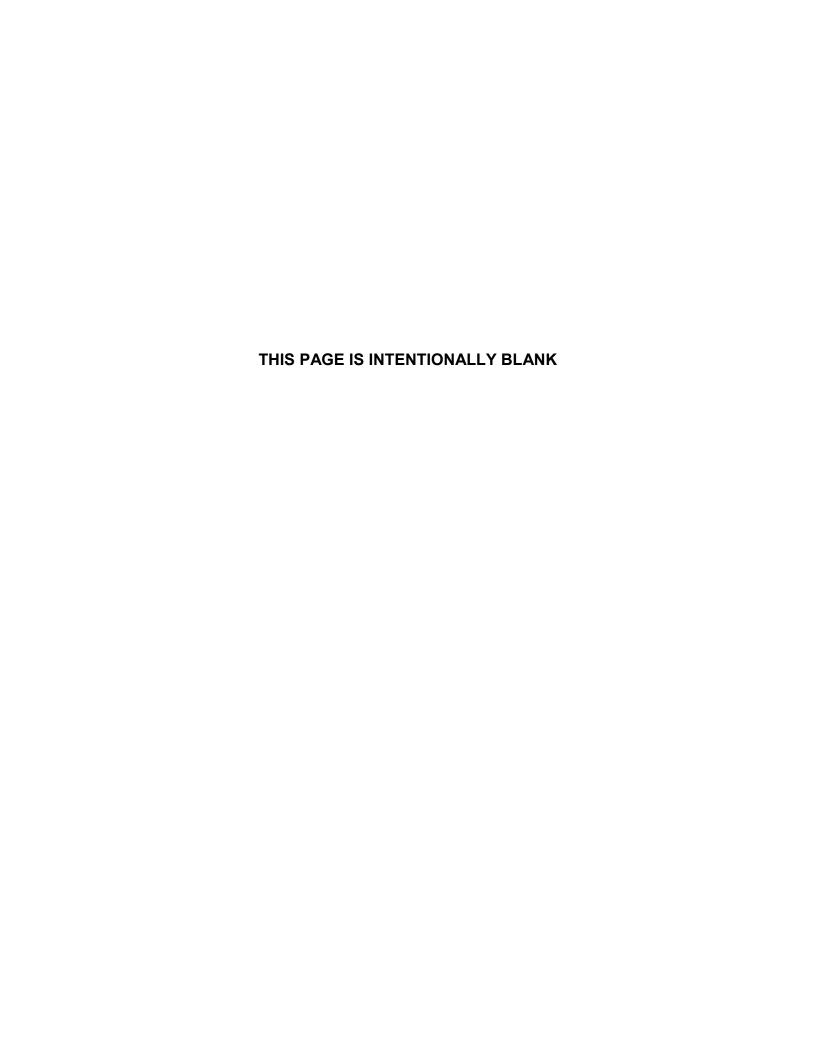**Strategic Data Project and
Education Pioneers Year 1
Report: Laying the Groundwork
for Data-Driven Decision Making**

October 16, 2013

Kristin Hallgren
Cassie Pickens Jewell
Celina Kamler
Jacob Hartog
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Policy Research

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EXECUTIVE SUMMARY

About the Strategic Data Use Initiative

The development of large and interconnected data sets has awakened educators to the value of strategically using data to inform education policy and improve instruction. Numerous organizations and agencies are supporting school districts and other education agencies in building their capacity to generate and use data based on the belief that effective data use is critical to improving student achievement. As part of its effort to help educators use data to improve teachers' effectiveness and increase students' college readiness, the Bill & Melinda Gates Foundation has invested in two initiatives, the Strategic Data Project (SDP) and Education Pioneers (EP). These programs aim to enhance the capacity of school districts and other education agencies to collect, manage, analyze, and use data through the support, training, and placement of additional staff.

About the Study

This three-year study is intended to understand how agencies have implemented SDP and EP and identify key challenges and promising strategies. Using a longitudinal case study approach, the study encompasses these tasks:

- Explore the skill sets and analytical capacity within partner agencies, including the role and participation of Strategic Data Project fellows or Education Pioneers analysts.

- Examine partner agencies' practices for goal setting, data use and quality, and evaluation and outcomes.

- Assess the data-driven decision making culture within partner agencies, including change over time whenever possible (for example, with partner agencies participating in the evaluation for multiple years).

- Document successes, challenges, and promising strategies related to data-driven decision making, particularly as they relate to policies and issues surrounding teacher effectiveness and college readiness goals.

Data for the study comes from interviews with SDP and EP staff members and with a diverse range of staff at seven agencies that began partnerships with SDP or EP in 2012-13. A review of documents and observations of professional development workshops hosted by SDP and EP supplemented the research team's understanding of programs' implementation.

What We Learned

This report presents findings from the study's first year (2012–2013), when partner agencies in the study began implementing the SDP or EP program. Because data collection occurred in the first year of programs' partnerships with agencies, this report cannot and does not assess whether change in agency practices has occurred yet. The following findings about agencies' context for data use, working with fellows, and challenges and lessons learned during the first year of partnership with SDP or EP emerged:

Background and Context for Data Use. When they began their partnerships with SDP or EP, the agencies in the study had strategic priorities in place to guide their work. However, agencies

often lacked consolidated or comprehensive data systems that offered easy access to data, and staff capacity for using data was relatively limited. To address this, agencies had secured a number of partnerships and resources to support their work.

Working With SDP and EP Fellows. SDP and EP fellows have played key roles in assisting with or leading efforts to upgrade data systems, prepare data analysis tools, or provide project management support. Less frequently, fellows conducted analyses to address key decisions related to these priorities. SDP and EP fellows also provided agencies with valuable support and expertise to build staff and departmental capacity for using data. Agencies particularly leveraged SDP fellows to improve analytical capacity by creating or improving analytic tools.

Data Analysis and Reporting. Although agency leadership and staff relied on fellows to prepare or present data-based information, many analyses that fellows reported conducting were not part of broader data analysis and reporting plans. EP fellows worked on creating guides informing parents about the district's schools; SDP fellows' technical skills were employed to conduct ad hoc data analyses related to agencies' goals and initiatives.

Challenges and Lessons Learned. The challenges reported by partner agencies centered on the work of transforming existing data systems and data use practices to use for strategic decision making: upgrading existing data systems; developing plans for analyzing data; ensuring staff know how to use data; and balancing these efforts with existing work. Key lessons learned in the first year of implementation included:

- Clear definition of fellows' work and careful placement within agencies was an important facilitator of fellows' early work.

- Frequent and ongoing discussions and training on data use help increase staff comfort with data.

- External partnerships, including those with SDP and EP, play an important role in bolstering agencies' technical and analytical capacity.

- SDP and EP networks offer fellows valuable resources that could be offered to other agency staff as well.

What's Next

These findings suggest two considerations for funders, agencies, and SDP and EP. First, agencies may need more assistance in planning the ways that better data will be used systematically and strategically in the future. Second, support for expanding the availability of SDP and EP network resources to more agency staff, perhaps even beyond the formal fellowship partnership period, could help ensure that technical and analytic expertise within agencies will be sufficiently built.

In fall 2013, the study team will visit the same seven agencies included in this report to explore what, if anything, has changed over time with regards to strategic data use. We will also visit up to five new partner agencies so that we can assess whether the findings presented in this report hold true or whether new SDP and EP partner agencies experience different issues.

STRATEGIC DATA PROJECT AND EDUCATION PIONEERS YEAR 1 REPORT: LAYING THE GROUNDWORK FOR DATA-DRIVEN DECISION MAKING

About the Strategic Data Project and Education Pioneers

The development of large and interconnected data sets has awakened educators to the value of strategically using data to inform education policy and improve instruction. Numerous organizations and agencies, including the Bill & Melinda Gates Foundation, are supporting school districts and other education agencies in building their capacity to generate and use data based on the belief that effective data use is critical to improving student achievement.

The Gates Foundation has invested in two initiatives, the Strategic Data Project (SDP) and Education Pioneers (EP), that aim to enhance the capacity of school districts and other education agencies to collect, manage, analyze, and use data through the support, training, and placement of additional staff.

SDP. Launched in 2008, SDP operates out of the Harvard University Center for Education Policy and Research. SDP partners with state education agencies, school districts, and charter school networks to transform the use of data in education to improve student achievement. To achieve this mission, SDP places and supports analytic personnel, called data fellows, in partner agencies for a two-year fellowship or works with existing partner agency employees, called agency fellows, to provide analytic-focused support and professional development through a two-year fellowship. Part of the partnership also includes SDP's use of agencies' data to conduct diagnostic analyses focused on improving human capital and college readiness. Fellows provide senior-level agency leadership with the capacity to leverage data in new ways to inform policy decisions, particularly in support of teacher effectiveness and students' college-going success and attainment.

EP. Founded in 2003 and supported by the Gates Foundation since 2011, EP mobilizes and prepares a national network of talented leaders, managers, and analysts to transform education into the best led and managed sector in the U.S. EP is guided by the belief that placing outstanding leaders, managers, and analysts in education positions outside the classroom is necessary to ensure strong and consistent system-wide results. To this end, EP places early- or mid-career professionals from multidisciplinary backgrounds in leadership, management, and analytic roles in education agencies such as school districts, charter school networks, or education nonprofits for 10-month "Analyst Fellowships."[1] The specific work of EP fellows varies greatly depending on the needs of the partner agency, but each fellow aims to improve the partner agency's capacity to use data effectively and make data-driven decisions.

Both SDP and EP applied thoughtful, systematic procedures to establish partnerships with agencies and select fellows. The effectiveness of these programs begins with their partnerships with educational agencies and with the fellows placed in these agencies. Partner agencies need to be motivated and engaged in measuring and understanding education-related outcomes and in

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[1] EP also has a fellowship program for graduate students with 10-week summer and yearlong placement options. This implementation study focused only on EP fellows and partner agencies participating in the 10-month Analyst Fellowship program and not the programs for graduate students.

communicating such analyses to a variety of audiences. The fellows need to demonstrate an interest in and aptitude for using data to address issues in education. SDP and EP, then, must appropriately match the two in order to ensure a sustainable and productive experience for the partner agencies and the fellows. Appendix A provides details about the processes used by SDP and EP to establish partner agencies and to select fellows.

About This Report

The Gates Foundation contracted with Mathematica Policy Research to conduct a descriptive implementation study of the SDP and EP programs through longitudinal, in-depth case studies of the agencies hosting SDP and EP fellows. The implementation study aims to describe change over time in the agencies' capacity for and use of data.

This report presents findings from the study's first year (2012–2013), when partner agencies in the study began implementing the SDP or EP program. Because data collection occurred in the first year of programs' partnerships with agencies, this report cannot and does not assess whether change has occurred yet. This report primarily provides baseline information about partner agencies' context for data use, the early work of fellows, data analysis and reporting activities, and early successes and challenges. It concludes with a short discussion of the first year findings, but later reports will provide an analysis of change over time in the agencies' capacity for and use of data.

The information to support this study came primarily from two sources: interviews with SDP and EP staff members and site visits that included in-person interviews with a diverse range of staff at the partner agencies. The first-year sites included three agencies that partnered with SDP, two agencies that partnered with EP, and two agencies that partnered with both programs. A review of documents and observations of professional development workshops hosted by SDP and EP for their respective fellows supplemented the research team's understanding of project initiatives. A detailed description of the site selection and study methodology can be found in Appendix B.

A. Background and Context for Data Use

When they began their partnerships with SDP or EP, the agencies in the study had strategic priorities in place to guide their work. However, agencies often lacked consolidated or comprehensive data systems that offered easy access to data, and staff capacity for using data was relatively limited. To address this, agencies had secured a number of partnerships and resources to support their work. This section provides context for the early phase of their partnerships with SDP and EP with descriptions of agencies' existing strategic priorities, data systems, staff expertise and development, and partnerships and resources.

Strategic Priorities

Even before entering into partnership with SDP or EP, agency respondents at leadership levels indicated a recent push for more systematic data use, often linked to agencies' strategic priorities and goals. Four key strategic priorities, determined by agency leaders through strategic planning processes, guided most data-related work in these agencies. These priorities are indicated in Figure 1.

Figure 1. Partner Agencies' Strategic Priorities

Agency leaders and staff articulated four key strategic priorities, which were determined by agency leaders through strategic planning processes:

1. **Simplify data access.** The rapid proliferation of data of all kinds has necessitated agencies' efforts to simplify data access and help users understand available data.

2. **Monitor progress toward meeting goals.** As part of their strategic priorities, agencies have employed data to measure progress towards meeting agency goals.

3. **Examine college and career readiness indicators and outcomes.** As a result of federal initiatives or state policies, agencies have prioritized using data, such as performance outcomes and drop-out indicators, to identify potential areas of concern, among students and allocate resources accordingly.

4. **Inform strategies for turning around low-achieving schools.** With support received from federal and state grant initiatives, agencies have implemented strategies to turn around low performing schools and are using data to inform decisions about personnel, programs, budget, and school closures

Data Systems

The growth of data collection efforts has strained many existing systems' capacities for storing and managing data. In some agencies, one data system collects all education-related data, including enrollment, attendance, grades, discipline, and classroom-level formative assessments. In others, multiple systems collect these data, and these agencies were working to consolidate it into a single repository. Regardless of the approach, all agencies were in the process of establishing or upgrading their data warehouses to better meet growing demand. Many agencies were also in the process of developing complementary software programs, typically called "data dashboards," that enable better management of and access to the data, based on permissions specified for different users (e.g., teachers, principals, and central office staff).

Staff Expertise and Development

Agency respondents in leadership levels indicated a desire to build the capacity of staff to work with data so it can be used to inform decision making. In two agencies, the approach to increasing staff capacity to use data was to hire new staff with data analysis skills. In some other agencies, professional development and training sessions were offered to existing staff in an effort to build their data analysis capacities. Most frequently, data analysis training opportunities for agency staff have been limited and informal. As a result, staff members without data analysis backgrounds indicated they were not familiar, nor comfortable, with using data effectively to make decisions.

Partnerships and Resources

Support from external partners and resources, including philanthropic organizations and state or federal grant programs, was critical to the development of data initiatives in every agency. Some agencies contracted with external vendors to support the development or maintenance of their data system. Others partnered with organizations to support specific data-related initiatives, such as developing a college readiness indicator system, or to conduct data analyses and related research.

B. Working With SDP and EP Fellows

At the time of data collection for this report, SDP and EP fellows had been working at their agencies for between one and nine months. Agencies were starting to implement their data projects; and fellows were learning where data resided, who owned the data, the accuracy of available data,

and the processes required to obtain data for analysis. In this section, we describe the how the fellows supported strategic priorities and worked to develop agency capacity for data use.

A companion document to this report presents seven case profiles, one for each partner agency in the study. Each profile presents agency-specific information about the four key areas discussed in this report. Readers interested in learning more about the specific context, activities, or challenges encountered by partner agencies as they undertook the key activities described in this section can refer to the profiles in that document for more information.

Supporting Strategic Priorities

Fellows' support of agencies' strategic priorities involved assisting with or leading efforts to upgrade data systems, prepare data analysis tools, or provide project management support. Less frequently, fellows conducted analyses to address key decisions related to these priorities. For the most part, SDP and EP fellows conducted similar work to support agencies' strategic priorities, including the six main activities shown in Table 1 and described in this section.

Table 1. SDP and EP Fellows' Work to Support Strategic Priorities, by Partner Agency

	Partner Agency						
	A SDP	B SDP	C SDP	D SDP and EP	E SDP and EP	F EP	G EP
Supporting Strategic Priorities							
Enhancing longitudinal data systems	X			X		X	
Developing a single-portal structure for the data system	X					X	
Creating user-specific dashboards		X	X	X	X	X	
Providing project management and strategic planning support	X				X		X
Examining college and career readiness indicators and outcomes	X	X		X	X		
Informing strategies for allocating school and district resources			X		X	X	X

Enhancing longitudinal data systems. Fellows, their supervisors, and agency staff, such as those in information technology (IT) positions, described activities that fellows were undertaking to support the expansion of agencies' data capacities by incorporating more data in their longitudinal data systems. For example, to assist with incorporating data on early childhood, K-12 education, and post-high school outcomes into a state data system, respondents described how some fellows collaborated within and across departments to help secure the data and evaluate the quality of the data from each source.

Developing a single-portal structure for the data system. A single-portal structure allows for the collection and storage of data from multiple sources and systems in a single data warehouse. It also offers a streamlined approach for uploading and extracting a richer set of available data. According to agency leaders, research and assessment administrators, and IT administrators, fellows undertook an important first step in developing this type of structure, by understanding where data resides, who owns the data, and how to link data from different locations or databases. Fellows, their supervisors, and research and assessment and IT administrators also described how fellows have forged connections across departments to make this work possible. For example, fellows

liaised with administrators, teachers, and staff across research, assessment, and compliance departments to coordinate data use and data sharing procedures.

Creating user-specific dashboards. Dashboards display student-, school-, teacher-, and district-level data. They enable agencies to share data from multiple sources in one central location, at a level appropriate to the needs of the user viewing the data. Fellows, fellows' supervisors, IT administrators, and research and assessment administrators reported that fellows assisted with strategic planning and design efforts for the dashboards, including facilitating conversations with agency leadership to decide the types of data available to different users and developing reporting features to transform raw data into actionable information. Fellows and research and assessment administrators also reported that fellows assisted with the selection of measures and locating the data to be included in the dashboards. For example, multiple fellows in one agency reported prioritizing and selecting from among 15 distinct data sources, including student test scores, state-measured school quality, school safety, enrollment, and retention.

Providing project management and strategic planning support. Agency leaders reported leveraging fellows' business skills, particularly those of SDP fellows, to help manage large and small projects. Often, this work was conducted as part of agency-wide efforts to measure progress toward meeting goals, to focus resources on the highest-priority initiatives, or to eliminate initiatives that were either not in line with strategic goals or had little evidence of effectiveness. For example, fellows, supervisors, and agency staff described how fellows used a project management framework to conduct analyses and produce reports about the agency's priorities. Using progress indicators such as program enrollment or proficiency scores, fellows reported developing performance trajectories for conducting quarterly measurement of the progress toward meeting strategic goals identified in agencies' strategic plans.

Examining college and career readiness indicators and outcomes. Fellows and agency administrators, including those in curriculum, research, and assessment positions, described how fellows merged different data sources to assemble a dataset used to develop a series of profiles of college readiness at different grade levels. For example, fellows at one agency analyzed data on K-12 test scores, grades, demographics, attendance, and persistence and completion data for former students to identify the types of skills and characteristics that exemplify a successful college graduate. These data were then used to create college readiness profiles, by grade, that included average test scores, grades, course load, and days absent. The agency used the profiles to assess how to keep students progressing on the college-ready path, or to return them to that path.

Informing strategies for allocating school and district resources. Respondents in human resources administration and leadership roles reported fellows used data to inform decisions about personnel, programs, budget, and school closures. For example, for low-performing schools in a particular district, fellows described analyzing school-level expense data for a new weighted student funding strategy. Respondents in research and assessment positions indicated plans to use these analyses to provide information about costs related to serving students with special needs and to distribute those costs across schools more efficiently.

Building Agencies' Capacity for Data Use

At the same time that they worked to support strategic priorities, SDP and EP fellows also provided agencies with valuable support and expertise to build staff and departmental capacity for using data. SDP fellows tended to provide more analytic support to their partner agencies than EP

fellows. Table 2 lists the specific work conducted by fellows, by partner agency, and the rest of this section describes the work in greater detail. Readers interested in learning more about these activities can refer to the profiles in the companion document.

Table 2. SDP and EP Fellows' Work to Support Strategic Priorities, by Partner Agency

	Partner Agency						
	A SDP	B SDP	C SDP	D SDP and EP	E SDP and EP	F EP	G EP
Building Agencies' Capacity for Data Use							
Building a data quality research group				X			
Providing technical assistance and training	X				X		X
Creating and improving analysis tools	X	X	X	X	X	X	
Developing and refining teacher effectiveness metrics		X					

Building a data quality research group. One agency hired SDP fellows with the express purpose of building a research group focused on data quality initiatives. This group's tenure is incorporated into the agency's long-term budget and development plans, beyond the length of the SDP partnership. The group consists of seven fellows, one of whom serves as director. The group has been charged with gathering information on the agency's data landscape, including location and current use of data and with developing and implementing data training for agency staff, including providing training on using the main student database, using Excel, and developing queries.

Providing technical assistance and training. Fellows, agency leaders, and agency staff involved in curriculum, research, human resources and IT departments described providing training and technical assistance to staff at all levels. These trainings primarily focused on teaching staff how to access and understand data. Fellows offered professional development for school- and district-level staff on how to use Excel and Access and the types of data systems available in the district. Fellows also led data workshops where they taught departmental leaders how to measure progress against long-term goals. These workshops encouraged attendees to align the right questions with the data that will best inform their work, and to consider who can help with obtaining certain data, when to collect it, and what analyses can be conducted to answer their questions.

Creating and improving analysis tools. Across agencies (and at all SDP agencies), fellows and their supervisors discussed the recent or ongoing development of numerous tools that would support data analysis at a variety of levels (e.g., state, district, and/or school). For example, one fellow reported reviewing a vendor-developed algorithm to support an analysis of students' persistence to high school graduation. The algorithm used information from the agency's student information system, such as attendance, credits completed, and suspensions, and created a risk index score for each student. The fellow identified an error in the vendor-developed algorithm and was working to correct it at the time of the site visit. Results from the corrected algorithm will be shared with schools so that they can target students for drop-out prevention interventions.

Developing and refining teacher effectiveness metrics. Education agencies have begun placing a high priority on understanding and measuring teacher effectiveness, often because of related state policies or mandates. Agencies partnered with SDP, in particular, are focused on examining data related to teaching and learning. For example, agency leadership, human resources, and research and assessment staff in one SDP agency articulated clear plans for refining teacher

evaluation metrics. In this agency, fellows and agency staff described working together to develop a more accurate picture of teacher effectiveness, incorporating data from classroom observations, student-survey data, and value-added data on student growth (for teachers of tested grades and subjects) and student learning outcome data (for teachers of non-tested grades and subjects).

C. Data Analysis and Reporting

Although agency leadership and staff relied on fellows to prepare or present data-based information, many analyses that fellows reported conducting were not part of broader data analysis and reporting plans. Table 3 presents the data analysis and reporting activities described in this section, by agency. Readers interested in learning more about these activities can refer to the profiles in the companion document.

Table 3. SDP and EP Fellows' Analysis and Reporting Activities, by Partner Agency

	Partner Agency						
	A SDP	B SDP	C SDP	D SDP and EP	E SDP and EP	F EP	G EP
Creating parent guides						X	X
Developing school-level reports	X	X				X	X
Preparing and presenting information to internal staff	X	X	X	X	X	X	X
Using technical skills to conduct ad hoc analyses	X	X	X	X		X	

Creating parent guides. Unique to EP agencies, fellows' supervisors explained that EP fellows worked on creating guides informing parents about the district's schools, describing plans for transforming underperforming schools into high-achieving schools, and offering guidance on making the best choice for students. To develop these guides, EP fellows collected and analyzed data on student achievement and growth, school culture, equity of school- or district-provided services, grade readiness, and other topics suggested by district staff and parents.

Developing school-level reports. Fellows, their supervisors, and agency leaders in IT and research and assessment described how fellows used school-level data on student achievement and growth, culture, and other performance metrics (including school- or district-provided services, grade readiness, and parent perceptions) to create a template for portfolios. Fellows then designed school-level reports, such as report cards or performance overviews, to meet the decision making needs of internal and external audiences. Fellows solicited feedback on the functionality and design of the report cards throughout the process. District leaders reported using the reports to determine which schools should be targeted to receive additional support or included in district or state turnaround initiatives.

Preparing and presenting information to internal staff. Agency leadership in SDP and EP partner agencies reported asking fellows to prepare and provide information for internal presentations. For example, fellows developed and presented weekly data summaries to district leadership to help keep them abreast of changes in suspensions, absenteeism, student achievement, and teacher performance. Another fellow analyzed survey and focus group data from a field test of a new teacher evaluation model, wrote a detailed report, drafted a presentation, and presented it to a steering committee on teacher effectiveness, which used the results to suggest policy to the agency leadership.

Using technical skills to conduct ad hoc analyses. Agency staff, including those in IT, research and assessment, and curriculum positions, reported employing fellows' technical skills in ad hoc data analyses related to agencies' goals and initiatives. This was especially the case in SDP partner agencies. For instance, a fellow in one agency examined data from satisfaction surveys of teachers who attended a state-led training for Common Core coaches. The agency wanted to see if any improvements could be made before the second round of training. This fellow-led analysis revealed a significant, positive correlation between satisfaction ratings and student growth scores, a finding that influenced the recruitment of teacher-coaches for the next round of training. Another fellow reported helping the superintendent create a presentation on the long-term effects of half-day versus full-day kindergarten programs. Using data from randomized admissions lotteries that determined eligibility for the programs, the fellow analyzed the impact of the two programs on college readiness outcomes observed many years later, using the ACT and eighth, tenth, and eleventh grade scores on state tests. The fellow wrote a summary of the results and created a presentation that the superintendent used to present the findings to the school board. Fellows also reported comparing the performance of ninth-grade students to tenth-grade students on biology exams in response to concerns that ninth-grade students were too young to be enrolled in biology classes.

D. Challenges Encountered and Lessons Learned

The challenges and lessons learned in the early phase of agencies' partnership with SDP or EP provide insight about how programs, agencies, and fellows can continue to work together to make progress in using data to inform strategic decisions. This section describes four key challenges agencies reported encountering and four lessons learned.

Challenges Encountered

The challenges reported by partner agencies centered on the work of transforming existing data systems and data use practices to use for strategic decision making: upgrading existing data systems; developing plans for analyzing data; ensuring staff know how to use data; and balancing these efforts with existing work. For each challenge, we provide action points for the agencies, SDP, EP, or the fellows to consider.

Different data systems or data use agreements hindered data sharing. A range of respondents, including agency leadership, program staff, and fellows, articulated a challenge with accessing desired data, either because the data existed in another department or division or because the data existed in multiple, separate systems. These respondents also noted the challenge of working with data within their own departments and divisions. Data comes from multiple sources, and fellows explained that success in obtaining necessary data to conduct analyses is sometimes based on relationships and physical location. Fellows from agencies that are developing comprehensive, longitudinal data systems reported that working with other departments

> **Action Point:** Agency leaders can facilitate and promote better data sharing opportunities within and across agency departments. Fellows can support this work by identifying and documenting data redundancies and access issues.

and divisions was challenging not only because different departmental data systems collect and maintain data differently, but also because departments within the same agency might need to develop data sharing agreements. These agreements can take months to develop, and usually involve legal or legislative support before being enacted. Respondents in leadership positions also noted that

when data are housed in multiple departments, a single source of truth can be difficult to find. As a result, data analyses can be incomplete, or possibly incorrect, depending on the data source.

Despite having access to a lot of data, agencies found it challenging to know how to best use the data. Respondents in leadership roles commented that, historically, agencies focused on collecting data from a variety of sources and at multiple points during the year. However, doing so did not necessarily result in conducting useful or complex analyses. The challenge moving forward, according to these respondents, is to determine useful or complex analyses that can be conducted using the data to inform strategic priorities, projects, and data-driven initiatives. The desire to address this challenge was the primary reason many agency leaders cited for engaging in partnerships with SDP or EP.

> **Action Point:** SDP, EP, and fellows can ask agencies questions about data use goals to encourage agencies to think critically and plan for ways to use the data available to meet their goals and address strategic priorities.

Limited analytic skills made it difficult to conduct complex analyses. Respondents in leadership and administration positions stated that agencies have offered professional development sessions focused on conducting data analyses or using data in their daily activities. However, most non-fellow respondents reported that these sessions have not increased their level of comfort with, or confidence in, conducting such analyses and using the data to make programmatic changes or strategic decisions. As a result, the ability to appropriately conduct analyses and use data for decision-making purposes is frequently limited to a small number of data-savvy staff, such as the fellows, who are comfortable with data analysis and use. Respondents in leadership positions noted that agencies, therefore, often struggle to change the agency-wide culture surrounding data use. Furthermore, agency leadership respondents did not articulate future plans for professional development to develop data use capacity among staff at all levels.

> **Action Point:** Fellows can offer professional development and training sessions for agency staff. SDP, EP, and fellows can leverage their networks to point out useful resources and trainings to support the data analysis skills of agency staff.

Staff struggled to balance current job responsibilities with new data demands. Fellows and respondents in IT positions reported difficulty finding time to conduct data analysis activities in conjunction with current responsibilities. SDP agency fellows, in particular, cited a concern balancing their new responsibilities with their ongoing workload. Unless supervisors intentionally shifted some of the fellows' preexisting workload to other staff, agency fellows reported not having time to devote to SDP activities including conducting data analyses. This frustrated agency fellows, who viewed the fellowship as a chance to expand their data analysis skills and more deeply explore areas of interest within their agencies.

> **Action Point:** Agency leaders can ensure that staff—particularly SDP Agency Fellows—have enough time set aside to perform the data analysis activities that will support the strategic priorities and data use goals of the agency.

Lessons Learned

Agency leadership, staff, and fellows reported four key lessons learned after several months of partnership with SDP and EP:

1. **Clear definition of fellows' work and careful placement within agencies was an important facilitator of fellows' early work.** Agencies had different approaches to

placing fellows within their organizational structures. For example, some agencies housed all fellows in one department to encourage knowledge sharing and collaborative activities. Others placed fellows in different departments to encourage proliferation of data use across the agency. Regardless of the approach, clearly articulating fellows' placement within the agency (and the rationale for that placement) enabled the fellows to better understand their roles within the agency and their access to key decision makers. Similarly, clearly articulating fellows' work in advance of the fellowship enabled fellows to begin their work quickly. Respondents in agencies with EP fellows particularly noted the benefit of this approach, since the fellows are only with the agency for 10 months.

2. **Frequent and ongoing data use discussions and trainings help increase staff comfort with data.** Respondents in leadership positions explained that they rarely need to convince staff about the importance and utility of using data, which a majority of respondents acknowledged as well. Leadership respondents articulated a perception that, because of data-focused discussions in recent years, the culture at their agencies has become more accepting of using data to drive decisions. Continuing to have discussions about data and professional development or training sessions is important for increasing staff comfort with using data, and fellows can support such efforts. For example, one type of training described during interviews was using the SDP fellows to provide staff with data analysis training, including using Excel and Access, and introducing the types of data systems available, to further develop staff capacity to use and analyze data across departments and offices.

3. **External partnerships, including those with SDP and EP, play an important role in bolstering agencies' technical and analytical capacity.** Respondents in leadership and IT positions explained that partnerships with education- and data-focused organizations enabled agencies to bolster their data use capabilities, as well as their technical and analytical capacities. For example, some agencies partnered with outside organizations to provide software or professional development sessions, tools, and training. One agency partnered with an outside organization that provided professional development to help school and district leaders better understand the implications of new teacher evaluation models. The partnerships with SDP and EP were also seen as valuable, as fellows' analytical skills and expertise provided agencies with new technical capacity to conduct data analyses and question data assumptions. Furthermore, respondents noted that partnering with SDP and EP was very beneficial because most agencies would not have been able to recruit individuals with such skills on their own.

4. **SDP and EP networks offer fellows valuable resources that could be offered to other agency staff.** Fellows articulated an appreciation for the networking opportunities provided through the SDP and EP programs. These opportunities, both in person and online, enabled fellows to ask questions of one another, learn from past fellows' projects and experiences, and better understand how their work fits within the broad spectrum of activities in educational administration. Fellows indicated that they could apply the knowledge gained from these opportunities to their work at the agencies. Agency leadership respondents indicated they would appreciate additional support and guidance from SDP and EP throughout the duration of the fellowship on such issues as how best to utilize the fellows and what additional supports to expect or request from SDP and EP.
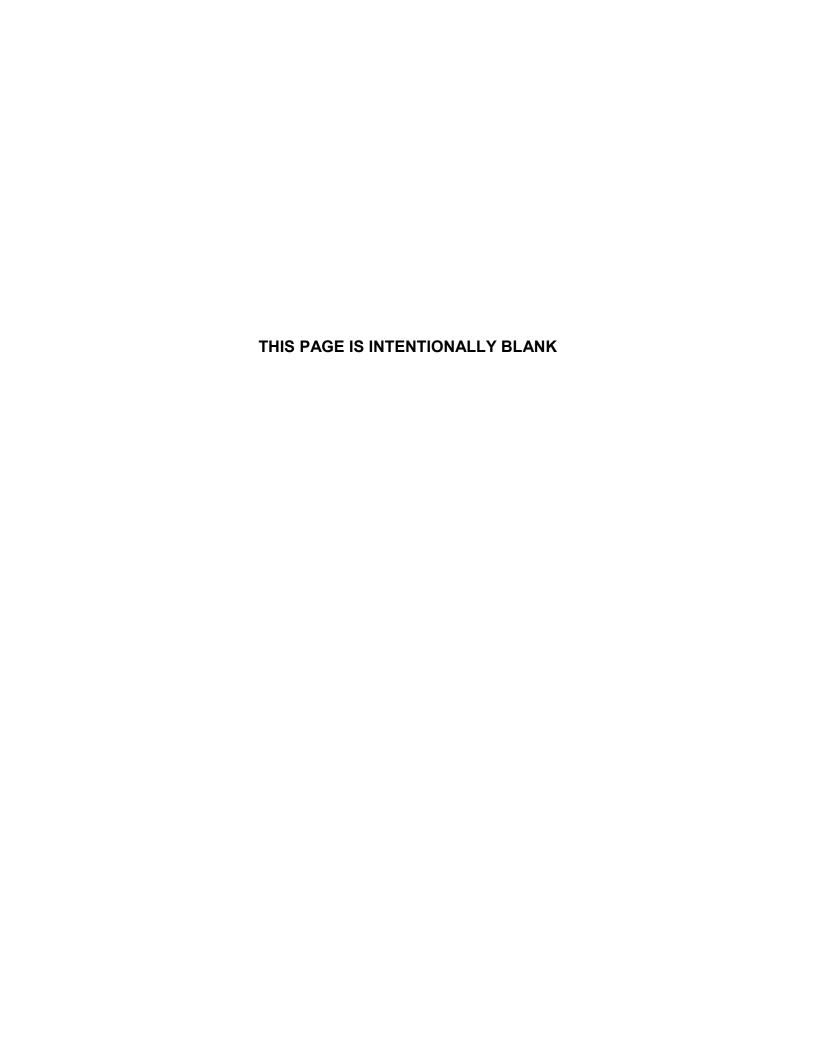
E. Discussion

Learning to use data strategically is a graduated and iterative process that requires systems for storing and reporting data, staff capacity and motivation, and organizational will. Especially in a tight fiscal climate, this kind of work can be challenging. We found a number of conditions that suggest study agencies are moving in the right direction. For example, agencies had appropriately placed SDP and EP fellows in positions within their agencies; agencies and the fellows working in them had started building data systems, planning data projects, or creating tools for accessing data; and respondents were eager to engage directly with SDP and EP to access the programs' potentially powerful resources. However, the first year findings raise two questions to explore in future years.
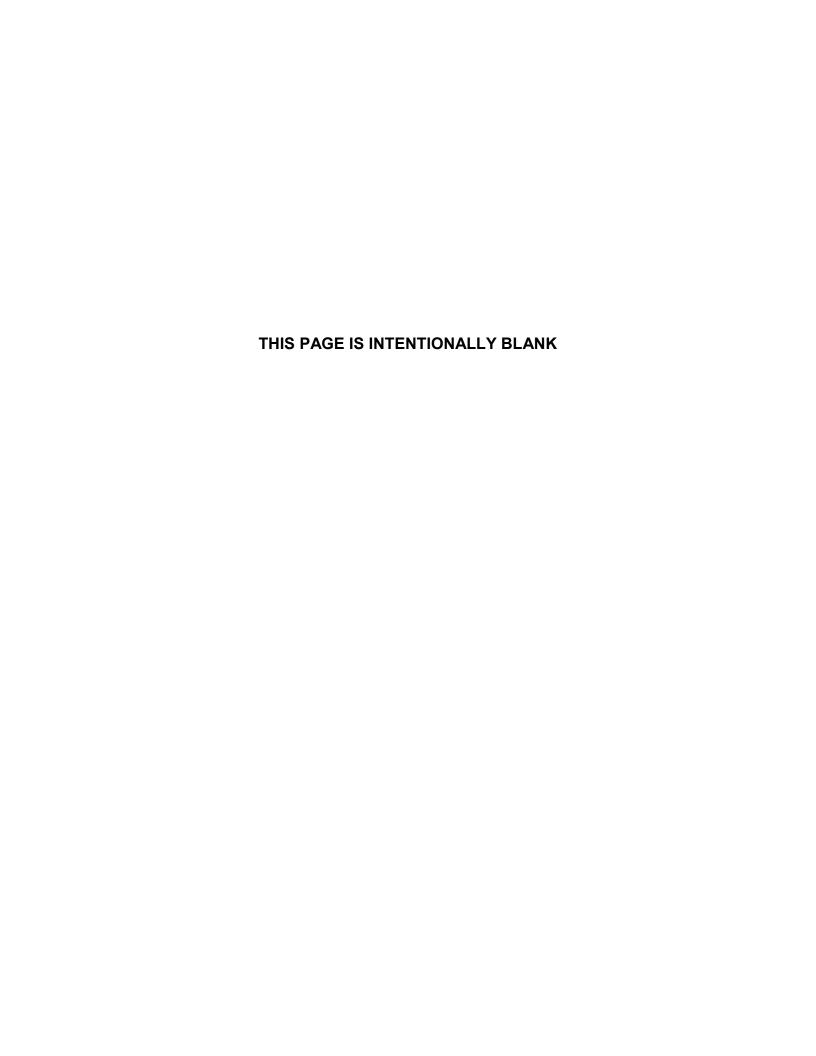
Do agencies have broader plans for using data to inform key decisions? Although making data accessible is important, it is also critical to plan how it will be analyzed and used. Despite having access to a wide range of data, SDP and EP partner agencies rarely articulated clear plans for analyzing it or for using analysis to make data-driven decisions. We also heard very little about future plans for ongoing training or professional development to increase staff capacity for conducting analyses or for using data to inform programmatic changes or strategic decisions. Finally, we heard several reports that agencies primarily employ fellows' technical skills to monitor projects or answer short-term questions with ad hoc analyses but not much articulation about how agencies would continue such activities beyond the fellows' tenure with the agency. These findings suggest that agencies may need more assistance in planning the ways that better data will be used systematically and strategically in the future.

What happens at the end of the SDP or EP partnership? Does SDP and EP fellows' work ensure that technical and analytic expertise within agencies will be sufficiently built? Clearly, there is much work to be done to prepare to use data strategically, and agencies are tackling this work in earnest. But what happens after that? The approach that several agencies appear to be taking to employ SDP fellows' technical skills may not facilitate building sufficient capacity to continue conducting complex analyses after the partnership ends. In a related point, while EP fellows' shorter tenure may be useful for setting up data systems and reporting tools, it may be too short to support developing stronger analytic capacity within the agency. One approach to addressing this issue could be to simply expand the availability of SDP and EP network resources to more agency staff, perhaps even beyond the formal fellowship partnership period.

In fall 2013, the study team will visit the same seven agencies included in this report to explore what, if anything, has changed over time with regards to the above questions. We will also visit up to five new partner agencies so that we can assess whether the findings presented in this report hold true or whether new SDP and EP partner agencies experience different issues.

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APPENDIX A

ESTABLISHING PARTNER AGENCIES AND SELECTING FELLOWS

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The effectiveness of SDP and EP begins with their partnerships with educational agencies and with the fellows placed in these agencies. Partner agencies need to be motivated and engaged in measuring and understanding education-related outcomes and in communicating such analyses to a variety of audiences. The fellows need to demonstrate an interest in and aptitude for using data to address issues in education. SDP and EP, then, must appropriately match the two. This appendix describes the processes used by SDP and EP to establish partnerships and select fellows. Table A.1 displays the key features of these processes.

Identifying and Selecting Partner Agencies

For SDP's 2012–2014 cohort of 16 partner agencies, after honing its partner agency application and selection process while working with two previous cohorts, SDP invited potential partner agencies to apply for the program. In the 2012–2014 cohort application, agencies described the work available for fellows, the planned organizational and supervisory structure, and the amount and availability of data for the diagnostic analyses, including whether teacher-student data links existed. Before establishing a partnership, SDP considered the agency's ability to use its own funding to support the fellows and used a rubric to assess the agency's strength of leadership, attention to the stated data agenda, and history of data quality and data use.

In recruiting its 51 partner agencies for the 2012–2013 Analyst Fellowship, EP reached out to its base of agencies that had participated in its summer fellows program. It also leveraged a grant from the Gates Foundation to develop relationships with new agencies. In the application, agencies described the fellows' intended projects and identified a proposed supervisor. Before establishing partnerships, EP confirmed that each agency's identified projects were data-focused projects central to developing data-driven decision making capacity and that the identified supervisor would be able to support the fellows' work.

Selecting, Placing, and Supporting Fellows

Selection. There are two types of SDP fellows: those who already work at partner agencies, called agency fellows, and those recruited from other sources and placed in agencies, called data fellows. Agency fellows typically apply to SDP in conjunction with the partner agency application, while SDP uses a network of professors at academic institutions to obtain referrals for data fellow positions. Both types of fellows typically have backgrounds in mathematics, economics, or public policy, and all have advanced degrees. To apply, applicants complete an online application. SDP then sends qualified applicants a practice data case, which involves manipulating large datasets and communicating the resulting analysis in a two-page memo addressed to a superintendent of schools. In a follow-up telephone conversation, applicants describe their data analysis approach and the memo. SDP invites successful applicants to attend a group interview in which they present a second data case, suggest recommendations for sample data use scenarios, and participate in a suitability interview. Throughout this process, SDP uses rubrics for identifying applicants' key competencies.

EP recruits potential fellows though career expos, evening networking receptions, career websites (such as LinkedIn and idealist.org) and corporations (such as management consulting firms) that might have a good pool of potential analysts, and taps its alumni network for referrals. Many fellows have academic backgrounds in economics, statistics, or policy, and many have worked in consulting and business-related fields. Applicants complete an application, quantitative data exercise, and group and individual interviews. After screening online applications, EP asks qualified applicants to complete a timed, Excel-based quantitative exercise. EP invites applicants who pass this exercise

Table A.1. Key Features of SDP and EP Programs

	SDP	EP
Program Guiding Principles and Goals		
Guiding Principles	(1) Policy and management decisions can directly influence schools' and teachers' ability to improve student achievement; and (2) valid and reliable data analysis significantly improves the quality of decision-making.	As a $600 billion sector responsible for the second largest workforce in the country, education must focus not only on effective teaching, *but also* on the quality of leadership and management of schools, districts, and systems. Focusing on leadership and management outside of the classroom is necessary to attract, develop, and retain effective teachers and principals.
Program Goals	• To transform the use of data in education to improve student achievement. • To change the data culture of partner agencies.	• To transform education into the best led and managed sector in the U.S. by placing outstanding leaders, managers, and analysts in education positions *outside* the classroom. • To optimize performance and impact of education organizations and EP leaders through access to knowledge and a robust network.
Fellow Qualifications and Anticipated Roles		
Fellow Qualifications	• Advanced degree (master's level or higher) • Strong background in quantitative analysis • Leadership and management experience • At least four years of professional work experience	• Bachelors degree or current enrollment in an advanced degree program • At least two years full-time work experience in analytical roles • Strong quantitative skillset
Length of Partnership	• Data fellow—2 years • Agency fellow—2 years	• Analyst Fellowship—10 months
Data Analysis Activities	• Provide senior-level leadership with capacity to leverage data in new ways to inform policy decisions • Intended to focus on improving teacher effectiveness or college readiness • Support, as necessary, SDP's diagnostic analysis of (1) teacher effectiveness (human capital) and (2) students' college-going success and attainment	• Variable; depending on the needs of the partner agency • Broad range of activities (e.g., projects can range from developing a per-pupil funding formula, to student performance analysis, to developing a user-friendly budget planning tool for principals)
Fellow Recruitment and Selection		
Position Advertisement	• Notifications on job sites • Referrals from professors and academic institutions	• Outreach via resume books, evening networking receptions, and career expos • Notifications on professional social networking and job sites • Active recruitment from consulting firms and similar corporations • Referrals from alumni network
Application Process	• All applicants complete an online application, including a résumé, cover letter, geographic preferences, and work interests. • Qualified applicants complete a practice data case that involves manipulating large datasets and communicating the resulting analytics in a two-page memo for a superintendent • Selected applicants attend a group interview in which they complete a second data case, are presented with scenarios that require quick analysis, and participate in interviews to determine suitability.	• All applicants complete an online application, including a résumé and geographic preferences. • Qualified applicants complete a timed, Excel-based quantitative exercise. • Selected applicants attend a group interview in which they participate in role-playing exercises, address a data-related problem, develop a presentation, and participate in an interview to determine suitability. • Following the group interview, selected applicants participate in a final one-on-one interview that probes for analysis, leadership, and management aptitudes.

	SDP	EP
Fellow Selection	• Applications are reviewed to determine quantitative skills, experience, and interest in education. • Follow-up phone calls are conducted with applicants to discuss their approach in data case analysis. • Rubrics are used to assess applicants' key competencies, including mathematical skills, communication skills, and understanding of theoretical frameworks.	• Data analysis exercises are used to assess applicants' Excel and analytical skills. • Rubrics are used to assess applicants during the group interview process, focusing on teamwork, group interactions, and suitability. • Rubrics are used to assess applicants during a final one-on-one interview process, focusing on analysis, leadership, and management aptitudes
Fellow Placement	• Fellows are matched to agencies based on information provided in fellow and agency applications. • SDP sends two or three potential fellows to agencies for final interview. • Partner agencies make final selection of their fellows. • SDP offers fellowship to the fellow(s) agencies have selected.	• EP considers fellows' geographic preferences, skill set, and interests, then recommends a placement "match" to fellows and partner agencies. • EP provides partner agencies with names of two or three fellows to interview. • Partners and fellows interview with each other • Once both parties confirm a match, EP finalizes a fellowship placement.
Partner Agencies Selection		
Agency Types	• State education agencies • School districts • Charter school networks	• State education agencies • School districts • Charter school networks
Program Advertisement	• Potential partner agencies identified by Gates Foundation • Potential partner agencies invited to apply	• Contact previous or on-going partners, typically from the summer analyst programs • Recruit partner agencies that serve a large number of students or have the potential to make a significant impact on the field
Agency Application Components	• Articulate organizational structure • Detail fellows' intended projects • Answer questionnaire about amount and availability of data • Complete an exercise demonstrating ability to link teacher and student data	• Identify fellow's supervisor • Detail fellow's intended projects • Submit partner application
Agency Selection Criteria	• Agency's strength of leadership • Agency's attention to stated data agenda • Data quality and history of data use within the agency • Agency has funding within its own budget to support fellows	• Appropriate supervisor to support fellows • Articulated projects that are "mission critical" and "would enable the fellow to make a difference" • Ability to fill agency needs based on number of available fellows
Benefits of Participation	• Enrollment and recruitment services • Diagnostic analyses	• Enrollment and recruitment services • Partner agencies considered clients

Sources: Interviews with program staff and observations of program workshops. Education Pioneers. "What We Do." Oakland, CA: Education Pioneers, 2012. Available at [http://www.educationpioneers.org/what-we-do/our-mission-and-values]. Accessed February 25, 2013. Strategic Data Project. "The Vision." Cambridge, MA: Harvard University, Center for Education Policy Research, 2012. Available at [http://www.gse.harvard.edu/~pfpie/index.php/sdp/ strategic-data-project-the-vision]. Accessed February 25, 2013.

EP = Education Pioneers; SDP = Strategic Data Project.

to a group interview to participate in role-playing exercises, solve a data-related problem, and develop a presentation. For the group interview, EP uses a rubric to assess applicants. Following the group interview, applicants participate in individual interviews.
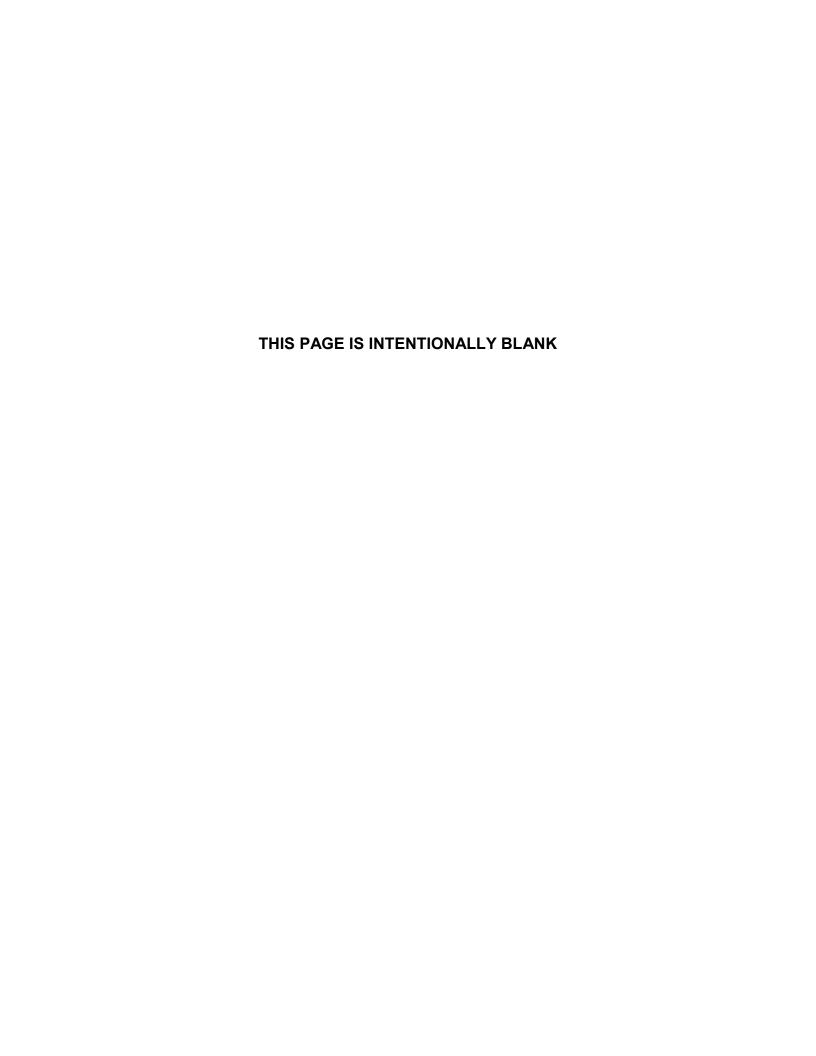
Placement. Using information provided in the fellow and agency applications, SDP matches two to three qualified applicants with a partner agency. Before making final decisions about applicants, SDP sends the applicants to the partner agencies for a formal interview. Partner agencies interview the applicants and make a final recommendation. SDP then offers a fellowship to the selected applicants.

EP's regional teams match qualified, accepted applicants with an appropriate partner agency by considering applicants' geographic preferences, skill sets, and interests. EP provides partner agencies a list of fellows that would be a good match, and a conversation between the applicant and the supervisor at the partner agency occurs to confirm suitability for the placement.

Support. During the two-year fellowship, SDP provides its fellows with eight professional development workshops focused on building competency in three core areas: (1) measurement and analysis, (2) leadership and change management, and (3) current education research. The workshops include presentations from leaders in the field, collaborative discussions, and sessions focused on supporting work in the areas of teacher effectiveness and college readiness. SDP fellows also receive online support through webinars, book clubs, listservs, and faculty advisors. SDP matches these advisors to fellows at the beginning of the fellowship based on the fellow's project work and the advisor's area of interest.

During the 10-month fellowship, EP provides fellows with five professional development workshops (referred to internally as "convenings") focused on building knowledge and skills in eight areas: (1) race, class, and the opportunity gap; (2) data in education; (3) organizational navigation; (4) theories of action; (5) communicating with data; (6) innovation and scaling up; (7) change management; and (8) communication skills. EP program managers facilitate the meetings, which typically feature outside speakers. EP fellows also have online support through webinars and a secure, information-sharing website.

APPENDIX B

METHODOLOGY

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Comprehensive, in-depth information to support the implementation analysis came from two primary sources: (1) telephone interviews with SDP and EP staff members and (2) site visits that included in-person interviews with a diverse range of agency staff. A review of SDP and EP documents and observations of professional development workshops hosted by SDP and EP for their respective fellows supplemented the research team's understanding of project initiatives. In this appendix, we describe these sources and the procedures followed to select agencies for participation in the study.

1. Telephone Interviews with SDP and EP Staff Members

We conducted telephone interviews with SDP and EP staff members to better understand program goals and fellow and agency application and selection procedures. We used a formal interview protocol to guide these 60-minute conversations.

To understand the support provided to fellows and program activities, we also attended one SDP and one EP workshop in fall 2012. These workshops provide fellows and analysts with an orientation to the programs, professional development training, and an opportunity to interact with peers from around the country. Documentation of workshops included taking careful notes on workshop presentations and activities as well as collecting and reviewing training materials, handouts, and meeting agendas.

2. Site Selection and Visits

The study team selected agencies that would demonstrate a range of data use activities taking into consideration the following criteria: (1) partner organization (SDP or EP); (2) agency characteristics, such as size, type, and geographic location; (3) data activities; and (4) input from SDP and EP staff. Characteristics of the selected agencies are summarized in Table B.1.

Table B.1. Summary of Selected 2012–2013 Evaluation Sites

	Number of Sites
Total Sites	7
Partner Organization	
Strategic Data Project	5[a]
Education Pioneers	4[a]
Site Characteristics	
State education agencies	2
District agencies	3
Charter district/Charter management organization	2

[a]Two sites partnered with both SDP and EP.

The agencies that participated in the evaluation were primarily school districts and state education agencies, which form the majority of partner agencies for both SDP and EP. The study team also included two charter districts or charter management organizations to better understand the unique activities of such entities.
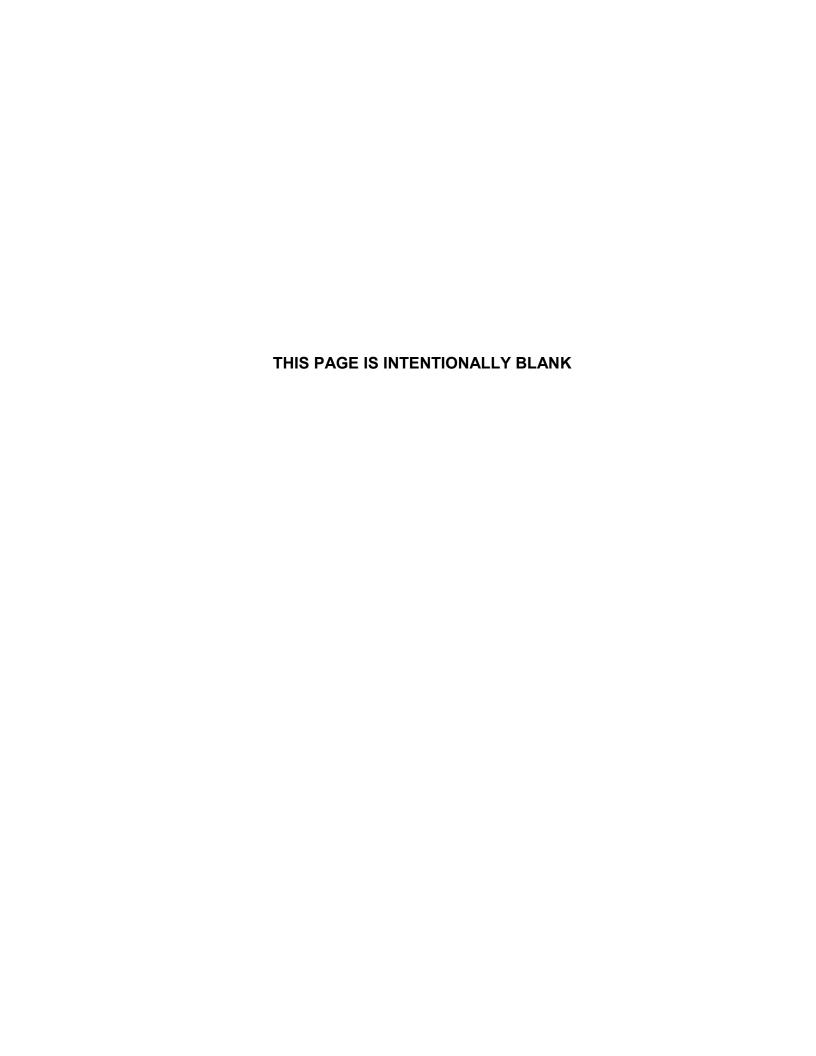
Each site visit was conducted by one study team member over 1.5 days and consisted of a series of 60-minute interviews with a host of key officials. During site visits, study team members used formal interview protocols for each respondent type to guide conversations. A summary of the number of completed interviews by respondent type is presented in Table B.2.

Table B.2. Summary of Interview Respondents from 2012–2013 Evaluation Agencies

	Number of Interviews
Agency leadership	17
Human resources administrator	8
Research and assessment or curriculum administrator	16
Information technology administrator	7
Financial officer or budget administrator	2
SDP/EP fellows	17
Teacher's union representative	3
School board representative	2
Total Interviews	**72**

We collected documents from each agency to augment our understanding of the activities undertaken by fellows and of each agency's goals, processes, and activities. Collected documents included project-related presentations to school board or governance councils, report templates, data reports, mission statements, performance management targets, and evaluation procedures.

The data collected for this report focused on the early implementation of the SDP and EP programs in 2012–2013. Later reports will collect information designed to provide further implementation details, such as the types of data analyses agencies conduct and the resulting decisions.

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