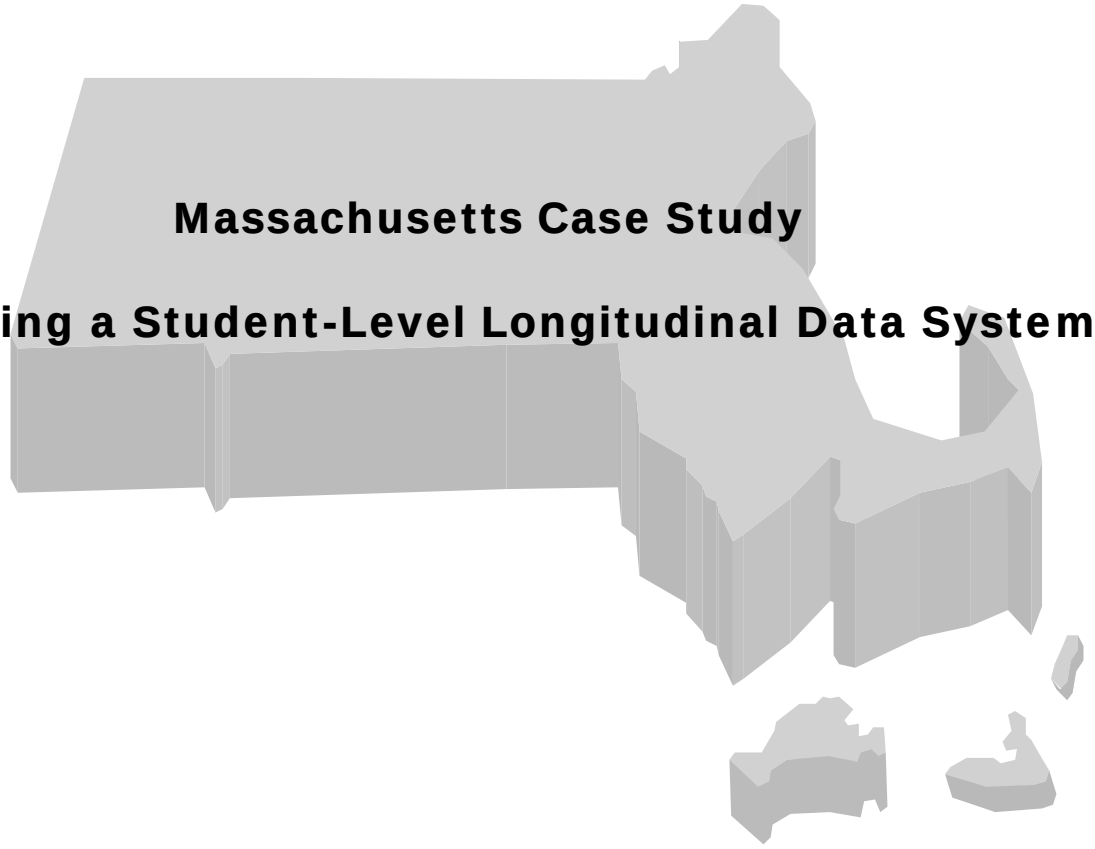
DATA QUALITY CAMPAIGN

Using Data To Improve Student Achievement



# Massachusetts Case Study

# Building a Student-Level Longitudinal Data System

Data Quality Campaign

November 2007

The Data Quality Campaign (DQC) is a national, collaborative effort to encourage and support state policymakers to improve the collection, availability and use of high-quality education data and to implement state longitudinal data systems to improve student achievement. The campaign aims to provide tools and resources that will assist state development of quality longitudinal data systems, while also providing a national forum for reducing duplication of effort and promoting greater coordination and consensus among the organizations focusing on improving data quality, access and use.

To help states learn from one another, DQC staff visited state education agencies which are engaged in different stages of development of their longitudinal data systems. In 2006, staff visited Florida, Utah, Virginia and Wisconsin; 2007 meetings were held in Massachusetts and South Carolina. The DQC will continue to highlight specific state efforts to develop and use longitudinal data systems, and will conduct additional case studies in 2008.

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# Massachusetts: Connecting the Dots

The Massachusetts Department of Education (MDOE) oversees 389 school districts and 59 charters, encompassing over 1,800 schools in which over 960,000 students were enrolled in the 2006-07 school year.

As of the 2007 Data Quality Campaign (DQC) annual survey of state longitudinal data systems, Massachusetts has implemented eight out of ten essential elements. The only elements the state has not implemented include the ability to connect teacher and student data together and a system to track which courses students take along with their completion status (e.g., grade or pass/fail status) in those classes.

## History

In 1993, the Massachusetts Education Reform Act (MERA) was enacted, leading to the development of statewide learning standards (the Curriculum Frameworks) and the Massachusetts Comprehensive Assessment System (MCAS).

Development of the statewide Student Information Management System (SIMS) was begun in 1998-99 with the first data collection in fall of 2001. SIMS was a direct result of MERA and provides a secure portal for districts to transmit data to the MDOE on individual students, using unique student identifiers. SIMS data elements are added and refined as reporting requirements evolve.

Teacher Information Systems: In 2002, the state launched the Educator Licensure and Recruitment System (ELAR), a web-based system that allows current and prospective Massachusetts educators to complete most licensure-related transactions on the Internet. The Educator Personnel Information Management System (EPIMS) is in the pilot stage, with statewide implementation currently planned for Fall 2007. EPIMS will replace the aggregate data collection on personnel currently employed in public education with individual educator information. EPIMS includes state-assigned educator identification numbers, multiple descriptors including the Highly Qualified status required under No Child Left Behind (NCLB), and a protocol to collect, define and link educators to the roles they perform and classes they teach. EPIMS incorporates the National Center for Education Statistics (NCES) course codes, with districts mapping courses taught to the NCES codes.

State Data Warehouse: MDOE maintains a database of itemized student responses to the MCAS and Massachusetts English Proficiency Assessment (MEPA). An Enterprise wide Education Data Warehouse, in the pilot stage, links individual student data to MCAS and MEPA assessment data. Plans call for the data warehouse to provide the infrastructure for teachers, administrators and policy leaders to be able to combine and analyze datasets that are not currently connected.

An additional ongoing effort involves a SIMS data exchange with the state's Board of Higher Education data warehouse to populate a K-16 database and ultimately, PK-16. The Department of Education has provided data on four graduating classes to the Board of Higher Education that has been matched to student records at public higher education institutions. The resulting analyses were recently shared with policy makers to highlight the relationships between high school and college performance. To date, data has only been shared from K-12 to higher education; the K-12 data system has not received data back from higher education.

## Current Developments

In FY08, the state legislature provided, and new administration supported, $5.2M in the state budget for Information Services and Technology/ This is a significant increase from the $700,000 received in FY07.

In March 2007 the MDOE applied for, but did not receive, a grant from the Institute of Education Sciences (IES) of the United Stated Department of Education (USDE) to complete the foundation for the Massachusetts Education Data System for Improving Student Success (MA-EDSISS). The objectives of this initiative are to:

- link students in SIMS to their assigned classes and then to EPIMS to create a complete student (including performance) to class to teacher connection
- complete critical functionality in ELAR (educator licensure), including incorporating educator item responses on the Massachusetts Tests for Educator Licensure (MTEL)
- fully link ELAR (educator licensure) to EPIMS (educator employment) to improve the accountability and effectiveness of the licensure procedures and enable districts to ensure that licenses of employed educators are current and course assignments are appropriate
- assign educator identifiers to individuals at the beginning of their career path to enable research leading to more informed policy decisions on educator recruitment, preparation, development, mobility and retention
- coordinate and improve data collections by streamlining procedures, increasing compatibility, and strengthening business rules to decrease data collection burden and increase the efficiency and validity of all data collection systems
- conduct a feasibility study on moving from periodic data collections to a more continuous data stream and, consequently, more timely information

Since MA was not awarded one of the IES grants, there are three key areas that are at risk of being delayed or not completed:

1. Development of a course completion system for students with the ability to connect student and teacher data;
2. Staff identifier – the goal was to assign a staff identifier (ID) as soon as people enrolled in a teacher preparation program and/or upon taking the licensure test, but the ID will continue to be assigned when the teacher joins the district; and
3. MDOE will be unable to conduct a feasibility study for implementing the Schools Interoperability Framework Association standards.

### *Implementation Challenges – staffing and funding*

Almost all of the development and maintenance work for these data systems is done in-house by the Information Services (IS) and Information Technology (IT) staff, since resources are generally not available to hire corporate vendors. The ability of the staff to produce useful systems and reports is substantially enhanced when project managers are available to oversee the work.

IS staff currently spend the majority of their time on federal mandates, with the remainder spent on *ad hoc* requests. The ability of the department to analyze and report the data on behalf of their stakeholders is hindered by the volume of the *ad hoc* requests, a situation that is anticipated to be eased by the enterprise education data warehouse and staffing a research and evaluation office within the MDOE.

The majority of EPIMS development has been accomplished with funds provided by state technology bonds. Although Bond money was stalled for much of FY07, additional Bond funds were provided to continue the statewide implementation of EPIMS.

Although there has been transition at the Governor and Commissioner level in MA, leadership within the MDOE is committed to the continued development of the data systems.

## Costs of Building, Managing and Updating Massachusetts' Longitudinal Data System

***Estimated costs to the state***: As always, the answer to the question of costs is a complicated one.

- The IS/IT department consists of 60+ staff. Although estimated costs of $4 million a year are incurred by the department, the allocated operating budget over the past five fiscal years was approximately $700,000 a year. To make up the shortfall, other MDOE program areas and sections are charged for work done on their behalf by IS/IT. This practice covers some costs, but it takes away from time on IS/IT-specific projects which adds another cost. As mentioned previously, IS&T was appropriated $5.2M in the state budget for FY08.For SIMS, the state currently has a contract with one consultant to oversee the implementation of changes to the data elements. The costs of maintaining the infrastructure of the system are separate. The costs of technical assistance to districts during the change process are spread out over the staff, as are the variety of other tasks associated with this effort.
- EPIMS development was begun with approximately $1 million in funds generated through IT bonds. An additional $1 million has been provided to complete the development and support statewide implementation. A portion of the EPIMS effort is supported by a grant from the National Governors Association (NGA).
- The data warehouse initiative was started with a competitive bid on a pilot project in early 2005. After exploring the experiences of other states and seeking a proof of concept for use by the department, MDOE selected Cognos as the vendor. The state legislature subsequently provided $5.5 million for this effort. This amount paid for a statewide license for the state department, all district and school staff, and policy makers, and the remainder supported three contractors and two state employees. The department plans to pay for maintenance of the system. Districts are expected to cover their own costs for training, consulting and professional development. Competitive two-year Title II, Part D grants (Enhancing Education Through Technology or Ed Tech grants) from the USDE have been targeted to districts that are interested and ready to participate in the data warehouse initiative.
- The state purchased a right-to-use license for districts to have access to assessment data (via TestWiz, a product of Datametrics). The cost, including training, is approximately $400,000 a year.

***Estimated costs to districts:***

Staff in two districts of varying sizes were interviewed for this report. Both agreed that it is hard to estimate costs associated with improvements in the state data system.

- Many costs are absorbed by the district, particularly personnel costs, or are sometimes absorbed by the district's vendor.
- One large district estimated that they had 2 human resources staff and one data director each spend about 150 hours on work related to the EPIMS system.

- Annual costs for service contracts and maintenance contracts in that district run approximately $500,000.

### Comments from districts

- Continue to involve districts in planning and pilot phases of development. Seek involvement of a variety of districts (in terms of size, geography, technology, etc.)
- If possible, provide even $5,000-10,000 to each district for human resources, hardware or software expenses. While it is only a small amount of the cost to a district, it will help things move forward and promote goodwill.
- Allow plenty of time for districts and districts' vendors to make changes to data systems prior to state data collections.
- Provide training and ongoing communication to district and school personnel in the form of online materials, in-person training, Frequently Asked Questions (FAQs), and ongoing email announcements about upcoming changes and interim solutions.
- Completion of the data warehouse will help districts in many ways, especially in getting data back in more useable formats. In the current system, districts indicate that it is not always easy to get data back from the state.
- Provide training throughout MDOE about data issues and standards so that districts will get the same response regardless of whom they ask questions.

## *Lessons Learned*

- "Any time you attach money to data or make it public, you will get more attention paid to obtaining quality data."
- With aggregate data, inaccuracies cannot be detected as early or clearly as with individual student level data.
- The less one is able to invest in project management, the harder it is to move the project forward.
- It is important for states involved in similar efforts to anticipate the maintenance and continued development costs after the major initial development effort is accomplished. It is vital that the necessary resources be available to keep the data systems functional and evolving.

## *Recommendations for Future Actions by MDOE*

- Engage a data advocate to promote the need for development *and* maintenance among state policymakers (e.g., Chief, Governor's office, legislators) – perhaps a former commissioner or deputy commissioner, as in other states.
- Continue to involve a variety of districts in design and pilot phases of new projects. Ensure a variety of voices in terms of district size and location, but also in terms of the types of individuals involved. For example, in the design of reporting and analysis tools associate with a data warehouse, include district-level research staff as well as IT staff to ensure that both the analytical and technological perspectives are addressed.
- Develop a communications/marketing plans (with help enlisted from a state data advocate or external sources) to educate state and district policymakers and other MDOE staff of the importance of cohesive data systems (P-20), professional development on the use of data, and the need to move from thinking of data only in

terms of meeting state and federal reporting needs to using data to inform state and local policy and funding decisions.

- Hire project managers to oversee the development of new functional areas of the data system (i.e., EPIMS, ELAR and data warehouse) or for major enhancements to existing systems. Designing, developing, and deploying an extensive statewide longitudinal data system cannot be accomplished by adding these additional responsibilities to existing staff. Oversight of the many committees, involvement in planning meetings, work with vendors and other project management activities that must be accomplished in-house is not a part-time prospect.
- Develop a development plan for gathering financial resources, supplemental to state funds, which will ensure that costs associated with maintenance and annual licenses and contracts will be covered to ensure that the data system is sustained at a state-of-the-art level, and especially to continue work on MA-EDSISS in lieu of not receiving an IES Statewide Longitudinal Data Systems grant.