Institutional Research and the Culture of Evidence at Community Colleges

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Acknowledgments

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Achieving The Dream: Community Colleges Count is a multiyear national initiative to help more community college students succeed. The initiative is particularly concerned about student groups that traditionally have faced significant barriers to success, including students of color and low-income students. Achieving the Dream works on multiple fronts, including efforts at community colleges and in research, public engagement and public policy. It emphasizes the use of data to drive change.

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The Community College Research Center, Teachers College, Columbia University, is the leading independent authority on the nation's more than 1,200 two-year colleges. CCRC's mission is to conduct research on the major issues affecting community colleges in the United States and to contribute to the development of practice and policy that expands access to higher education and promotes success for all students.

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Executive Summary

In recent years, community college leaders have begun to consider expanding the traditional role of institutional research (IR) at their colleges. This is due in part to several outside influences. Federal and state governments are pressing colleges to provide more data demonstrating evidence of student outcomes and institutional performance. Accreditation agencies are also asking colleges to provide evidence of student learning and achievement, and they want colleges to establish systems of institutional self-assessment to produce such evidence. The desire for more data and better analysis is also influenced by a growing enthusiasm among educators and advocates to use data to guide decisions about college management and about the design of college programs and services. This notion holds that data should be used not only for the purpose of accountability, but also for the explicit purpose of improving student outcomes and institutional performance.

The Achieving the Dream: Community Colleges Count initiative, now in its third year of implementation, and several other national projects have also begun to raise awareness about the potential benefits of using data for improvement. Aided by a data facilitator and a coach, colleges participating in Achieving the Dream collect longitudinal data on their students (including courses taken, grades received, and programs completed), analyze the remedial and college-level course pathways taken by each cohort of students, and disaggregate the findings to determine if there are gaps in achievement among particular student groups defined in various ways, such as part-time students or students of color. Such analysis helps colleges to chart student progress over time and identifies points where some students tend to struggle or leave college entirely. Colleges can then develop strategies to improve student progress based on a clear diagnosis of the challenges that are present.

Undertaking such an ambitious improvement strategy requires not only a capacity for data collection and analysis, but also a willingness to shift organizational culture in considerable ways. For such a strategy to be effective, stakeholders throughout the college must recognize and accept the legitimacy of internal research findings about student progress. Achieving the Dream recognizes the need for organizational transformation in creating such a climate and calls for college leaders to help nurture a "culture of evidence." The process of building a culture of evidence requires the broad engagement of administrators, faculty, and student services staff in using data to understand where their students are experiencing problems, designing strategies for remedying those problems, and then evaluating the effectiveness of solutions implemented. It also involves institutionalizing the use of data analysis as the basis for program review, strategic planning, and budgeting.

Community colleges that want to embark upon such a plan certainly face challenges. This report presents findings from a study conducted by the Community College Research Center (CCRC) on how well prepared today's community colleges are in moving toward the greater use of data and research to improve student success. Data for the study were drawn from two major sources: first, an e-mail survey of a national random sample of 189 college administrators responsible for IR (111 full responses), and, second, case studies of 28 community colleges in 15 states. The case studies included five or more in-depth interviews with college presidents, administrators, and faculty at each institution. The study aimed to learn how much IR capacity community colleges have in terms of IR staff size and facility with research methods, how IR is utilized by different actors within colleges, and what barriers may exist that impede the development of IR analysis that would benefit college decision making.

Many persons who participated in the research are clearly aware of the growing interest in data-driven decision making. Indeed, most of the college presidents who were interviewed said that they had sought ways of improving data use at their college and had hopes of replacing

"institutional mythology" with fact. Yet, despite the interest and aspirations that were voiced at many colleges, results of the study reveal significant obstacles for strengthening the role of IR in improving college performance.

The first challenge is a lack of research capacity found at many community colleges. IR offices are typically small and underfunded. In fact, about half of the colleges surveyed employ just one or fewer full-time equivalent (FTE) IR staff persons. In general, IR offices do not have the resources to take on more tasks beyond what is required by the time-consuming responsibilities of compliance reporting to federal and state agencies and preparation for accreditation visits. Tight staffing is especially prevalent among smaller colleges. The average FTE student enrollment at colleges with IR departments employing more than two FTE staff persons is 7,763. This is more than twice the average enrollment size of colleges with IR departments employing two or fewer FTE staff persons.

Another obstacle in strengthening IR involves the difficulty that many colleges have in "cleaning" student data entered into student information systems at different times by multiple departments, and the difficulty in extracting these data from the same systems, which are not designed with research in mind. Without an easy-to-use data collection and analysis system, conducting the kind of research that could inform improvements to program and institutional performance is difficult.

A final challenge focuses directly on organizational change. Among the leadership found at most community colleges, investing the resources and commitment required to build both a capacity for rigorous research and an atmosphere in which such research is valued and utilized is not yet a priority. Moreover, the study finds that administrators and faculty are often quite skeptical about the legitimacy of sophisticated studies in explaining student outcomes or informing improvements in teaching.

While the findings call attention to the existence of these formidable challenges, they also shed light on how IR is structured at the small number of colleges in the study that do use data to manage and improve programs and services. Such colleges typically combine institutional research, planning, institutional effectiveness, and assessment into one department. These departments are led by an individual with experience and advanced training who is a full member of the college's leadership team, and they employ sufficient staff to conduct research above what is required for the purposes of compliance and accreditation. Large IR departments such as these tend to be older than those found at other community colleges. Among surveyed IR departments that were formed prior to 1995, half employ three or more FTE staff persons. Among those departments formed since 1995, however, only 4 percent are this large.

The study makes it clear that developing a sophisticated IR function and building a culture of evidence can take a long time. At one college advanced in its use of data for improving student outcomes and institutional performance, efforts in this direction began in the 1980s and took hold during the 1990s. Administrators at that college say that it has taken them ten to fifteen years since then to establish a culture in which data-based decision making is institutionalized. During that time, each new president of the college has worked to preserve and extend gains made in terms of data collection, analysis, and college-wide research literacy.

Community colleges that want to expand the traditional role of IR face several challenges in terms of resources, data collection, and institutional priorities. This study suggests that college leadership is a key component in making the necessary investment in IR capacity and in promoting changes in organizational practice that are required to embrace a strategy for using data to improve institutional performance and student success.

Introduction

The administrative area responsible for retrieving and analyzing student data in community colleges is typically the institutional research (IR) department. A 1999 survey conducted by Peterson et al. found that IR offices at two-year colleges were primarily responsible for preparing colleges for accreditation and meeting state reporting requirements. In recent years, however, community college leaders have begun to consider expanding the traditional role of institutional research at their institutions. This trend is largely driven by two developments: growing demands for accountability from policymakers and accreditation agencies and increasing recognition of the value of evidence on student progression for improving programs and services.

Federal and state governments are pressing colleges to provide more data demonstrating evidence of student outcomes and institutional performance. Although most states have not required outcome of students tracked over time, the federal government has done so at least in a limited fashion with the development of the Student Right-to-Know performance measures. Implemented through the Integrated Postsecondary Education Data System (IPEDS), it requires colleges and universities to report graduation and transfer rates for cohorts of students over set time periods. Recently, the Secretary of Education's Commission on the Future of Higher Education has stressed the need for improved data on college performance to enable prospective college students to make better informed choices.

Accreditation agencies are also asking colleges to collect and analyze data by requiring evidence of student learning and achievement and the establishment systems of institutional self-assessment to produce such evidence. The standards of the New England Association of Schools and Colleges (NEASC) now call for the continuous collection of data on institutional effectiveness. The Higher Education Commission of the North Central Association of Colleges and Schools is encouraging the colleges it accredits to adopt an alternative accreditation process called Academic Quality Improvement Program (AQIP), which compels colleges to strengthen data collection and use the information to evaluate and improve practice. The Southern Association of Colleges and Schools (SACS) expects colleges to develop Quality Enhancement Plans that require the use of data in developing targeted efforts to improve student success and evaluating their effectiveness.

The desire for more data and better analysis is also influenced by the growing enthusiasm for using data to guide decisions on college management and the design of programs and services (Petrides, 2004). This notion holds that data should be used not only for the purpose of accountability, but also for the explicit purpose of improving student outcomes and institutional performance. The Achieving the Dream: Community Colleges Count initiative, now in its third year of implementation, and several other national projects have also begun to raise awareness about the potential benefits of using data for improvement. Aided by a data facilitator and a coach, colleges participating in Achieving the Dream collect longitudinal data on their students (including courses taken, grades received, and programs completed), analyze the remedial and college-level course pathways taken by each cohort of students, and disaggregate the findings to determine if there are gaps in achievement among particular student groups, such as students receiving financial aid and students of color. Such analysis helps colleges to chart student progress over time and identifies points where students tend to struggle or leave college entirely. Colleges can then develop strategies to improve student progress based on a diagnosis of the problems and evaluate the strategies to inform improvements and guide allocation of resources to support practices that promote student success.

Undertaking such an ambitious improvement strategy requires not only a capacity for data collection and analysis, but also a shift in organizational culture. Stakeholders throughout the college must recognize and accept the quality and legitimacy of internal research findings about student progress. They need to make key decisions about strategies and specific interventions based on evidence of what works for students generally rather than on anecdotes about individual student success. Achieving the Dream recognizes the need for organizational transformation in creating such a climate and calls for college leaders to help nurture a "culture of evidence." The process of building a culture of evidence involves broad engagement of administrators, faculty, and student services staff in using data to understand where their students are experiencing problems, designing strategies for remedying those problems, and then evaluating the effectiveness of those

implemented strategies. Colleges participating in Achieving the Dream are expected to institutionalize the use of data analysis as the basis for program review, strategic planning, and budgeting.

To better understand how well prepared today's community colleges are to move toward greater use of data and research in improving student success, CCRC conducted a study of IR at community colleges. We sought to find out how much IR capacity community colleges have in terms of IR staff size, qualifications, and facility with research methods. We also asked what role and status IR has in the organizational structure of community colleges, how IR is used by different actors throughout colleges, and the extent to which it is currently used in decision making at different levels within colleges. Finally, we looked for common barriers that impede the development of the kind of IR analysis that could best inform decisions that affect student achievement.

Study Sample and Method

Data for our study were drawn from two major sources. First, we conducted an e-mail survey (spring 2005) of a national randomized sample of 189 college administrators with primary responsibility for institutional research (111 full responses for a 59 percent completion rate; larger colleges were more likely to respond; no appreciable differences in urban/suburban/rural location or proportion of minority or part-time students between responding and non-responding colleges). Second, we conducted five or more in-depth interviews (with college presidents, senior academic affairs and student services administrators, institutional researchers, and faculty) about IR practices at each of 28 community colleges in 15 states to build case studies of each institution. By combining methodologies, we sought both a national perspective on institutional research practices, as well as a deeper and more nuanced understanding about the processes and structures of information management at individual colleges.

Toward this end, case study colleges were selected to capture some of the variation in context that we perceived to be influencing IR practice at community colleges. The 15 selected states represent five different levels (three states each) of involvement in performance accountability based on Burke and Minassians' (2003) typology. Two colleges

were then randomly selected from each state, one from institutions above the median size — based on full-time equivalent (FTE) enrollment — and one from those below the median size. In two states, we were unable to recruit any of the state's small colleges to the study, resulting in 28 case studies across the 15 states.

Our interviews focused on how IR is perceived and utilized by different stakeholder groups within an institution that work directly with issues related to students and student success, namely academic affairs, student services, and faculty. We also wanted to examine the role of leadership and organizational reporting structures that determine how IR is implemented, making the interviews with each college's president key to our analysis.

Findings

Characteristics of Community College Institutional Research

Staffing. Our survey and case study results indicated a wide range of IR staffing patterns. These structures fell into four basic categories. First, there were those colleges with no IR function at all. Three colleges (3%) participating in our survey fell into this category. Second were those colleges at which an IR function exists, but less than 1 full-time equivalent (FTE) staff member is devoted to it. Fifteen colleges in our survey (14%) structured IR in this way. In these cases, research made up about one third to one half of an administrator's responsibilities. Respondents at 6 of these 15 colleges were in senior positions (dean, vice president, or higher). The remaining colleges in our survey were evenly split between the final two categories. Forty-five colleges (41%) employed a single IR director. Some of these IR directors reported having minor part-time assistance from students or administrative assistants totaling 0.5 FTE or less. At 18 of the colleges falling into this category, the lone IR director reported directly to the president. The final category consisted of those colleges with IR departments employing more than 1.5 FTE researchers. This category contained 48 (43%) of our respondent colleges.

IR directors (as opposed to senior administrators with IR responsibilities) fall very much into the middle management range of community college organizational structure. This

tends to be true even when an IR director reports directly to the college president. Their "director" status does not afford them the level of responsibility or authority that would be given to a vice president.

The number of full-time equivalent (FTE) IR staff at the surveyed colleges ranged from 0 to 7. Nearly three quarters of the surveyed colleges had two or fewer FTE staff devoted to IR, and just over half of these colleges actually had one or fewer. We estimate that one fifth of community colleges have little or no IR capacity beyond very basic reporting functions due to very limited staffing. Our case study colleges showed a similar range of staffing patterns.

Two key factors that appear to relate to the size of an IR department are the size of the college and the age of the department. Our survey showed that the average student FTE for departments with more than two full-time IR staff was 7,763. This is more than twice the size of the average for colleges with 2 or fewer FTE researchers. Larger IR departments also tended to be older. Among departments formed prior to 1995 (there were 39 of these, or just under half of those with departments responding to this item), 51 percent were large (3 or more FTEs) and 13 percent were small (fewer than 1 FTE). Conversely, among departments formed 1995 to present, 4 percent were large and 47 percent were small.

These results are important because they have implications for creating the kind of data environment that is necessary for building a culture of evidence. The colleges that are likely to need the most help in developing their research capacity to use data to improve student outcomes are those that are medium to small in size. Those (mostly larger) colleges with the most capacity for these functions represent a relatively small subset of community colleges nationwide.

We found that some colleges used grant funds to support research beyond basic compliance reporting. And our case studies revealed another potential strategy for increasing IR capacity. Some of the IR departments that devoted more time to analytical research were more likely to employ graduate students to do this kind of work. Further inspection of the survey data, as well as some case study interviews, supported the finding that community colleges situated near research universities have more FTE researchers than do those without a nearby university.

Preparation of institutional researchers. The preparation of IR personnel is an important topic that bridges the organizational structure of IR with the types of research conducted. About half (54 percent) of senior IR personnel responding to our survey had been working in IR for six or more years. Based on our case study findings, there appears to be considerable movement in IR personnel, with many of our interviewees reporting that they were new to their colleges, but not to their occupations. No typical pathway to working in IR was evident in our interviews. Only one individual had earned a degree that explicitly prepared her for work in an IR office. Several interviewees described starting out in some other department in the college and getting pulled into IR because they were either looking for more challenging work or were predisposed to working with numbers.

Only 11 percent of our survey respondents held less than a master's degree. About half held master's or professional degrees (51 percent). Nearly 40 percent (38 percent) held either a PhD or EdD. Most of these degrees were in education (32 percent), followed by the social sciences (23 percent), and business (17 percent). A number of respondents held two equivalent degrees (for example, an MS in policy analysis and an MA in political science); frequently these included a background in policy or urban studies.

We asked how many semesters of coursework respondents had completed in quantitative methods. Such coursework was evenly distributed over the group as a whole, with about half of the respondents having three or fewer semesters and half having four or more. However, senior IR staff holding doctorates were about twice as likely as others to have completed four or more semesters in quantitative methods (only nine percent of survey respondents held social science doctorates with four or more courses in quantitative methods). Individuals with education or business degrees tended to have fewer semesters of quantitative coursework. Our interview data were consistent with these survey findings.

The question raised by these differences in educational preparation is whether the background of an IR director appears to make any difference in the way that IR is conducted and used at the colleges. We hypothesized that IR directors with PhDs, and particularly those in the social sciences who have considerable training in research

methods, may be conducting more sophisticated research at their colleges, and that their research may be more likely to be intended for organizational decision making. This hypothesis did not hold true based on our survey and interviews. While highly qualified IR personnel are more likely than others to use sophisticated methodologies, it is not clear that these methodologies are considered necessary for the job. Indeed, the more sophisticated IR work may be done for the purpose of journal submissions and conference presentations rather than for college management. In general, we found examples of strong and weak institutional research used for college management and improvement of programs and services regardless of the backgrounds of IR leadership. We discuss this at greater length in sections that follow.

Sources of data for IR. The data used by IR come from a variety of sources. Our survey results indicated that state and IPEDS data (which originally come from the colleges themselves) are two of the most important sources of information about students, followed by national student surveys such as the Community College Survey of Student Engagement (CCSSE) and Noel Levitz, followed by homegrown surveys.

IR departments make use of college-based student information systems, which are simultaneously an excellent source of data and the most significant barrier to data use. Student information systems are made up of all the information that college personnel enter into their databases about students. This process begins with a student's application and continues throughout her educational experience at the college. But student data are entered by a wide range of college personnel, and in some cases by work-study students or other part-time help who are hired for data entry, but are sometimes not trained to do so effectively. Therefore, if the data in the system are to be used for research purposes, one of the first roadblocks encountered by IR offices trying to expand their research capacities is the need to crosscheck student information and make sure that the processes in place for entering data include procedures for identifying and correcting errors. Student data are entered by many college departments. Typically, admissions, financial aid, counselors, placement test administrators, and faculty all have their own interfaces with a college's student information system. In some cases, there are areas of the database that do not interact with each other. This is the case with one frequently

used system, which consists of separate subsystems for students, financial aid, finance, human resources, and advancement. This compartmentalization can create hours of extra programming if data from more than one sub-system are needed.

Although student information systems are rich sources of data, they are not designed with research in mind; rather, they are designed primarily to serve student record-keeping purposes as well as other management functions such as college financial administration, facilities use, and class scheduling. It is possible to run "data extracts" from these systems consisting of individual student data that can be imported into programs such as Microsoft Access, Excel, SPSS, or SAS for research purposes. Our interviews show that at many colleges only a small number of administrators and faculty have been trained to access data from student information systems for analysis. The lack of easy accessibility to the vast store of data available at community colleges is a major challenge for many community college IR departments. At a minimum, it creates a bottleneck situation, where IR staff spend time accessing and organizing data for their own purposes or assisting others on campus with these tasks.

Both our survey and case studies suggest that student data collected and archived by state community college or higher education agencies are used by IR personnel. Our survey asked respondents whether they had access to a state-level data warehouse. Three fifths (59 percent) of respondents reported having access to state data warehouses, over half (56 percent) of respondents reported having access to college data warehouses, and 18 percent to district data warehouses. Overall, 42 percent of the survey respondents both had access to a state data warehouse and used it "frequently." Our interview results conflicted with this information, however. We learned that while data may be archived at the state, district, and college levels, these data are only used by the most advanced IR departments. IR personnel did tell us they routinely use data reports published by state and district offices. These reports are generally descriptive and include information on enrollment patterns disaggregated by a variety of student characteristics, including enrollment status, race, gender, and program or degree.

Many IR departments also collect data through surveys. Surveys of students who have left the college are the

most common. Response rates are often extremely low, but the information can provide some indication to the college about the types of work and further education students pursue after graduation. Employer surveys are also frequently used, often as part of the program review process for occupational programs. Businesses that are known to employ community college graduates are asked whether they are satisfied with the levels of preparation of students. Large scale surveys are also conducted with enrolled community college students in order to assess student satisfaction or "engagement" in the college. These tend to be national surveys, such as the Community College Survey of Student Engagement (CCSSE) and Noel-Levitz.

In addition to these routine types of surveys, IR departments are sometimes involved in conducting surveys on behalf of faculty and staff; often the IR staff assist in writing and designing the survey and turn over the task of analyzing the data to whomever requested the survey. Such surveys are conducted for a wide range of reasons: sometimes in preparation for grant proposals, sometimes as part of an existing grant, and sometimes because faculty and staff are pursuing degrees and credentials themselves that have a research requirement. Finally, IR departments occasionally conduct focus groups. Our interviews suggest that these are relatively rare; they are typically carried out by IR departments that are somewhat more sophisticated in their approach to research.

Uses of Institutional Research

State and federal compliance reporting. Much of the time of IR staff is devoted to reporting data to a variety of external stakeholders, especially state and federal government agencies. The nature of data requests coming from states varies widely and depends on the structure of the state system and methods of collecting and organizing data. Some state systems are more centralized, with significant research capacity at the state level, while others have little or no statewide community college infrastructure. Centralized state systems may or may not have centralized data systems. In most instances, each time the state system needs particular information regarding student enrollments, it must request a report from each of the colleges in the system. In states such as these, something as simple as reporting the percent of female community college students statewide requires each college to report

counts of students disaggregated by gender. This kind of activity takes up much of the time of IR offices.

Federal reporting is similar and is generally associated with the Integrated Postsecondary Education Data System (IPEDS) and grant-funded programs, such as those under the Perkins Act, and Titles III and V. While it might sound as if state and federal reporting are redundant, they are not, because each data point reported has its own parameters, and there is often no coordination between state and federal agencies on data definitions. Based on our interviews, it is commonly believed that the demands of state and federal compliance reporting have been increasing in recent years. This is not surprising, given the current climate of increasing accountability.

For the purposes of this report, we describe federal, state, accreditation, and grant reporting as "compliance reporting." An important subset of compliance reporting involves performance accountability. Some states have implemented performance accountability systems for community colleges. Performance accountability reporting, in which colleges report on such indicators as rates of retention, transfer, and graduation, job placement success, student performance on licensing exams, and student satisfaction, differs from other compliance reporting in that theoretically the stakes are higher. Sometimes states simply report the data to external audiences, but in a few cases financial rewards or sanctions are determined based on performance. Our research design took into consideration the demands of state accountability systems, with the hypothesis that the degree of performance accountability required of community colleges might be related to IR capacity. We found that this hypothesis was not supported by either the survey or the case study data. In fact, the most salient characteristic associated with greater IR capacity was college size, regardless of the state in which the colleges were located.

Colleges did not perceive the time required to keep up with compliance reporting as well spent. For example, one vice president observed that "the federal burden alone consumes probably 20-25 percent of the IR office, and that is basically data of no use to us. The results of it don't inform any of our decision making and are so aggregated that they are not relevant to the decisions that we make on campus." In general, there was a consensus that the information generated in response to most compliance

reporting requests, while sometimes indirectly used in college decision making, did not really contribute significantly in learning about students. And faculty at many colleges questioned new demands by accreditation agencies for greater accountability reporting. They expressed doubts about the usefulness of such measures in informing faculty for purposes of actual program improvement.

A central problem with the responsibility of compliance reporting is that it takes time away from carrying out research that could play a role in college operations, such as examining the rate at which remedial students go on to enroll and succeed in college-level, degree credit programs and what practices are effective in increasing that rate. From the standpoint of the colleges, the state and federal compliance reporting role of IR is non-negotiable since they have no choice but to participate. Therefore, colleges are compelled to allocate personnel time to this function rather than to other types of research. Since reporting requirements are more or less the same across all colleges within states, regardless of enrollments, the impact of these demands may be relatively greater on smaller colleges. A college that is large enough to support an IR department with several staff can devote a smaller percentage of its overall IR resources to this function.

Internal reporting. In addition to external compliance reporting, internal reporting is the other main responsibility of IR departments. The data most frequently requested by college administrators concern enrollments. At approximately one third of our case study colleges, enrollment reports were produced daily or weekly and circulated to college administrators, including deans and department chairs. At most of the remaining colleges, these reports were circulated at critical times in the semester. Based on our interviews, the explanation for this focus on enrollment monitoring is that in most states colleges are funded primarily on the basis of student enrollments, so the only way that budgets that have been created in the spring can be successfully supported in the fall is if enrollments meet or exceed projections. If they do not, deans and department heads need to find ways to shuffle adjuncts and close sections so that the college will not exceed the budget.

The primary internal audiences for IR, according to both our survey and interview results, were college presidents and other college administrators. Over four fifths of survey respondents described college presidents and vice presidents (84 percent) and college administrators (86 percent) as frequent recipients of reports, compared to 45 percent describing faculty as frequent recipients. Only 18 percent considered trustees to be frequent recipients.

The fact that college presidents were often perceived by IR staff as a primary audience for their work deserves attention. Many of the IR personnel in our case studies told us that it was extremely important to them to report directly to the college president as opposed to reporting to academic affairs, information technology, or some other division. Two reasons were given for this. First, reporting directly to the college president elevates the status of IR so that data are more likely to be used in decision making. In a large number of such cases, IR is included on the president's cabinet. At the same time, even though data may be used in decision making, IR directors themselves generally do not have the level of responsibility or authority that would be given to a vice president. Among those colleges with newly established IR departments, our interviews indicated that responsibility for IR was shifting upward in the organizational hierarchy from an IR "coordinator" or part-time role to director. In colleges with established IR departments we found that senior positions were being created that merged IR with strategic planning. Second, reporting to the college president allows IR to be used college-wide rather than becoming beholden to certain departments or functions.

It is important to emphasize that faculty were much less likely to be perceived as frequent recipients of IR reports. In general, faculty were reported to be not very involved in IR, either as an audience or as participants in research. According to our surveys and interviews, when faculty involvement in IR occurred, it was most often in the context of strategic planning or the accreditation process.

Through our case studies, however, we did hear about interesting studies conducted by individual faculty members or groups of faculty from the same program with the assistance of IR. These studies tended to focus more on student outcomes and pathways through college than did the routine research carried out by IR personnel. One college described a recent example of a study looking at whether gains in writing skills of students taking composition early on in their college careers are sustained

in their later course taking. IR worked with faculty to assess the writing skills of their students, and then disaggregated the results according to when the students had taken composition. At another college, the math department wanted to know about the effectiveness of its "tech math class." In particular, the math faculty wanted to know how students taking this class fared once they reach pre-calculus. The study confirmed that students taking "tech math" were doing as well as others when they reached pre-calculus. This department also used IR to look at the success rates of students starting in developmental math and found that these students had better rates of success in college-level courses than students who had not taken the developmental courses.

IR priorities. While these examples illustrate that individuals and groups within colleges occasionally utilize IR to carry out small studies about student progress, the majority of IR work relates to compliance reporting and enrollment monitoring. Applied research that is either analytical or evaluative is less common and is considered to be a lower priority.

We asked colleges about other priorities for IR, what other types of studies they conduct, and what methodologies they use. In addition to preparing the reports requested by state and federal agencies, at three quarters of the colleges surveyed, preparation for accreditation visits was considered a high priority for IR offices. At a minimum, this involves ongoing program review and generating data for accreditation reports. This finding was consistent with our case studies. Time spent preparing for accreditation goes in cycles. It becomes the focus of IR offices for a year to two years prior to a visit, which means a realignment of priorities occurring every five or ten years.

Program review, which is an ongoing part of the accreditation process, was a high priority for half of the survey respondents. IR staff are generally responsible for pulling together basic factual information about the college such as enrollment patterns and demographic characteristics of students by program. Our case studies indicated that ongoing program review often includes other items of information, such as employer surveys and graduation statistics. Some colleges are being pushed toward more sophisticated processes to replace program review that will eventually include measurements of student learning.

Student retention studies were reported to be a high priority by over half of the colleges, but this finding was not well supported by our case studies. Instead, our interviews indicated that, while studies of student retention are done by IR departments at some colleges, they were not given high priority at any of our case study sites. It is possible that this discrepancy reflects differing definitions of retention. Retention can, for example, be studied from semester to semester and year to year. But based on our interviews, community colleges often associate "retention" with the rate at which students pass individual courses, not persistence across terms or advancement to higher-level courses. We believe that many respondents to our survey were thinking of course pass rates when answering the question about the priority for studies of retention.

It is important to recognize that in order to analyze what actually happens to students enrolling in college, it is necessary to identify cohorts of students and use student unit data to follow their progress over extended periods of time. Our interviews suggest that longitudinal studies of student progression are rare at community colleges. Even IR departments with the most capacity conducted such studies only once every few years.

Transfer is one area of longitudinal research that does appear to receive attention. When we asked colleges about following student progress over time, many interviewees described studies they routinely conducted in which they seek information about what happens to students once they transfer to four-year universities. Some states routinely use National Student Clearinghouse data to identify students who transfer into the state university system. In states where these systems do not exist, we were given examples of arrangements to obtain data that had been made between specific institutions. For example, several community colleges in our study reported following up with their transfer students at key receiving institutions. In some instances, these follow-ups involved providing data on student course completions, but in several cases we learned that IR offices had conducted focus groups or surveys with students who had transferred. In addition, many community colleges are beginning to pay a per-student-tracked subscription fee to use National Student Clearinghouse Data, which is a source of data linked to financial aid that allows colleges to track students who leave their institutions and go on to enroll in other colleges and universities.

We also sought information about the extent to which community colleges conduct studies in which student data are disaggregated to learn about the differences between groups of students sharing common background characteristics, such as race and ethnicity, full- or part-time attendance, age, gender, and parents' education. Only 26 percent of survey respondents considered studies of student outcomes disaggregated by race/ethnicity to be high priority; indeed, 41 percent reported that these studies are either not done at all or given low priority. Our interview findings were consistent with these results. Few IR offices produced reports disaggregating students by any variable; those that did so were most likely to use race and ethnicity. College officials offered explanations for why disaggregating by race and ethnicity was not done. For example, at a large New England college, we were told it would not be productive because they could not tease out differences within standard racial or ethnic categories. Institutional researchers at a small, predominantly white college reported that they do not disaggregate by race because it would be too easy to identify students.

Longitudinal analysis and the study of relationships between student backgrounds and outcomes require some sophistication in research methodologies. Multivariate analysis is needed if a researcher seeks to control for the impact of student background in equations predicting outcomes, or wants to use a sample of students to analyze the outcomes of a larger student population. In our survey and interviews, we asked researchers to tell us about the methodologies they use to conduct IR studies. The survey results show that almost all of the respondents reported conducting basic descriptive analysis of data — for example frequencies (89 percent) and rate computations (100 percent). However, with the exception of correlations (57 percent), fewer than half reported using any kind of statistical technique (for example, 48 percent use chi square tests, 40 percent use linear regression, and 22 percent use logistic regression). These results are consistent with our interviews with IR directors, in which few used anything beyond rates, frequencies, and cross-tabulations unless they sought to publish their work in a professional journal.

The results of our survey indicate that the types of methodologies used by researchers are related to their educational backgrounds. Researchers holding MAs and PhDs reported using more of the complex methodologies (19 percent and 32 percent, respectively, compared

with 0 percent for BA holders), with a clear increase in complex methodology use (defined as time-series analysis, multinomial logistic regression, canonical correlations, path analysis, or event history modeling) among PhDs. Respondents with degrees in the social sciences or in fields such as public policy or public administration or urban studies were also more likely to use complex methodologies (30 percent and 25 percent, respectively). Consistent with these results, researchers using complex methods were more likely than others to have four or more semesters of quantitative coursework (31 percent versus 14 percent for 0-1 semesters and 10 percent for 2-3 semesters). Performing longitudinal analysis using student cohort data, which is essential for well-conceived data-based decision making, requires higher-level knowledge of methodologies and statistics. Our research on IR departments suggests that at many colleges the capacity for this kind of analytical research does not exist. However, even in those instances where it does exist, IR personnel rarely, if every, carry out sophisticated analyses for use in college management or in efforts to improve programs and services. This may explain the finding from our study that respondents generally perceived that knowledge of advanced statistics is not essential to performing in the role of institutional researcher.

Our research revealed a cultural resistance to complex research. In our interviews with community college personnel, we were repeatedly told by college presidents, vice presidents, and institutional researchers themselves that complex studies were not useful to them. Two major explanations for this emerged. One involves the legitimacy of complex studies for learning about community college students. We were told by our interviewees that there are simply too many variables to account for when analyzing the educational outcomes of community college students. The second was the perception that there is simply no audience for complicated analysis. These findings dovetail with the widespread faculty resistance to greater accountability demands in accreditation that was found to exist at many colleges.

Perceived Barriers to Effective Use of Institutional Research

To better understand the barriers confronted by IR at community colleges, our survey asked respondents to

check off all applicable responses to the following question: "Which of the following would you need in order to increase the effectiveness of institutional research at your college?" The need for additional staff topped the list, with most of the respondents (85 percent) describing this as a problem. In addition, a fifth of the respondents reported that they are hampered by the absence of an IR department, which also suggests problems with staffing resources. Along the same lines, the need for professional development for IR staff was identified by more than half (56 percent) of the respondents. Nearly a third of the respondents (31 percent) told us that they needed upper-level college administrators to use institutional research in order for them to become more effective.

Thus it is not surprising that we found only a small number of colleges collecting data on student outcomes for purposes of strategic planning and program improvement. The IR departments that were most advanced in using data for college management were those that combined research, planning, institutional effectiveness, and assessment into one department. These departments were generally led by an individual with a PhD who was a full member of the college's management team, and employed staff with a range of job roles to fit the many requirements of managing and analyzing data. This differentiation of roles streamlines the process of responding to external demands, giving the senior leadership of the department more time to design and implement studies of internal importance to the college. At these colleges, which tended to be large in size, there is sufficient IR capacity to produce research that is respected and relevant to institutional management and efforts to improve teaching and learning.

Conclusion

Many of our case study colleges were clearly aware of the growing interest in data-driven decision making. Most of the college presidents we interviewed told us that they sought ways of improving data use at their colleges and had hopes of replacing "institutional mythology" with fact. We were told about a number of external pressures that were helping to elevate the importance of data. Accreditation teams are telling colleges that their capacity for institutional research and assessment of learning needs to be improved. State governments are also

increasing demands on colleges for data, particularly as part of performance accountability systems. And we also heard from some colleges that the League for Innovation's Learning College initiative had encouraged them to place a greater priority on data-based decision making.

Yet, our study shows that by far the most common uses of institutional research by community colleges are compliance reporting to federal and state agencies and preparation for accreditation visits. And there was a consensus among respondents that the information generated for compliance reporting and even accreditation is not very useful to college management or faculty and student support staff. Compliance reporting takes time and resources away from research that could benefit college operations and help to improve student outcomes. Internally, institutional research is most often used to monitor enrollments. Few colleges systematically track student progress and outcomes over time, and even fewer use this information to improve programs and services.

Our study reveals some formidable challenges to strengthening the role of institutional research in building a culture of evidence at community colleges. The first is a lack of research capacity at many community colleges to do more than what is required beyond the time-consuming responsibilities of compliance reporting and preparation for accreditation. About half of the colleges we surveyed have one or fewer full-time IR staff persons. We estimate that about one fifth of colleges have little or no IR capacity beyond very rudimentary reporting functions due to limited staff (often less than one full-time person) and, in some cases, a lack of training and experience on the part of IR staff.

Colleges with larger IR staffs (which tend to be the larger institutions) and those that had established IR departments for a long time were able to free up staff from compliance reporting to conduct research related to the management and practice of teaching and learning. Some colleges used grant funds to support research focused on improvement while a few recruited graduate students from nearby universities.

The difficulty many colleges have in "cleaning" student data entered at different times by multiple departments and the difficulty in extracting these data from student information systems designed to support administrative

functions rather than research are two other impediments to doing research that could inform improvements to program and institutional performance.

We also found that, to a large extent, a college's president determines the way research and data are used in the management of the institution. The IR administrators we surveyed most often perceived college presidents as the primary audience for their work. As mentioned, our interviews revealed a clear awareness among presidents of the greater pressures for accountability and of the potential value of using data for improvement. Yet, in only a few cases are community colleges using longitudinal data on student progress and success — as opposed to using only data on enrollments — to manage the institution. This may reflect the skepticism reflected in our interviews with college presidents (as well as other college personnel) about the legitimacy of more sophisticated studies in explaining community college student outcomes. It may also mean that some presidents do not know how to use data to manage the institution. This would suggest the need for more education on data-based management in doctoral programs that prepare college presidents and in continuing education.

Presidents who want to move their institutions toward greater use of data to improve programs and practices may well face resistance from the faculty. Some of the faculty we interviewed questioned whether institutional research could provide information useful in improving teaching. Many faculty expressed doubt that the increased accountability reporting being demanded by accreditation agencies would lead to improved outcomes for students. IR staff at some colleges work with individual faculty to conduct studies of the effectiveness of particular programs or strategies, but these efforts tend to be isolated. IR staff considered faculty a primary audience for their work at fewer than half of the colleges surveyed.

The IR departments in the small number of colleges we found that did use data to manage and improve programs and services combined research, planning, institutional effectiveness, and assessment into one department. These departments were generally led by an individual with a PhD who was a full member of the college's leadership team, and employed sufficient staff to handle research above what is required for compliance.

Building a culture of evidence and an institutional research function to support it can take a long time. At one college in our case studies that was advanced in its use of data for improving student outcomes and institutional performance, efforts in this direction began in the 1980s and took hold during the 1990s. Administrators at the college say that it has taken them ten to fifteen years since then to establish a culture in which data-based decision making is institutionalized. During that time, each new president of the college worked to preserve and extend gains made in terms of data collection, analysis, and college-wide research literacy.

The importance of college leadership to making the necessary investment in IR capacity and promoting the needed changes in organizational practice and culture further suggests that present and future college presidents need to learn about and embrace strategies and methods for using data to continuously improve the impact of programs and services on student success.

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