Insights in Education and Work

Principals' Use of Data:

An Executive Summary

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ACT®

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The purpose of this report is to provide a descriptive account of principals' use of data for decision making in one midwestern state. Included in this report is a summary of how often principals use data, their perceptions of data decision-making utility, confidence in using data, and the organizational mechanisms present to support data use. The report concludes with distinct barriers to data use.

Acknowledgments

The authors would like to thank the cross-functional team at ACT who provided invaluable guidance on the research design and survey development. These individuals are Chrys Dougherty, Teri Fisher, Laura Stevens, and Briana Huntsburger. A special thanks to Jeff Wayman who provided feedback on early versions of each survey.

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Introduction

In February of 2012, principals in one Midwestern state were invited to participate in *ACT's Principal Data Use Survey* to ascertain their self-reported beliefs, attitudes, and actions related to using data. We defined data use or data-informed decision making as "systematically analyzing existing data sources within the school, applying outcomes of analyses to innovate teaching, curricula, and school performance, and, implementing (e.g. genuine improvement actions) and evaluating these innovations" (Schildkamp & Kuiper, 2010).[1] In the survey, we focused on specific types of data, including:

- National and state achievement test data (e.g., Stanford 9, K-Prep, ACT, SAT)
- Formal assessments (e.g., district benchmark assessments)
- School assessments (e.g., quizzes, grades, assignments)
- Other student data (e.g., disciplinary information, ELL status, supplementary education participation, student retention)
- Other data (e.g., survey data, classroom walkthrough data)

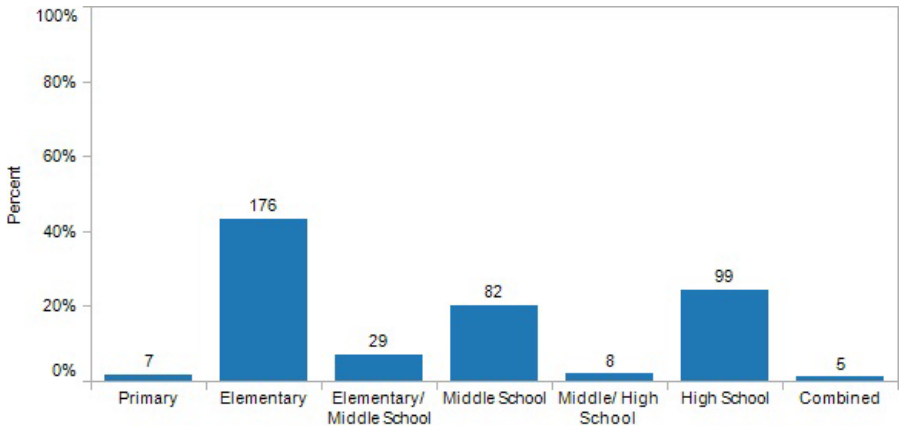
Principals were instructed to think of these types of data when answering the survey questions. Principals were asked to report how frequently they use these data to: inform the school's vision, inform school and individual student learning, make decisions on organizational operation and moral perspective, identify collaborative partnerships and the larger political context, and inform staff placement.

Responses to the level of usefulness that accessible data had for decision making were also requested. Moreover, since the frequency and usefulness of data are only as meaningful as the context in which they are used, we also sought to ascertain school- and district-level support mechanisms for effective data use, principals' perceptions of the quality of the data available, and principals' confidence in using data. Barriers, whether perceived or actual, were also obtained. Finally, principals were asked to indicate how they support teachers in their data use and how long they have been implementing data based initiatives at their school. For more details about the specific questions, please see a copy of the survey instrument in Appendix A3.

The remainder of this report summarizes principals' responses on *ACT's Principal Data Use Survey*. We begin by describing the principals who responded to the survey. We then move into the major areas of data use believed to be important conditions for using data effectively. We conclude with an overall summary of results and a resource page listing the literature that describes the factors that shape effective data use. Appendix A presents a technical summary of item development, survey administration, and data analysis.

Who Responded?

ACT's Principal Data Use Survey was completed[2] by 406 (34%) of all principals from 147 (84%) school districts in the state. Most of the responding principals[3] were White (95%) and slightly more than half were male (52%). The respondents had an average of 7 (*S.D.* = 7.2) years of experience as a principal, with most of this experience in the school and district in which the principal was currently employed (district *M* = 6, *S.D.* = 6.3; school *M* = 5, *S.D.* = 4.6).



Note: The height of a bar represents the percentage of principals responding to that school level. The number above the bar is the number of principals responding to that school level.

Figure 1. School level distribution

Principals who responded to the survey have an average of 12 (*S.D.* = 5.8) years of teaching experience. The largest percentage of principals previously taught elementary (n = 139), followed by history (n = 97). Forty-three percent (43%) of principals who participated in this study lead the elementary grades (e.g., Grades K–5). See Figure 1 for all other school levels.

Making Meaning from the Numbers

At ACT, we are in the business of presenting numbers to people. When we present a number, there is a level of precision associated with that number. Many things affect this precision including how much data are used to estimate the number. When a number is based on hundreds of thousands of pieces of data, it is very precise. However, the more precise the number, the more likely we are to find statistically significant results when comparing across groups and items even if the results might not be meaningful. We need to be able to determine to what degree differences in comparative analyses are of practical importance. In this report, we would keep in mind that comparing results across items should be done with caution. For example, although 90% of principals might indicate that they have access to district level data, this may or may not be statistically different than 75% access to school mobility data.

In addition, it may be that only certain groups in the population respond. This can lead to situations in which the sample does not look like the entire population in which we are interested. We try to get as representative a sample as possible, but there may be certain types of principals who respond to the survey and a different sort who do not respond. We provide exploratory results as to whether those principals who responded look like the principal population in the state in Appendix A. However, given the limited data available at the state level, we recommend being cautious in generalizing the results presented here to the entire principal population.

Principals' Self-Reported Responses on Data-Informed Decision Making

What types of data do principals have access to and how useful are these data?

Principals were asked if they had access to a variety of types of data and how useful they found those data to be. The principals reported having access to most data types generated from students' scores on state, district, and school tests, as well as having access to survey responses from parents and students. Fewer principals indicated having access to nationally normed assessments and student course enrollment histories. Figure 2 shows how useful principals felt some of the data types were for decision making. In general, principals felt the data were useful, with most data types reported as being at least 50% "Very Useful" or "Extremely Useful" to principals. Each gray bar in the graph shows the percentage of responding principals who reported the data type as either "Very Useful" or "Extremely Useful." The blue line indicates the percent of principals reporting that the data type was available. Only principals who indicated they had access to the data element recorded the degree to which it was useful.

Most principals gain access to these data on their own a few times a week (55%); slightly fewer (44%) request data from someone else weekly or almost weekly, and even fewer (37%) have someone provide them with the data without them asking once or twice a month. Principals indicate that at least some of their data are available across time. Almost half (47%) of principals indicated that at least 75% of the data they have available to them is tracked across multiple years, with another 32% indicated at least 50% of their data are longitudinal.

Ninety percent (90%) of principals indicated they had access to an electronic data system; however, only seven percent (7%) indicated that all these systems talk to one another. The remaining principals reported that none of the systems talk to each other (31%), parts of the system are able to talk to each other (51%), or they only have one data system (11%). At least 89% of the principals have access to the data system in their office, somewhere else in the school, and/or via the internet at home.

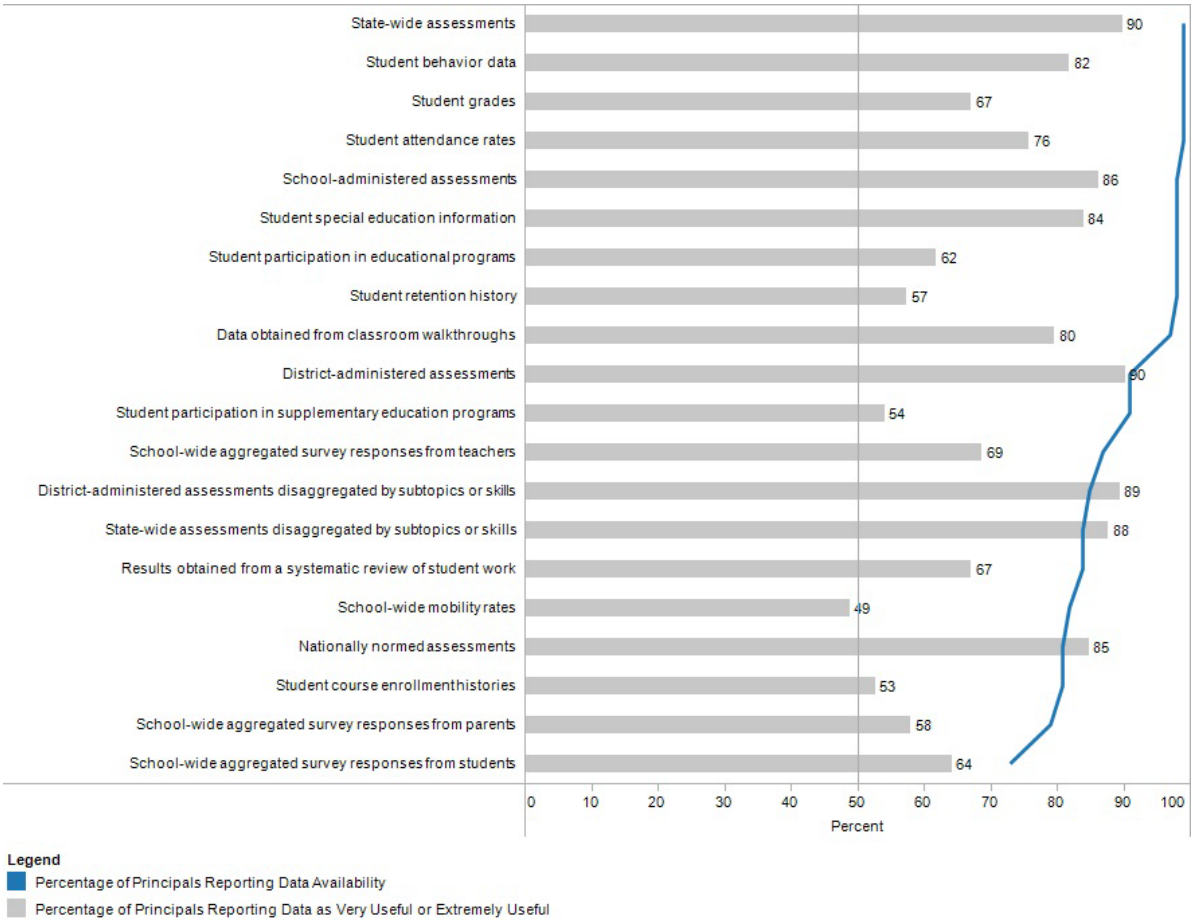
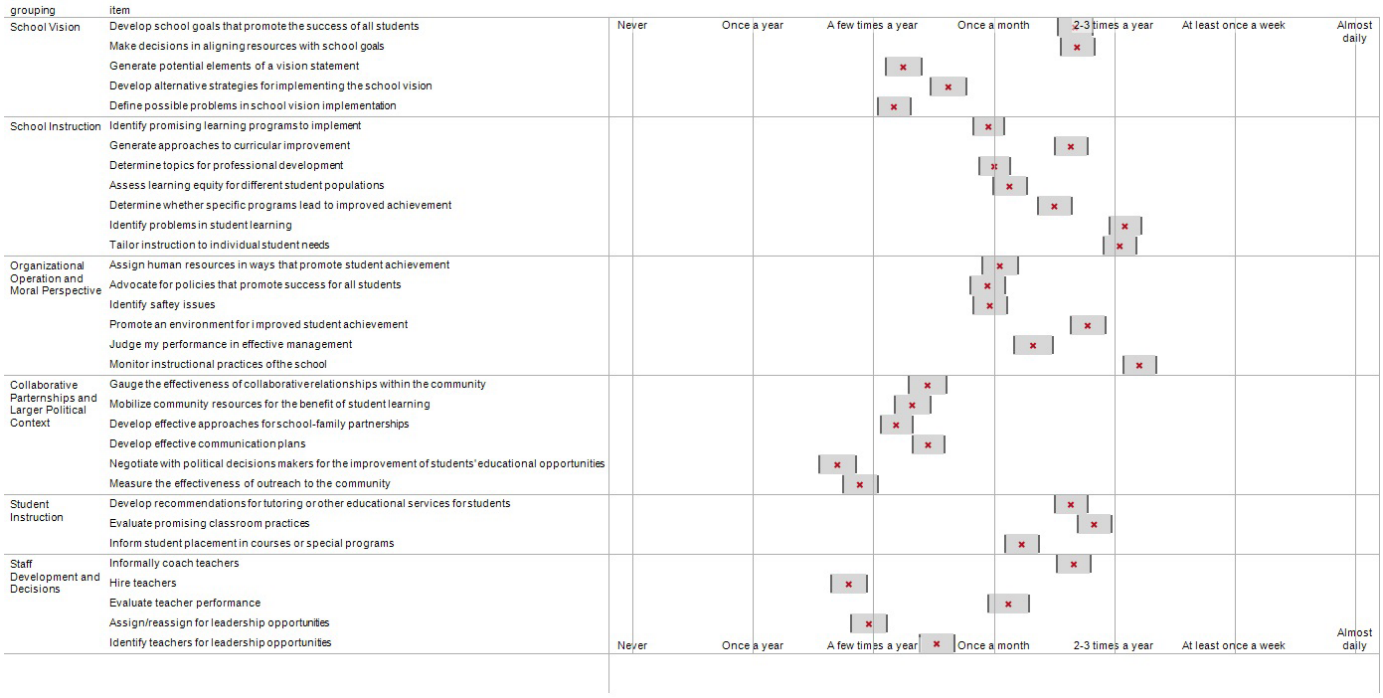


Figure 2. Accessible and useful data elements

How often do principals use data for decision making?

Principals were asked 32 questions about how often they used data to: inform the school's vision, inform school and individual student learning, make decisions on organizational operation and moral perspective, identify collaborative partnerships and the larger political context, and inform staff placement. The mean for each item was plotted (red x) as well as the confidence interval around that mean (gray box) in Figure 3.

Comparing ways of using data, all principals reported more frequently using data to monitor instructional practices of the school. Across items, principals tend to use data between a few times a year and 2–3 times a year, depending on the data use context. Principals were less inclined to use data for collaborative partnerships and for the larger political context. Overall, principals use data to inform decision making but do so at different frequencies based on the decision that needs to be made.



Note: red x indicates mean item score and each grey box represents a confidence interval around that mean item score.

Figure 3. Frequency of data use

What are principals' attitudes about data and how confident are they in using them?

Positive attitudes towards using data and confidence in one's own ability to use data are closely related. Principals were asked seven questions about their attitudes towards using data and four questions about their confidence in their own ability to use data. The means for these were computed to create an "attitude towards data variable" and "confidence using data variable." Figure 4 shows the responses on these, where values from 1 to 6 represent the scale from "Strongly Disagree" to "Strongly Agree." Each individual principal is shown with a dot; the overall mean is shown with a red X. Most of the data are in the top right corner, showing that most principals have positive attitudes towards data and are fairly confident using data.

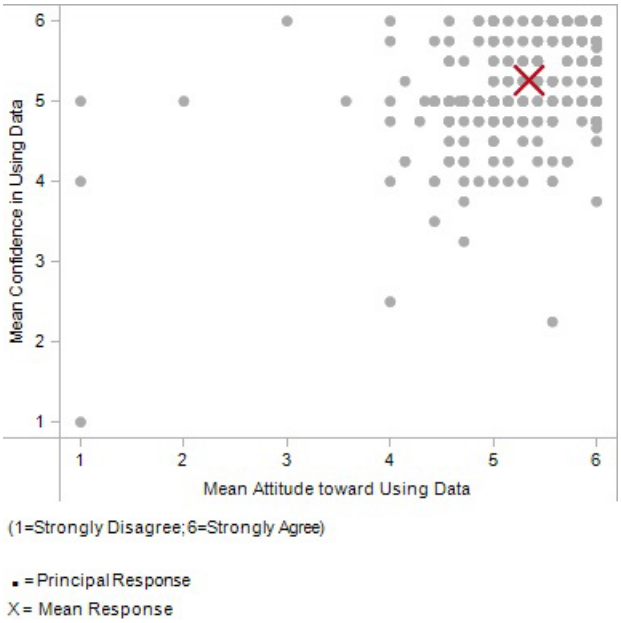


Figure 4. The relationship between confidence in one's own ability to use data and attitude towards using data.

What are principals' beliefs about district benchmark assessment data and state assessment data?

Principals were asked five questions about their beliefs concerning district benchmark assessment data and five questions about their beliefs concerning state assessment data. These questions asked about: *applicability to work*, *ease of interpretation*, *whether it is a good measure of student learning*, *whether it is easily accessible*, and *whether it is aligned well to curriculum standards*. Overall, there was slightly more satisfaction with the district benchmark assessment data relative to assessment state data. In particular, principals believed that the district benchmark assessment data are easier to interpret, better measures of student learning, and more easily accessed when needed. Figure 5 shows the district benchmark variable plotted with the state variable. The largest group of data is in the upper right quadrant. These are principals who are generally favorable to both types of assessments. Overall, positive beliefs about one assessment type were correlated with positive beliefs about the other assessment type.

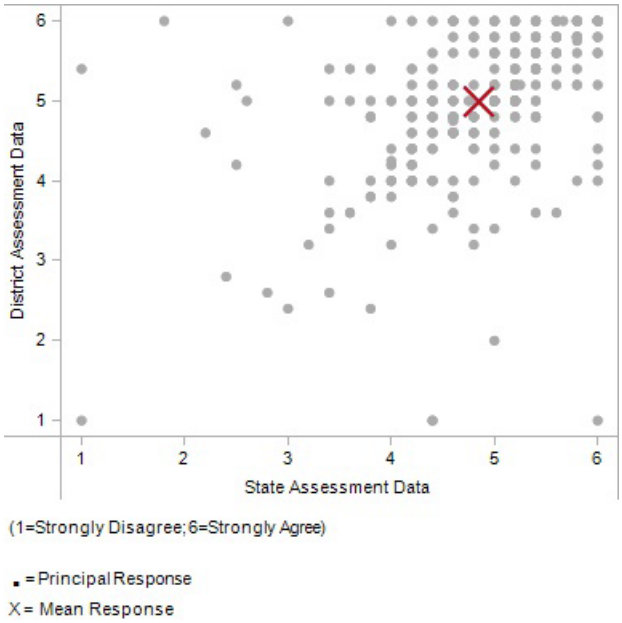


Figure 5. The relationship between beliefs about district benchmark data and state assessment data

What types of professional development on data use do principals receive and how impactful is it?

Professional development (PD) is a key way in which district and school administrators can enhance principals' use of data. Overall, nearly one out of three (32%) of principals reported that, in the past academic year, they had between four and eight hours of professional development focused on using data. Over one out of four principals (27%) reported having between nine and 16 hours of professional development. Almost 19% reported having less than four hours.

Figure 6 shows the percentage of people who indicated that the professional development activity was "Very Useful" or "Extremely Useful" (gray bar) as well as the percentage of principals who report that the professional development activity was provided by the school and/or the district (blue line). Approximately three out of four principals (86%) indicated having PD that helped them interpret data to identify students' instructional need. Principals, however, had much less exposure to PD that helped them to synthesize multiple measures (51%) and ask questions about the quality of their role as principals that can be answered with data (43%). Although principals indicated that they have received professional development to use the basic functions of the data system (74%), principals were less likely to indicate that it was useful (57%) relative to other PD topics.

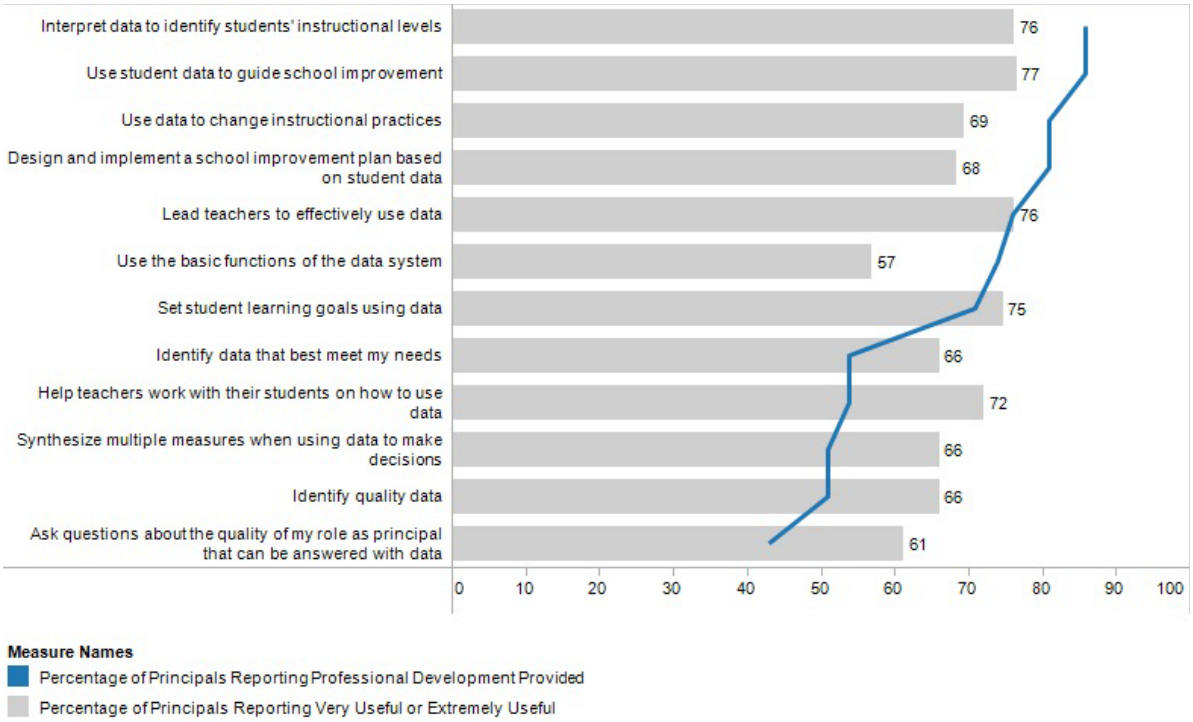
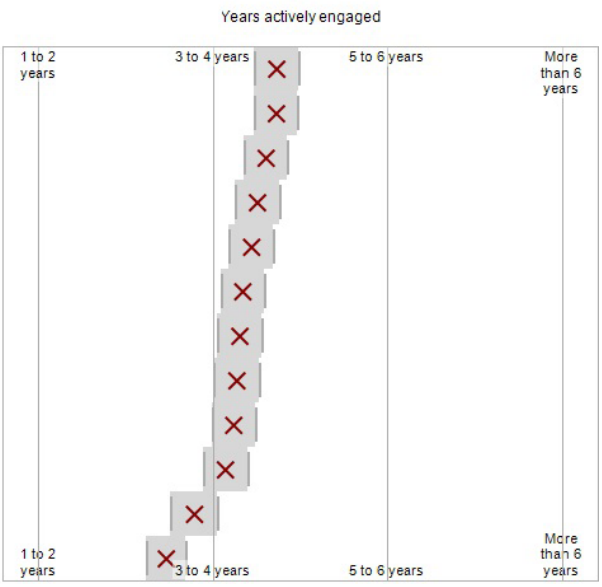


Figure 6. Professional development provided and level of usefulness

How long have schools participated in data initiatives?

There were fewer principals who have started or have no plans to start tracking teacher use of their information management system. Most principals, across data initiatives, have begun data integration.

	No plans in this area (%)	Planning but have not started (%)
Designing/acquiring an information management system to support data analysis	4.3	4.9
Providing formal time for teachers to discuss data in a group setting	0.0	2.9
Establishing a process for continuous improvement	0.3	5.6
Designing professional development to build capacity for teachers to analyze, interpret, and use data	1.7	5.2
Establishing a culture of data use at the school level	0.6	7.2
Providing teachers with research-based guidance on differentiating instruction based on student assessment data	0.6	7.0
Requiring teachers to follow specific data-informed decision making practices in the school improvement plan	2.0	8.4
Providing teachers with access to a data expert	9.4	8.2
Providing models to teachers to illustrate how to use data in informing their instruction	2.6	5.8
Following up to determine if teachers have implemented instructional changes prescribed as a result of data analysis activities	1.5	10.3
Tracking teacher use of the information management systems	13.5	12.6
Providing teachers with access to an online data base of lesson plans and planning resources linked to academic standards and assessment results	2.0	11.7



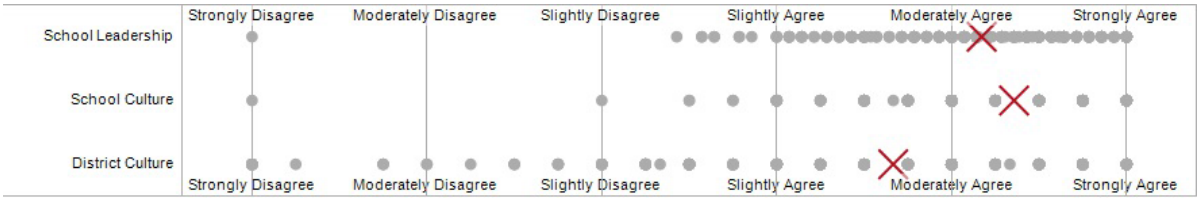
Note: red x indicates mean item score and each grey box represents a confidence interval around that mean item score.

Figure 7. Historical account of data initiatives

Of those principals who indicated that they had already implemented data-related initiatives (approximately between 75–95% of principals, depending on the activity), on average, they had done so in the last four years. Figure 7 presents these trends.

How do schools and districts support data use?

Principals were asked to report how school leaders provide support to teachers' in their use of data. Example items include *school administrators (including myself) discuss data with teachers* and *create many opportunities for teachers to use data*. On average, principals moderately agreed that their school leaders provided these support mechanisms to teachers. Principals were also asked to indicate the degree to which they agreed that the school and district provided a culture of data use. Principals were more inclined to say that the school provided a positive culture relative to the district. Figure 8 presents these data.



Note: A red X indicates the mean of subscale scores and each gray dot represents a respondent's subscale score.

Figure 8. District and school support for teachers' data use

Principals were also asked how districts provide support to principals and teachers in their use of data. Figure 9 presents these results. District administrators tend to assist school staff in using data to reach school goals but are less inclined, according to the principals, to provide policies to indicate when teachers should work with data. Principals indicated that providing the first round of data analysis before the beginning of the school year is the most useful, relative to other potential district services; however, fewer principals indicate that is occurs.

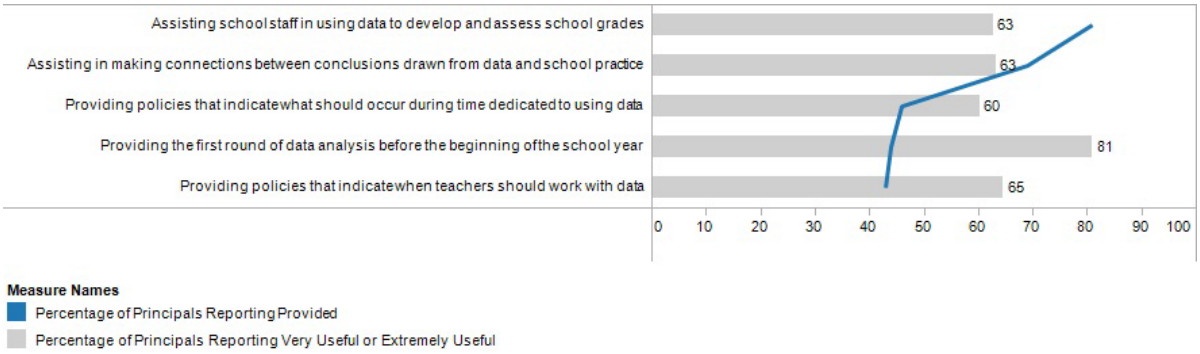
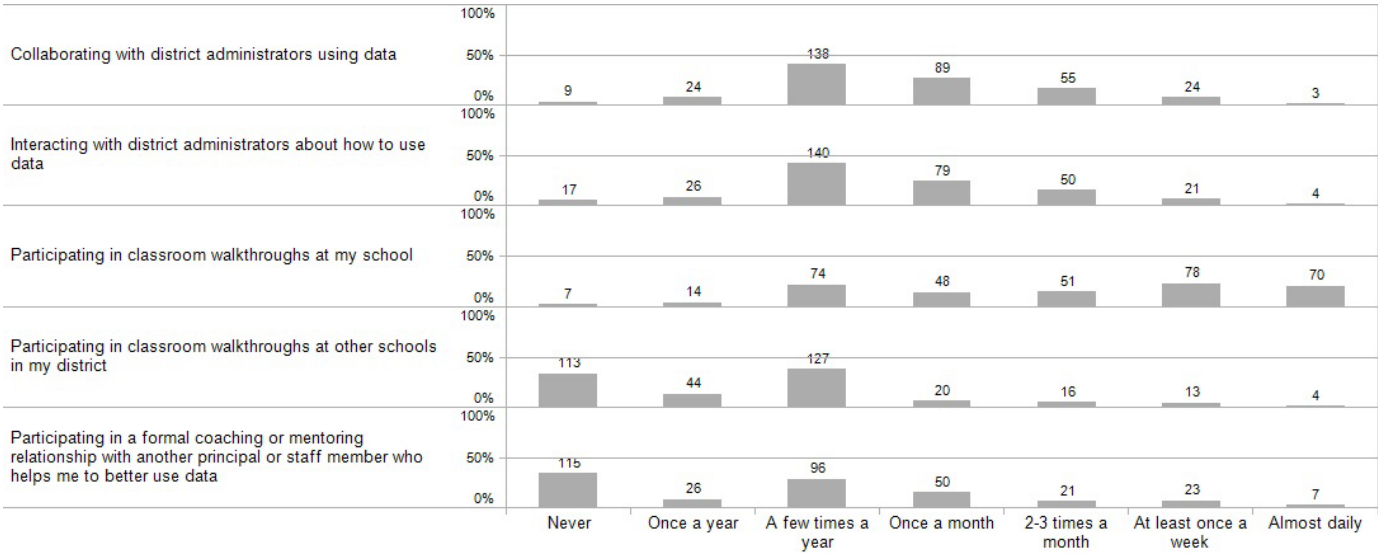


Figure 9. Percentage of school and district support provided and level of usefulness

How often do principals collaborate with other staff on data use?

Principals were asked how often they collaborated with other staff on a variety of data use activities, including *interacting with district administrators about how to use data* and *participating in a formal coaching or mentoring relationship with another principal or staff member who helps them to better use data*. Principals were likely to indicate that they never

work with a formal coach or participate in classroom walkthroughs at other schools (Figure 10). For the most part, however, principals reported collaborating with others on data a few times a year.



Note: The height of a bar represents the percentage of principals responding to that item and category. The number above the bar is the number of principals responding to that item and category.

Figure 10. Collaboration with others

What are the types of barriers principals report?

Principals were asked what they felt were barriers for data-informed decision making in their schools. Eight potential barriers were listed, and principals indicated whether the potential barrier was not a barrier, was a minor barrier, or was a major barrier. We classified these into three groups (see Table 1).

Table 1. Barriers to Data Use.

Label	Definition	Potential barriers in this category. Lack of . . .
Not a barrier	<50% of responses said either minor barrier or major barrier	• district leadership support for data-informed decision making • electronic data system • policies that provide direct access by school staff to all or portions of the data system • student performance data in specific subject areas
Minor barrier	between 50% to 75% of responses said either minor barrier or major barrier	• school staff-preparation on how to use data for instructional decision making • technical skills of school staff to access or use electronic data systems • communication or sharing of data across departments within the district
Major barrier	> 75% of responses said either minor barrier or major barrier	• time for school staff to conduct data-informed decision-making activities

Conclusions

The goals of ACT's research on data use best practices are to understand how data are being used by educators at various levels of the organizational system—teachers, school leaders, and district administrators—to identify which practices yield the greatest impact on student growth, to highlight the ways in which educators are successful in using data, and to identify where ACT might provide support in improving educators' data-informed decision making. Responses from principals have helped us to move towards our principle goal of helping educators improve data-informed decision making.

Thank you! Thank you to the principals who endorsed the survey, and thank you to the principals for filling them out. We know *time* is precious and that that a principal filling in a survey is one of many requests that go beyond the usual principal role. We thank you for filling this out. We know that you do it because you trust that we are using these data to improve students' education. Your trust is important to us, and your effort will help us to achieve our shared goal of improving education.

Endnotes

1. Schildkamp, K., & Kuiper, W. (2010). Data-informed curriculum reform: Which data, what purposes, and promoting and hindering factors. *Teaching and Teacher Education, 26*, p. 482–496.
2. Completion was defined as any respondent who answered at least 20% of the survey questions.
3. Either the principal or the assistant principal, which ever person was most knowledgeable about school level data use was asked to complete the survey. This report aggregates these responses into a "principal" data use report (95% reported being a principal and 5% reported being an assistant principal).

Resources

Here we provide a reference list of research studies that indicates the importance of various factors (e.g., access to data, access to an electronic data system and expert, and school and district leadership) informing effective data use in schools. We end with research that supports the claim that using data is important for student achievement, administrator leadership, and organizational change.

Access to data:

Coburn, C. E., & Turner, E. O. (2011). Putting the "use" back in data use: An outsider's contribution to the measurement community's conversation about data. *Measurement: Interdisciplinary Research and Perspective, 9*(4), 227–234.

Honig, M. I., & Venkateswaran, N. (2012). School-central office relationships in evidence use: Understanding evidence use as a systems problem. *American Journal of Education, 118*(2), 199–222.

Marsh, J. A., Pane, J. F., & Hamilton, L. S. (2006). *Making sense of data-driven decision making in education.* Santa Monica, CA: RAND Education.

Access to an electronic data system:

Coburn, C. E., & Turner, E. O. (2011). Putting the "use" back in data use: An outsider's contribution to the measurement community's conversation about data. *Measurement: Interdisciplinary Research and Perspective, 9*(4), 227–234.

Luo, M. (2008). Structural equation modeling for high school principals' data-driven decision making: An analysis of information use environments. *Educational Administration Quarterly*, *44*(5), 603–634.

Wayman, J. C., Cho, V., Jimerson, J. B., & Spikes, D. D. (2012). District-wide effects on data use in the classroom. *Education Policy Analysis Archives*, *20*(25), 1–31. Retrieved from http:/epaa.asu.edu/ojs/article/view/979.

Data expert:

Marsh, J. A., Pane, J. F., Hamilton, L. S. (2006). *Making sense of data-driven decision making in education.* Santa Monica, CA: RAND Education.

Schildkamp, K., & Kuiper, W. (2010). Data-informed curriculum reform: Which data, what purposes, and promoting and hindering factors. *Teaching and Teacher Education, 26*, 482–496.

Wayman, J. C., Cho, V., Jimerson, J. B., Spikes, D. D. (2012). District-wide effects on data use in the classroom. *Education Policy Analysis Archives, 20*(25), 1–31. Retrieved from http:/epaa.asu.edu/ojs/article/view/979.

School and district leadership:

Honig, M. I., & Venkateswaran, N. (2012). School-central office relationships in evidence use: Understanding evidence use as a systems problem. *American Journal of Education, 118*(2), 199–222.

Luo, M. (2008). Structural equation modeling for high school principals' data-driven decision making: An analysis of information use environments. *Educational Administration Quarterly*, *44*(5), 603–634.

Marsh, J. A., Farrel, C. C., & McCombs, J. S. (2015). How leaders can support teachers with data-driven decision making: A framework for understanding capacity building. *Educational Management Administration, & Leadership, 43*(2), 269–289.

Schildkamp, K., & Kuiper, W. (2010). Data-informed curriculum reform: Which data, what purposes, and promoting and hindering factors. *Teaching and Teacher Education, 26*, 482–496.

Data use:

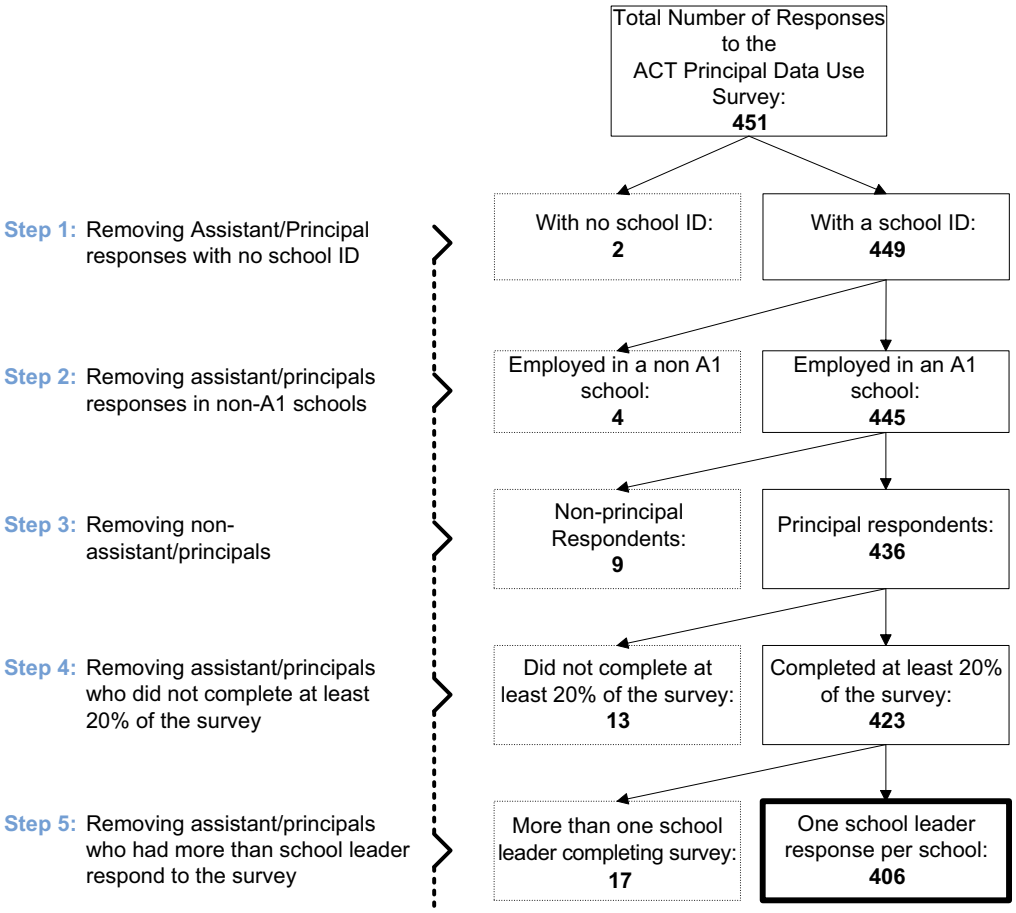
Schildkamp, K., & Kuiper, W. (2010). Data-informed curriculum reform: Which data, what purposes, and promoting and hindering factors. *Teaching and Teacher Education, 26*, 482–496.

Wayman, J. C., Cho, V., Jimerson, J. B., Spikes, D. D. (2012). District-wide effects on data use in the classroom. *Education Policy Analysis Archives, 20*(25), 1–31. Retrieved from http:/epaa.asu.edu/ojs/article/view/979.

Appendix A1. Population and Analytical Sample Description

The focus of this research study was to ascertain principals' perceptions of their use of data for decision making, including their confidence in using data, beliefs about the utility of using data, and the support mechanisms in place at the school- and district-levels that aided in that use. As such, the research population included the 1,194[1] schools classified as either principal or head teacher controlled schools (i.e., A1 schools—see Table A1.1).

Figure A1.1 presents the number of principals or assistant principals[2] who participated in the ACT data use study in one Midwestern state. A total of 451 principals responded to the ACT Principal Data Use Survey, however, since the research focus was to understand principals employed in principal or head teacher controlled schools, some data were removed prior to analyses.



Note: A1 indicates principal or head teacher controlled schools; the dark black border box represents the final analytical sample; the dotted lined boxes represent the principals who were removed from the analytical file.

Figure A1.1. Analytical sample

First, those principals who did not have a school ID were removed (n = 2) from the analysis. This occurred when a respondent did not answer the survey questions that asked them from which school and district they were primarily employed or they did not answer the survey using the custom URL link, a situation in which school employment was not captured. School ID was

an important variable in connecting responses with the school and district context. Second, some respondents were employed in organizations that were not principal or head teacher controlled schools. According to the state categorization system,[3] there are nine school classifications, presented in Table A1.1. Any respondent who indicated a school classification that was not A1 were removed from the analytic data file. The four principal responses removed from the analytical sample came from A5 schools (i.e., district operated alternative) or schools that were not classified.

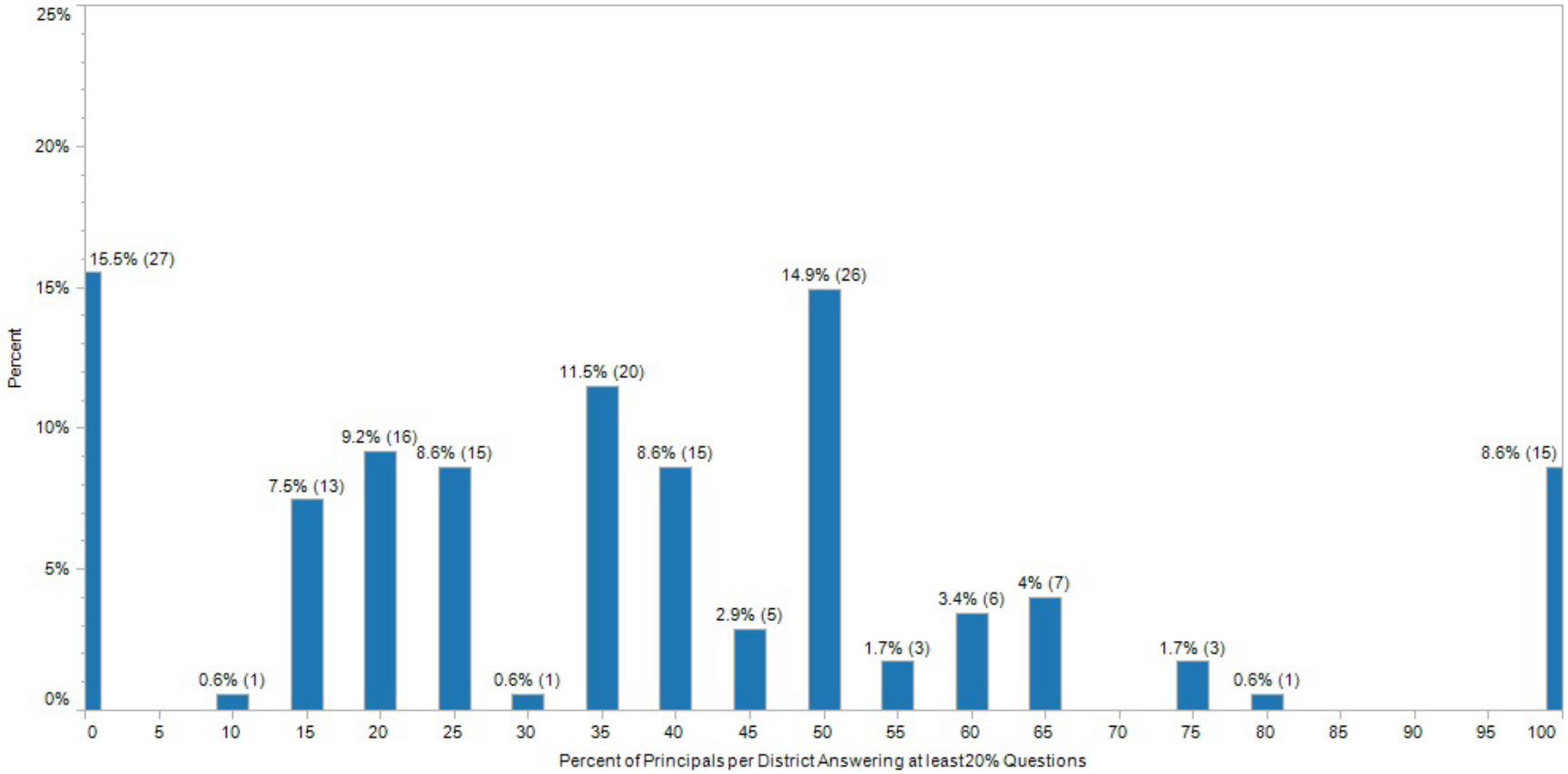
Third, any respondent who self-identified as not a principal or assistant principal was removed (n = 9). These individuals were self-identified as a teacher, curriculum coach, counselor, education recovery leader, director of instruction, instruction supervisor, or intervention specialist. We wanted to keep the school leadership role as consistent as possible across the different school responses and as such only included those who indicated they were a principal or an assistant principal. Fourth, we wanted to create an analytical sample that included relatively meaningful and coherent data; therefore, any respondent who did not complete at least 20% of the survey was removed (n = 13). In essence, these were individuals who only answered the first few survey items that asked the respondents to describe themselves and the school in which they primarily worked but they exited the survey prior to providing information on their use of data. Finally, we wanted to maintain equal representation per school. A total of 14 schools had more than one principal respond to the survey. We kept only one of the respondents, typically the principal's responses or the respondent answering the most questions for a particular school, removing 17 responses from the analysis.

In the end, a total of 406 principals were included in the analytic sample those survey participants were included in the reporting of principals' perceptions of data use. This is an estimated response rate of 34%.[4]

Table A1.1. Department of Education School Classification

Classification	Classification Description
A1	Principal or head teacher controlled school
A2	District operated-vo. tech school
A3	District operated-special ed school
A4	District operated-preschool program
A5	District operated-alternative school
A6	District operated program in non-district school
C1	State operated vocational tech. school
D1	State Dept. of Ed operated (Blind & Deaf)
R1	Private, non-church related

Principals included in the analytic sample came from 147 or 84% of districts with A1 schools in the state. Across all districts with A1 schools, less than three principals participated per district, on average. There was, however, a relatively wide range of percentages of principals participating at the district level. About 41% of districts (n = 72 of 174) had less than 27.5% of its principals responding to the *ACT Principal Data Use Survey;* about 38% of districts (n = 66 of 174) had between 32.5% and 52.5% of its principals responding; and the remaining districts had more than 52.5% principal participation (20%; n = 35 of 174). Interestingly, 15 districts had a 100% principal participation rate and 27 districts had a 0% principal participation rate. Figure A1.2 provides the distribution of principal responses at the district level.



Note: x-axis represents the midpoint; 5% is the midpoint between 2.5% and 7.5%. Each bar includes both the % and (number of schools).

Figure A1.2. Principal response rates by district

School type was defined by the state school profile[5] and school type (see Table A1.2). Principals were identified by the type of school in which they were primarily employed.

Table A1.2. School Type Definition

School Type	Beginning with Grade . . .	Ending with Grade . . .
Primary	Entry/Primary/Preschool	Entry/Primary/Preschool, 1, or 2
Elementary	Entry/Primary/Preschool, 1, 2, 3, or 4	3, 4, 5, or 6
Elementary/Middle	Entry/Primary/Preschool	7 or 8
Middle School	4, 5, 6, 7, or 8	6, 8, or 9
Middle/High School	5, 6, or 7	12
High School	9 or 10	9 or 12
Combined	Entry/Primary/Preschool	12

Principal participation by school showed similar patterns across school type, although primary schools had the lowest average principal response rate at 25%, and high schools had the highest average principal response at just over 49%. Table A1.3 provides the average principal response rate by school type.

Table A1.3. Principal Participation by School Type

School Type	# Principals Responding	# Possible Principals	Average Principal Response Rate per School Type
Primary	7	28	25.0%
Elementary	176	630	27.9%
Elementary/Middle School	29	79	36.7%
Middle School	82	224	36.6%
Middle/High School	8	20	40.0%
High School	99	201	49.3%
Combined	5	12	41.7%
All Schools	**406**	**1194**	**34%**

Note: The "# Possible Principals" column represents principals who had the potential to be a part of the analytic sample (i.e., in A1 schools, with a district/state ID). The "# Principals Responding" column represents the number actually in the sample. Note that there were 147 districts represented with at least one principal responding, and there were 174 total districts in the state.

Appendix A2. Instrument Description

A survey instrument, the *ACT Principal Data Use Survey,* was used to collect the data for this study. The survey instrument is a comprehensive survey that elicits principals' perceptions of their use of data for decision making, their confidence in using data, the quality of data available, and the school- and district-level mechanisms in place to support principals' data use. The instrument itself was constructed by an ACT research team in 2011. Most items originated from pre-existing survey instruments while other items were constructed by the ACT research team. The *Principal Data Use Survey* is comprised of 16 reliable subscales[6] as well as several other items intended to stand on their own. The survey begins with principal qualification questions (e.g., years of principalship experience; number of years of teaching experience) and ends with demographic information (e.g., gender, ethnicity, age).

The instrument was developed through an extensive review of the literature. Emphasis was given to data use studies that utilized a survey research design (e.g., Luo, 2008; Wayman, Cho, Jimerson, & Spikes, 2012)[7] and research reviews summarizing effective data use and the mechanisms that foster that use (e.g., Coburn, & Talbert, 2006; Schildkamp, & Kuiper, 2010; Spillane, 2012).[8] Through this work, the research team first developed a theoretical model of data use (see Figure A2.1) that was then used to identify the key areas that could be measured using a survey. Pre-existing survey items[9] and key concepts, found in the literature and rephrased into survey items, were aligned to the areas in the theoretical model to identify the survey's content coverage. What resulted was a draft principal data use survey that measured the following areas: interventions to promote data use, data characteristics, data user characteristics, school and district organizational support, and the frequency of data use.[10]

This draft survey was then reviewed by two external experts on data use and four internal ACT staff experts in educational best practices. The reviewers were asked to provide feedback on each survey item for clarity, applicability to the teaching profession, and relevance to the field of data use. Where applicable, modifications were made to the survey item.

The survey was then field-tested through cognitive interviews. The cognitive interview asked principals and assistant principals to speak out loud as they were answering each survey item. Periodically, the researcher stopped the process to ask specific questions about the respondents' interpretation of the item or scale. Principals and assistant principals were recruited so as to diversify respondents by years of experience, grade level, subject area, and type of school (i.e., rural, urban, and suburban). This was largely achieved, but recruitment was done by convenience.

The goals of the cognitive interviews were to reduce the length of the survey and ensure that items and the scale were being interpreted as intended. This process resulted in a 25% reduction in the survey length and minor edits to the items. We also wanted to identify the types of data (e.g., standardized assessments, grades) that respondents thought of as they answered the survey questions (e.g., how often do you use data to plan lessons) and whether it was necessary for us to provide a list of data types as a way to create continuity in responses. Interview responses showed that respondents varied in how they defined "data" so instructions were also added to the survey requesting that respondents think of these types of data—national and state achievement test data, formal benchmark assessments, grades, disciplinary information—when responding to how data inform their educational practice.

Survey items were developed primarily by the ACT research team, but items from pre-existing surveys were also used.[11] Subscale scores were calculated by averaging across items that

comprised the given subscale. Those who answered at least 50% of the items that make up the subscale received a subscale score. Below, we discuss when a subscale was created and when individual items were used. The major areas of the *ACT Principal Data Use Survey,* including sample items, the scale, and reliability results, are described next; Table A2.1 summarizes this information. Appendix A3 presents the *ACT Principal Data Use Survey* in its entirety.

Data Availability. The survey consisted of six major questions associated with the types of data principals have available to them and how such data are accessed. Respondents were asked to report whether they had access to 20 data elements and, if accessible, their level of usefulness for making decisions about instructional matters. Participants were asked to indicate whether they had access to and found useful, for example: *Student test scores on state-wide assessments* and *School-wide aggregated survey responses from parents.* Accessibility was scored on a dichotomous scale (0 = no; 1 = yes) and usefulness was scored on a five-point scale (1 = not useful; 5 = extremely useful). Data were analyzed at the item level.

Respondents were also asked how often they accessed these data, what percentage of the data was longitudinal, and whether the data were accessible using an electronic data system, and if so, from where was the system accessible. Respondents were also asked whether the data systems they have available to them talk to one another. The respondents were then provided an opportunity to respond to an open-ended question asking them to indicate the data they would like to have access to but currently do not. These questions were analyzed at the item level.

Data Use. These items pertained to four areas in which principals use data: school vision (5 items), school instruction (7 items), organizational operation and moral perspective (6 items), collaborative partnerships and the larger political context (6 items), student instruction (3 items), and staff development and decisions (5 items). Most of these areas for principal use originate with the work conducted by Luo (2008); however, the latter two areas emerged through principal cognitive interviews by ACT researchers. Items are self-rated on a seven point scale: 0 = never; 7 = almost daily. Sample items for each of the six areas include:

- *I have used data to develop school goals that promotes the success of all students.*
- *I have used data to identify promising learning programs to implement.*
- *I have used data to assign human resources in ways that promote student achievement.*
- *I have used data to gauge the effectiveness of collaborative relationships within the community.*
- *I have used data to develop recommendations for tutoring or other educational services for students.*
- *I have used data to hire teachers.*

The ACT research team has found each subscale to have internal consistency. Cronbach's alpha (α) reliability coefficients using the state data were:

- 0.87 for data use for school vision
- 0.89 for data use for school instruction
- 0.88 for data use for organizational operation and moral perspective
- 0.91 for data use for decision making in collaborative partnerships and the larger political context
- 0.79 for data use for student instruction
- 0.85 for data use for staff decision making

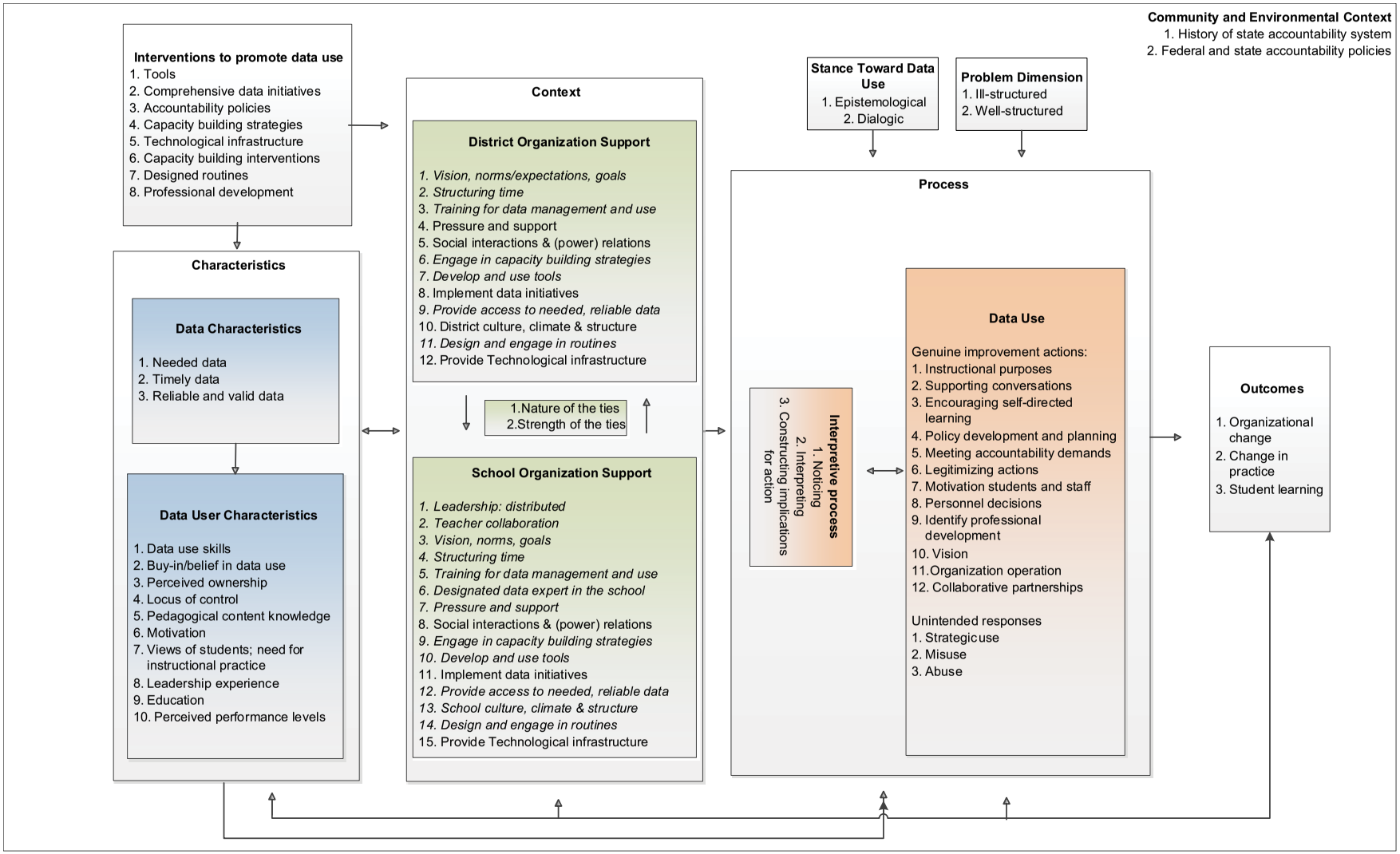


Figure A2.1. Theoretical model of data use

Data Characteristics. Respondents were asked to report on their perceptions of the quality of assessment data. Using 10 items, two areas were measured—perceived quality of state assessment data (5 items) and perceived quality of district benchmark assessment data (5 items). Using a six point scale (1 = strongly disagree; 6 = strongly agree), prompts asked respondents to describe these two types of assessments using the same descriptors. For example, two separate questions asked, one for district benchmark data and another for state assessment data, whether these data were applicable to the respondent's work. Each survey respondent received a subscale score for quality of state assessment data and perceived quality of district benchmark assessment data. These subscale scores have internal consistency (state α = .85, district benchmark α = .92).

Data User Characteristics. Respondents were asked to report on their beliefs in using data (7 items) and confidence in using data (4 items). A six point, self-rated scale: 1 = strongly disagree; 6 = strongly agree was used. Example items measuring beliefs in using data included: *data are almost always useful in helping educators plan instruction,* and *data are almost always useful in improving student learning.* Example items measuring confidence in using data included *I am confident in my ability to identify data that best meets my needs* and *I am confident in my ability to draw correct inferences from data.*

Each survey respondent received a subscale score for *beliefs in using data* and *confidence in using data.* These subscale scores have internal consistency (beliefs α = .95, confidence α = .91).

Data Use Professional Development. Respondents were first asked whether 12 areas of data use professional development topics were provided to them by their school and/or district. If the professional development was provided, they were then asked to report its usefulness. Using a five point scale (1 = not useful; 5 = extremely useful) example usefulness items included professional development on how to:

- *Use the basic functions of the data system (e.g., accessing and downloading data, data queries).*
- *Interpret data to identify students' instructional levels.*
- *Ask questions about the quality of my role as principal that can be answered with data.*
- *Use student data to guide school improvement.*

Principals were also asked to report on the impact that these professional development activities, if provided, had on them as professionals (8 items). Using a six point scale (1 = strongly disagree; 6 = strongly agree) example items asked whether the data-related professional development activities teacher participated in this year . . .

- *Increased my ability to use data effectively.*
- *Helped me better identify quality data.*
- *Improved my skills to meet the instructional needs of all students.*

These latter items were not analyzed but an internal consistency of: usefulness α = .97, impact α = .93 was found.

Data Use Collaboration with Others. Collaboration around data use focused on how frequently principals worked with district administrators and others at their school on how to effectively use data for decision making (3 items). Respondents were asked, for example, to indicate how frequently in the last year they *collaborated with district administrators using data.* A 7-point

scale was used (1 = never; 7 = almost daily). Data were analyzed at the item level and reliabilities for the state sample was high (see Table A2.1).

Support for Data Use by School and District Administrators. Principals were asked the degree to which they agreed that the school leaders (including themselves) provided a culture of data use and provided support to teachers in that use. Two scales were created—school culture (4 items) and school leadership (14 items)—to measure these two school level support mechanisms. In addition, principals were asked to indicate the degree to which they agreed that the district provided a culture of data use (4 items). For each item, a 6-point scale was used (1 = strongly disagree; 6 = strongly agree). Data were analyzed at the item level and reliabilities for the state sample were high. Example items for each of these three areas of district and school administration support included:

- School Leadership. *School administrators (including myself): discuss data with teachers* and *create many opportunities for teachers to use data.*
- School culture. *School administrators (including myself): provide a clear direction about how data should be used to improve instruction* and *convey enthusiasm about data-informed decision making to staff at my school.*
- District culture. *District administrators avoid using data to blame* and *clearly communicate that data-informed decision making is fundamental to my work.*

Historical Data Use Activities. Principals were asked to indicate for how many years their school has been actively engaged in a series of data use activities (12 items). Example items included: *how many years have you been engaged in tracking teacher use of the information management system, providing models to teachers to illustrate how to use data in informing their instruction,* and *providing formal time for teachers to discuss data in a group setting.* Reliability analyses were not conducted given the nature of the scale (1 = no plans in this area; 2 = planning but have not started; 3 = 1–2 years; 4 = 3–4 years; 5 = 5–6 years; 6 = more than 6 years). Results were therefore presented at the item level.

Data Use Barriers. Principals were asked the degree to which eight areas were believed to be not a barrier (= 1), a minor barrier (= 2), or a major barrier (= 3) to expanded use of data for decision making in their school. Example reasons included *lack of school staff preparation on how to use data for instructional decision making (e.g., data interpretation skills)* and *lack of technical skills of school staff to access or use electronic data systems.* Items were analyzed to determine the frequency of principals who reported the severity of the barrier. As such, when an item had <50% of responses indicate the reasons was a minor barrier or major barrier it was classified as not a barrier, between 50% to 75% of responses said the reason was a minor barrier or major barrier it was classified as a minor barrier, and when the reason had greater than 75% of responses saying either minor barrier or major barrier it was classified as a major barrier.

Table A2.1. Data Use Subscale Measures

Data Use Subscale	# Items	Scale	Alpha	n
Data Use for School Vision Decision Making	5	1 = never 7 = almost daily	0.87	358
Data Use for School Instructional Decision Making	7	1 = never 7 = almost daily	0.89	346
Data Use for Organizational Operation and Moral Perspective Decision Making	6	1 = never 7 = almost daily	0.88	354
Data Use for Decision Making in Collaborative Partnerships and the Larger Political Context	6	1 = never 7 = almost daily	0.91	345
Data Use for Student Instructional Decision Making	3	1 = never 7 = almost daily	0.79	355
Data Use for Staff Decision Making	5	1 = never 7 = almost daily	0.85	345
Quality of State Assessment Data	5	1 = Strongly Disagree 6 = Strongly Agree	0.85	349
Quality of District Benchmark Assessment Data	5	1 = Strongly Disagree 6 = Strongly Agree	0.92	341
Beliefs in Data Use	7	1 = Strongly Disagree 6 = Strongly Agree	0.95	344
Confidence in Using Data	4	1 = Strongly Disagree 6 = Strongly Agree	0.91	346
Usefulness of Data Use Professional Development Provided	12	1 = Not Useful 5 = Extremely Useful	0.97	41
Impact of Provided Data Use Professional Development	8	1 = Strongly Disagree 6 = Strongly Agree	0.93	195
Data Use Collaboration with Others	3	1 = never 7 = almost daily	0.78	333
School Administrators' Leadership in Data Use	14	1 = Strongly Disagree 6 = Strongly Agree	0.95	331
Culture of Data Use by School Administrators	4	1 = Strongly Disagree 6 = Strongly Agree	0.91	346
Culture of Data Use by District Administrators	4	1 = Strongly Disagree 6 = Strongly Agree	0.93	328
Barriers to Data Use	8	1 = Not a Barrier 3 = Major Barrier	0.80	323

Appendix A3. ACT's Principal Data Use Survey

Background

1. What is your position?

- ○ Principal
- ○ Assistant principal
- ○ Other (please specify)

  _____

2. How many assistant principals do you have at your school?

- ○ None
- ○ One
- ○ Two
- ○ Three or more

3. What is the name of the school in which you primarily work?

_____

4. In which district is this school located?

_____

5. How many years have you been in your current position, including this year? (Fill in each space with zero or another whole number.)

in total? _____

in this district? _____

at this school? _____

6. Which of the following best describes your school?

- ○ A charter school
- ○ A magnet school
- ○ A vocational or technical school
- ○ An alternative school
- ○ A traditional public school
- ○ Other (please specify) _____

7. Before you became a principal, how many years of elementary or secondary teaching experience did you have?

_____ year(s) of teaching before becoming a principal.

8. If you have previous teaching experience, in what main subject areas did you teach? Select all that apply.

- ○ General Elementary
- ○ English/Language Arts/Reading
- ○ Journalism/speech/communication
- ○ Computer Science
- ○ Foreign Language
- ○ Engineering
- ○ Health/Physical Education
- ○ Mathematics
- ○ Science
- ○ History/Social Studies
- ○ Special Education
- ○ Bilingual/ELL/ESL/ESOL
- ○ Fine Arts (Music, Theatre, Art, Dance)
- ○ Other (please specify) _____

9. What grades are offered at the <u>school</u> in which you primarily work? Select all that apply.

○ K ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11 ○ 12

Data Availability

In this section, please respond to questions about the data you have available to you.

10. Do you have access to any of the following types of data? Please indicate whether each data source is currently available to you, and if so, indicate how useful each source of data was to you and/or your leadership team for making decisions about instructional matters at your school.

	Data availability		Level of usefulness for decision making				
	No	Yes	Not useful	Minimally useful	Some-what useful	Very useful	Extremely useful
a. Student test scores on **state-wide assessments**.	O	O	O	O	O	O	O
b. Student test scores on **state-wide assessments disaggregated by subtopics** or **skills**.	O	O	O	O	O	O	O
c. Student test scores on **district-administered assessments** (e.g., benchmark assessments).	O	O	O	O	O	O	O
d. Student test scores on **district-administered assessments disaggregated by subtopics** or **skills**.	O	O	O	O	O	O	O
e. Student performance on **school-administered assessment**s (e.g., end of unit tests, classroom quizzes, homework).	O	O	O	O	O	O	O
f. Student test scores on **nationally normed assessments** (e.g., Stanford 9, ACT, SAT, PSAT).	O	O	O	O	O	O	O
g. Student special education information (e.g., diagnostic data).	O	O	O	O	O	O	O
h. Student behavior data (e.g., counselor reports, referrals, discipline).	O	O	O	O	O	O	O
i. Student grades.	O	O	O	O	O	O	O
j. Student course enrollment histories.	O	O	O	O	O	O	O
k. Student participation in educational programs (e.g., ELL, Title I, gifted and talented, special education).	O	O	O	O	O	O	O
l. Student participation in supplementary education programs (e.g., tutoring).	O	O	O	O	O	O	O
m. Student retention histories.	O	O	O	O	O	O	O
n. Student attendance rates.	O	O	O	O	O	O	O
o. **School-wide** mobility rates.	O	O	O	O	O	O	O
p. Data obtained from classroom walkthroughs.	O	O	O	O	O	O	O
q. Results obtained from a systematic review of student work (e.g., portfolio or other student work evaluated using a rubric).	O	O	O	O	O	O	O
r. **School-wide** aggregated survey responses from students.	O	O	O	O	O	O	O
s. **School-wide** aggregated survey responses from parents.	O	O	O	O	O	O	O
t. School-wide aggregated survey responses from teachers.	O	O	O	O	O	O	O
u. Other data not mentioned above. **Please specify in the space below.**	O	O	O	O	O	O	O

11. In a typical month, how often do you access data through the following?

	Less than once a month	Once or twice a month	Weekly or almost weekly	A few times a week	Not applicable
a. Personally accessing data from a computer system.	O	O	O	O	O
b. Requesting data from someone in my district.	O	O	O	O	O
c. Someone in my district gives me data without me asking.	O	O	O	O	O

12. By your estimate, what percentage of the data that you currently have is available for multiple years?

- ○ Less than 25%
- ○ 25% but less than 50%
- ○ 50% but less than 75%
- ○ 75% or more
- ○ Don't know

13. Do you have access to an electronic data system?

- ○ No
- ○ Yes

14. Do you currently have access to an electronic data system in any of the following locations? *(If no electronic data system is accessible, please skip this section.)*

I have access to an electronic data system . . .	No	Yes	Don't know
a. in my own office.	O	O	O
b. somewhere else in the district.	O	O	O
c. via the Internet at my home.	O	O	O

15. Are the electronic data systems you have available to you able to talk to one another (e.g., are they integrated)? *(If no electronic data system is accessible, please skip this question.)*

- ○ No, systems are unable to talk to each other.
- ○ Yes, some systems talk to each other but not all.
- ○ Yes, all systems are able to talk to each other.
- ○ I only have one data system.

16. What data would you like to have that you do not currently have access to?

_____

The remainder of this survey asks about the use of specific types of data to inform your educational practice. Please consider only the following when you think of data:

- National and state achievement test data (e.g., Stanford 9, AIMS, KPREP, ACT, SAT)
- Formal assessments (e.g., district benchmarks)
- School assessments (e.g., quizzes, grades, assignments)
- Other student data (e.g., disciplinary information, ELL status, supplementary education participation, student retention)
- Other data (e.g., survey data, classroom walkthrough data)

Data Use

In this section, please indicate the frequency in which you use data to inform your work as a principal.

17. How often in this current academic year (including last summer) have you used data to do the following?

	Never	Once a year	A few times a year	Once a month	2–3 times a month	At least once a week	Almost daily
a. I have used data to develop school goals that promotes the success of all students.	O	O	O	O	O	O	O
b. I have used data to make decisions in aligning resources with school goals.	O	O	O	O	O	O	O
c. I have used data to generate potential elements of a vision statement.	O	O	O	O	O	O	O
d. I have used data to identify promising learning programs to implement.	O	O	O	O	O	O	O
e. I have used data to generate approaches to curricular improvement.	O	O	O	O	O	O	O
f. I have used data to assign human resources in ways that promote student achievement.	O	O	O	O	O	O	O
g. I have used data to determine topics for professional development.	O	O	O	O	O	O	O
h. I have used data to advocate for policies that promote success for all students.	O	O	O	O	O	O	O
i. I have used data to identify safety issues.	O	O	O	O	O	O	O
j. I have used data to promote an environment for improved student achievement.	O	O	O	O	O	O	O
k. I have used data to judge my performance in effective management.	O	O	O	O	O	O	O
l. I have used data to gauge the effectiveness of collaborative relationships within the community.	O	O	O	O	O	O	O
m. I have used data to assess learning equity for different student populations.	O	O	O	O	O	O	O
n. I have used data to mobilize community resources for the benefit of student learning.	O	O	O	O	O	O	O
o. I have used data to develop alternative strategies for implementing the school vision.	O	O	O	O	O	O	O
p. I have used data to develop effective approaches for school-family partnerships.	O	O	O	O	O	O	O
q. I have used data to define possible problems in school vision implementation.	O	O	O	O	O	O	O
r. I have used data to develop effective communication plans.	O	O	O	O	O	O	O
s. I have used data to negotiate with political decisions makers for the improvement of students' educational opportunities.	O	O	O	O	O	O	O
t. I have used data to monitor instructional practices of the school.	O	O	O	O	O	O	O
u. I have used data to determine whether specific programs lead to improved achievement.	O	O	O	O	O	O	O
v. I have used data to measure the effectiveness of outreach to the community.	O	O	O	O	O	O	O
w. I have used data to identify problem in student learning.	O	O	O	O	O	O	O
x. I have used data to tailor instruction to individual student needs.	O	O	O	O	O	O	O
y. I have used data to develop recommendations for tutoring or other educational services for students.	O	O	O	O	O	O	O
z. I have used data to evaluate promising classroom practices.	O	O	O	O	O	O	O

	Never	Once a year	A few times a year	Once a month	2–3 times a month	At least once a week	Almost daily
aa. I have used data to inform student placement in courses or special programs.	O	O	O	O	O	O	O
bb. I have used data to informally coach teachers.	O	O	O	O	O	O	O
cc. I have used data to hire teachers.	O	O	O	O	O	O	O
dd. I have used data to evaluate teacher performance.	O	O	O	O	O	O	O
ee. I have used data to assign/reassign teachers to courses or grades.	O	O	O	O	O	O	O
ff. I have used data to identify teachers for leadership opportunities.	O	O	O	O	O	O	O

18. How often in this current academic year (including last summer) have you done the following?

	Never	Once a year	A few times a year	Once a month	2–3 times a month	At least once a week	Almost daily
a. Used data to compare subgroups of students.	O	O	O	O	O	O	O
b. Used data to compare student performance by grade.	O	O	O	O	O	O	O
c. Used data to compare my school to other schools.	O	O	O	O	O	O	O
d. Used data to examine trends in school	O	O	O	O	O	O	O

Data Characteristics & Data User Characteristics

The next set of questions asks about your perception of the quality of specific types of data. Additional questions ask about your skill set in using data

19. These items are about your perception of the quality of state assessment data to which you have access. To what extent do you agree or disagree with the following statements? *(If no state assessment data are available for your school, please skip this section.)*

The state data I have available to me are . . .	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
a. applicable to my work.	O	O	O	O	O	O
b. easy to interpret.	O	O	O	O	O	O
c. good measures of student learning.	O	O	O	O	O	O
d. easily accessible when needed.	O	O	O	O	O	O
e. aligned well to curriculum standards.	O	O	O	O	O	O

20. These items are about your perception of the quality of district-provided benchmark assessment data to which you have access. To what extent do you agree or disagree with the following statements? *(If no benchmark assessment data are available for your district, please skip this section.)*

The benchmark data I have available to me are . . .	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
a. applicable to my work.	O	O	O	O	O	O
b. easy to interpret.	O	O	O	O	O	O
c. good measures of student learning.	O	O	O	O	O	O
d. easily accessible when needed.	O	O	O	O	O	O
e. aligned well to curriculum standards.	O	O	O	O	O	O

21. These items are about your attitudes and opinions regarding data. Please indicate how much you agree or disagree with the following statements.

Data are almost always useful in . . .	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
a. helping educators plan instruction.	O	O	O	O	O	O
b. offering information about students that was not already known.	O	O	O	O	O	O
c. improving student learning.	O	O	O	O	O	O
d. helping evaluate the quality of instruction.	O	O	O	O	O	O
e. informing progress in school or district improvement plan.	O	O	O	O	O	O
f. helping determine if a program is effective.	O	O	O	O	O	O
g. guiding conversations with parents.	O	O	O	O	O	O

22. These items are about your attitudes toward your own use of data. Please indicate how much you agree or disagree with the following statements.

I am confident in my ability to . . .	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
a. identify data that best meet my needs.	O	O	O	O	O	O
b. synthesize multiple measures when using data to make decisions.	O	O	O	O	O	O
c. draw correct inferences from data.	O	O	O	O	O	O
d. use technology to manipulate data.	O	O	O	O	O	O

Providing Leadership and Support

This section asks about the role of administrators' efforts (including yourself) to build capacity at the school-level to support using data to improve instruction.

23. Please indicate the extent to which you agree or disagree with the following statements about school administrators' role (including yourself) this academic year (including last summer) in supporting data use for teachers' decision making and planning.

Administrators in my school (including myself) . . .	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
a. provide a clear direction about how data should be used to improve instruction.	O	O	O	O	O	O
b. convey enthusiasm about data-informed decision making to staff at my school.	O	O	O	O	O	O
c. clearly communicate that data-informed decision making is fundamental to teachers' work.	O	O	O	O	O	O
d. focus on continuous inquiry, learning and improvement based on data.	O	O	O	O	O	O
e. create many opportunities for teachers to use data.	O	O	O	O	O	O
f. are a good example of effective data users.	O	O	O	O	O	O
g. discuss data with teachers.	O	O	O	O	O	O
h. model effective techniques for interpreting and acting on data.	O	O	O	O	O	O
i. provide teachers with formal feedback on data use.	O	O	O	O	O	O
j. scaffold teachers' learning about using data.	O	O	O	O	O	O

Administrators in my school (including myself) . . .	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
k. observe teachers while they implement a data-informed strategy in their classroom.	O	O	O	O	O	O
l. monitor how teachers engage with data.	O	O	O	O	O	O
m. lead discussions on the meaning of data.	O	O	O	O	O	O
n. develop data reports tailored to teachers' specific requests for information.	O	O	O	O	O	O
o. are responsive when teachers have specific questions about student achievement data.	O	O	O	O	O	O
p. provide important procedures to guide teachers' use of data.	O	O	O	O	O	O
q. structure time for teachers to collaborate around data use.	O	O	O	O	O	O
r. work with small groups of teachers to analyze student test results.	O	O	O	O	O	O

24. For how many years has your district been actively engaged in the following data activities?

	No plans in this area	Planning but have not started	1 to 2 years	3 to 4 years	5 to 6 years	More than 6 years
a. Designing/acquiring an information management system to support data analysis (e.g., that generates timely data and makes useful data accessible to staff at all levels of the system).	O	O	O	O	O	O
b. Tracking teacher use of the information management system (i.e., data system).	O	O	O	O	O	O
c. Designing professional development to build capacity for teachers to analyze, interpret, and use data.	O	O	O	O	O	O
d. Providing models to teachers to illustrate how to use data in informing their instruction (e.g., templates, providing assistance to analyzing and revising material taught).	O	O	O	O	O	O
e. Providing formal time for teachers to discuss data in a group setting.	O	O	O	O	O	O
f. Providing teacher with access to an online data base of lesson plans and planning resources linked to academic standards and assessment results.	O	O	O	O	O	O
g. Providing teachers with research-based guidance on differentiating instruction based on student assessment data.	O	O	O	O	O	O
h. Establishing a process for continuous improvement (e.g., developing measurable goals, measuring progress).	O	O	O	O	O	O
i. Establishing a culture of data use at the school level (e.g., explicit norms and expectations regarding data use, creating a safe climate for data use, mutual accountability among staff).	O	O	O	O	O	O
j. Providing teachers with access to a data expert (e.g., mentor, coach).	O	O	O	O	O	O
k. Requiring teachers to follow specific data-informed decision making practices in the school improvement plan (e.g., identifying targets, monitoring their data).	O	O	O	O	O	O
l. Following up to determine if teachers have implemented instructional changes prescribed as a result of data analysis activities.	O	O	O	O	O	O

Receiving Professional Development and Support

Now think about the school- or district-sponsored activities to support your professional growth and development. In this survey, professional development is defined as activities that develop an individual's skills, knowledge, and expertise as a principal.

25. First, please indicate if the school- or district-sponsored professional development activity was provided during this academic year (including last summer) and by whom. If provided, please indicate the degree to which the professional development activity was useful.

		If provided, how useful was it?				
Professional development on how to . . .	**Provided**	**Not useful**	**Minimally useful**	**Somewhat useful**	**Very useful**	**Extremely useful**
a. use the basic functions of the data system (e.g., accessing and downloading data, data queries).	O	O	O	O	O	O
b. interpret data to identify students' instructional levels.	O	O	O	O	O	O
c. use data to change instructional practices (e.g., tools for translating data into practice).	O	O	O	O	O	O
d. set student learning goals using data.	O	O	O	O	O	O
e. identify data that best meet my needs.	O	O	O	O	O	O
f. ask questions about the quality of my role as principal that can be answered with data.	O	O	O	O	O	O
g. synthesize multiple measures when using data to make decisions.	O	O	O	O	O	O
h. identify quality data.	O	O	O	O	O	O
i. design and implement a school improvement plan based on student data.	O	O	O	O	O	O
j. help teachers work with their students on how to use data.	O	O	O	O	O	O
k. use student data to guide school improvement.	O	O	O	O	O	O
l. lead teachers to effectively use data.	O	O	O	O	O	O

26. Approximately how many total hours during this academic year (including last summer) did you spend in any school- or district-sponsored professional development focused on training you to effectively use data for decision making?
(If you indicated in the previous item that no professional development activities were provided by your district, please skip this question.)

○ Less than 4 hours ○ 4–8 hours ○ 9–16 hours ○ 17–24 hours ○ More than 24 hours

27. Please indicate the extent to which you agree or disagree with the following statements about any school- or district-sponsored professional development activities in which you participated in the current school year (including last summer). *(If no professional development activities were provided by your school or district, please skip this section.)*

Overall, the data-related professional development activities I participated in this year . . .	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
a. increased my ability to use data effectively.	O	O	O	O	O	O
b. helped me to better identify quality data.	O	O	O	O	O	O
c. were developed with my input.	O	O	O	O	O	O
d. were designed or chosen to support the school's improvement goals.	O	O	O	O	O	O
e. were designed or chosen to support the implementation of district-wide initiatives.	O	O	O	O	O	O
f. were topics identified based on student data.	O	O	O	O	O	O
g. improved my skills to meet the instructional needs of all students.	O	O	O	O	O	O
h. improved my ability to lead teachers' data use.	O	O	O	O	O	O

28. First, please indicate if the following district support was provided during this academic year (including last summer). If provided, please indicate the degree to which the activity was useful.

		If provided, how useful was it?				
	Provided	Not useful	Minimally useful	Somewhat useful	Very useful	Extremely useful
a. Providing policies that indicate when teachers should work with data (e.g., certain number of days per week).	O	O	O	O	O	O
b. Providing policies that indicate what should occur during time dedicated to using data (e.g. guidance on key problems to work on).	O	O	O	O	O	O
c. Assisting in making connections between conclusions drawn from data and school practice.	O	O	O	O	O	O
d. Providing the first round of data analysis before the beginning of the school year.	O	O	O	O	O	O
e. Assisting school staff in using data to develop and assess school goals.	O	O	O	O	O	O

29. Please indicate the extent to which you agree or disagree with the following statements about your district administrators' role this academic year (including last summer) in supporting data use for school decision making and planning.

District administrators . . .	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
a. provide a clear direction about how data should be used to improve instruction.	O	O	O	O	O	O
b. convey enthusiasm about data-informed decision making to staff at my school.	O	O	O	O	O	O
c. clearly communicate that data-informed decision making is fundamental to my work.	O	O	O	O	O	O
d. avoid using data to blame.	O	O	O	O	O	O
e. are responsive when there are specific questions about student data.	O	O	O	O	O	O

30. During the current school year (including last summer), how many times did you engage in the following types of activities?

	Never	Once a year	A few times a year	Once a month	2–3 times a month	At least once a week	Almost daily
a. Collaborating with district administrators using data.	O	O	O	O	O	O	O
b. Interacting with district administrators about how to use data.	O	O	O	O	O	O	O
c. Participating in classroom walkthroughs at my school.	O	O	O	O	O	O	O
d. Participating in classroom walkthroughs at other schools in my district.	O	O	O	O	O	O	O
e. Participating in a formal coaching or mentoring relationship with another principal or staff member who helps me to better use data.	O	O	O	O	O	O	O

31. To what extent, if any, is each of the following issues barriers to the expanded use of data-informed decision making in your district?

	Not a Barrier	Minor Barrier	Major Barrier
a. Lack of school staff-preparation on how to use data for instructional decision making (e.g., data interpretation skills).	O	O	O
b. Lack of technical skills of school staff to access or use electronic data systems.	O	O	O
c. Lack of time for school staff to conduct data-informed decision making activities (e.g., to reflect on or use data for teacher collaboration).	O	O	O
d. Lack of district leadership support for data-informed decision making (e.g., explicit norms and expectations regarding data use).	O	O	O
e. Lack of communication or sharing of data across departments within the district.	O	O	O
f. Lack of policies that provide direct access by school staff to all or portions of the data.	O	O	O
g. Lack of an electronic data system.	O	O	O
h. Lack of student performance data in specific subject areas.	O	O	O

Demographic Information

In closing, we would like to ask a few questions to help us determine if we surveyed a representative sample of educators.

32. Are you . . .

- ○ Male
- ○ Female

33. What is your age range in years?

- ○ Under 25
- ○ 25–29
- ○ 30–39
- ○ 40–49
- ○ 50–59
- ○ 60+

34. How do you describe yourself?

- ○ American Indian
- ○ Asian
- ○ African American
- ○ Hispanic
- ○ Pacific Islander
- ○ White
- ○ Other _____

35. What is the highest degree you hold?

- ○ Associate degree
- ○ Bachelor's degree
- ○ Master's degree
- ○ Doctorate or first professional degree
- ○ Do not have a degree beyond a high school diploma

36. Please use the space below to provide any comments concerning this survey or the use of data for decision making.

_____

_____

_____

Thank you for your participation. We appreciate your help!

Appendix A4. Data Collection

The *ACT Principal Data Use Survey* was primarily an online survey powered by Vovici software. To ensure a maximum level of participation, we took a two-pronged approach to encourage principal participation. First, principals were recruited to participate through a contact list available on the Department of Education's website[12]; administrators were both emailed and sent letters via the U.S. mail requesting they participate in the study. Communication was sent directly from ACT to principals. Second, principals were directly contacted via email through the Department of Education's Principal listserv. Here, an ACT researcher provided the Director of Communications with the email message who then placed the message in the principals' weekly e-newsletter. What follows is a more detailed description of the principal recruitment and data collection process; Table A4.1 summaries this process in detail.

Notifications and data collection occurred between January and March 2013. This timeframe was chosen to avoid the state standardized assessment window (March/April). In addition, we wanted to avoid the end of the academic year (May/June) when other surveys were being administered and when educators were focused on closing out the school year.

Starting at the end of January, principals in the state were sent a pre-notification message explaining that ACT was looking for principals to participate in the *ACT Principal Data Use Survey*. Two pre-notification messages were sent—one via email and one through the U.S. mail. ACT sent pre-notifications directly to principals, describing the research study, the benefits of participating, and the timeframe for participation.

In February, principals were sent an email invitation to the survey. The message re-iterated the research focus, the importance of participating, and how the results would be used. The email also provided the survey link, instructions on how to log into the survey, and assurances that responses were anonymous. Principals were provided a letter via the U.S. mail a week later with similar messaging.

Principals, via the state's listerv, were sent two reminder messages, one in February and another a month later. ACT directly sent principals two reminder notifications. One via email and another using U.S. mail. Those who received a reminder message via U.S. mail were also provided with a paper version of the survey. The survey closed on March 31st. Data were then exported from Vovici into an Excel file for data cleaning and analysis.

Table A4.1. Data Collection Process

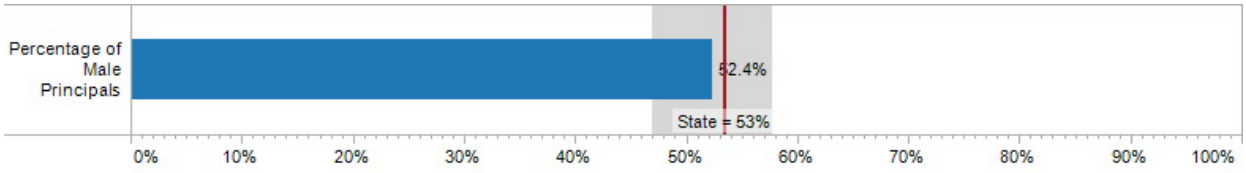
Date	Method	Description	Method	
			State	ACT
1/24/13	Email	A pre-notification message was sent describing the purpose of the research.		X
2/7/13	U.S. Mail	A second pre-notification message was sent describing the purpose of the research and the benefits of participation.		X
2/13/13	Email	An invitation asking for participation in the survey, including the online survey link.		X
2/19/13	Email	A reminder note was sent encouraging non-participants to complete the survey by the due date and thanking participants for already completing the survey.	X	
2/20/13	U.S. Mail	An invitation asking for participation in the survey, including the online survey link. A paper survey was provided to those principals who had not yet completed the online survey.		X
3/6/13	Email	A reminder note was sent to non-respondents only encouraging their participation.		X
3/25/13	Email	A reminder note was sent encouraging non-participants to complete the survey by the due date and thanking participants for already completing the survey.	X	

Appendix A5. Data Analysis

Preliminary analyses are addressed first; analyses specific to the results presented in executive summary are addressed second. Three sets of preliminary analyses were conducted. First, since the results are intended to be generalized to principals employed in A1 schools in the state, analyses were conducted to determine if respondents were similar to the statewide principal population. Second, item non-response analyses were conducted to determine if data were missing at random. Simple descriptive statistics were conducted to determine the amount of missing data. Third, a measure of internal consistency was used to determine reliability estimates for key constructs measured in the survey.

Analyses of data presented in the executive summary were descriptive in nature (e.g., frequencies, means, and standard deviations). We elaborate in more detail on all of these analyses next.

Representativeness of respondents. One of the major issues to survey research is the non-response bias that occurs when some respondents complete the instrument while others do not (Fowler, 1993).[12] To determine if our analytical sample looked like principals across the state,[13] we compared the two groups on a key demographic characteristic (see Figure A5 for summarized results).



Note: The red line represents the state percentage of male principals. The grey bar represents the confidence interval around the estimated percentage of male principals responding to the survey.

Figure A5.1. State level vs. analytic sample comparisons on gender

The results showed that, in comparison to the state, principals who respondent to the survey, on average, are just as likely to be male (52.4%, vs. 53% at the state). Since we do not have information about state-wide degree attainment or years of teaching experience for principals and cannot determine the representativeness of these respondents, we therefore, caution the reader in generalizing the survey results to all principals in the state.

Missing data. Item non-response is an additional survey research concern. To address concerns about missing data, the data were analyzed to determine the severity of the problem (i.e., how many respondents refused to answer each question) and to see if there were any obvious patterns for their omission. Although the amount of missing data towards the beginning of the survey was minimal, a drop off in participation occurred towards the end of the survey. Missing data were treated as missing in all subsequent analyses; the executive summary omits results that pertain to the survey that had large amounts of missing data.

Consistency of items within constructs. To ensure that the items in the survey had internal consistency, a series of Cronbach's alpha were employed. Here, each theoretically developed set of questions were analyzed to determine if the scores generated from these items were reliable (e.g., hung together). We considered a standardized alpha coefficient above .80 as an indication that scores were reliable. Further, we looked at whether removing an item would

improve the overall reliability estimate for the construct under analysis. If an item reduced the reliability estimate by .10 points, the item was removed and not used in this report.

Executive summary analyses. Analyses of data presented in the executive summary were descriptive in nature (e.g., frequencies, means, and standard deviations) since the focus of this report is to describe principals' frequency of data use, support mechanisms in place to support that use, and any historical use of data schools have engaged in. Depending on the survey items, either the mean and associated confidence interval were provided or the percentage of principals who endorsed the top two options of the scale were presented. To determine if items or subscales were presented, we first reviewed all items level means, standard deviations, frequency distributions, the percentage of principals that endorsed the top option on the scale, and the percentage of principals that endorsed the top two options on the scale. When variation across items within a particular construct was present, data were presented at the item level. When results within a construct across items were similar, subscales were generated and presented.

The analysis for this report was generated using SAS software using Version 9.2. Copyright, SAS Institute Inc. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc., Cary, NC, USA.

Endnotes

1. The total of 1,194 principals is based on school counts from the state website summing the number of principals in who work at A1 schools. Respondents were instructed to have either a principal or an assistant principal complete the survey, whichever was most knowledgeable about data use in the school. As such, the total number of A1 schools in the state was used in the denominator used to calculate sample size percentages.
2. Throughout this appendix, 'principal' refers to the either the principal or assistant principal who responded to the survey.
3. Source: http://applications.education.ky.gov/SRC/DataSets.aspx
4. See Table A1.3 for the numbers used to make this calculation.
5. Source: http://applications.education.ky.gov/SRC/DataSets.aspx under "Profile."
6. Although the survey consists of 16 subscales, not all were addressed in the executive summary.
7. Luo, M. (2008). Structural equation modeling for high school principals' data-driven decision making: An analysis of information use environments. *Education Administration Quarterly, 44*(5), 603–634. Wayman, J. C., Cho, V., Jimerson, J. B., Spikes, D. D. (2012). District-wide effects on data use in the classroom. *Education Policy Analysis Archives, 20*(25). Retrieved from http://epaa.asu.edu/ojs/article/view/979
8. Coburn, C. E., & Talbert, J. E. (2006). Conceptions of evidence use in school districts: Mapping the terrain. *American Journal of Education, 112*, 469–495. Schildkamp, K. & Kuiper, W. (2010). Data-informed curriculum reform: Which data, what purposes, and promoting and hindering factors. *Teaching and Teacher Education, 26*, p. 482–496. Spillane, J. P. (2012). Data in practice: Conceptualizing the data-based decision making phenomenon. *American Journal of Education, 118*, 113–141.

9. The pre-existing surveys used in this study include the following. All items were used with permission. Marsh et al. (2005). The role of districts in fostering instructional improvement. RAND Report. *Use of the District Instructional Improvements Teacher Survey;* Wayman, Cho, and Shaw. (2009). Survey of educator data use; U.S. Department of Education, Office of Planning, Evaluation and Policy Development, Policy and Program Studies Service, *National Educational Technology Trends Study: Local-level Data Summary,* Washington, D.C., 2008; U.S. Department of Education, National Center for Education Statistics. *Teacher Preparation and Professional Development: 2000*, NCES 2001–088, by Basmat Parsad, Laurie Lewis, and Elizabeth Farris. Project Officer: Bernard Greene. Washington, DC: 2001.
10. It should be noted that the survey is not intended to measure every facet of the theoretical model. Rather the model was used as a guide for what could reasonably be measured by a survey. Those areas that could be measured using this mode were included, given method applicability and survey length.
11. See footnote 8.
12. Fowler, F.J. (1993). *Survey Research Methods.* Newbury Park: Sage Publications.
13. The comparison here is between the analytic sample and all principals in the state. This is a proxy for determining if our sample represents, on key demographic information, the larger population. A more appropriate comparison would have been to compare the analytic sample to principals employed in A1 schools in the state. However, we did not have access to this information and instead made state wide comparisons using all principals in the state regardless of the type of school they were employed in.

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