, district expenditures and school expenditures"; and the Administrator Data Review (ADR) application, developed by CEPI to provide "useful information back to the intermediate school district (ISD), local education agency (LEA), district and public school academy (PSA) district staff members from the educational data they submit to CEPI each year."[2]

CEPI ensures that data collection activities meet federal and state data requirements and abide by the requirements of the Headlee Amendment, which places restrictions on newly mandated activities or services required by the state. So, for example, while the School Infrastructure Database (SID) "has the capability to include information about technology (hardware, networks, connectivity, distance learning etc.) and school structure (physical construction, capacity and use elements)" these data are not currently collected, as presently they "are not required by the state or federal government."[3]

CEPI appoints an individual to oversee data collection, work with the Department of Information Technology to collect and maintain data using the MEIS, and provide customer support to assist districts in managing their data. Data quality is ensured through a number of audits at the district and the state level. Intermediate districts conduct audits to make sure their data records do not

count individual students more than once. Districts also sample schools to conduct field audits and desk audits; their purpose is to determine whether student enrollment data are accurate and to confirm whether the state provides aid to that school district. CEPI provides data to the Office of Audits in the Department of Education to audit for students with full-time status; the Office of Audits provides technical assistance in auditing pupil enrollment. At the state level, audits are conducted to ensure the validity and reliability of data submitted by the districts. Error checks are run based on established parameters; consistency with historical data is established, and databases are triangulated to test for accuracy and reliability. (The Michigan State Department of Education does not, however, have the statutory authority to audit districts for data quality before data are submitted to the state.)

Application developers in the Department of Information Technology (DIT) create the software needed to make Michigan's education data available and accessible. DIT also has quality assurance staff to develop test plans and test cases for software developers to write and use to check the quality of the data.

The CEPI data administrator manages data, adds and derives variables, develops crosswalks and combines datasets as necessary to ensure data are compliant with federal requirements. Staff of the Michigan Department of Education ensure data comply with federal requirements before they are submitted to the U.S. Department of Education. State education agency officials avail themselves of training sessions provided by the National Center for Education Statistics and other federal agencies (e.g., on the Education Data Exchange Network, EDEN, and Common Core Data, CCD), and attend NCES National Forum on Education Statistics and Management Information System conferences to keep informed on best practices of data use and management. State education agency officials also receive updates from the Education Information Management Advisory Consortium (IMAC), affiliated with the Council of Chief State School Officers (CCSSO).

Key reports and documentation on the data collection process developed by CEPI are available on: the CEPI web site; the Michigan Association of School Boards web site; and the *School Matters* web site, a service of Standard & Poor's (see www.schoolmatters.org). CEPI maintains its own web site to provide data on how schools and districts are performing (see http://www.michigan.gov/cepi/0,1607,7-113-985-3496--,00.html). The Michigan Association of School Boards (http://www.masb.org/) also provides assistance to local school boards to assess their data and compile school profiles.

Defining state data needs

How Michigan defines data needs

Working with CEPI to define Michigan's data needs are three distinct groups of individuals. The first group includes representatives of eight state agencies that participate in data governance, with a data policy committee comprised of decision-makers from those eight agencies. Also contributing to the definition of the state's educational data needs are the members of the Data Managers Working Group (DMWG); these individuals work directly with federal program offices and state offices to respond to state and federal mandates and articulate compliance needs. A third group is composed of other stakeholders who provide valuable input to the needs definition process, including K-12 entities, educators, superintendents, intermediate school district superintendents, individuals responsible for data entry, and members of the public, advisory groups, and focus groups.

Procedurally DMWG members identify and advise the data policy committee of data collection measures needed to comply with state and federal mandates. A key function of the data managers working group is to identify potential duplicate data collections. DMWG members advise the Data Policy Committee on collection measures necessary to comply with state and federal mandates. The data policy committee works with the data managers to define procedures to enhance the

efficiency and effectiveness of data collection and use. Key stakeholders provide feedback on current processes and input on what, from their perspectives, are the most useful formats for accessing data—advice which is described as critical in current efforts to build a state data warehouse capable of longitudinal reporting of all the data Michigan collects.

Information and data priorities

The vision of Michigan's data governance process is to "collect once, store once, and use many times." Importantly, 'use many times' is recognized to mean 'share many times'; thus a key consideration is how data can be shared to reduce the reporting burden for districts. Accordingly key priorities are to establish one system to collect and warehouse data to provide information in a user-friendly, accessible format.

Student data are collected three times a year, personnel data are collected twice, and financial data are collected once in the fall after the school year has been completed. These data are used to look at student performance at the district, school, and student levels; e.g., the Michigan Department of Education provides resources to generate scatterplots at the district level and maintains historical student data in a secure web site. School report cards provide assessment results as an indicator of school performance; these report cards are readily available to the public on the Michigan Department of Education web site (https://oeaa.state.mi.us/ayp/index.asp). Longitudinal school enrollment, attendance, demographic and outcome data are available at the student level. Currently, however, data are not collected that would provide information for assessing instructional intervention at the classroom level. It was noted such data would be helpful to the state for identifying factors (e.g., resources, curriculum, teaching experience) that encourage students to stay in school and are associated with positive student learning outcomes.

The remainder of this section reviews the kinds of questions the state of Michigan would most like its educational data to address both in the short-term and looking further to the future, and highlights the information needs which senior state education agency officials currently consider to be particular priorities. Existing challenges which may affect the state's ability to achieve these objectives moving forward are discussed below.

Establishing benchmarks. One of the challenges in using state data to compare Michigan's educational progress with that of other states in the nation is the variation in data definitions currently employed among the states. For example, one state may define truancy as 10 or more unexcused absences, while another may define it as 20 or more unexcused absences. It is difficult to compare graduation outcomes and dropout challenges across states given different formulas for determining graduation and dropout rates. Assessment scores also cannot be readily compared, as different measures and formulated scores are used among states.

Determining how various subgroups of students are performing in school is a priority for the state of Michigan. State education agency officials have a perspective on how to effectively measure a student's fullest academic potential: to establish benchmarks and obtain a complete profile of students' academic performance and capabilities, individual student data must be collected and measured in the context of the environment and resources available to each student. Subgroup identification provides only a partial profile of a student; e.g., simply identifying students on the basis of their racial background provides an incomplete understanding of the individual-level characteristics that may affect their academic experiences. State education agency officials note it is critical to examine all factors affecting students' learning experiences, including, ideally, data on environmental and available resources not obtained via current data collections. More detailed student profiles could be extremely informative in determining the most effective academic programs and practices to offer a diverse group of students. A legislative mandate to collect such

data is crucial to the ability to develop these more comprehensive student profiles.

Tracking progress. Michigan's most pressing information needs include gathering more data on teacher training, teacher professional development, curriculum development, and transitions to postsecondary education. Information on teacher preparation programs and where teachers teach after completing teacher training is collected, but additional data on individuals' teaching experiences and how these may influence retention or attrition from the profession are desirable. Such information is crucial for better understanding the tools and training that best prepare teachers for their classrooms. Additional data on professional development and the ability to link such data to student outcomes would also be beneficial. (Currently the state gathers data on the preparation programs individual teachers attended, and where they were licensed; these data are provided to the Office of Professional Preparation Services with identifying names, but without their social security number or any identification number to protect anonymity. Without any identification number, there is no structured system to provide this data to the districts.) There is also an interest in exploring any relationships between teacher retention and student outcomes.

Curriculum development is another priority topic in Michigan. The state provides standards and benchmarks for its curricular programs, and these standards are helpful for identifying what assessments focus on when evaluating student performance. A standardized method for identifying lesson plans and materials instructors use, and consistent course naming across schools would make it possible to assess how certain curricular programs fare in various school settings, and to identify which curriculum programs are effective with which students.

Interest was also expressed in more and better data to assess transitions to postsecondary education. A state education agency official described two obstacles to collecting such data. First, higher education institutions do not use a unique identification code for student data. This makes it challenging to link K-12 education student data to postsecondary education data. Second, education institutions and education policymakers need to collaborate in working within the constraints of the Family Educational Rights and Privacy Act to allow K-12 education and higher education institutions to share data while still protecting the rights of students and their families.

No additional enhancements were suggested to the information collection processes Michigan plans to provide data for calculation of graduation or drop-out rates. A new method from the National Governor's Association Compact on Graduation Counts has been used to track senior high school students since 2002. This method is expected to provide not only more data on graduation and drop-out rates, but also to enhance capacity to monitor data entry at the district level. Data quality is anticipated to improve significantly, as raw data rather than information based on estimation formulas will be collected. NCES definitions will also be used for drop-outs.

Enhancing capacity to use existing data resources. As noted above, at the state level, Michigan utilizes a variety of resources to check the validity and ensure the accuracy of state databases. Further enhancements to quality control procedures are limited by the inability to establish the accuracy of school district data before it is submitted to the state database. Critical here is the absence of a statutory authority to audit the quality of school data. Should such an authority be established, additional resources would also be required to enable state staff to assist districts in auditing the quality of their data. State staff amount to less than twenty people, and there are 820 school districts to audit. Additional tools to check data entered at the school district level would also be desirable.

Understanding state data challenges

The importance of accountability has shifted from using aggregated data collected at a specific point

in time to using disaggregated data collected over a period of time. Districts are making more concerted efforts to collect valid and reliable disaggregated data by using more systematic procedures. This results in districts becoming more skilled in their resources to collect and maintain data on student outcomes and teaching factors. These data can be instrumental in facilitating discussions and making decisions on how to better address the educational needs in the state.

Although there are working systems in place to collect disaggregated data, the state would benefit greatly from and has initiated plans to enhance its data warehouse. Building a longitudinal system to house data and make it available in an accessible and useful format to enhance policy and practice decisions is a high priority. Limited staff, expertise, time, and funding are challenges in developing this warehouse. Once all the necessary data are collected and stored, priorities include determining what types of reports would be most useful to the districts and other stakeholders (school board members, educators, policymakers, teachers, parents).

Resolving remaining inconsistencies (e.g., in data definitions across datasets and over time) and developing the necessary information processing storage space are other priorities in Michigan. Inconsistencies in data definitions can be challenging (e.g., the lack of consistent definitions of race/ethnicity categories for multi-racial individuals). Data definitions can change when funding sources shift, as different funders may employ different definitions. One of the possible ways to address this obstacle would be for funding establishments to begin developing their programs first with data collection, and then develop the program based on the feasibility of the data collection. Efforts on the part of the federal government to be consistent in requesting data from the states are appreciated, as this allows the state to be consistent in requesting data from the districts. Michigan is able to comply with federal reporting requirements, although program offices continue to work to improve their student data collection activities and data reporting.

The state is also concerned to address inconsistent coding procedures that may occur across items, datasets, and/or over time. Such challenges are particularly likely to arise when data are not consistently defined and when reports have short deadlines, so that data documentation may not be completed until after reports are submitted. Another challenge is inconsistencies in data definitions across states; standardization of data definitions across states would help to ensure the consistency of coding procedures across items, datasets, and/or over time.

State data inventory

Michigan's educational data system

Several key agencies develop and maintain the structure of Michigan's educational data systems: the Michigan Department of Education, the Center for Educational Performance and Information of the Office of the State Budget, the Department of Labor and Economic Growth, the Office of the Governor, and the Department of Information Technology. These agencies collaborate to support the collected data systems known as the Michigan Education Information System.

Six databases are maintained in the Michigan educational data warehouse, the Michigan Education Information System:

- The Single Record Student Database (SRSD) is a collection of each student's age, gender, race/ethnicity, and program participation. SRSD data are collected three times a year, and is used to meet the No Child Left Behind Act of 2001 and the adequate yearly progress requirements.

- The Registry of Educational Personnel (REP) collects information on school personnel, including the Michigan Department of Education's teacher certification audit. School personnel data and reports are collected from school districts twice a year.

- The School Infrastructure Database (SID) is a collection of data on Title I Schoolwide Programs and Dual Enrollment, safety policies and practices, school prevention programs, disciplinary problems, and safety/disciplinary incidents.

- The Financial Information Database (FID) collects data on districts' annual financial reports, balance sheets, revenues, and district and school expenditures. Data are collected in compliance with the Michigan Public School Accounting Manual Chart of Accounts.

- The School Code Master (SCM) is the state school directory. It includes general directory information and official district and school identification codes for all K-12 public schools. SCM data complies with the NCLB and the Michigan Department of Education's accreditation initiative, *Education YES!*.

- The Administrator Data Review (ADR) is a database of CEPI data given access to the intermediate school districts, local education agencies, local education agencies, and public school academies.

Key data elements

Michigan continues to make great strides in collecting key data elements. Their databases include student-level enrollment, demographic, program participation data, and student-level graduation and dropout data. As reported by the Data Quality Campaign, Michigan is capable of using a unique statewide student identification system to link student data across key databases over multiple years, as well as match individual students' test data across years to assess academic growth.

The remainder of this section provides an overview of student and teacher data currently collected and archived by the state of Michigan. Key contacts for additional information on Michigan's data collection systems are listed in table E1. For additional information see the CEPI direct web link (http://www.michigan.gov/cepi/0,1607,7-113-985---,00.html) and the MEIS direct web link (http://www.michigan.gov/cepi/0,1607,7-113-986---,00.html).

TABLE E1

Key contacts for more information on Michigan's data collection activities

These data collection activities . . .	. . . are currently the responsibility of:
• Single Record Student Database (SRSD) • Registry of Educational Personnel (REP) • School Infrastructure Database (SID) • Financial Information Database (FID) • School Code Master (SCM) • Administrator Data Review (ADR)	Center for Educational Performance and Information (CEPI) Hannah Building,2nd Floor 608 West Allegan Street Lansing, Michigan 48913 Phone: (517) 241-2374 Fax: (517) 335-0488 Email: CEPI@michigan.gov Web site: www.michigan.gov/cepi/ The Department of Information Technology (DIT) Client Service Center is available to address questions about CEPI applications. DIT Client Service Center 235 South Grand, Suite 304 Lansing, Michigan 48913 Phone: (517) 335-0505 Fax: (517) 241-8439 Email: Help-Desk@michigan.gov Web site: http://michigan.gov/dit/0,1607,7- 139-30629---,00.html

Student data

Demographics. CEPI collects key demographic data elements three times a year (see http://www.michigan.gov/documents/CycFldSub0506_157950_7.pdf for the Cycles of Field Submission documentation). Gender, date of birth, race/ethnicity are collected three times a year, and low-income status is collected twice a year. CEPI cleanses, structures, and stores these data into MEIS collections. In addition to CEPI and MEIS, the MDE and CEPI submit aggregated data to the National Center for Education Statistics (NCES) as well as Standard & Poor's SchoolMatters.com web site (see http://www.schoolmatters.com/).

Student special population status. CEPI collects various student special population status data elements, including Limited English Proficiency status, special education program participation, supplemental nutrition eligibility status, migrant status and participation in other federal and state programs through the SRSD data collection. Most of these data elements are collected in the fall, spring, and at the end of the school year, and are maintained by CEPI. CEPI, the MDE, NCES, and SchoolMatters.com provide access to reports and data on special program participation.

Enrollment. Michigan's enrollment database includes students' gender, ethnicity, low-income status, English language learner status, operating district, resident district and attendance. All these data elements are collected three times a year by CEPI and are maintained in the SRSD data collections. The enrollment data are permanently stored by the state so it is possible to monitor continuous enrollment over multiple years and these downloadable data sets are available from the CEPI and NCES web sites.

Course-taking. A limited number of course codes exist for the SRSD and REP data sets, but a consistent statewide course numbering system has not yet been developed, and course completion data (e.g., summer school courses completed for high school credit) are not collected and maintained at the state level.

Special program participation. CEPI collects data on early childhood program participation, individualized education program information, special assistance programs, and Honors program/courses (Advanced Placement courses included). Data are collected in the fall, spring and the end of the school year, and these data are available from the CEPI and NCES web sites.

Achievement. The Michigan Educational Assessment Program (MEAP) is the state-wide assessment that evaluates third- through ninth-grade student performance in English, Language Arts, Mathematics, Science, and Social Studies. The MDE Office of Educational Assessment & Accountability (OEAA) maintains student-level data and works with CEPI to identify and track students. The state also collects and maintains student-level data on each untested student in a tested grade, but does not collect explanations for why the student was not tested. These data are permanently stored for evaluating student achievement and academic progress over multiple years. Student-level test records also include demographic data, such as gender, race, ethnicity, low-income status, and English proficiency status. CEPI, the MDE, and SchoolMatters.com provide data access on student achievement. Student-level college readiness test scores (e.g., AP, SAT, and ACT exam scores) are not collected or maintained by the state.

Graduation and dropout data. CEPI collects student-level graduation data, including diploma type, in the fall, spring, and at the end of the year. Also collected are student-level dropout data (including information on where un-enrolled seventh though twelfth grade students who do not graduate go) and information on students who receive their GED or who are able to graduate after dropping out or transferring schools. All these data are stored in the SRSD data collections and are maintained and made available by CEPI. Graduation and dropout data are also submitted to NCES and SchoolMatters.com for publication.

Teacher data

Demographics. The REP collects personnel data, including demographic; certification, qualification and professional development; and mobility and attrition variables. These data are collected twice each year; CEPI, NCES, and SchoolMatters.com provide access to these data. Data variables include (see http://www.michigan.gov/documents/RecLay0606_161977_7.pdf):

- teacher's name
- social security number
- credential license number
- date of hire
- school assignment (i.e., at which school the teacher works)
- teaching position assignment
- grade assignment
- full-time equivalency status
- wage
- function code
- highly qualified
- academic major
- academic minor
- administrator continuing education
- number of classes taught
- Title I and Title II, Part A teacher status
- funded position status
- date of birth
- gender
- racial/ethnicity
- highest educational level
- type of credential
- date credential issued
- date of expiration of credential
- hours of professional development
- employment status
- date of termination of employment
- personnel identification code
- full-time base annual salary
- non-Michigan sponsoring institution

Linking state data

Multiple years of student-level demographic, enrollment, and achievement data can be linked. To date, no system has been implemented to link teacher and student data, and there is currently no common student identifier available to match student-level K-12 records to student-level higher education enrollment records.

Data quality assurance

DIT maintains the infrastructure to manage and store data for access by interested stakeholders. CEPI and MDE use network technology to collect, transfer, and report data. Agencies participating in educational data governance collaboratively develop standards to protect confidentiality of student-level data, standards for the collection of data, common definitions, and procedures to facilitate data-sharing among agencies. The state has procedures to ensure that neither teachers nor students have multiple identification numbers. As

of 2006/07, the state has an audit system to review the accuracy of submitted FTE data in the aggregate, although as noted above there is currently no system to conduct on-site quality checks.

Notes

1. Retrieved online 6 Jan 2007 from http://www.legislature.mi.gov/(S(a0jl31fy2sp2vl55z2lw1z45))/mileg.aspx?page=getobject&objectname=mcl-388-1694a&queryid=1613767&highlight. Michigan's Center for Educational Performance and Information was created within the office of the Michigan state budget director in the department of management and budget. For additional information on CEPI see Public Act 191 of 2001 and the Center's web site at www.michigan.gov/cepi.

2. See the "MEIS at a Glance" (at http://www.michigan.gov/documents/Flow_Chart_34792_7.xls); "SSRD Overview" (at http://www.mi.gov/cepi/0,1607,7-113-986_10481---,00.html); "Registry of Educational Personnel (REP): New to the REP?" page 2 (at http://www.mi.gov/documents/NewToREP1004_107313_7.pdf); "SID Overview" (at http://www.mi.gov/cepi/0,1607,7-113-986_10482---,00.html); "FID Overview" (at http://www.mi.gov/cepi/0,1607,7-113-986_10484---,00.html); and "ADR Overview" (at http://www.mi.gov/cepi/0,1607,7-113-986_38364---,00.html).

3. See "SID Overview" (at http://www.mi.gov/cepi/0,1607,7-113-986_10482---,00.html).

APPENDIX F
MINNESOTA

Information needs assessment

Data collection and quality assurance procedures

Minnesota is in the process of creating an educational data warehouse and expects to have 80 percent of the state's major data systems warehoused by the end of June 2007. Staff are being trained to organize data and access it more centrally, although providing secure and variable access to stored data is technically complex and may take another six months to complete. Validation checks are built into all data collection efforts, and the state is working to make sure that the same piece of data is collected one time only to improve reliability.

Defining state data needs

How Minnesota defines data needs

Most data collected by the Minnesota Department of Education (MDE) are based on either state or federal reporting requirements. The Research and Assessment Division then works with other divisions to define data elements to be collected, usually by taking a federal data definition and refining it within the state context.

Information and data priorities

Minnesota's primary goals with respect to its educational data are to centralize the data, ensure the data are catalogued, and make the data more accessible to a variety of end users (ranging from districts to researchers).

The remainder of this section reviews the kinds of questions the state of Minnesota would most like its educational data to address in the short-term and looking further to the future, and highlights the information needs which senior state education agency officials currently consider to be particular priorities. Existing challenges which may affect the state's ability to achieve these objectives moving forward are discussed below.

Establishing benchmarks. Minnesota would like to be able to compare data across states but remains wary of contextual differences which limit the comparability of data even when definitions are more or less the same. Exit codes, for example, can be applied, collected, and edited in different ways by different states. Comparing various sub-groups or sub-populations within the state also is a goal of the MDE. The state provides districts with uniform codes, trains administrators on reporting standards, and has appropriate editing options and quality controls. A remaining challenge is to create sensitivity throughout the MDE to state and federal differences in data definitions.

Tracking progress. There is growing interest statewide in obtaining more or better information about the effectiveness of specific programs, teaching practices, and curricular reform. However, establishing consistent definitions and ensuring consistent data collection remain problematic.

Documenting outcomes and their causes. Minnesota is able to collect quality data on particular outcomes of interest such as academic achievement, dropout rates, and transitions to postsecondary education. However, a recurring challenge is coordinating state efforts to collect such data with potentially conflicting requirements of federal agencies. The federal offices for Special Education (the U.S. Department of Education's Office of Special Education and Rehabilitative Services) and the Title I program (the U.S. Department's program office for Student Achievement and School Accountability Programs) both require states to collect assessment data, for example, but have different inclusion rules. Other agencies or programs (such as EDEN) may collect the same data but require different collection schedules.

Enhancing capacity to use existing data resources. The MDE obtained a $3 million grant over three years to build a longitudinal data warehouse. These funds are expected to cover only a fraction

of the real cost of the system. In addition to funds for technical restructuring, Minnesota would welcome funds for staff to coordinate federal reporting requirements at the state level.

Understanding state data challenges

The MDE has identified two major issues that affect its ability to provide high-quality, longitudinal data. The first is building the data warehouse and providing secure access to different users. Related challenges include inconsistencies in coding procedures across items and over time (a data dictionary is being constructed); inconsistent intervals in data collection (the data warehouse will eliminate most of these); inconsistencies in the treatment of missing data; inability to match records or link existing data sets (the data warehouse will resolve this); and data entry errors. More federal funding for building technical capacity or infrastructure would ensure Minnesota's ability to address these issues.

The second major issue for the MDE is a concern with the consistency of federal reporting requirements. State education agency officials have noted that there have been major improvements over the last year or two, but would welcome additional federal efforts to ensure the coherence and consistency of requests for state data from federal agencies.

State data inventory

Minnesota's educational data system

The Minnesota Department of Education Data Center has been created to provide a repository of information about Minnesota schools. Several years of data have been compiled describing general characteristics of each school district. In most cases, data files for the current year are available and some extend back to the 1989/90 school year. These files are provided in several formats for users who may wish to load the data into their own software for analysis or reporting purposes. Reports and data files are made available and posted online after the data are finalized. Normally, the department finalizes student and staff data in March or April of each year. Periodically, data files are updated with minor revisions to some districts. More information about Minnesota's educational data collections can be obtained through the contacts in table F1. (For additional information see http://cfl.state.mn.us/datactr/index.htm; http://www.ohe.state.mn.us/index.cfm.)

Key data elements

Following is an overview of student and teacher data currently collected and archived by the state of Minnesota.

Student data

Demographics. Minnesota collects student demographics annually, including gender, age, ethnicity, race and English proficiency. The state does not collect date of birth, low-income status, disability status, or migrant status data. For additional information see:

- http://cfl.state.mn.us/datactr/enroll/index.htm
- http://www.ohe.state.mn.us/tPg.cfm?pageID=760&1534-D83A_1933715A=c7d2d499261b4237

TABLE F1
Key contacts for more information on Minnesota's data processes and files

These data collection activities . . .	. . . are currently the responsibility of:
Data submissions and downloads	Cathy Wagner, 651-582-8688 or mde.data-downloads@state.mn.us
Staff automated reporting (STAR)	Dan Bittman, 651-582-8807 or mde.star@state.mn.us

- http://cfl.state.mn.us/datactr/enroll/index.htm
- http://cfl.state.mn.us/datactr/language/index.htm

Enrollment. Each year, Minnesota gathers student-level enrollment data, which is permanently stored to be subsequently used to determine continuous enrollment, student mobility, and attendance. For additional information see:

- http://cfl.state.mn.us/datactr/enroll/index.htm#school
- http://cfl.state.mn.us/datactr/enroll/index.htm
- http://cfl.state.mn.us/datactr/mobility/index.htm
- http://cfl.state.mn.us/datactr/attend/index.htm

Course-taking. Minnesota does not collect data regarding student course taking.

Special program participation. Minnesota does not collect data regarding student special program participation.

Achievement. The state of Minnesota collects and stores data on student-level test results. These data are permanently stored to help determine academic progress. In addition, Minnesota maintains individual records on all untested students in tested grades. SAT, ACT, and AP exam results are also collected and permanently stored by the state. For additional information see:

- http://www.dataqualitycampaign.org/survey_results/state.cfm?st=Minnesota
- http://www.ohe.state.mn.us/mPg.cfm?pageID=793&1534-D83A_1933715A=e39ede2d5c6064cf
- http://www.ohe.state.mn.us/tPg.cfm?pageID=795&1534-D83A_1933715A=ccce61e27fb22fa2
- http://www.ohe.state.mn.us/mPg.cfm?pageID=798&1534-D83A_1933715A=3d7acb42609b6ffb

Graduation and dropout data. Minnesota annually assembles student-level graduation data by diploma type. Likewise, the state collects student-level dropout data each year. The state does not track information on departing students. For additional information see:

- http://cfl.state.mn.us/datactr/grads/index.htm
- http://www.ohe.state.mn.us/tPg.cfm?pageID=1464&1534-D83A_1933715A=79dfda9979826da
- http://cfl.state.mn.us/datactr/drops/index.htm

Teacher data

Demographics. Minnesota annually collects data on teacher gender and ethnicity by salary, assignment, and category. Age data also are collected. For additional information see:

- http://education.state.mn.us/mde/Data/Data_Downloads/Staff_Data/Licensed_Staff/index.html
- http://cfl.state.mn.us/datactr/staff/index.htm

Certification, qualifications, and professional development. Minnesota annually collects data on teachers' years of experience and highest degree obtained. For additional information see:

- http://cfl.state.mn.us/datactr/staff/index.htm

Mobility and attrition. Minnesota does not collect data regarding teacher mobility or attrition.

Linking state data

Minnesota assigns all of its students a unique statewide student number, which is used to link student-level records across the state's databases. Likewise, the state creates unique identifiers for its

teachers. At this time, Minnesota does not match records across teachers and students.

After successfully applying for a Statewide Longitudinal Data System grant, Minnesota is participating in the U.S. Department of Education's Statewide Longitudinal Data System program from November 2005 to October 2007. Minnesota is collaborating with Michigan and Wisconsin to build a comprehensive multi-state longitudinal data system. For additional information see:

- http://www.dataqualitycampaign.org/survey_results/state.cfm?st=Minnesota
- http://nces.ed.gov/Programs/SLDS/PDF/Minnesota.pdf
- http://nces.ed.gov/Programs/SLDS/PDF/minnesotaabstract.pdf

Data quality assurance

The Minnesota Department of Education Data Center is responsible for data quality for the state. The Center reviews data to make sure more than one student is not assigned the same identifier or that students receive different unique identifiers when they change districts. Likewise, the Center works to prevent two teachers from being assigned a single identifier and to ensure teachers do not receive more than one identifier.

Minnesota relies on separately collected and verified databases for its student demographic information. In addition, the state has a statewide audit system to review data submitted. Statistical checks are also performed on the data submitted by the districts. If data are flagged by the statistical checks, Minnesota has established a system to investigate the data in question. Furthermore, the state has produced criteria for determining when data submitted by school districts are likely to be in error. On-site quality checks are an additional measure used by the state to promote accuracy in the data submitted by school districts. When school districts are found to be doing a poor job collecting and submitting information or accounting for missing students, the state imposes consequences on the school districts.

APPENDIX G
OHIO

Information needs assessment

Data collection and quality assurance procedures

The Educational Management Information System in the Ohio Department of Education is used to collect and maintain education data for the state. School district data are collected in regional data acquisition sites, called Information Technology Centers (ITCs), where data are cleaned and checked for errors. These sites are seen as the "first line of defense" prior to the data being sent to the state. Once submitted, data are processed and preliminary reports are posted, during which time districts can make changes to their data if there are problems or issues with reporting.

A number of state-level offices contribute to the quality control process. Data are audited by a cross-agency team that constantly monitors the state's data auditing processes and makes recommendations for improving them. Program offices are responsible for checking data related to their programs. A data services office has responsibility for quality control of the data. The state also relies on districts to monitor their data. Most major cities are their own data acquisition sites. Given the size of such districts and the volume of data they process, it is recognized that their submissions are particularly vulnerable. To assist districts in ensuring the quality of the data they submit, the state distributes numerous reports to districts and provides opportunities to verify information currently in the system and update information to correct any inaccuracies.

State education agency officials noted no staffing needs with respect to data collection or quality control at the state level. Data reporting is accomplished via a recently updated web site.

Defining state data needs

How Ohio defines data needs

Ohio's educational data needs are defined through a combination of statutory requirements and input from numerous Ohio Department of Education (ODE) offices and stakeholders. ODE offices provide input on information that would be particularly valuable on specific topics (e.g., the curriculum office with respect to course offerings; the office of policy and accountability with respect to policy evaluations and program evaluations; and the offices that comprise the Center for Students, Families, and Communities with respect to state reading funds, data related to discipline including 'persistently dangerous schools', and school readiness and early learning). Such offices frequently have specific data needs, given the variety of children they serve and their unique characteristics, and participate in both formal and informal needs definition processes. Formally, individual centers meet annually to review information requirements, including those associated with legislative mandates. More informally, data managers meet periodically with senior officials and other state education agency staff to continuously monitor data requirements. In addition, the department seeks input from a variety of stakeholders around the state. Formal mechanisms for obtaining stakeholder input include the Educational Management Information System (EMIS) Advisory Committee, a national group that advises the department. Together, participants in these processes work not only to identify information needs, but also to identify potential redundancies and whether information currently collected is underutilized.

Information and data priorities

Ohio's goals in using educational data were described as twofold: first, to improve student learning (overall, and student learning of specific important content), and second to improve the effectiveness and efficiency of the educational system. Specific educational data goals are prioritized to obtain the information critical for determining

how to comprehensively address student needs. Such goals include:

- Supporting collaboration among the various education offices. For example, reading test scores may be examined in conjunction with student discipline and absenteeism information.
- Collecting data to address longitudinal questions (e.g., enabling evaluations of the long-term impact of curricula such as Reading First).
- Linking student with teacher data more easily.

A cross-cutting concern, described as one of Ohio's most pressing information needs, is to continue ongoing work to make data accessible to educators in ways that are actionable. This includes presenting data in ways that do not require intended data users (e.g., administrators and teachers) to be data experts—making it easier for users to understand the implications of data for student learning, teacher professional development, and other outcomes. Key goals here are to ensure the right data are delivered to particular users in a timely way and in formats that are understandable (e.g., creating more 'friendly', facile data interfaces).

Establishing benchmarks. Ohio has already established benchmarks to measure the performance of various sub-groups and mechanisms to examine how Ohio is performing relative to the rest of the nation (e.g., using the National Assessment of Education Progress, NAEP). State education agency officials are also interested in benchmarking the state's progress internationally, to ensure the state's students are prepared to compete in the global economy. Another area of interest is providing benchmarks to assess the relative cost-effectiveness of particular strategies or interventions.

Tracking progress. As the state's student-level information system matures (at the time of writing the state had entered the third year of the collection of individual-level unidentifiable student data), additional information will become available for addressing longitudinal questions about student progress through the educational system.

Ohio is interested in additional information on the utilization and impact of teacher professional development opportunities. A large number of professional development efforts are under way across the state, but it can be challenging to obtain good information not only about who attended what sessions, but also about the content and quality of workshops and other TPD activities. Particularly challenging here are developing and consistently applying definitions and measures of what constitutes high quality professional development. Currently, the state uses the STARS system to collect data on the types of professional development teachers pursue. Although this system collects information on what courses and workshops teachers participate in for their professional development, no data are collected on how much teachers learn and use in their classrooms.

Obtaining more information on transitions to postsecondary education was described as a recurring rather than an urgent need. Limited information is already available for students who attend Ohio public postsecondary institutions, but very little for those who attend private institutions in-state or higher education institutions out-of-state. A critical impediment to obtaining such data are legal prescriptions against sharing individual-level data outside the state system; the logistical issues encountered in tracking students as they leave high school are also challenging. Although Ohio uses a unique student identifier in the K-12 school database, a unique identifier is not used to link K-12 student data to postsecondary student data.

Improved processes for following students who transfer to community or alternative schools, and mechanisms for following the progress of children who attend preschool programs as they move into the elementary education system would also be beneficial. Ohio is also considering adding variables to the state report card to make it more informative, including measures of school climate and family engagement.

Understanding state data challenges

This study identified multiple positive outcomes associated with the educational data system Ohio has put into place and continues to develop. Within the ODE, data have been used to promote more cross-center collaborative efforts to address student needs. For example, a monthly performance council was described as having evolved into a learning community which uses educational data to take a much more holistic and sophisticated approach to understanding the factors that affect student learning outcomes. Data are used throughout the system for continuous improvement and continuous learning. Ohio's educational data have been used to provide information about where districts and schools need to be more strategic in examining what they do and how they can improve their results. More generally, the state's educational data have been described as creating a transparency and openness that have proved to be powerful catalysts for individuals to examine their practices and question whether they are achieving the results they are capable of attaining, and for larger, positive, very constructive discussions about the results of the education system. These notable achievements notwithstanding, the state has identified additional challenges which it seeks to address.

Ohio is working to eliminate problems associated with inconsistencies in data definitions across data sets, including the creation of a data warehouse that will enable datasets to work across each other more efficiently. Other inconsistencies and issues that can often prove challenging for large data collection and information processing systems were not characterized as problematic for the ODE (e.g., inconsistencies in data definitions over time, in coding procedures across data sets, items, and/or over time, or in the intervals between data collections; incomplete or inadequate documentation of data sets; or problems resulting from data entry errors).

More challenging is the inability to match records or link data sets to take advantage of information already collected at the state level. The difficulties here are not technical; the challenge here is a legal one, resulting from what has been described as the very restricted view federal attorneys have taken of states' ability to share individual-level data collected in the K-12 system. Some systems have been developed to allow data sharing that does not employ individual-level data, but there are limitations to additional efforts that can be made to leverage existing information absent a less restrictive ruling from the U.S. Department of Education.

Other challenges are associated with the burden additional data collection can pose, including at the local level. Concern was expressed that information needs such as those described above may be difficult to achieve if additional resources cannot be provided to districts (e.g., to provide additional staff resources). At the state level, it was noted that it can be difficult to retain technical staff given salary differentials with the private sector.

State data inventory

Ohio's educational data system

The Ohio Department of Education's (ODE) organizational structure consists of several offices responsible for managing the state educational data. Table G1 provides contact information for ODE staff involved in the educational data system. The infrastructure for collecting and maintaining the data are managed by the Office of Information. This office maintains and updates the department's technology tools, including computer hardware, software, and Web applications. Instructions for school districts on collecting data on student performance and school district needs are provided by the Office of Data Services, which develops the Education Management Information System (EMIS) manual. There are four types of data in the EMIS: student data, staff data, district and building data, and financial data. When the state department receives data from the school districts, the Information Technology Centers (ITC) will process the data by extracting, aggregating, validating, formatting, compiling, and

TABLE G1
Key contacts for more information on Ohio's data processes and files

These data collection activities . . .	. . . are currently the responsibility of:
Education Management Information System (EMIS)	Beth Juillerat, Director of Data Services, 614-752-8368
EDEN Coordinator	Unknown
Ohio Department of Education (Operations)	Steven Burigana, Chief Operating Officer, 614-466-3763
Ohio Department of Education (Information)	Amy Andes, Chief Information Officer, 614-466-3763
Ohio Department of Education (Technology)	Gregory Davidson, Chief Technology Officer, 614-387-0339
Application development	Michael Carmack, Director, 614-466-5440
Project Management	Wendi Boggs, Director, 614-995-5928
Technical Services	Brian Brown, Director, 614-644-0706

transferring it. ITC also includes the Ohio Education Computer Network (OECN), which collects and aggregates the EMIS district data.

Contact information is collected and maintained by systems in ODE. A directory of educational institutions is maintained by the Ohio Education Directory System (OEDS). The Ohio Educational Directory System Redesign (OEDS-R) is a decentralized data system that allows organizations (e.g., public districts, public schools, community schools, nonpublic schools, etc.) to maintain their own data. OEDS is accessible to the public for the purposes of obtaining the most current information about an organization.

Key data elements

The Data Quality Campaign conducted a survey to determine which key data elements each state in the country has in its educational data system. Based on their survey, Ohio has data elements related to student demographics, student special population status, student level enrollment data, student course taking, student achievement, student special program participation, student college-readiness test scores, and student graduation and dropout data.

The remainder of this section provides an overview and highlights of student and teacher data currently collected and archived by the state of Ohio. For additional information see:

- Data Quality Campaign web site, http://www.dataqualitycampaign.org/survey_results/state.cfm?st=Ohio.
- Ohio Department of Education web sites:
    - http://www.ode.state.oh.us/GD/Templates/Pages/ODE/ODEDetail.aspx?page=3&TopicRelationID=17&Content=17172.
    - http://www.ode.state.oh.us/GD/Templates/Pages/ODE/ODEDetail.aspx?page=3&TopicRelationID=60&Content=18212
- Education Data Exchange Network (EDEN): http://www.ed.gov/about/offices/list/oig/auditreports/a11e0003.pdf)
- Information about enrollment data for public and nonpublic school districts. http://www.ode.state.oh.us/GD/Templates/Pages/ODE/ODEDetail.aspx?page=3&TopicRelationID=396&Content=17431.
- Statewide Longitudinal Data System program, conducted by U.S. DOE. http://www.ed.gov/programs/slds/index.html

Student data

Demographics. Student demographic data elements include: gender (collected first in 2000/01), date of birth, age, ethnicity (collected first in 2000/01), race (collected first in 2000/01), and

low-income status (collected first in 2002/03). All of these elements are contained in the state-wide student demographic record included in EMIS.

Also included in the student demographic record is information about the special population status of students. These data are collected with the same frequency as the demographic data and are included in the student demographic record. These elements include English proficiency status (first collected 2001/02), disability status (first collected 2000/01), economic disadvantage status (first collected 2002/03), and migrant status (first collected 2001/02).

Enrollment. Student enrollment data elements include: school in which the student is enrolled, student mobility (first collected 2001/02), and student attendance data. If a student has been enrolled in more than one district during the reporting period, each district submits a student demographic record.

Student mobility and student attendance are both contained in the Student Attendance Record included in the Education Management Information System. EMIS collects these records at the end of specified reporting periods, and manages the data.

Course-taking. Information regarding student course-taking is contained in the Student Course Record, which is included in the EMIS. A separate student course record is reported for every course in which the student is participating, and the state uses a statewide system for coding the courses. Course completion data include middle school courses taken for high school credit, summer school courses taken for high school credit, and dual enrollment courses taken from college and universities.

Special program participation. The Student Program Record contains information regarding student special program participation, including: early childhood program participation, individualized education program participation, special assistance programs, and honors programs/courses. The Student Program Record is part of the EMIS.

Achievement. The state of Ohio collects student-level test data annually. These data include the Ohio Achievement Test record, the Ohio Proficiency-Only Test record, the Ohio Ninth-Grade Proficiency Test record, the Ohio Graduation Test record, the Preschool Assessment record, the Ohio test of English Language Acquisition record, and the CTAE Student Assessment record. These test records are all stored in the EMIS. The Ohio Achievement Test record data are reported during the year-end reporting period, and test records are reported for all students enrolled during any test administration in the current school year. These tests include reading, math, science and social studies from 3rd grade to 8th grade. Test data are stored permanently by the state, and the state does collect and maintain individual records of each untested student in a tested grade. Student-level SAT or ACT exam results are not collected by the state.

Graduation and dropout data. Ohio collects data on graduation status in the Student Attendance Record. These elements include the graduation credit units and retained status. These data are collected and managed by the EMIS. Information on diplomas is found in the "diploma type element" in the Student Attendance record. The state collects annual dropout data and stores it in the Student Attendance record in the EMIS. The state also records data on the "Withdrawal/Dropout/Truancy Reason element" which provides "the reason for the most recent withdrawal from the school district."

Teacher data

Demographics. Information on teacher demographics is collected annually and is found at http://www.ode.state.oh.us/GD/DocumentManagement/DocumentDownload.aspx?DocumentID=12577. This information is stored in the EMIS, and EMIS is responsible for

collecting, maintaining and providing access to this data. These data were first collected in 1999.

Certification, qualifications, and professional development. Teacher certification, qualification, and professional development information are collected annually and can be found in the iLRC (interactive Local Report Card) at http://ilrc.ode.state.oh.us/Downloads.asp. The iLRC collects, maintains, and provides access to these data, which were first collected in 2001/02.

Mobility and attrition. Teacher mobility and teacher attrition information are collected annually and stored in the Education Management Information System (EMIS), found at http://www.ode.state.oh.us/GD/DocumentManagement/DocumentDownload.aspx?DocumentID=12577. EMIS is responsible for collecting, maintaining, and providing access to this data and has collected these data elements since 1999.

Linking state data

Ohio was awarded a $5.7 million grant in November of 2005 to build a statewide longitudinal data system. Efforts to build this system in Ohio are contingent on the ability to link data. Ohio has successfully implemented the Statewide Student Identifiers (SSIDs) system. A third party vendor assigns the unique SSID, which is a nine character identification code for each public school student within the Ohio public education system. The SSID is used for EMIS reporting purposes to retain privacy, and may not at any time be cross-walked with the data files that contain personal student-level data. Teachers are also assigned a unique statewide teacher identifier.

Data quality assurance

Ohio has several processes for ensuring the accuracy of its educational data. Districts are encouraged to review their data for accuracy before they submit data to the state via EMIS. On-site quality checks, however, are not conducted at the schools. When the state receives the district data from EMIS, statistical checks are performed and a system is used determine the accuracy of the data. Consequences are enforced on districts if their data are not validated by the state data quality assurance processes.

The state of Ohio currently has procedures in place to prevent two different individuals from receiving the same ID and also to prevent the same student from receiving a different ID when she/he changes districts. Ohio also has policies to ensure that teachers do not receive different IDs when they change districts.

APPENDIX H
WISCONSIN

Information needs assessment

Data collection and quality assurance procedures

In Wisconsin, the Department of Public Instruction (DPI) is responsible for much of the state's educational data collection, with the Information Technology (IT) team of the Department responsible for meeting the technical aspects of the state's data needs. The state occasionally contracts for various collections as well.

Data are audited in part by IT staff with help from DPI program experts, although this department believes that more auditing at the state and local level are important to improve data quality. DPI is working to maximize the efficiency of auditing efforts but resource constraints, growing federal mandates, and shorter federal time lines for submitting required data limit progress on this task. Automated validity logic checks are performed to look for missing data, invalid codes, and inconsistent relationships with other data in the system. The state education agency also checks for possible problems or areas where data quality problems may exist. If the state finds problems that are not picked up by the various groups submitting data, the state communicates with them about the issues and explains what might be happening and what might be wrong. The state also performs some site visits to determine if there are issues with data quality.

After data are collected, data are reported to the public and other stakeholders via the Wisconsin Information Network for Successful Schools (WINSS) web site. WINSS integrates data from a wide range of DPI data collections to provide a web-based version of mandated reports. But, more importantly, WINSS facilitates the use of data included in mandated collections for school improvement purposes by providing flexible graphing and download tools as well as software to facilitate the collection and use of optional data. Links on WINSS graph pages explain where the data come from, limitations, and how rates and other indicators are calculated. Much of the information presented on this web site is driven by various federal programs, including EDEN, NCLB, and IDEA. More information about WINSS is provided at http://dpi.wi.gov/sig/ppt/winssdata.ppt. A site map is available at http://dpi.wi.gov/sig/sitemap.html. The Longitudinal Data System project will integrate and enhance WINSS providing local educators with access to more data and more tools.

DPI has many separate data collections and is working to integrate these collections to more efficiently meet growing reporting mandates and to provide more useful information at the same time. Data collection goals and procedures, including various codes and data elements are documented on DPI web pages. The key student level collection is the Individual Student Enrollment System (ISES). Information about ISES is provided at http://dpi.wi.gov/lbstat/isesapp.html. The WINSS web site does not provide information about how data are collected, because it is a reporting/presentation site not a collection site.

Wisconsin also has an ongoing data dictionary project. The department has been working to obtain consistent data definitions across program areas for a decade or more and has made intermittent progress. Consistent long-term commitment of staff and resources to this task would facilitate work as this is an on-going task and a more comprehensive dictionary is needed for the integration of collection and reporting systems. DPI has hired a limited term employee with experience in the creation of data dictionaries to facilitate the planning process, but staff and money are likely to be continuing barriers to maintenance and evolution of the dictionary. This data dictionary project is described more as a business task than a technical task.

While there is a person whose job responsibilities broadly include being the "data quality coordinator," Wisconsin does not have designated staff at the state level whose sole responsibilities and

authority are related to monitoring data quality. Although there are many conversations about data quality at the state level between individuals working on various collections or aspects of data usage, personnel working on individual data collections maintain primary responsibility for the quality of those collections while at the same time juggling other responsibilities.

Defining state data needs

How Wisconsin defines data needs

Wisconsin's data needs are defined by many people, including several groups who analyze changes in state and federal laws to determine how the data collected and reported need to change to meet new regulations and rules. Formally, there is a data management steering committee that becomes involved when new data needs require changes in long-term plans, priorities, or additional resources. There are also other more "ad hoc" groups that assemble from various divisions when there are changes in requirements or new requests that do not fit neatly into any existing group. Usually, the IT section that is responsible for the technical aspects combines with people from program areas who need the data to determine collection and reporting needs, define data elements and collection categories, create automated business rules and warnings, and generate reports.

Wisconsin also tries to involve as many stakeholders as possible in defining data requirements and needs. Ideally schools, communities, advocacy groups, other state agencies, and other governmental jurisdictions are involved, all of whom might be interested in using the data and relating it to their own information. Wisconsin considers the interests of these groups when defining state data needs. Developing and implementing plans to maximize access to, and usefulness of, data for all stakeholder groups is a DPI goal (see Guiding Principles http://www.dpi.wi.gov/lbstat/isesprinc.html), but one that is difficult to achieve due to growing federal mandates and state/district resource constraints.

Information and data priorities

A key goal for Wisconsin in terms of using educational data is to make it available and accessible to educators and other stakeholders who work to improve student achievement and the educational experience. Beyond understanding student needs, Wisconsin wants to help people understand which courses of action might help address those needs and improve outcomes. This includes developing ways to present data that will assist in determining whether students are making progress, and ideally to connect interventions with student achievement. Such work can only be achieved in the context of reporting mandates, a primary goal of the department.

Wisconsin's data currently can address questions about student progress and achievement, and make comparisons across groups. The state also would like to be able to link interventions with student progress and improvement, but DPI currently does not collect data on interventions. Some Wisconsin educators would like to make intervention data an optional submission so that local educators can more efficiently discuss the effectiveness of past interventions and make on-going adjustments accordingly.

The remainder of this section reviews the kinds of questions the state of Wisconsin would most like its educational data to address in the short-term and looking further to the future, and highlights the information needs that senior state education agency officials currently consider to be particular priorities. Existing challenges which may affect the state's ability to achieve these objectives moving forward are discussed below.

Establishing benchmarks. Comparing Wisconsin's progress with other states and with the nation overall is of interest to the agency if comparable data are readily available. A high priority question for Wisconsin, and one that is currently being addressed, is how various subgroups or subpopulations within the state are performing. The agency has been aggregating and disaggregating data by population subtype for the last ten years.

Tracking progress. Wisconsin began collecting grade-level enrollment data with unique student identifiers in fall 2004 as part of the Individual Student Enrollment System (ISES). This system tracks movements of Wisconsin students from school to school and district to district and is used to identify students as dropouts or graduates. Implementation of ISES continues to be a major challenge for DPI and school districts because, until 2004, Wisconsin did not have a statewide student level data collection and students did not have state identifiers.

A current priority is obtaining information on postsecondary transitions, although this may not be feasible for several more years given other more pressing needs coming from EDEN and IDEA. While the state would like more and better information on a variety of topics, many of its resources are currently being expended to provide information required under federal law.

A major resource constraint for collecting and reporting postsecondary or other data is the need for more staff, especially in the IT area. Even if money is available to hire consultants, agency staff must be available to train consultants on operations within the department and to maintain and modify systems and tools developed by consultants. Consulting in IT might still be helpful, however, in terms of developing more efficient ways of connecting, reporting, and using information.

Wisconsin collects some curriculum data about course offering and course taking, but these data are not always reliable or complete. With respect to curriculum data needs, the state has created a resource called the Curriculum Resource Center (http://www2.dpi.state.wi.us/sig/practices/high_2.asp) that provides access to thousands of high quality MarcoPolo classroom activities, lesson plans, etc. aligned with national standards. The department spent considerable effort in the recent past aligning MarcoPolo lesson plans, etc., with state standards, which enables teachers to pull up lessons in specific subject content areas by grade level. Currently, it is challenging to update the database regularly given personnel constraints. Such staffing issues are not easily solved by outside hiring since knowledge of the Wisconsin academic standards is required.

Documenting outcomes and their causes. Wisconsin is interested in documenting specific outcomes related to areas such as academic achievement, drop out rates, and transitions to postsecondary education. Many of these types of questions have already been addressed and are reported on the WINSS web site. Obtaining data on transitions to postsecondary education, while of high interest, presents more of a challenge. Wisconsin now only collects aggregate data on post-graduation intentions, and limited surveys are conducted to collect more information as required.

Another area of interest is to find ways to monitor outcomes more frequently and more locally for teachers and school staff. Ideally, the state would like local educators to use on-going formative assessments so that teachers can actually adjust lessons as learning is happening rather than at the end of the year. This sort of system might be designed more as an optional resource for educators, and be incorporated into tools for instructional teams. Wisconsin also seeks to answer questions about how to use time and money more efficiently in districts, schools, and classrooms.

Enhancing capacity to use existing data resources. Additional staff and long-term funding would allow Wisconsin to develop and maintain systems for using data more effectively. Training in data use at the state level is currently sporadic and informal due to a lack of staff time and resources.

Understanding state data challenges

Wisconsin's educational data system already has made important impacts. There is less reliance on anecdotal information and more reliance on whatever factual information is available to help guide discussions and focus plans. A variety of stakeholders are developing a genuine interest in having

and using education data, and the state is working to provide information necessary to make better informed decisions. However, current data collection and reporting requirements more than use up available resources. The state is working to meet competing deadlines and must reprioritize work on a daily basis. Although agency staff are well aware of issues associated with collecting, reporting, and analyzing data, it can be challenging to attend adequately to all of them. Staff turnover is a challenge as well since departing permanent staff generally have no backups and funds may only be available to hire temporary employees. Additionally, it would be helpful if the state received assistance in data quality and analysis since current staff are focused on data collection requirements and assisting districts with required reports.

Wisconsin seeks to have faster turnaround of statewide test data and for that data to provide more information about students' needs within a subject area. Other challenges facing the state include:

- There is a lack of time and staff to meet federal reporting requirements even as these continue to grow. Wisconsin is working to address these challenges and has made substantial progress (e.g., adding a unique statewide student identifier—with invaluable support in the planning stages from ESP solutions—and implementing its first statewide student level data collection.). Concerns were expressed, however, that additional requirements can overtake whatever progress has been made. The state would benefit from a secure funding stream to hire permanent staff able to maintain new systems (once grants have expired).

- Inconsistencies in data definitions present a problem for Wisconsin, although the state has made substantial progress in eliminating such inconsistencies. A comprehensive data dictionary is needed. DPI has hired an LTE to assist with the planning process. Plan implementation and maintenance of the dictionary are likely to suffer from insufficient staff and other resources.

- Labels, definitions, and collection/reporting categories are often modified to comply with changes in the law or for other reasons. Such modifications can cause confusion, data quality problems, and the loss of some longitudinal information not to mention the expense of reprogramming. Wisconsin is working to alleviate this problem by making stakeholders aware of the ramifications involved in making these types of modifications. Resources that have been helpful in this regard include the national Data Quality Campaign and the EDEN initiative which promotes consolidation of data collection requirements across federal programs.

- Inconsistencies in coding procedures are a recurring problem as changes in data collection and/or reporting requirements may necessitate adding or splitting codes. The state is aware of these issues and addresses associated problems.

- Like other states, Wisconsin has experienced problems coordinating the collection of related information as state and federal agencies often have conflicting deadlines for collecting required data and may request very similar types of data.

- Wisconsin is fairly consistent in its treatment of missing data but has more missing data than the department would like, often because districts are unable to meet reporting deadlines. The state made the transition from having almost all aggregated data to student level data in a very short period of time, and some districts are still struggling with this transition even as timelines become increasingly rigid.

- Data entry errors are a problem for the state. Wisconsin continues to develop automated systems that are able to flag data entry errors; however, schools are burdened with responding to error and warning messages that the system produces in order to complete collections, which in turn creates a burden for agency help-desk staff.

- Wisconsin makes every effort to meet reporting requirements and requests for data from individuals who want to use it for studies or publications, although the agency cannot always respond to more informal requests in a timely fashion. Wisconsin has made a wide range of redacted data files available for download. The Data Quality Campaign's initiative to coordinate data requests across partner organizations has helped reduce the number of data requests. Concerns remain about maintaining privacy in accordance with state and federal laws.

Opportunities and challenges of linking data

Wisconsin has made substantial progress in linking data and matching data sets, particularly via the recent implementation of a statewide student numbering system. The department has also created a consistent list of schools with a consistent set of codes across program areas in order to facilitate the matching of databases and records. As noted above, the data dictionary project is in the planning stages and would benefit from outside expertise and internal staff dedicated to this process. When completed, this data dictionary will be made publicly available.

State data inventory

Wisconsin's educational data system

The Wisconsin Department of Public Instruction "collects a wide range of statistics and program data from the educational and library communities to meet State and Federal legislative requirements" (see http://dpi.wi.gov/lbstat/data.html). The introduction to the "Data" section of the DPI web site provides links to forms used in data collection, "web sites for data submission," "supporting documentation and instructions," an "extensive array of reports on student performance, demographics, special education, teachers and staff, finance, public libraries, and school performance" and other information (see http://dpi.wi.gov/lbstat/data.html).

All data collections authorized by the DPI are included in the *Data Collection Plan*, a "planning document and reference tool" that "lists recurring forms . . . authorized for collection to meet the needs of programs" that the DPI administers (see http://www2.dpi.state.wi.us/datacoll/StSupt.htm; http://www2.dpi.state.wi.us/datacoll/default.asp).[1] At the time of writing, the DPI *Data Collection Plan* provided information on 363 collections including those whose usage is internal ("used only within DPI"), local ("distributed by DPI for local use only and not returned to the DPI"), and external ("sent outside DPI to be completed and returned to the department") (see http://www2.dpi.state.wi.us/datacoll/AboutPub.htm). Lists of sets of forms meeting specific search criteria (e.g., generated by keyword or primary respondent searches) provide key summary information for each collection, including: form number and title, due date(s); primary respondent; and the division, team/program, and names and telephone numbers of key DPI contacts. In many cases, links to electronic versions of print-only forms and/or electronic fillable forms are also provided; other data collections employ "full-blown web applications that use defined programming codes to activate an action."[2]

The DPI Library and Statistical Information Center's web pages are another source of detailed information on Wisconsin education data collections.[3] From the Center's home page, visitors to the DPI web site can access a "Data Collection Reporting Schedule" and descriptions of and links to other DPI Library and Statistical Information Center services and resources. Other valuable sources of information include DPI's descriptions and documentation of:

- The Individual Student Enrollment System (ISES), which enables districts and schools to provide the "student demographic and outcome data needed to meet the ESEA [Elementary and Secondary Education Act] report card requirements at the state, district, and school levels" via file upload or on-line data entry (see http://dpi.wi.gov/lbstat/isesapp.html).

Wisconsin school districts began to participate in the ISES in the 2004-05 school year (see http://dpi.wi.gov/lbstat/ises_5ws.html).

- The Wisconsin Student Number Locator System (WSLS) which is used "(1) to assign new Wisconsin Student Numbers (WSNs) to students entering Wisconsin Public Schools, (2) to help ensure that the WSNs stay with students as they move from school to school and district to district, (3) to update WSLS data such as when students exist a school or when data used for matching change (e.g., legal name, guardian), and (4) to correct errors in WSLS birthdates, spellings, etc." (see http://dpi.wi.gov/lbstat/wslsapp.html).

- The Wisconsin Student Assessment System (WSAS), which "includes both regular assessments taken by nearly all students and alternate assessments taken by certain students with limited English proficiency or disabilities" (see http://dpi.state.wi.us/oea/wsas_intro.html).

- The School Performance Report, including the May 2006 version of the 2005-2006 *School Performance Report Data Definitions and Directions* (available online at http://dpi.wi.gov/spr/doc/sprdir06rev2.doc), and the May 2004 version of the School Performance Report Glossary (online at http://dpi.wi.gov/spr/doc/sprgl04.doc).

Key data elements of Wisconsin's educational data system are summarized and reported by the Department of Public Instruction on the agency web site at http://dpi.wi.gov/index.html.

The DPI Library and Statistical Information Center's home page provides links to information on the School Performance Report, and statistical data and reports available from the Department of Public Instruction Statistical Information Center (http://dpi.wi.gov/lbstat/statpg.html). In addition, most of the data collected by DPI are available on the Wisconsin Information Network for Successful Schools (WINSS) pages. WINSS is an electronic resource that has been created "to help educators, parents, and community members who have an interest in educating the hearts and minds of all children. The Standards and Assessment, Data Analysis, Continuous School Improvement, and Best Practices sections guide users to key local, state, and national information about success in education as found on the DPI web site and other valuable resources" (see http://dpi.state.wi.us/sig/index.html). This web site was created through a partnership of the North Central Regional Educational Laboratory (it was noted that without the NCREL partnership, WINSS would not exist), the Office of the Governor, and the Department of Public Instruction (DPI).

WINSS data files are created using data stored (in Oracle tables) at DPI. There are five student demographic elements, four student special population status elements, four student-level enrollment data elements, one student course-taking element, three student achievement elements, three student special program participation elements, two student college-readiness exam score elements, and three student graduation and drop out elements. WINSS also provides information on teacher certification and qualifications and some information related to teacher professional development.

Additional information on ISES, WINSS, WSAS, WSLS, the work of the Division for Libraries, Technology, and Community Learning (including the Library and Statistical Information Center), and other key data reporting activities is available online, and from the individuals listed in table H1.

Key data elements

This section provides an introduction to student and teacher data currently collected and archived by the state of Wisconsin. Additional information on data collection and reporting of specific data elements is available online (see the listing of data elements included in the ESEA Data Site Map, at http://dpi.wi.gov/lbstat/eseamap.html).

TABLE H1
Key contacts for more information on Wisconsin's data processes and files

These data collection activities . . .	. . . are currently the responsibility of:
EDEN Coordinator	Tiffany Boyd (608) 267 9162 tiffany.boyd@dpi.state.wi.us
Individual Student Enrollment System (ISES)	Tiffany Boyd (technical and support) (608) 267 9162 tiffany.boyd@dpi.state.wi.us Jean Whitcomb (content) (608) 266-2937 jean.whitcomb@dpi.state.wi.us
Wisconsin Department of Public Instruction, Division for Libraries, Technology, and Community Learning Library and Statistical Information Center	Richard Grobschmidt Assistant Superintendent (608) 266 2205 richard.grobschmidt@dpi.state.wi.us Roslyn Wise (608) 266 6439 Roslyn.wise@dpi.state.wi.us Kay Ihlenfeldt Team Leader (608) 266 3108 kay.ihlenfeldt@dpi.state.wi.us Barb Ballweg Education Statistics Coordinator (608) 266 1730 barbara.ballweg@dpi.state.wi.us
Wisconsin Information Network for Successful Schools (WINSS), Data Analysis	Jean Whitcomb (608) 266-2937 jean.whitcomb@dpi.state.wi.us
Wisconsin Student Assessment System (WSAS)	Office of Educational Accountability oeamail@dpi.state.wi.us
Wisconsin Student Number Locator System (WSLS)	Jean Whitcomb (608) 266-2937 jean.whitcomb@dpi.state.wi.us

Student data

Demographics. Public school districts supply WSLS with key demographic information, including student gender, race, and birth date (see http://dpi.wi.gov/lbstat.datawsn.html). Additional demographic and student special population status information is collected via the ISES, including beginning in fall 2005 a 'long-term US student indicator,' migrant status, and Section 504 status (to indicate students with "a physical or mental impairment covered under Section 504 of the Rehabilitation Act"; see http://dpi.wi.gov/lbstat/datawsas.html). Also available online is detailed information on data collection and reporting of: racial/ethnic group and gender (see http://dpi.wi.gov/lbstat/dataracgdr.html#gender); economically disadvantaged status (see http://dpi.wi.gov/lbstat/dataecon.html); English language proficiency (see http://dpi.wi.gov/lbstat/ddataelp.html), and the "major or overriding disability condition that best describes an IDEA-eligible student's impairment" (primary disability; see http://dpi.wi.gov/lbstat/datadisab.html).

Enrollment. The Individual Student Enrollment System (ISES) replaced the PI-1290 Fall Enrollment Collection in 2004/05 (with counts of economically disadvantaged students based on the October DPI School Lunch Collection and counts of English language learners based on the LEP data collection through 2004/05). Prior to the 2004/05 school year, enrollment counts were based on data obtained in the PI-1290 Fall Enrollment Collection (the October DPI School Lunch Collection for counts of economically disadvantaged students, the LEP data collection for counts of English language learners, and the PI-2197 Federal Student Data Collection for counts by disability). Included in these counts are students enrolled in "all public schools required by law to submit School Performance Report data," including "schools operated by districts . . . and nondistrict charter schools." As "nearly all these requirements apply only to public schools" the Department of Public Instruction "has very little data about private schools" (http://www.dpi.wi.gov/spr/demog_q&a.html). Available online is detailed information on data collection and reporting of: school enrollment and exit dates (see http://dpi.wi.gov/lbstat/dataenroll.html); grade level placement data collection and reporting (see http://dpi.wi.gov/lbstat.datagrade.html); the schedule of the educational program in which a student is enrolled (program schedule, see http://dpi.wi.gov/lbstat/datasched.html); attendance collection and reporting (see http://dpi.wi.gov/lbstat/dataattend.html); and the circumstances under which students exit from schools (exit type; see http://dpi.wi.gov/lbstat/dataexit.html).

Course-taking. Local school districts submit data on course offerings in a Course Offerings Report, also referred to as the Curriculum Report, (PI-1215); these data can be used to provide information on course taking patterns (see http://dpi.wi.gov/spr/course_q&a.html). Information collected via the Course Offerings Report include: "the total number of different courses offered for Advanced Placement (AP), Cooperative Academic Partnership Program (CAPP), and SPR Advanced Coursework"; enrollments under listed course titles (including Advanced Placement courses, foreign languages, mathematics and science) and enrollments by subject area in CAPP programs allowing students "to take college-level courses and receive college credits"; foreign language instruction offered in grades kindergarten through five; high school graduation requirements; part-time open enrollment; and youth options (see http://dpi.wi.gov/apps/doc/1215inst06.doc). PI-1215 can be accessed (a print-only form can be downloaded) online via http://www2.dpi.state.wi.us/datacoll/PInum.asp; 2005/06 instructions for completing the report are also available online (at http://dpi.wi.gov/apps/doc/1215inst06.doc).

Special program participation. The Special Education Team (in the Division for Learning Support: Equity and Advocacy) "collects and processes data on students in special education programs in response to federal requirements. This includes the unduplicated child count, implementation of FAPE [free appropriate public education] report, the student exiting report, the discipline and the personnel reports" (see http://dpi.wi.gov/sped/cc_data.html). Both the ISES and the Federal Student Data Report (Child Count) collect student-specific data; "other state special education programming data comes from the Local Performance Plan submitted by each school district in Wisconsin, the School Performance Report, and through surveys," (http://dpi.wi.gov/sped/dm-speceddata.html). Data definitions for the IDEA Federal Student Data Report (PI-2197) for the 2006/07 school year are available online (at http://dpi.wi.gov/sped/doc/ccinstr07-dd.doc). An 'educational environment' field (reflecting "the extent to which students with disabilities are educated with their nondisabled peers") "will be collected on an optional pilot basis in 2006/07 ISES Count Date records in preparation for possible consolidation of the PI-2197 (Child Count) and WSLS/ISES in 2007/08." The educational environment field "will be required in 2007/08 ISES Count Date records for students with disabilities." For additional information on this field, see http://dpi.wi.gov/lbstat/dataenvir.html.

Achievement. The Wisconsin Student Assessment System (WSAS) is one mechanism through which "students demonstrate their progress toward achieving the academic standards in English language arts, mathematics, science, and social studies." Currently the system "includes both regular assessments taken by nearly all students and alternative assessments taken by certain students with limited English proficiency or disabilities" (see http://dpi.wi.gov/oea/wsas_intro.html).

From (spring) 1989 to 2005, third-graders' reading comprehension was assessed by the Wisconsin Reading Comprehension Test (WRCT) (see http://dpi.wi.gov/oea/wrct3.html). Beginning in Fall 2005, Wisconsin Knowledge and Concepts Examination—Criterion-Referenced Tests (WKCE-CRT) replaced the WRCT and WKCE reading and mathematics tests. Student performance on the WKCE-CRT "is reported in proficiency categories and used to determine the adequate yearly progress of students at the school, district and state levels" (http://dpi.wi.gov/oea/kce.html). Included in these standardized tests are "commercially-developed questions used in schools across the country and questions developed specifically for Wisconsin in order to improve coverage of Wisconsin academic standards. The WKCE-CRT measures achievement in reading, language applications, mathematics, science, and social studies using multiple-choice and short answer questions. Students also provide a rough draft writing sample. Total WKCE-CRT test time varies by grade and may range from 5 to 8.5 hours" (see http://dpi.wi.gov/oea/kce.html).

The resulting information on how Wisconsin students are performing academically can be viewed graphically (and the associated raw data can be downloaded) via WINSS (e.g., http://data.dpi.state.wi.us/data/graphshell.asp?ORGLEVEL=ST&FULLKEY=ZZZZZZZZZZZZ&DN=None+Chosen&SN=None+Chosen&GRAPHFILE=GEDISA). Other useful online sources for understanding and using WSAS data include the WINSS Similar Schools/Districts tool (http://www.dpi.state.wi.us/winss/similar.html), the WSAS Scatterplots (http://www.dpi.wi.gov/winss/kcescatter.html), and On-line Reporting System (password-protected reports at http://dpi.state.wi.us/oea/doc/wkce-crt_wsas_trnr_manual.doc).

Other student performance indicators that can be accessed via WINSS include retention rates, and performance on college admissions (ACT) and placement (Advanced Placement Program) tests (see http://data.dpi.state.wi.us/data/performance.asp?fullkey=ZZZZZZZZZZZZ&DN=None+Chosen&SN=None+Chosen&TypeCode=0&ORGLEVEL=ST). Detailed information on ACT and AP examination data available via WINSS (including the source and cautions regarding the use of the data) is available online at http://www.dpi.wi.gov/spr/colleg_q&a.html. Additional information on educational assessment in the state of Wisconsin is available online from the Department of Public Instruction's Office of Educational Accountability (OEA, at http://dpi.wi.gov.oea/assessmt.html).

Graduation and dropout data. Wisconsin collects student-level high school completion data, including by credential type (graduates are students who received regular diplomas), and student-level drop out data. This information is collected annually and is stored in Oracle tables at DPI. WINSS provides access to this data (e.g., high school completion rates, overall and by type of credential, at http://data.dpi.state.wi.us/data/graphshell.asp?Group=AllStudentsFAY&GraphFile=HIGHSCHOOLCOMPLETION&STYP=9&DETAIL=YES&CompareTo=PRIORYEARS&ORGLEVEL=ST&FULLKEY=ZZZZZZZZZZZZ&DN=None%20Chosen&SN=None%20Chosen&TQSUBJECTS=SUMALL&TQSHOW=LICSTAT&RelateToTQS=EconomicStatus&DISABILITY=APD&HSC=ALL&TypeCode=0; drop out rates over time at http://data.dpi.state.wi.us/data/graphshell.asp?GRAPHFILE=DROPOUTS). Also available online is detailed information on high school completion credentials data collection and reporting for 2003-04 and beyond (at http://dpi.wi.gov/lbstat/datahsc.html).

Teacher data

Staff data are collected annually via the Fall Staff Report (PI 1202). As described in the Data Definitions and Instructions for the 2004/05 school year Fall Staff Report (available online at http://dpi.wi.gov/lbstat/doc/1202doc05.doc), information reported in this data collection includes: staff employed by reporting agencies as of the third Friday in September; staff assignments; gender; year of birth; race; highest degree; years of experience (within the district, and in total); and salary information. Links to a variety of information regarding the Fall Staff Report are available on the online Data Collection Reporting Schedule (at http://dpi.wi.gov/apps/schedule.html). Links to information on staff, teacher, and program data available at DPI are available at http://dpi.wi.gov/sig/dm-stafftchr.html. Other useful online sources for understanding and using teacher data include "Understanding Data About Teacher Qualifications" (at http://dpi.wi.gov/spr/teach_q&a.html), and "Questions to Consider When Using Teacher Data" (at http://dpi.wi.gov/spr/teach_use.html).

Optional perceptions data tools

District and school users may choose to collect and report perceptions data using WINSS tools (see http://dpi.wi.gov/sig/improvement/process.html). Most of these tools were developed with the support of NCREL. Some samples of these surveys are provided at http://goal.learningpt.org/winss/sample.htm, http://goal.learningpt.org/winss/scs/sample.htm, and http://goal.learningpt.org/winss/staff/sampques.asp. WINSS also includes an optional school improvement planning tool that helps local educators identify priorities and develop a school improvement plan through discussion and analysis of optional and mandated school data on WINSS (http://goal.learningpt.org/winss/sip/).

Linking state data

Key to the Individual Student Enrollment System was the development of the Wisconsin Student Number Locator System. The WSN is "a unique, unduplicated number . . . intended to be the student's sole identifier throughout his or her PK-12 experience. Parents cannot opt their child out of being assigned a number in the system. . . . Districts use Wisconsin Student Numbers (WSNs) instead of names to submit data about student educational progress, such as attendance, grade level placement, dropout, graduation credentials, or acquisition of English proficiency, in addition to demographic data necessary to meet mandated disaggregation requirements," (see http://dpi.wi.gov/lbstat/datawsn.html).

The WSN provides "opportunities for the consolidation of data collections so that more information and public reports can be created with less data allowing educators to spend more time and money on serving students and less on data collection than would otherwise be required" (see http://dpi.wi.gov/lbstat/wslsdupl.html). Wisconsin also assigns unique teacher identifiers. These are updated annually for new teachers and have been in place since 2005/06 (see http://www.dataqualitycampaign.org/survey_results/state.cfm?st=Wisconsin). Currently records cannot be matched across students and teachers.

Wisconsin has procedures in place to prevent two different individuals from receiving the same unique ID and to prevent the same student from obtaining/receiving a different ID when she/he changes districts; Wisconsin also has procedures to ensure that a teacher does not have two different IDs and that two teachers do not have the same ID (see http://www.dataqualitycampaign.org/survey_results/state.cfm?st=Wisconsin). For additional information on the state's education data quality assurance procedures, see pages 58–59.

Longitudinal data decision supports

Wisconsin is the recipient of a U.S. Department of Education Statewide Longitudinal Data System grant to "create a longitudinal data decision support tool kit that will facilitate knowledge-based curriculum, assessment, and school operational decisions to improve education effectiveness and

delivery" (see http://nces.ed.gov/Programs/SLDS/PDF/wisconsinabstract.pdf). Working in collaboration with the Wisconsin Center for Education Research and the Departments of Education in Minnesota and Michigan, the Department of Public Instruction is working to "develop a comprehensive data system to meet new federal, state, and local reporting requirements for schools" (see http://dpi.wi.gov/eis/pdf/dpi2005_154.pdf). Additional information about the proposed program of work is available from the U.S. Department of Education's Institute of Education Sciences (see http://nces.ed.gov/Programs/SLDS/stateinfo.asp).

Notes

1. As described in the Wisconsin Department of Public Instruction's Data Collection Plan, "all data collections which are to be distributed to anyone outside of Wisconsin state government by or under the sponsorship of the Department of Public Instruction must be submitted for review and authorization prior to planned distribution," (http://www2.dpi.state.wi.us/datacoll/AboutPub.htm). From the "Data Collection and Forms" page on the DPI web site (http://dpi.state.wi.us/dltcl/dm-datasubmission.html) a variety of information about the Plan can be accessed, including: a message from the State Superintendent; background information about the publication; help in viewing the Plan; and a list of frequently asked questions (see http://www2.dpi.state.wi.us/datacoll/default.asp). From the latter page it is also possible to view the entire list of data collections for the DPI, and to search and view collections for a particular DPI team/program, by keyword, by primary respondent, by month due, by form number, or by form type (including survey/questionnaire, sample forms, and miscellaneous forms).

2. The DPI was the "first [Iowa] state agency to make use of electronic data reporting"; its web-based collections "require on-line completion and submittal" and may "include database integration whereby submitted data is saved to a server database," (see "Frequently Asked Questions" at http://www2.dpi.state.wi.us/datacoll/WebHelp/DCP_FAQ.htm and "From the State Superintendent" at http://www2.dpi.state.wi.us/datacoll/StSupt.htm).

3. The mission of the Library and Statistical Information Center, "a combined effort of the Wisconsin Department of Public Instruction's Professional Library and Statistical Information Center," is "to provide accurate information about children, schools, school districts, public libraries and education" (http://dpi.wi.gov/lbstat/).

APPENDIX I
INSTRUCTIONS FOR ACCESSING THE STATE DATA INVENTORIES

Access to the state data inventories will be provided through a password-protected web site being established at Michigan State University. State education agency officials seeking credentials to access this web site should contact the Office of the John A. Hannah Chair in the College of Education at Michigan State University (517 432 0300).

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