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AUTHOR Jones Janis Cox; And Others
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ABSTRACT

In response to legislative mandates calling on educational institutions to become more accountable for monies spent, a number of community colleges in California have implemented research and data collection models to help them answer state and local questions about institutional effectiveness. However, there is a significant difference between providing the numerical measures to comply with accountability mandates and real institutional effectiveness. In 1983, the Los Rios Community College District initiated the Student Flow Research Model (SFRM), which collected data on four critical areas: (1) characteristics of enrolled students; (2) community characteristics; (3) student performance, program effectiveness, and student services; and (4) activities and perceptions of transfers, graduates, and non-returning students. Beginning in the 1990s, each of these four data collection areas was significantly enhanced, and the rest of this paper focuses on the 1990s version of the SFRM and its development into the new Collegiate Yearly Accountability Model. In the area of community characteristics, a computerized Enrollment Projection Potential Model (EPPM) was added. To enhance data collection efforts on enrolled students, demographic and application data were combined with course and section data, allowing for a computerized program review. In the area of student performance, an entirely new database was developed, linking demographic data with transcripts. Finally, with respect to the former student follow-up efforts, new database changes allowed for results to be compiled at the program level for use by faculty. A discussion of five original versions or models of the EPPM is provided, and flow charts, data tables, and references are included. (PAA)

BEYOND ACCOUNTABILITY:

BUILDING A MODEL FOR INSTITUTIONAL EFFECTIVENESS

Janis Cox Jones
with
Brad Brazil
Beth S. Lee, Ed.D.

Los Rios Community College District
Office of Planning and Research

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and to the

CALIFORNIA ASSOCIATION FOR INSTITUTIONAL RESEARCH
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THE ERA OF ACCOUNTABILITY

A Nation at Risk. Involvement in Learning. To Reclaim a Legacy. Integrity in the College Curriculum. The Neglected Majority. Time for Results. Since 1983 a steady stream of these and other national reports have focused on the need for educational reform. Calls for higher standards and tougher performance criteria have trumpeted from both within and without the educational establishment. Something is wrong with American education, the critics charge, and institutional defenders have been hard pressed to meet the criticisms with anything more substantial than rhetoric. Faced with data that seem to show low retention rates, increased numbers of remedial courses, fewer transfer students, longer time to degree, and fewer course and program completions, educators are being asked to account to a variety of audiences as to how they are spending public monies and whether what they are doing is working (Coffey, 1989).

The responses of state legislatures across the country to the calls for educational reform have resulted in a plethora of commission reports, resolutions, regulations and new laws concerning institutional effectiveness. Reforms in access, admissions, remediation, curriculum, and graduation standards have surfaced in many states, with concomitant reporting requirements. Almost everywhere, these measures represent the states' desire to improve educational quality by causing institutions to become more accountable for their outcomes (Moore, 1986).

The move toward increased accountability at the state level has also introduced the potential for—and the reality of—performance-based funding of educational institutions as a logical corollary. Competitive incentive grants, withholding of percentages of state appropriations, increased percentages of funding based on meeting performance criteria, are all in existence in various states across the country. Such performance-based systems certainly put teeth into state-level mandates for accountability, but also raise crucial questions of who is to determine the evaluation criteria and appropriate performance measures. Whether it be legislative staff, state board members, or institutionally-based task forces, wise choices in evaluation and performance measures are essential to real educational improvement—and potentially even to institutional survival.

In addition to the state and federal mandates for increased accountability, the regional accreditation agencies have instituted their own calls for more accountability through new accrediting standards. Beginning in 1984 with the Commission on Colleges of the Southern Association of Colleges and Schools, the regional agencies have written standards that established the evaluation of effectiveness as a major criterion for accreditation. In 1988, the Western Association of Schools and Colleges adopted its standard on "Institutional Effectiveness" that calls for each institution to initiate a research program that assesses student skills, performance and outcomes, and links that information to the institution's planning process (WASC, 1988, p. 16).

The California Picture

In California, the call for increased accountability for the state's community colleges and its linkage to institutional research is perhaps nowhere better stated than by the Commission for the Review of the Master Plan for Higher Education in its study *The Challenge of Change: A Reassessment of the California Community Colleges* (1986, p. 12):

> Institutional research is essential to determine which types of programs work best with which students under what circumstances, and to ensure the wisest use of public funds in meeting student and community needs. There is relatively little statewide institutional research available to evaluate the effectiveness of the Community College transfer, vocational, or remedial programs, which are of particular concern to this Commission. If these programs are to be implemented successfully and cost-effectively, they must be accompanied by research and evaluation from the start, to strengthen these programs as they develop as well as to evaluate their ultimate merit. Significant additional funds will be needed for this research.

To respond to the challenge of accountability, institutions have begun to identify and implement research and data collection models that will help them answer both state and local questions about institutional effectiveness. What has become apparent over the past several years, however, is that there is a significant difference between accountability—which has come to be focused on data elements and numerical measures (what used to be called "compliance")—and real institutional effectiveness. With the advent of California's community college reform bill (generally known as "AB 1725"), and the passage of legislation detailing the state's new accountability system for the community colleges, colleges across the state have added research offices to help meet the demands for accountability data to be entered into the new statewide Management Information System (see Coffey and Hamre, 1988). There it will be analyzed by the State Chancellor's Office staff to help answer the various state agency and public questions about how well the community colleges are responding to one or another mission or mandate. Clearly, the era of accountability is upon us. The remainder of this paper will describe how one district, often noted for its successes in proving what it's doing is working, has moved beyond accountability and built a real model for institutional effectiveness.

IN THE BEGINNING: THE STUDENT FLOW RESEARCH MODEL

In 1983, considerably before the current emphasis on accountability, the Los Rios Community College District began to build what would later come to be known as the "Student Flow Research Model." Given the district's major emphasis on using research results for planning and decision-making, we sought a model that would bring together information in four critical areas: (1) Community: characteristics of the district's service area population; (2) Enrolled Students: characteristics of the entering student population; (3) College Experience: evaluation of student performance, programs and services; and (4) Former Student Follow-Up: follow-up of transfer and occupational graduates, and nonreturning students (Coffey, 1987). (See Figure 1.)

Student Flow Research Model
"Effectiveness and Accountability"

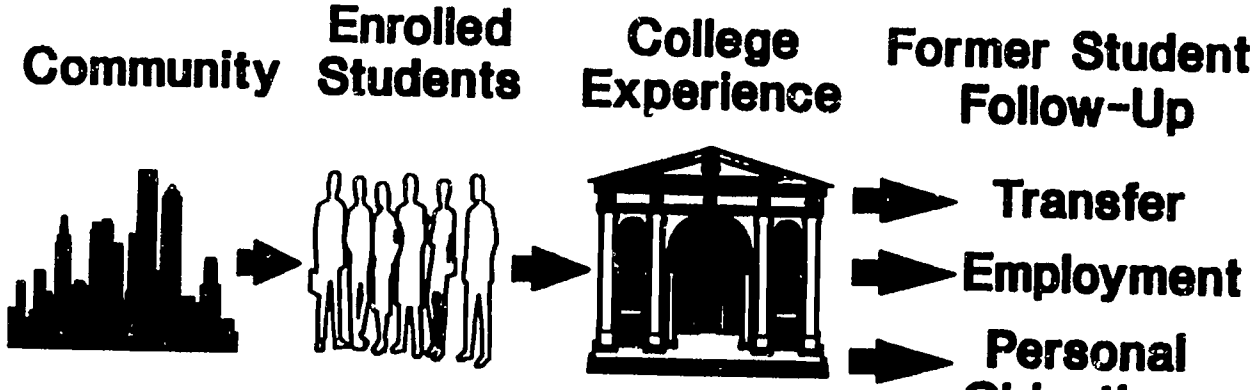

FIGURE 1

Rather than focus on data to be collected, we intended that the research produced in these four areas would answer a series of seven key questions, questions we thought any district or college should be able to answer:

1. What is our community like and who are our potential students?

2. Who are our enrolled students? Do they differ by college? Do they reflect the community at large?

3. What kinds of preparation do our students bring to our institutions? Are they prepared for our college-level classes or do they need remediation?

4. What are the educational goals of our students and do these goals differ by age, sex, ethnicity, work status, or economic level?

5. How well are we meeting our students' needs? Is what we're doing working and how do we know?

6. What happens to our students once they leave? Are they successful as transfers to four-year institutions? In finding jobs? In improving skills and potential if currently employed?

7. Finally, how can we improve what we're doing?

While we had originally thought that these key questions were almost self-evident, the considerable interest in the model and questions from California and across the country indicated that the concept of building a research model around student and institutional effectiveness questions was quite new. The basic components of each of the four areas of the model are shown in Figure 2.

For the Community information, we developed district and college service area demographics, based on the most recent Federal Census, and "geocoded" to our service areas based on a ZIP code analysis of our enrolled students. Labor market information from a variety of sources is included in the Community information, as is economic data about particular communities. For the Enrolled Students information, we largely use student demographic, goal and financial aid status data from the application data base, along with course and unit load information from the course and program data base.

The College Experience area was the one in which we found the least information available when we designed the Student Flow Research Model, because the studies of student preparation, persistence and performance had yet to be done. We knew even then, however, that we wanted to do internal evaluations of our programs and services according to the "three E's": equity, efficiency and effectiveness. To do truly effective program and service evaluations, we knew we needed some means of tying student demographic and goal data to course-taking patterns and

Los Rios Student Flow Model

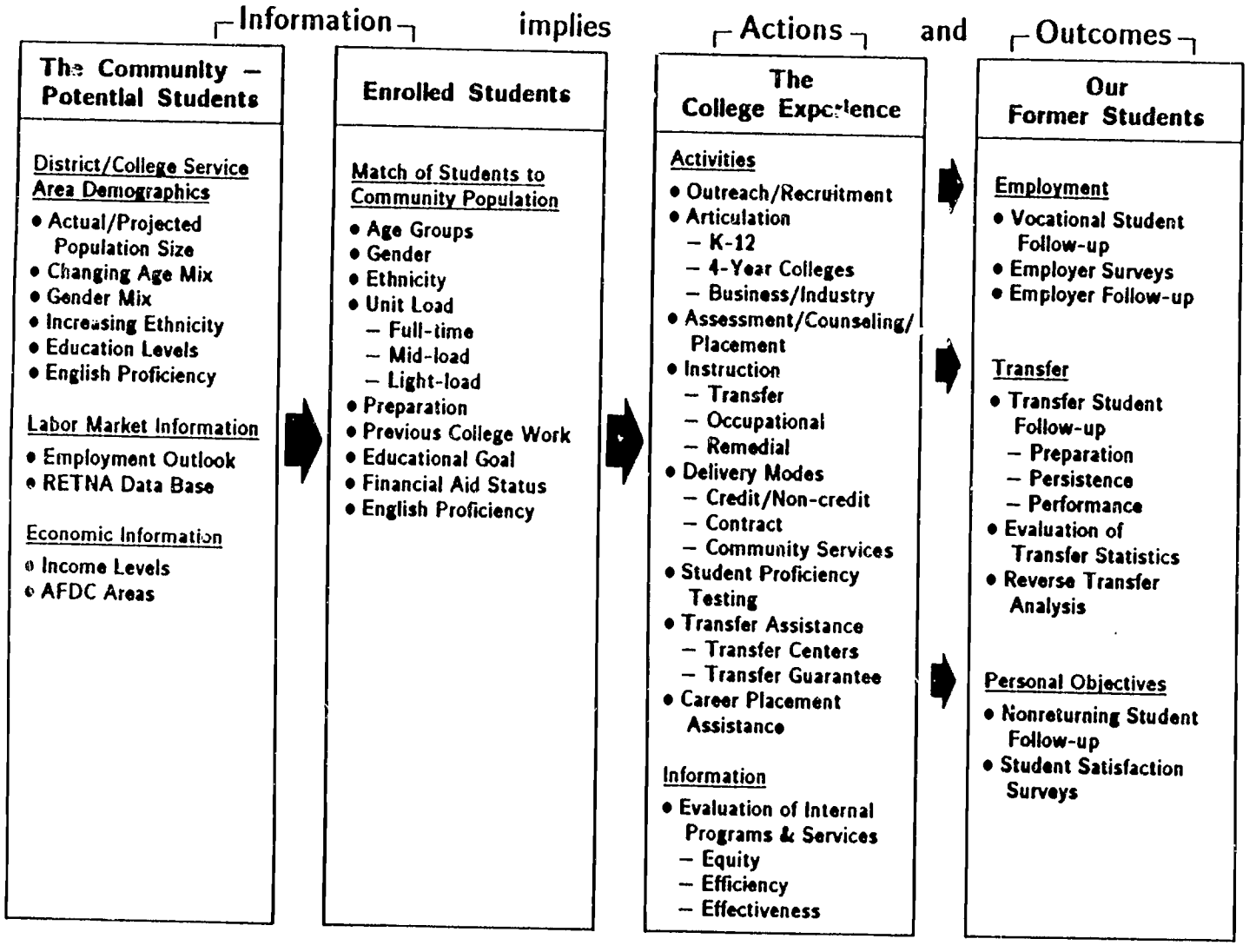

FIGURE 2

transcripts—and in the early 1980s, without the kinds of relational data bases that are now in use, we had no way to do it.

Finally, the information on our Former Students was becoming available, based on our *Measures of Progress* studies (Lee, 1987, 1991), which used survey research to follow what had happened to our students once they had left our colleges. Indeed, our research in that area was used in pivotal legislative discussions about the supposed high community college drop-out rate, when we were able to document that many of our students came for job upgrading and retraining opportunities that required only particular courses rather than degrees; in short, we documented the phenomenon of the "drop-in" student.

Over the past nine years, we have finetuned the Student Flow Research Model and kept our eyes on the increasing importance of those seven key questions. And we were able to add, through the addition of some unique data base developments, the ability to answer the questions of what was happening to our students while they were in our institutions. The next section of this paper will focus on our 1990s' version of our Student Flow Research Model and its development into the Collegiate Yearly Accountability Model—or our CYA model, for short (and yes, the allusion to the more common meaning of those initials is intended).

THE NEW MODEL AND WHAT MAKES IT WORK

Figure 3 illustrates the new data base developments that make the new model work. In the Community information area, we have added the Enrollment Potential Projection Model© or EPPM©, an entirely unique computerized enrollment projection model that has recently been approved by the state Department of Finance for use in projecting the enrollments for Folsom Lake College, the district's proposed new college (usually, only DOF can do such projections). In the Enrolled Students information area, we have combined the demographic and application data from the original model (our "student master files") with course and section data (our "master schedule files"). This has enabled us to do computerized program review analyses that include five-year demographic, enrollment, credit load, and day/evening trend information. In the College Experience area, we have again constructed an entirely new data base—the Student Performance Data Base or SPDB—that links the student demographic and course data with performance data (transcripts) into a "quasi-relational" data base, allowing us to do computerized transcript analysis for any population of students quickly and accurately. Finally, in the area of Former Student Follow-Up, we have enhanced our extensive student follow-up survey data base through the ability to compile the results not only at the district or college level, but also at the program level for use by faculty doing program planning and review. The next sections will cover each of these areas in greater detail.

The Enrollment Potential Projection Model

The Los Rios Community College District, as part of its new strategic planning process, began in early 1991 to update and enhance the enrollment projection model first developed by Dr. Marc Hall for the 1988 facilities project. The new model developed by the district's Office of Planning

Student Flow Research Model
What Makes It Work

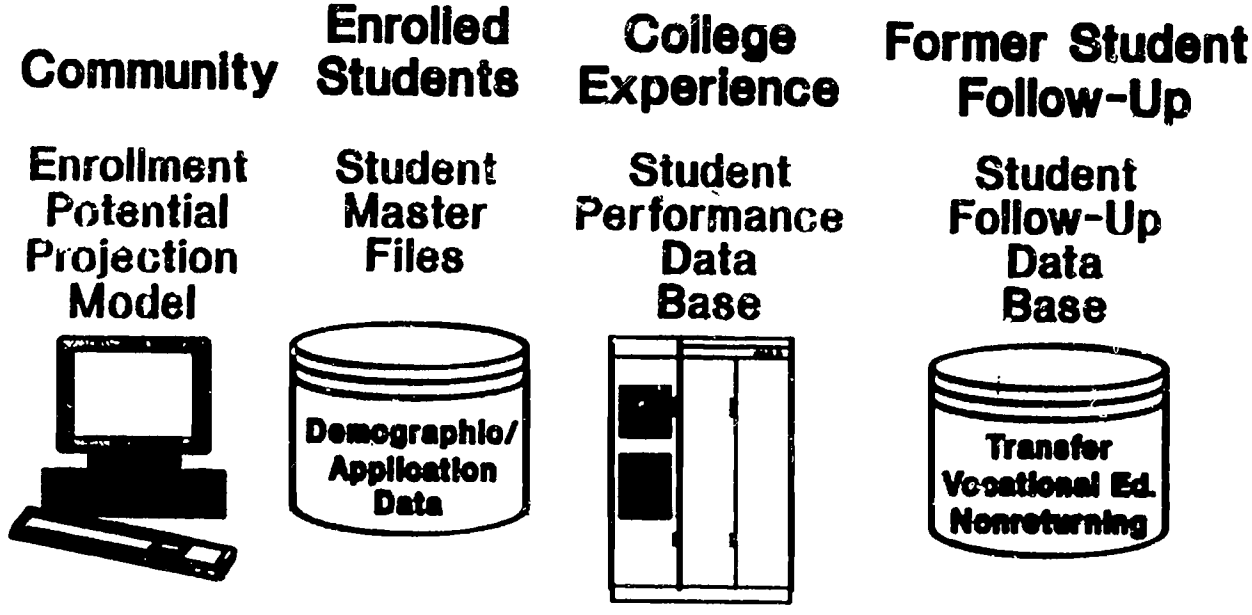

FIGURE 3

and Research is called the Enrollment Potential Projection Model (EPPM) and is quite different from the original, due to its capability of producing alternative projection scenarios. This is particularly important in a multi-college district with a variety of outreach center locations. The computerized EPPM has proved useful in the district's strategic planning discussions, and particularly in helping to answer major policy questions about the communities our current colleges and centers serve, the demographic changes projected for those communities, the potential effects on the size and nature of our future student populations, and the ways in which the district can address the dramatic growth in the Sacramento region. The EPPM provides the district and colleges with capabilities crucial to comprehensive and cost-effective planning:

(1) The ability to project the potential for increased enrollments in the district and at the colleges based on the most accurate data available;

(2) The ability to project the results of a variety of alternative planning scenarios, including differences in community area growth rates and college participation rates; and

(3) The ability to project the potential impacts on district enrollments of proposed new colleges or centers.

The EPPM was designed to help the district and colleges answer the key planning questions facing any district as it examines alternatives to handle projected growth:

- How many students will we need to serve in the coming years?
- From which community areas of the district's service region will these students come?
- What impacts might the differential rates of growth throughout the district's service area have on projected district and college enrollments?
- What impacts might target marketing to particular areas have on potential district and college enrollments?
- What are the available options for meeting the increased demand, and what are the potential impacts of each option on the current colleges and centers?
- Are there enrollment limits that we wish to set for current or projected colleges or centers, and what could be the potential impacts of such limits?

The Enrollment Potential Projection Model projects potential enrollments for the Los Rios district and the individual colleges based on current enrollment participation rates, using actual and forecasted population projections based on 1990 Census Data and governmental population projections. Figure 4 on the next page illustrates the basic components of the model.

Enrollment Potential Projection Model

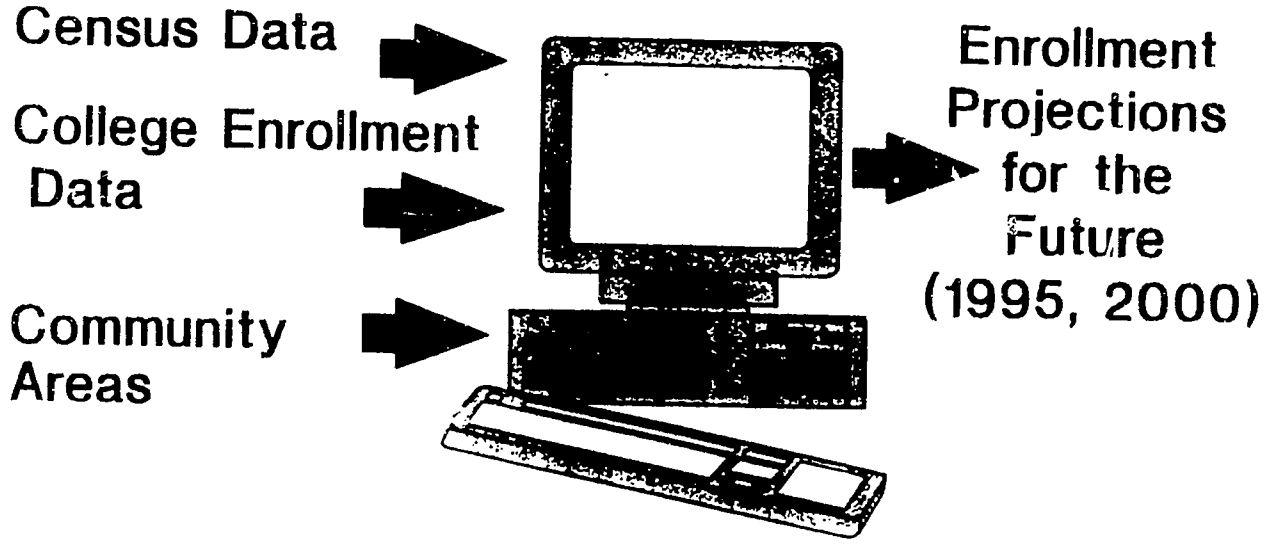

FIGURE 4

The forecasted population projections for Sacramento and Yolo County were provided by the Sacramento Area Council of Governments (SACOG). El Dorado County population projections were also supplied by SACOG, but were derived from Department of Finance projections.

The EPPM divides the Los Rios district into 24 individual community areas. Population projections for each of the community areas were supplied by SACOG for 1990, 1995 and the year 2000. Actual 1990 enrollments were derived through analysis of the district's Fall 1990 First Census Student Master Files. Enrollments were identified for each community area, and broken out by college (including the Placerville Center).

Participation rates of students from each of the community areas were derived by the following formula:

$$\frac{\text{1990 Fall Student Enrollment from Community Area}}{\text{1990 Population from Community Area}} = \text{Participation Rate}$$

Projected enrollments for any community area for the years 1995 and 2000 were computed by applying the following formula:

$$\text{1990 Participation Rate by Community Area} \times \text{Population of Community Area in Year of Projection} = \text{Estimate of Student Enrollment in Year of Projection by Community Area}$$

Individual college enrollments were computed by calculating attendance distributions by college using the following formula:

$$\frac{\text{Fall 1990 Total College Student Enrollment from Community Area}}{\text{Fall 1990 Total District Student Enrollment from Community Area}} = \text{Ratio for Each College} \times \text{Estimate of Student Enrollment in year of Projection by Community Area} = \text{Estimate of Student Enrollment by College by Area in Year of projection}$$

There are five original versions of the Enrollment Potential Projection Model©. **Model I, the most basic model** is patterned after the model developed by Dr. Marc Hall (*Los Rios Community College District Student Enrollment Analysis and Projections, Report II*; Hall and Coffey, 1988). The first page of the model is essentially the "data page" where the parameters are set. It shows the base population projections for each community area; the 1990 student population that attended from each community; the actual 1990 student participation rate (the percentage the student population is of each community area); the 1995 projected community area populations; the resulting projected 1995 student population (based on holding the actual 1990 participation rate steady); the year 2000 projected community area populations; and the resulting projected year 2000 district student population (again, based on the 1990 participation rate).

Summary reports for 1995 and the year 2000 are provided on the following pages of the model showing projected potential enrollment distributions for the individual community areas for each of the three current colleges in the district, and for the Placerville Center, for 1995 and 2000. Totals printed at the bottom of each page show district projected potential enrollments.

Model II builds on the foundation of the first model, but **allows for user-adjustable participation rates** for each community area. Since participation rates can be increased by proximity to a center or college, as well as by marketing, the ability to adjust the participation rate is an important part of the model. The same summary reports for 1995 and the year 2000 are also included in this model.

Model III, a more complex model, **also provides for user-adjustable participation rates** by community area, but **in addition allows for adjustable population multipliers for each community area.** This permits adjustment of the community area populations if more current population projections are available or other factors suggest changes. In addition, Model III allows the user to set enrollment limits for each college, then permits the "excess" enrollments to be allocated to a "new" college if forecasted enrollments for the current college exceed the user-defined limits. The same summary reports for 1995 and the year 2000 are also included in this model.

A crucial component of the EPPM is the ability to reflect the enrollment limits established for each of the district's current colleges and the Placerville Center, so that "excess" enrollments can be applied to the "new" campus in the model. **Model IV provides for setting of college enrollment limits.** The Chancellor and the college presidents agreed upon the college enrollment limits to be used in the EPPM. These limits were established after consideration of State facility usage standards, maximum buildout for each of the current campuses based on the district's 1991 Capitol Outlay Plan, and the ability to meet recognized and generally accepted levels of service. American River College's enrollment limit was set at 21,000; Cosumnes River College was set at 10,000; the Placerville Center was set at 3,000; and Sacramento City College was set at 18,000. The EPPM was modified to reflect the mutually agreed-upon enrollment limits, and then was run to produce the "Model IV" baseline projection.

Model V, the model ultimately used and approved by the Department of Finance as the formal projection for the new Folsom Lake College enrollments, adds one additional feature to Model IV: **a "Special Report" that identifies the proportions of people most likely to attend the new college from each community area,** based on proximity, on analysis of student enrollment by ZIP code, and on responses to a community survey. While Model IV projects all the potential new students coming to the district, the Model V Special Report recognizes that not all the new students from throughout the district will attend the new campus, and instead reflects those most likely to attend.

The EPPM has provided a unique means of answering the key questions of what our various community areas are like and what level of potential future enrollments we will need to serve. The best example of the effectiveness of this new research model has been its approval by the

state Department of Finance, the state Chancellor's Office, and the California Postsecondary Education Commission as the basis for the formal enrollment projections for the Los Rios district's fourth college. The model is highly flexible and permits us to analyze any number of alternative scenarios, based on adjustable participation rates, variable population multipliers, different college enrollment limits, and the likelihood of people from different community areas attending each of our colleges. The EPPM has generated a great deal of interest from other community college districts around the state as we all seek to understand how we can plan to meet the increasing enrollment demands in face of continuing fiscal stringency.

Combining Student and Course Master Files

In the area of Enrolled Students mentioned above, we have now combined our student application and demographic files with our master schedule files, in order to be able to analyze historical student enrollment data and its relationship to changes in course-taking patterns. Figure 5 on the next page illustrates the linkages of these files and the kinds of information available.

Our Student Master Files (SMF) contain student application and demographic information collected during the registration process. Information such as educational goal, full- or part-time status and major are some of the application items that are collected. Demographic information includes such elements as age, gender and ethnicity which are also collected during the application registration process.

Our Master Schedule Files (MSF) contain student course enrollment information collected from the students during the registration process. The actual class schedules, which include course, section, day and time and instructor information, are stored in these files.

All information collected from students during the registration process is stored on the district's mainframe computer(s). The district's research department routinely extracts the information from the Student Master Files and Master Schedule Files stored on the district's mainframes at the end of Fourth Week Census. These files are then restructured into an SPSS-readable format, thus simplifying analysis.

The ability to link these two types of quite extensive mainframe files using SPSS-X thus became our first look into how student enrollments both affect and reflect course planning decisions. At the college level, having the five-year history of key program trends relieved the faculty from having to search for and analyze such information as they had done in the past, permitting them to spend their time instead on evaluation of the implications of the trends for planning. Having solid and visual evidence of the various program trends also made it easier for faculty and administration alike to identify those programs that were weak in enrollments and in need of improvement or potential deletion. This helps make the program review process at least somewhat less threatening, and considerably less adversarial.

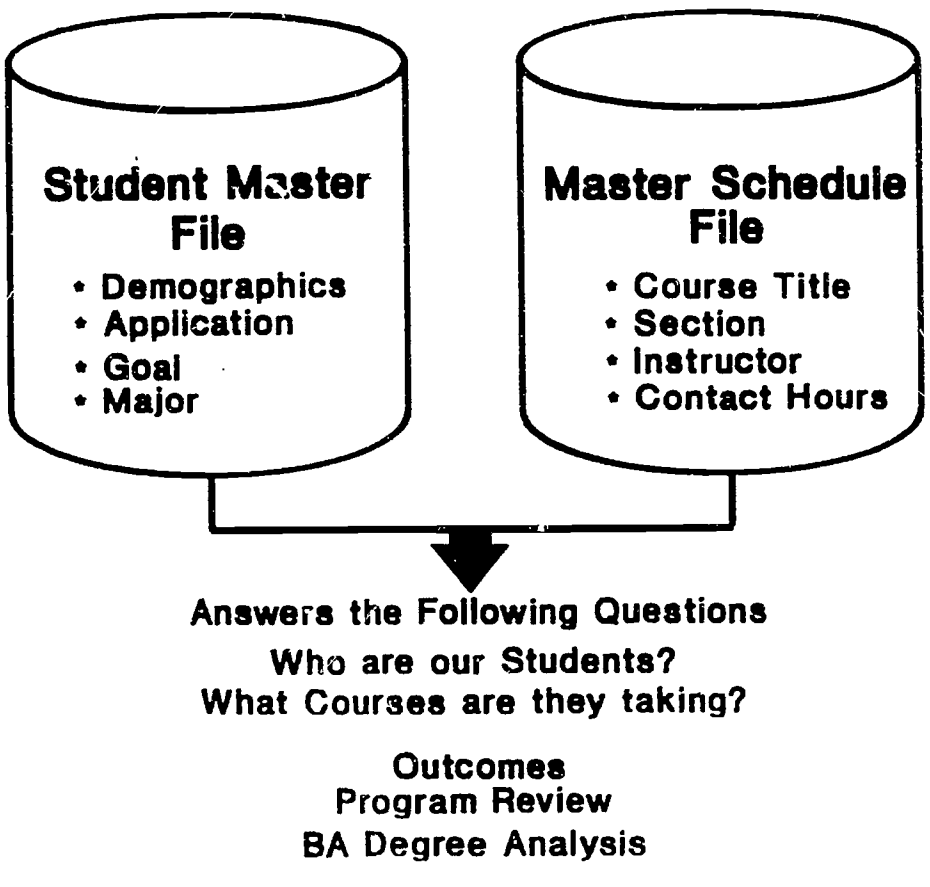
Student/Course Files
Student Master File
• Demographics
• Application
• Goal
• Major
Master Schedule File
• Course Title
• Section
• Instructor
• Contact Hours
Answers the Following Questions
Who are our Students?
What Courses are they taking?
Outcomes
Program Review
BA Degree Analysis

FIGURE 5

The ability to link Student Master Files and Master Schedule Files has also proven invaluable for our recent analysis of baccalaureate students' course-taking patterns and demographics. New state legislation passed during the 1992 fiscal crisis mandates a differential fee of $40 per unit (in addition to the usual $10) for those community college students who already have a baccalaureate or higher degree. In order to plan for the Spring 1993 semester, when the new fee takes effect, the district needed to answer two key questions:

1. What courses are these baccalaureate degree students enrolled in?

2. What do we know about these students demographically and in terms of their reasons for enrolling?

To answer these questions, we analyzed the entire Fall 1992 Student Master File to determine the students' goals and demographics, then combined the information with the course information for these students contained on the Fall 1992 Master Schedule File. The resulting analysis provided a profile of the baccalaureate students districtwide: the majority were women, most over the age of 30, predominantly white, who had enrolled primarily for occupational reasons. Each college was able to see its own baccalaureate student profile, and was provided an analysis of the courses these students were taking, including frequency of course enrollments by academic department. The colleges used this information to plan their Spring course schedules and to anticipate the areas which might be hardest hit by enrollment losses due to the fee.

Finally, the list of baccalaureate students from the Student Master File was used as a mailing list for a special survey which was sent to each of these students to elicit additional information about their plans for the Spring 1993 semester and their reactions to the new baccalaureate fee.

The Student Performance Data Base

Perhaps the most critical new addition to our research capabilities in terms of evaluating institutional effectiveness is the new Student Performance Data Base. When we began to develop the SPDB, the district's student information was designed such that the demographic and application information was stored in "flat file" structure on the Honeywell mainframe computer, while the transcript information was stored in a newly purchased relational data base format on the district's CDC Cyber mainframe. The statistical package SPSS-X was installed on the Cyber. Linking files across these two platforms with two entirely different data base structures would be a complicated process to say the least. And yet we knew that with demands for accountability increasing, we needed to look at data in new ways to answer the key questions on student preparation, persistence and performance. We decided to move ahead, creating our own quasi-relational data base that would link all the disparate files into a usable, effective structure.

We needed to be able to answer the key questions about what was happening to students while they were in our three colleges, whether they were persisting and performing successfully, and how performance might differ for different groups of students in different programs. To do such analyses we needed the capability of essentially examining transcripts as would a counselor,

looking not only at overall or course-specific GPA, but at the kinds of courses the student was taking—remedial, transfer or occupational—since student preparation for college-level work is a key indicator of student performance, and an important issue in community colleges.

Figure 6 illustrates the major components of the Student Performance Data Base. Essentially, student application, demographic and transcript data files on the mainframe computer were linked using student Social Security numbers and the file handling capabilities of SPSS-X. Converting the transcript data files proved the most difficult, since the on-line viewing capabilities designed for the counselors at each college to view individual student transcripts meant that the relational data base structure was highly complex. We decided that duplicating the transcript data base in SPSS-readable format was a poor idea since that data base contained over four million transcript records, with over two billion characters. We developed a means of using the Cyber's fourth-generation query language to navigate the transcript data base, extract the necessary files on a project-by-project basis, and build those files into an SPSS-readable format for each project as needed. Once a study was completed, the SPSS-readable transcript information would be purged from the system, or kept in an off-line format.

In order to produce computerized transcript analyses for particular types of courses, we had to design a process to identify every course on the district's data base as to type—whether the course is a general education or an occupational education course, and at the transfer, AA degree or remedial level. In addition, we wanted to be able to select or aggregate the information at the department or even course level, so as to answer such questions as how students who take remedial English courses perform in courses at the Freshman Composition level, or what the GPAs of student athletes are when figured with and without PE courses. This required having the district's Research Coordinator (who also spent 14 years in the district as a counselor), identify each course as to type, design the program and then build a data base of twenty years of district course offerings (all courses ever taught in the district over that time and therefore on historical transcripts). We could finally classify each course a student had attempted over the past twenty years, taking into consideration renaming of courses and changes in classifications over time. Computerized transcript analysis was now a reality.

Because the SPDB also includes the student application and demographic data, performance analyses can be done along demographic lines or according to student goal or major, and student populations can include any group of students identifiable by Social Security number—those who have matriculated, those on financial aid, those in special programs or receiving special services. This permits true analyses of the effectiveness of programs and services on particular populations, and pre- or co-requisites on student performance in subsequent courses. The information for specific populations in specific studies can be requested by staff at our colleges and downloaded in any of a variety of formats for use in microcomputer SPSS analysis. Recently, the college research offices have begun designing their own research data bases, using data downloads from the SPDB that are done for all students at each college each semester. Agreement on the most critical data elements was reached by the college research offices so that the full downloads can be done once at the district level and then disaggregated by college. Figure 7 shows a flowchart of the key elements of the Student Performance Data Base.

Student Performance Data Base

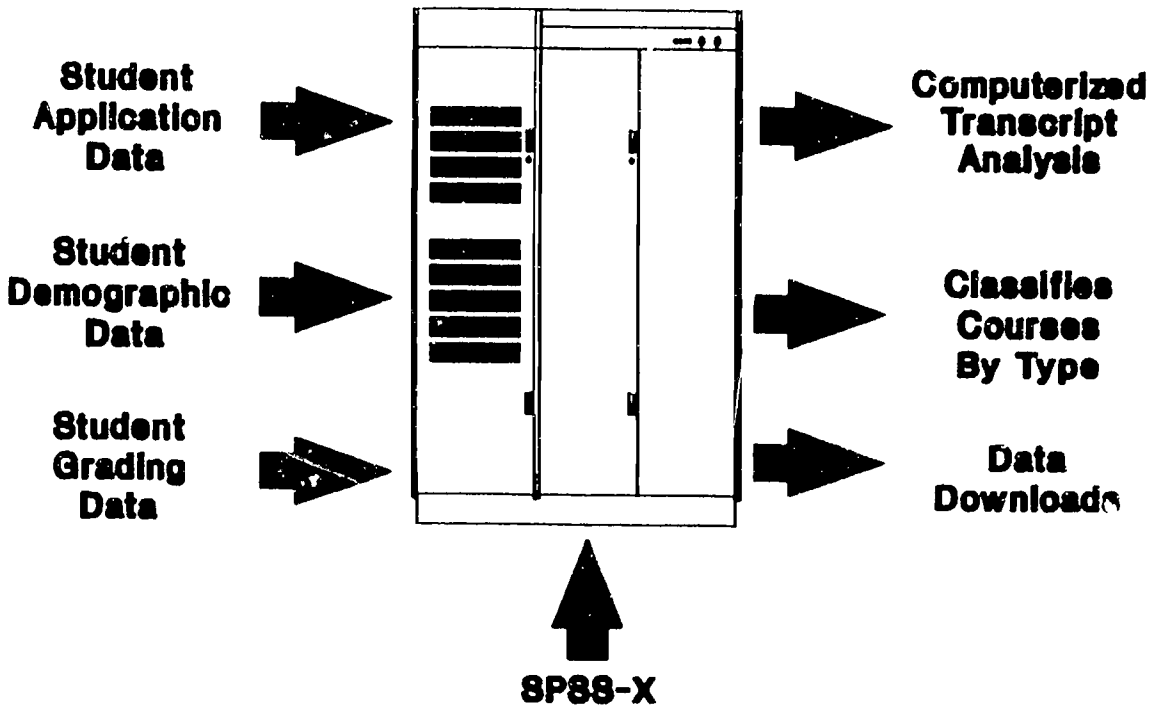

FIGURE 6

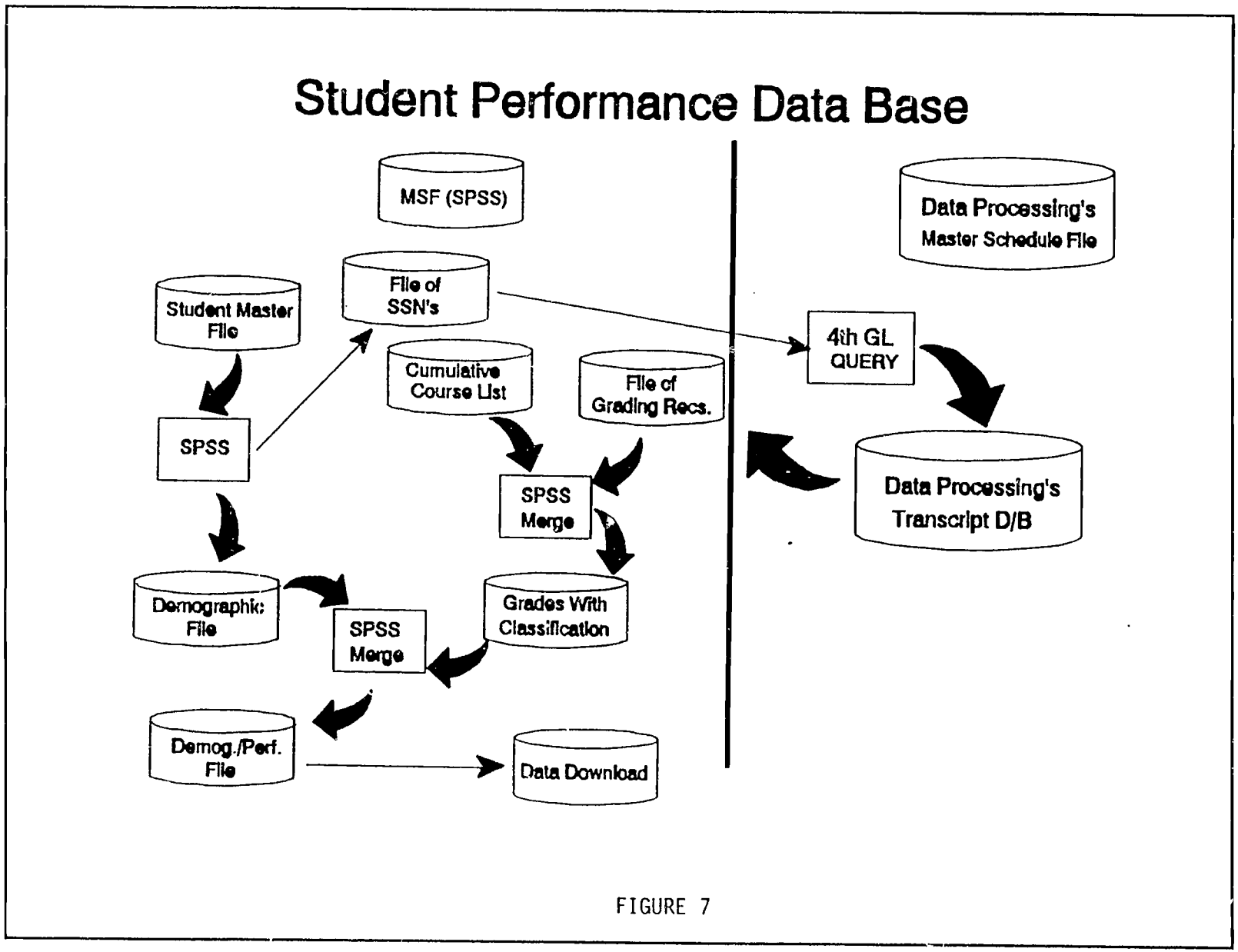
Student Performance Data Base
MSF (SPSS)
Data Processing's
Master Schedule File
File of
SSN's
Student Master
File
4th GL
QUERY
Cumulative
Course List
File of
Grading Recs.
SPSS
SPSS
Merge
Data Processing's
Transcript D/B
Demographic
File
SPSS
Merge
Grades With
Classification
Demog./Perf.
File
Data Download

FIGURE 7

The SPDB has been used in a wide variety of studies since its inception. Perhaps best-known is the district's *Moving On: A Cooperative Study of Student Transfer* (Jones, 1991), done with the University of California at Davis and with California State University at Sacramento. This study, which has been published nationally, went far beyond the usual counts of transfer students to determine their levels of preparation, persistence and performance at the community college, and then how they performed in terms of units attempted and completed, GPA and baccalaureate degree attainment at each of the universities. We were able to identify those students who had taken remedial courses in English, math or ESL at the community college level and then to track the remedial vs. non-remedial cohorts into and through the universities to determine the effects that remediation had on subsequent performance. Analyses were performed along demographic lines for various ethnic groups and for both genders. The findings—that the community college transfers performed as well as or better than the university native students, and that the remedial cohort graduated from the universities in proportions not much different from the non-remedial cohorts—were shared across all three segments and helped to identify profiles of the successful transfer student. This information is being used by counselors, transfer center directors and others to assist students in developing and reaching their transfer goals.

More recently, the SPDB has been used in an analysis of our baccalaureate degree-holding students in terms of their demographics and course-taking patterns. This is particularly important in light of the new $50 per unit fee that the Legislature mandated for all such students in the community colleges. We were able to identify those students who held the baccalaureate degree (according to their declaration on the application), and provide a picture of who these students were and what courses they were enrolled in, to help in planning next Spring's course offerings since many of these students may not be back in January. The fact that these students were predominantly older women, almost half of whom enrolled with specific job attainment, upgrading or retraining intentions (and a considerable percentage with transfer intentions), is helping us focus attention on how to meet the needs of these students—who will now pay university-level prices for their community college courses. In addition, the district's planning and research office has designed and mailed a survey to these students to determine the impact of the differential fee on their educational intentions.

Now in the planning stages is an evaluation of the new Math, Engineering and Science Achievement/Community College Program in the district's three colleges, funded with new state appropriations, which aims to increase the numbers of underrepresented transfer students in math- and science-related fields. The SPDB will enable us to identify and then follow these targeted students to monitor their persistence and performance as they receive the program's various special services, as well as determining how many such students achieve eligibility for transfer. The ability of the SPDB to track students at the department or even course level will be crucial to the success of the evaluation of the effectiveness of MESA/CCP.

Former Student Follow-Up Data Base

The Los Rios district began its student follow-up efforts with a pilot survey in Spring 1983, long before the demand for accountability became an issue of state and national concern. We wanted to know what happened to our students as a result of their community college experience: Were they employed? Did they transfer to another college or university? Had their goals been met? (Figure 8).

The Spring 1983 pilot study involved only "occupational" students, following guidelines required for Vocational Education Data System (VEDS) reporting. As a result of that study, Los Rios decided to expand its survey population to include all graduates and certificate earners (general education as well as occupational majors), plus the cohort of nonreturning nongraduates (referred to as NRSs) selected according to VEDS guidelines. Since that study also showed that the VEDS guidelines misidentified from 20% to 40% of the students' major programs, Los Rios decided to use its own record of the degrees/certificates actually awarded (if any).

The Los Rios Student Follow-Up Data Base now includes responses from almost 12,500 former students who attended the district's three colleges between 1982 and 1990 (Figure 9). Survey results, reported in the district's *Measures of Progress* series, are aggregated on the basis of the respondents' self-reported educational goals: University Transfer, Occupational Preparation, Occupational Retraining, and Personal Interest, with a separate analysis of responses from NRSs (regardless of goal). The results are also summarized by program, by college, and for the district as a whole.

The early Los Rios studies were conducted annually (1984 through 1987), and were compared in *Measures of Progress: A Four-Year Retrospective* (Lee, 1987). As recommended in that report, subsequent studies have been conducted biennially (but still include all students who would have been included in the annual surveys). *Measures of Progress: Student Follow-Up, 1984-1991* (Lee, 1991) discussed the series of studies in a newsletter format, identifying trends and summarizing the responses received during that eight-year period.

In addition to collecting the employment data required for reporting on occupational education students, the Los Rios questionnaire elicits information on the students' primary reason for enrolling at the community college, their current educational status (including information on their transfer school, if any), and their ratings of community college courses completed and services used (Figure 10). Thus the surveys go far beyond "compliance" reporting and provide considerable additional information useful in college and district planning.

Survey procedures have been modified over the eight-year period, usually in direct response to suggestions or requests from users of the data. One of the most important of these changes, made at the request of college deans of occupational information, was the development of program-specific summaries which are prepared for each major program having ten or more responses. Each summary shows the number and percentage of respondents answering each of the questionnaire items, as well as basic information regarding that program's survey population

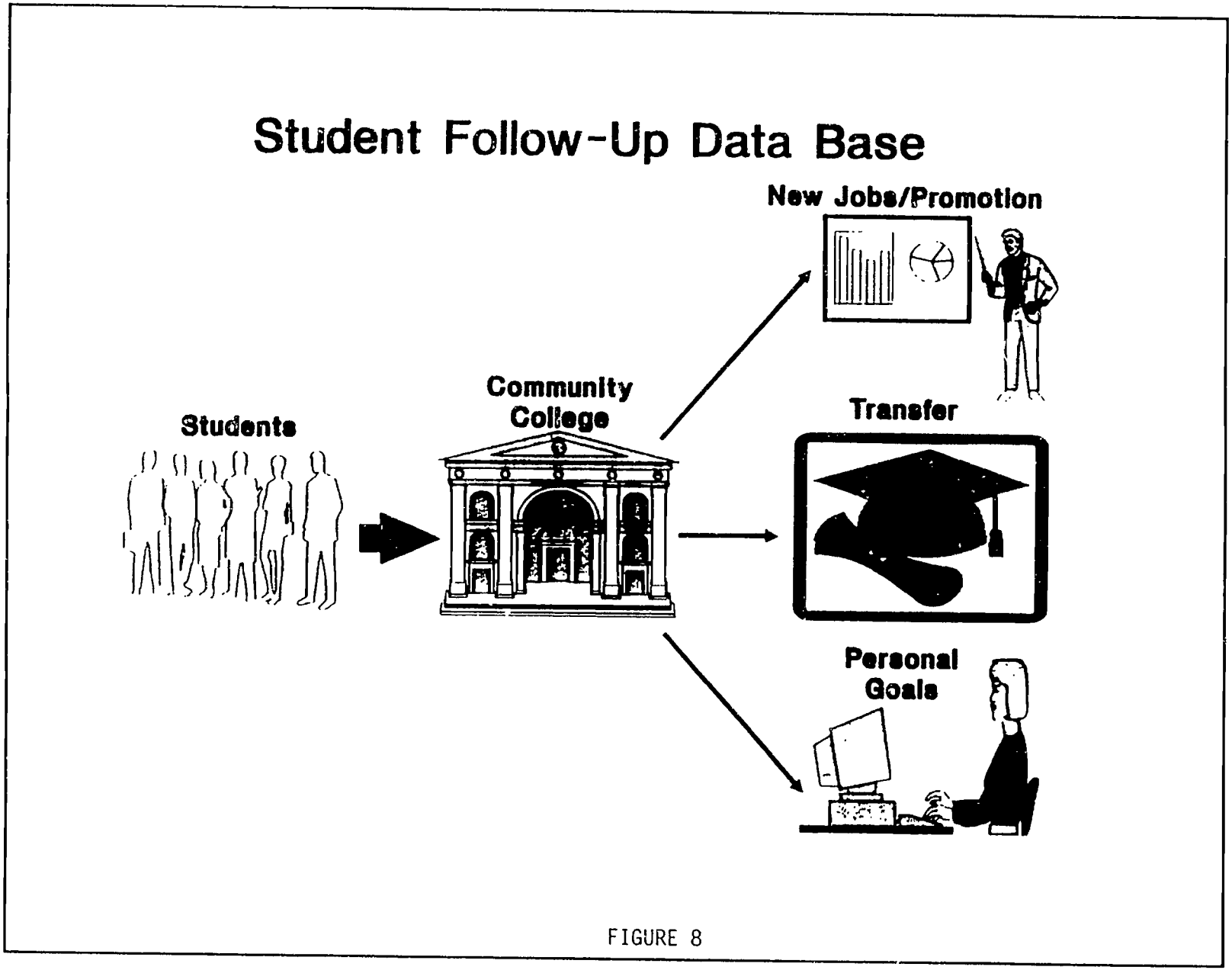
Student Follow-Up Data Base
New Jobs/Promotion
Community College
Students
Transfer
Personal Goals

FIGURE 8

Student Follow-Up Data Base

Populations: 1982 - 1990

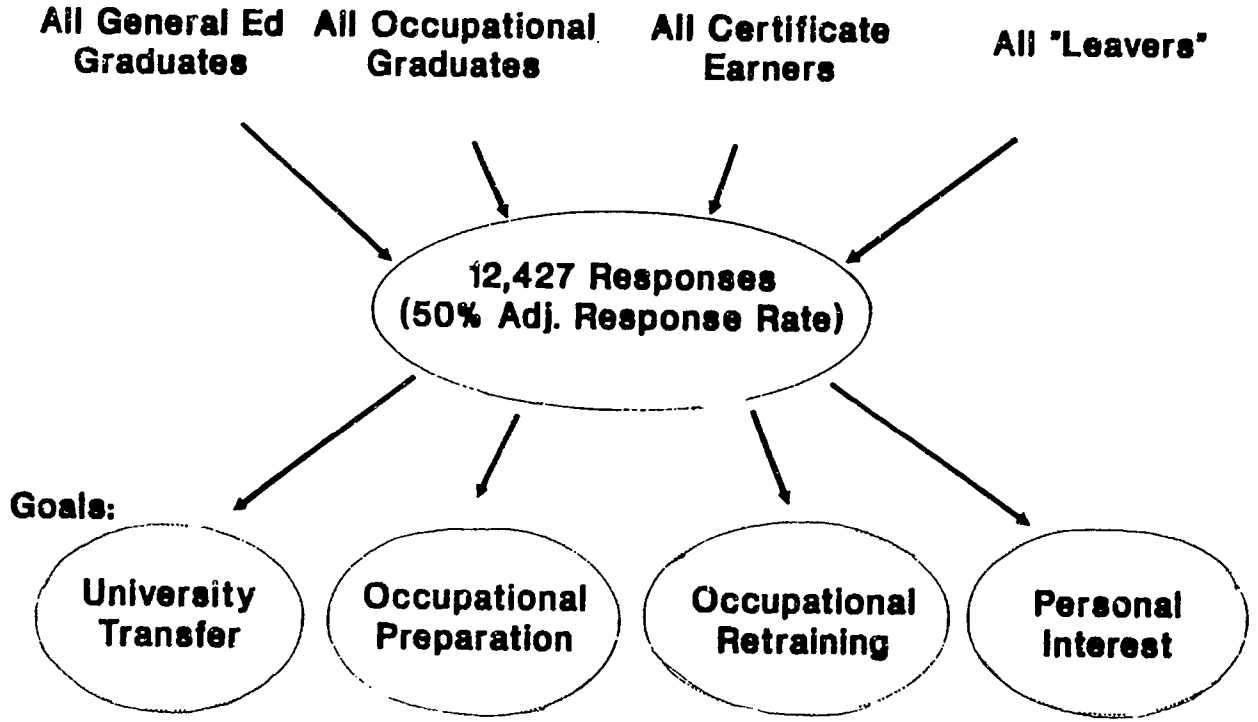

FIGURE 9

MEASURES OF PROGRESS, 1984- 1991
STUDENT FOLLOW-UP DATA: KEY TO ACCOUNTABILITY

- ✔ **Types of Data:**
  - **Students' Educational Goals**
  - **Employment/Educational Status**
  - **Evaluations of Instruction and Services**
- ✔ **Results by Occupational Program**
- ✔ **Uses of the Data:**
  - **Curriculum Development, Program Review**
  - **Accreditation Self-Study, Team Visits**
  - **Business/Industry, Community Relations**
- ✔ **Beyond Compliance: Meets/Exceeds Requirements for SSFS, VATEA, Student Right-to-Know**

FIGURE 10

(number of graduates, certificate earners and NRSs; adjusted response rate; and demographic profiles of the respondents). This change of format and the breakdown of information by program makes the information much more useful to college staff in their curriculum and program review efforts and in accreditation self-study reports.

Another refinement—the designing of individual skills-specific questionnaires for various occupational majors—resulted from Los Rios' involvement in the early stages of what is now called the Statewide Student Follow-Up System (SSFS): faculty at each of our colleges used drafts developed for that earlier project to design supplementary forms tailored specifically to Los Rios occupational programs they wanted to examine more closely. Currently, in cooperation with the SSFS project manager, the basic questionnaire to be used for the Spring 1993 Los Rios student follow-up survey is being revised to ensure that Los Rios can participate in the SSFS study while continuing to gather the extensive additional data our colleges have come to expect.

The Student Follow-Up Data Base enabled the district to comply in a timely manner with the Student Right-to-Know regulations, since we already had on hand a large amount of historical information regarding where former students found employment and the relationship of their jobs to their community college education. The data base is also expected to be very useful in meeting the new VATEA reporting requirements.

Information from the data base has also been used in a variety of other ways: by the colleges, to provide information for their Occupational Education Advisory Committees; by members of Los Rios' Board of Trustees and the Director of Community and Media Relations, in responding to business/community concerns; in conference presentations and published articles on community college accountability at both state and national levels.

Los Rios continues to refine its student follow-up system with each new biennial survey, in order to continue to meet the need for even more comprehensive answers to the basic question: What happened to our students as a result of their community college experience? The enhancements described above and others in the planning stages will maintain the Student Follow-Up Data Base as a dynamic and essential component of the district's accountability model.

FROM ACCOUNTABILITY TO EFFECTIVENESS

The genesis from the Student Flow Research Model to the new CYA Institutional Effectiveness Model has taken almost ten years. Much trial and error has been involved, along with a strong focus on the original key questions from the Student Flow Model. Those questions are still the ones we need to answer, and our ability to examine our programs and services in terms of their effectiveness in producing successful students is now more important than ever. In this era of increasing student enrollment demand and diminishing resources, we no longer have the luxury of maintaining programs and services that are not meeting student needs. And more than ever before, we are being asked to demonstrate—to the Legislature and the Governor, to state and federal agencies, to our boards, to our communities, to our faculty and to our current and potential students—that what we are doing is working.

In designing our model, we kept focused on the questions to be answered rather than on the data to be collected; that was true in the original Student Flow Research Model and it continues to be the best process for enhancing the model. Focusing on what happens to our students as they move into, through and beyond our colleges has helped us identify which pieces of the model we needed to add next—and helped us to work around seemingly impossible barriers creating what we needed as the technology permitted it (and sometimes when it didn't). As we were able to get to finer levels of analysis (course-taking patterns; the effects of remedial courses; GPA with and without PE courses), we have been better able to identify where our programs and services are having an impact and where they are not. Figure 11 summarizes the changes to the model over time, and Figure 12 illustrates some of the key outcomes we have achieved—the move from compliance and accountability to institutional effectiveness.

Perhaps most of all, we have learned how complex a process is analyzing institutional effectiveness—and sometimes, how political. Documenting increases in the number of transfers a community college is sending to public four-year universities is one thing; finding out what proportion of those students ever received their baccalaureate degrees, and how it differed by gender and ethnic group, is quite another. While it is tempting to hold individual colleges accountable for particular outcomes (numbers who transfer; students who graduate), it is also true that colleges do not have control over all the factors that affect student performance, and that students themselves must take some responsibility for their success or failure. However, as researchers who believe that the only real reason for research in the community colleges is to help improve our institutions on behalf of our students, and to determine which programs work best with which students under what circumstances, we believe that the more complete the information, the more compelling an argument for change. Moving from compliance and accountability to true analyses of institutional effectiveness is difficult and time-consuming. It may be the most we can do; it is the least our students deserve.

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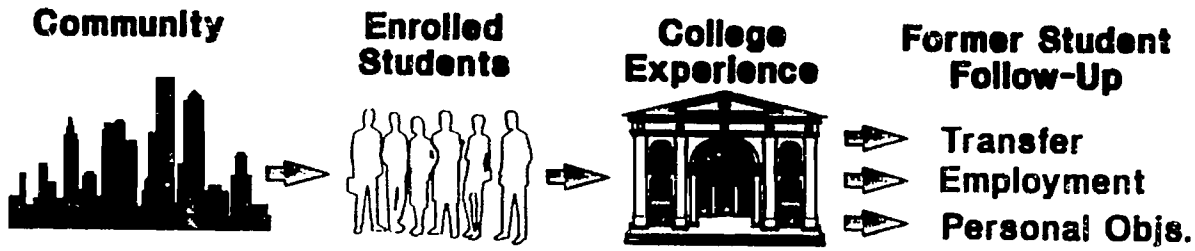
Student Flow Research Model

"From Accountability to Effectiveness"

Model



Outcomes

- Folsom Lake College Proposal
- Student Profiles
- Program Review
- Diversity/AA
- Bac. Degree Student Analysis/Survey
- MESA/MEP Eval.
- Cooperative Transfer Study
- Student Athletes Success
- Ability-to-Benefit Students
- Measures of Progress
- VATEA
- Beyond State "BFS"

FIGURE 11

Key Question:

Is What We're Doing Working and How Do We Know?

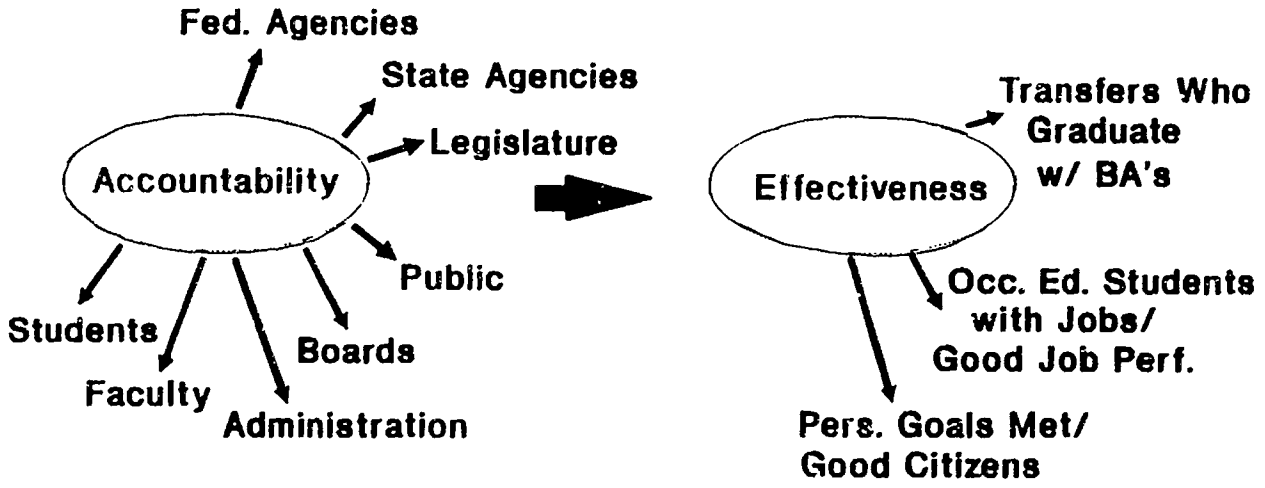


FIGURE 12

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