This article describes a method by which colleges (institutions of higher education) construct and use multiple future scenarios and simulations to strategically plan: to create visions of their futures, chart broad directions (mission and goals), and select learning and delivery strategies to achieve those broad directions. This method involves the writing of scenarios to use them in a number of analytical ways, including simulations of consequent future student enrollment, to provide empirical support for long-term decisions.

Few can predict the future confidently, what with the wild cards or unforeseen events that seem to take place with increasing frequency. To handle this problem, as colleges attempt to plan their futures, it is quite useful to work with several plausible scenarios, subjecting them to scrutiny and building iterations until one or more may be used to begin developing long-term solutions.

In their planning, colleges can hardly avoid an “interest in how present action or inaction may affect present and future generations” as described by Didsbury (1999, vii). Colleges add value to human capital, imbuing individuals with skills and knowledge that, with obvious periodic upgrading, enable them to function as citizens and workers over most of their lifetimes. Thus, to be effective, the college should structure learning today to provide the kinds of skills

**Background**

This article describes a method by which colleges (institutions of higher education) construct and use multiple future scenarios and simulations to strategically plan: to create visions of their futures, chart broad directions (mission and goals), and select learning and delivery strategies to achieve those broad directions. This method involves the writing of scenarios to use them in a number of analytical ways, including simulations of consequent future student enrollment, to provide empirical support for long-term decisions.

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In their planning, colleges can hardly avoid an “interest in how present action or inaction may affect present and future generations” as described by Didsbury (1999, vii). Colleges add value to human capital, imbuing individuals with skills and knowledge that, with obvious periodic upgrading, enable them to function as citizens and workers over most of their lifetimes. Thus, to be effective, the college should structure learning today to provide the kinds of skills
and knowledge needed by students for several decades in the future. Similarly, colleges’ capital or facilities planning must extend beyond the current decade. For instance, a large student services/learning building (if conceived today) must be designed and sized for the functions it will host some 14 years from now, given the processes of funding, planning, design, construction, and equipping that will precede the building’s occupancy and the need for it to be functional for many years beyond occupancy.

For the college, it is not a question of whether (or not) to engage in long-range strategic planning since, as Didsbury (1999) notes, inaction “plans” the future as well. The question is how to do it—how to strategically plan for the long range—when the future seems so uncertain. The best answer is to plan in the context of multiple scenarios.

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**Scenario Planning**

The concept of “scenario” in planning seems to have been pioneered by Herman Kahn in the 1940s while he was working on future thinking for the RAND Corporation. Kahn later founded the Hudson Institute, which specialized in writing scenarios, some about nuclear war. Contemporary work by the Stanford Research Institute (SRI Futures Group) produced future scenarios for education and the environment, and later efforts were undertaken by major corporations about their product marketing (Chermack, Lynham, and Ruona 2001).

Shoemaker (1995, 26) defines scenario planning as “a disciplined methodology for imagining possible futures in which organizational decisions may be played out.” Van der Heijden (1997) describes three paradigms for the use of scenarios in strategic planning: (1) rational (one best solution), (2) evolutionary (identified only in retrospect), or (3) processural (processes for learning from mistakes). Alternatively, scenarios may be (a) intuitive, qualitative, or “soft” (as advocated by Kahn and Wiener [1967]); (b) quantitative (Amaro and Lipinski [1983]); or (c) the inevitable “middle ground” that incorporates both intuitive and quantitative techniques.

The work in college planning, described in this article, embodies the middle ground of both qualitative and quantitative techniques. And it is suggested that this work may be assessed by Van der Heijden’s (1997) five criteria for scenarios. They must be:

- multiple (to reflect uncertainty)
- plausible
- internally consistent
- relevant (to the college’s concern)
- new and original perspectives

Contrasting with the rationalistic decision theory’s one best solution, scenarios developed in this article have the dual attributes of both upsides and downsides, so to speak, described by Van der Heijden (1997). Another characteristic of the college scenario work described here is that it deals with the balance of predictability and uncertainty through the “scenarios and simulations” context of the midterm to longer-term future, as conceived by Kaivo-oja (2001) and Van der Heijden (1996) and depicted in figure 1.

**The College Context**

To begin strategic planning, given future uncertainty, the implications of multiple scenarios need to be explored as planning staff attempt to identify long-term problems and, given the college’s mission, craft a vision, direction, and specific strategies. These multiple scenarios acknowledge the overall uncertainty facing a college that typically is sensitive to relatively certain demographic trends, uncertain economic cycles, and generally unknown future public policies.

Developing and working with multiple scenarios can help college planners understand what Rose and Kirk (2001, 55) describe as “critical components” of the strategic planning process: (a) the internal and external environment that influences decision making, (b) institutional policies.
and constraints, and (c) how the effects of any given decision are connected to other relevant actions. Indeed, as Rieley (1997, 4) argues, “scenario planning is not the answer to the challenges facing higher education...we are not trying to predict the future; we are trying to understand potential futures.” Consistent with the Rose-Kirk observations, Rieley argues further that it is not enough to identify the forces driving higher education; one must also understand the relationship of these forces. Rieley’s “systems map” (diagramming these relationships) and “scenario matrix” (assessing these relationships within different scenarios), however, represent exceedingly complex exercises, especially if one is interested in exploring the empirical implications of different scenarios.

Simplifying the scenario-writing process somewhat, the Commission on Preservation and Access (1995), in its Vision 2010 Project, designed four scenarios around two axes: (1) competition (ranging from Yale University vs. Harvard University to Yale vs. Microsoft) and (2) digital literacy (ranging from reliance on just text to reliance on a symbiosis of text, graphics, sound, and video). This work proceeds by developing and analyzing details of the matrix’s four quadrants. These details include both quantitative and qualitative factors.

Using a more open (and less explicitly defined) starting point, College of Marin (2000) sought a fresh perspective, also constructing four scenarios. For each of these scenarios, planning participants first examined action options and then identified robust strategies that appeared to address issues and problems, regardless of the future’s content. It then remains for Marin to monitor events, using explicit indicators to see which scenario(s) come to pass and to fine-tune strategies accordingly.

The RAND Corporation (1994) has used an idea, similar to Marin’s, called “exploratory modeling.” This modeling combines quantitative forecasts with scenario planning to look at a range of plausible futures in California higher education, concentrating on enrollment, revenues, productivity, and fee changes. The effort was to determine the best policy choice, given uncertainty (the similarity to Marin’s work), rather than to establish the most likely future scenario and best policy for that.

Once there is a commitment to using quantitative (as well as qualitative) measures, it is useful to identify metrics that facilitate thoughtful discussion by staff; that is, metrics that count in making plans and decisions. For the college, one obvious metric is future students: their enrollment numbers, characteristics, entering skills, and needs. Once simulated, these values for future students can be assessed for their implications for learning: the quantity and content of emerging curriculum, which includes topics, skills, knowledge, and experiences that students will need, given anticipated future socioeconomic conditions of the area(s) in which the students will live. These assessments also support discussions about ways to deliver that learning on the college’s main campus via active or passive (the traditional model) learning; at off-campus centers and/or work sites; or through distance learning via online (Internet), televised, interactive video, CD-ROM, or other media.

If much of a college’s strategic planning is dependent on the likely number and kind of its future students, enrollment simulations must not only be insightful so as to suggest policy directions but also, one would hope, be reasonably accurate so as to avoid overly large ongoing revisions in the college’s execution of its plan.

Brinkman and McIntyre (1997) describe different ways of evaluating enrollment patterns and forecasting or simulating future enrollment. Qualitative methods, often relying on expert groups such as focus, Delphi, and charrette, are useful, sometimes essential, in cases where there is little historic quantitative data. The same is true (that little data are needed) for curve fitting, one of two ways to conduct quantitative forecasting. Variations of curve fitting such as moving averages, Box-Jenkins (combining moving averages with autoregressive models, which regress current on prior values of a univariate time series), and others are useful when conditions can be expected to remain largely the same. Unfortunately, this is seldom the case.

Causal modeling, the other category of quantitative forecasting, emphasizes the factors affecting enrollment and requires more historic data. No one factor determines enrollment at a college; rather, it is the result of the combined effects of many manageable and unmanageable factors.

Unmanageable factors are those outside the institution that are typically associated with demand analysis, and just as typically (for college strategic planning) associated with the environmental scan of events and trends taking place “out there”: demographics, economics, technology, culture, competitor practices, and public policy.

Manageable factors include those actions the college controls (mostly or partially): tuition and fee levels, financial aid delivery, curriculum content and delivery, marketing, admissions, registration, and probation and dismissal policies and practices.
The Simulation Model

For the illustration in this article, enrollment simulations use the econometric model proposed by McIntyre (1999), which sorts the empirical impact on college enrollment of the important manageable and unmanageable factors. Then, several plausible future scenarios are written and quantified, and, building on these scenarios, the college simulates future student enrollments that result from a variety of manageable policies and practices. These results prove useful for analyzing different planning strategies. Alternatively, it is possible to use the model as an evaluation tool as when, for instance, McIntyre (1998) assessed one college’s enrollment management strategy to expand its outreach to feeder high schools and, from the results, influenced the college’s long-range budget and marketing plans.

Simulations are based on the following econometric regression model:

\[ E = a + b_1F_o + b_2F_{oth} + b_3P + b_4UN + b_5B + b_6D + u \]

where

- \( E \) = college student enrollment
- \( F_o \) = college’s own student costs (tuition and fees, books and supplies, transportation, and child care)
- \( F_{oth} \) = student tuition and fees of other similar providers or competitors
- \( P \) = eligible population of college’s service area or markets
- \( UN \) = unemployment (or economic conditions) in college’s markets
- \( B \) = college’s operating budget (proxy for supply)
- \( D \) = college’s policy or delivery techniques: sites, distance learning
- \( a, b_1, \ldots, b_6 \) = regression parameters
- \( u \) = model estimate errors or “residuals”

The first step is to statistically fit this model to past, actual enrollment patterns. Time series analyses like this typically show a high fit to the data because most variables are increasing over time. Consequently, the model’s errors or “residuals” should be analyzed using metrics such as the Durban-Watson (DW) statistic, along with qualitative observations. If errors are systematically high or low over time and the DW statistic is significant, one or more important independent variables likely have been omitted from the estimating model.

Besides the model’s overall fit, it is possible to assess the relative impact on enrollment of the different explanatory factors or variables. In this case, two measures—elasticity and the student t-value (statistical significance)—of the impact on enrollment of the individual explanatory variables are especially useful. In addition, the usual cautions for such models must be observed. There may be model errors, measurement errors, and the ever-problematic simultaneous equation bias where the dependent variable, enrollment, may be driving one or more of the independent explanatory variables (e.g., budget), rather than the other way around, as assumed by the model. Corrections exist for such problems and may be employed during the empirical work.

Once the statistical parameters of the model are estimated, future values of the independent variables are specified from scenarios (as described later in this article) and future enrollments then simulated and analyzed for each scenario. Scenario attributes also provide the basis to estimate the future characteristics, entering skills, and needs of these students.

The Case: College of the Desert

The case study in this article is College of the Desert (COD), one of 108 public community colleges in California. Located in southern California, east of the Los Angeles basin, this college serves the rapidly growing Coachella Valley, an irrigated and partially urbanized desert that is home to more than 300,000 people.

COD is a comprehensive, less-than-baccalaureate college, delivering university transfer, workforce programs, customized business training, and developmental and continuing education each year to more than 10,000 individuals and businesses. Student needs are highly diverse and, as a result, the college’s programs range in rigor all the way from prescollegiate developmental classes to English as a second language (ESL) to the lower-division general education transfer core to retraining classes for highly skilled jobs.

Student enrollments at COD have fluctuated over the past three decades, peaking at 11,500 in 1991 and falling during the recession of the early 1990s because of student fee increases and budget constraints. College enrollment growth resumed in 1996 but was interrupted again in 1999 when the California legislature removed and reassigned part of COD’s service area to another college. During the
last three years, COD’s enrollment has increased again and is expected to roughly double, from 10,000 to around 20,000 students, over the coming two decades.

However, the service area population has grown by nearly one-third during the past 10 years alone, and, despite its enrollment growth and generally effective programs and services, COD’s accessibility or market penetration—the ratio of college enrollment to service area adult population—is at its lowest point in three decades.

Serving an area that continues to grow in population and where the “baby boom echo” has started to emerge from high school (and will continue through most of the coming decade), COD’s future enrollment growth will be substantial. But there are many important questions about what and how the college’s students should learn.

**College Scenarios**

In the case examined here, the methodology of developing scenarios, like that of many other futures exercises, is a combination of different approaches, but all focus on the single objective of developing metrics that drive the enrollment simulations.

To help facilitate COD’s strategic planning, work begins with the typical environmental scan and trend analysis of conditions external but relevant to the college’s work (Desert Community College District 2003). Building on these data, a series of qualitative and quantitative evaluations is undertaken of the college’s aggregate performance in achieving its stated mission, perceived strengths and weaknesses, and priorities.

Results of this evaluation are then reviewed and discussed in a variety of venues such as open forums, focus groups, interviews, public meetings, and via the Internet by a variety of groups including students, college staff, and interested members of the college’s service area, the Coachella Valley community. From these generally informal processes, a series of planning themes are developed. These themes identify the broad trends that are significant for the college’s direction. For instance, regarding COD’s role in workforce preparation, the plan notes that labor is scarce and many new hires lack necessary skills, knowledge and values for the work.

Apart from a few large and effective programs, COD workforce preparation programs appear to be too small and, in some cases, growing little in the face of increasing industry demand for labor. Efforts by COD to expand and improve such programs are constrained by a lack of public funding. (Desert Community College District 2003, 15)

The next significant step in the planning process is to formulate a plausible status quo Scenario A. For this, scenario writers draw on the previous work at COD as well as on prior experience in scenario building for other colleges. One might say the writers use the “intuitive logic,” described by Martelli (2001, 63), as the preferred method of scenario building for this planning project. In any case, review of Scenario A (by a broad advisory committee) suggests this scenario may be overly optimistic, leading the writers to develop Scenarios B and C, embodying more difficult external conditions and more problematic internal policies.

At this stage of the process, COD planners complete a new statement of vision and mission for the college and begin exploring a variety of planning strategies. As these strategies emerge, the scenario writers construct yet another scenario—Scenario D—that embodies those (strategies) that are manageable (i.e., within the college’s ability to implement).

The four scenarios supporting the college’s strategic planning process (with specific metrics summarized in figure 2) are:

- **Scenario A.** General continuation of current policies by COD, together with a relatively moderate recovery from the 2001–2 economic downturn by late 2003 and continued long-term upward movement of the California economy.

- **Scenario B.** COD policies are like Scenario A, but the 2001–2 slowing of California’s economy slips into a significant downturn in 2003, followed by a cycling of the state’s economy that is longer in duration and smaller in depth than the typical cycles before the 1990s.
Scenarios and Simulations to Plan Colleges

**Figure 2 College of the Desert (COD) Planning Scenarios**

<table>
<thead>
<tr>
<th></th>
<th>Scenario A</th>
<th>Scenario B</th>
<th>Scenario C</th>
<th>Scenario D</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Economy</strong></td>
<td>Turns up in 2003, cycles</td>
<td>Turns down, cycles</td>
<td>Like Scenario B</td>
<td>Like Scenario A</td>
</tr>
<tr>
<td><strong>Population</strong></td>
<td></td>
<td></td>
<td></td>
<td>Up by between 2.3–3.7% yearly</td>
</tr>
<tr>
<td><strong>Unemployment (Rate)</strong></td>
<td>Cycles around 5–8%</td>
<td>Cycles between 4–12%</td>
<td>Like Scenario B</td>
<td>Like Scenario A</td>
</tr>
<tr>
<td><strong>Cost of Living (CPI)</strong></td>
<td>Up by 3%</td>
<td>Up by 4%</td>
<td>Like Scenario B</td>
<td>Like Scenario A</td>
</tr>
<tr>
<td><strong>College Prices (State and Local Government Purchases Index)</strong></td>
<td>Up by 3%</td>
<td>Up by 4%</td>
<td>Like Scenario B</td>
<td>Like Scenario A</td>
</tr>
<tr>
<td><strong>Enrollment Fee (EF)</strong></td>
<td>Stable to 2004, then up by CPI</td>
<td>Like Scenario A</td>
<td>Up 33% in 2003–4, then up by CPI</td>
<td>Like Scenario A</td>
</tr>
<tr>
<td><strong>Other Fees</strong></td>
<td>Like EF</td>
<td>Like Scenario A</td>
<td>Like Scenario B</td>
<td>Like Scenario A</td>
</tr>
<tr>
<td><strong>Student Direct Cost</strong></td>
<td>No change</td>
<td>Like Scenario A</td>
<td>Like Scenario B</td>
<td>Down 5% 2005–7</td>
</tr>
<tr>
<td><strong>Operating Budget</strong></td>
<td>Up by around 5–6%</td>
<td>Up by around 4%</td>
<td>Like Scenario B</td>
<td>Like Scenario A</td>
</tr>
<tr>
<td><strong>Policy/Practice</strong></td>
<td>No change</td>
<td>Like Scenario A</td>
<td>Like Scenario B</td>
<td>Like Scenario A</td>
</tr>
<tr>
<td><strong>Delivery</strong></td>
<td>No change</td>
<td>Like Scenario A</td>
<td>Like Scenario B</td>
<td>Add distance learning, new center; improve other sites</td>
</tr>
<tr>
<td><strong>California State University Student Fees</strong></td>
<td>Like community colleges</td>
<td>Like Scenario A</td>
<td>Up 20% in 2003, 2004</td>
<td>Like Scenario A</td>
</tr>
</tbody>
</table>

- **Scenario C.** Like Scenario B, except that the student enrollment fee (tuition) is increased by one-third in 2003 and 2004 in reaction to economic and budget conditions. Competitor (California State University undergraduate) student fees rise by one-fifth in 2003 and 2004, after which all fees rise by consumer price index (CPI).
- **Scenario D.** Like Scenario A, except that COD expands its distance learning and adds a new Eastern Coachella Valley center to supplement its main campus and several improved sites across the valley between 2005 and 2007, thereby reducing student costs, particularly for transportation.

Values embodied in these scenarios are needed for the specific metrics that drive the enrollment simulation model. While none of the planners or scenario writers knows which scenario will eventually materialize, it is possible to review each for its content, internal logic, and consistency to prepare for the analysis of each.
Figure 3  COD Fall Enrollment: Actual 1980–2001; Simulated 2002–2019 for Scenarios A, B, C, and D
Scenarios A and B assume differing future socioeconomic conditions external to the college—A being more “optimistic” than B—while COD policies and delivery strategies remain generally unchanged. Scenario C, by contrast, provides a look at what might happen if the economy does not recover, but instead turns down, and the California legislature reacts much like it did in the face of similar conditions one decade earlier: to increase college student fees dramatically. Finally, a decidedly different future is assumed in Scenario D, where economic conditions begin improving in late 2003 (like Scenario A) but where COD expands its distance learning and establishes a large new center and improves other sites in 2005 and 2007. 

(Scenario D is predicated on COD’s ability to secure substantially more capital funding than it has in the past.)

The specific features of these scenarios, summarized in figure 2, need to be reviewed carefully and updated, as appropriate, for ongoing COD planning. The enrollment simulation model, which was developed for this project, easily accommodates changes in scenario assumptions so that their consequences for future COD enrollment, planning strategies, and long-range budgeting may be analyzed. In general, the scenarios should be kept simple; the more complex the scenarios, the less likely the probability of their taking place and the more problematic the empirical consequences. Scenarios also must be internally consistent (i.e., a falling economy raises unemployment and stimulates college enrollment demand). But a falling economy simultaneously reduces the college’s public revenues and its ability (ironically) to accommodate that increased enrollment demand. While COD staff begins planning strategically for Scenario D, current conditions suggest that Scenario C is more likely in the short term, with a possible return to Scenario D in the long term. Thus, an adaptation or additional iteration (a Scenario E?) may eventually become the basis for planning.

**Implications of Planning Scenarios**

As expected, the planning scenarios produce quite different results. Simulated future COD enrollments from each scenario are displayed in figure 3, along with the past actual enrollments through 2001 from which the basis for estimating model parameters was developed.

The Coachella Valley’s robust growth, relatively constant student costs, and relatively optimistic economic and budget assumptions of Scenario A result in COD’s enrollment doubling, from just over 10,000 in 2002 to over 20,000 fall enrollments by 2019. In this scenario, the college’s access or market penetration (enrollment/adult population) would increase from its current level of 41 fall enrollments per 1,000 Valley adults up to 45/1,000 by 2010 and to 48/1,000 by 2015, above the 1990 level of 40/1,000 but below historic peaks of 62/1,000 in 1981 and 78/1,000 in 1975 (see figure 4).

<table>
<thead>
<tr>
<th>Year</th>
<th>California Community Colleges</th>
<th>Riverside Community College District</th>
<th>COD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>80</td>
<td>79</td>
<td>58</td>
</tr>
<tr>
<td>1990</td>
<td>68</td>
<td>57</td>
<td>40</td>
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<tr>
<td>1995</td>
<td>58</td>
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<td>2000</td>
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<tr>
<td>2001</td>
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<tr>
<td>2002</td>
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<tr>
<td>2005</td>
<td></td>
<td></td>
<td>42</td>
</tr>
<tr>
<td>2010</td>
<td></td>
<td></td>
<td>45</td>
</tr>
<tr>
<td>2015</td>
<td></td>
<td></td>
<td>48</td>
</tr>
</tbody>
</table>

**Figure 4 COD Access or Market Penetration**

Planning for Higher Education 25
Use of a metric-like market penetration (enrollment divided by adult population) to begin assessing implications of different future scenarios is important because of COD’s commitment in its mission statement: to be open to service area residents who have the ability to benefit. COD current performance in this regard is comparable to its level recorded in 1990 but below 1980 and substantially below the performance of California Community Colleges generally (see figure 4). Only Scenario D enables COD to recoup its highest historic performance.

For Scenario A (and the other scenarios), student characteristics, prior experience, and needs also are estimated. For instance, data underlying the model and scenarios enable planners to estimate that future COD students will increasingly be:

- Hispanic
- less prepared, particularly out of high school
- needing training in ESL, communications, and information technology skills

These are all trends suggesting specific changes to learning strategies at COD.

In Scenario B, economic cycles and their resulting implications for COD budgets and Coachella Valley unemployment push COD enrollments up rapidly in the short term only to level out toward the end of this decade and fluctuate dramatically during the following 10 years. Resulting enrollments, peaking at more than 16,000 fall head count by 2013, would put COD’s market penetration at 42/1,000, which is slightly higher than the current level but below Scenario A.

The significant increase in student enrollment (tuition) fees in Scenario C with overall conditions like those in Scenario B, as expected, results in a significant decline in COD enrollments, which is reversed to some degree at the beginning of the next decade as area unemployment rises and budget and fee policies stabilize. The enrollment decline is the result of empirical work in building the simulation that shows that, historically, COD students are highly sensitive to fee increases; that is, enrollment is highly price-elastic, other things being equal. This finding, of course, alerts COD planners to the need for improvements in the college’s internal financial aid capability (i.e., the amount of aid, its advertisement, and the ability to identify students in financial need) to ameliorate the impact of possible fee increases that are set externally.

Market penetration at COD in Scenario C (without financial aid improvements) drops to 31/1,000 in 2010, one of the lowest-ever levels at the college. As noted, improvements—from the conditions that existed during the last large student fee increase (1992 and 1993)—in information about and access to available financial aid could modify this result.

Scenario D results in COD enrollments rising to 17,000 by 2010 and more than 20,000 by 2015, with high and substantially improved levels of market penetration. This scenario probably represents the upper bound of COD’s future operating possibilities.

The importance of avoiding inconsistent and large student fee changes, like those in the early 1990s and Scenario C, is obvious: as much as one-third of potential COD enrollment could be deterred by such actions by the end of this decade. And, based on projecting COD’s budget history, the assumed COD budget conditions in Scenario A—up by around 5 percent to 6 percent annually—would result in about 1,000 more enrollments by 2010 than would the tighter budgets assumed in Scenario B—up around 4 percent annually.

Apart from other differences, improved capital outlay funding that leads to improvements in COD delivery systems and facilities would, by itself, add around 2,200 more students by 2010 in Scenario D. These delivery strategies, together with relatively optimistic operating budgets, result in enrollments and access (market penetration) that bring COD to nearly the level of service it provided the Coachella Valley in the early 1980s.

If restoring access to prior levels were not enough of an issue for COD, comparisons of the college’s performance to that of the other 107 community colleges in California and to COD’s neighboring community college, Riverside, strongly suggest that improvements in access to COD are necessary if the college is to achieve its planning goals and objectives.

But while access improves, long-term operating budget problems occur in Scenarios A and D because increasing Coachella Valley population will exert enrollment pressures (especially if student costs are reasonably stable) that will far outpace traditional sources of operating budget revenues (see figure 5). The results of Scenarios A and D, therefore, are that real (price-adjusted) outlays per full-time equivalent student (FTES) decline to between $2,900 and $3,300 by 2010. These are levels that, based on past experience,
Figure 5  COD Revenues per FTE Student, Actual 1980–2001, Simulated 2002–2019 for Scenarios A, B, C, and D.
cannot sustain a quality educational package. Compensation would be too low to attract competent staff, class loads and sizes too large, and services of all kinds inadequate. (Over the past two decades, COD’s operating budget has ranged between $3,500 and $4,500 per FTES in real terms and currently is just under $4,000.) Only in the undesirable Scenario C, where enrollments are relatively stable—leading to dramatic declines in student access to COD—are operating budgets within the historic range.

The implications of these scenarios and simulations suggest that if COD is to achieve its goals of providing access to quality, learning-centered education for Coachella Valley residents, the college must embrace strategies that enable it to

- operate more economically without sacrificing quality
- increase operating and capital budget resources over traditional levels

The specific strategies of COD’s long-term educational plan (Desert Community College District 2003) are designed not only to position the college to pursue the enrollment simulations (targets) of Scenario D but also to ameliorate the likely operating cost difficulties confronting the college (and students as well). Strategies such as improved campus facilities, greater use of off-campus centers and distance learning, and a variety of learning-centered instructional techniques (see O’Banion [1997] for details), among others, will help reduce costs while maintaining or even improving quality.

The college also plans to confront the issue of scarce public resources by (a) vastly expanded partnering (i.e., sharing resources) with private firms that use the skills and knowledge that COD adds to its students (future employees of many of these same firms) and (b) greater use of differential pricing where some financially able students will pay most or all of the cost of their education in programs where the private benefits vastly outweigh the public benefits. Other low-income and otherwise underrepresented students will be assisted financially and in ways that reduce other barriers to access for them.

**Conclusion**

Scenarios and simulations prove to be an essential component of effective strategic planning at a college.

“setting the stage”—by becoming informed, the Rose and Kirk (2002) recommendation—for developing broad directions and specific strategies, the scenarios described here meet Van der Heijden’s (1997) criteria for (a) acknowledging uncertainty; (b) being plausible, internally consistent, and relevant; and (c) providing college planners with new and original perspectives in their efforts to plan for the long term. Simulations of future college student enrollments under each of the scenarios enable planners not only to explore the implications of different numbers of students but also to analyze the characteristics, prior experience, and needs of these students in order to design educational content and delivery that is learning centered and, therefore, likely to be effective. The simulations also frame fiscal issues for a broad range of plausible future conditions, thereby alerting college planners to long-range strategies and options like distance learning, partnering, and differential pricing, among others, that otherwise might not have been pursued or expanded.

**References**


As states change the financing structure of public higher education by lowering appropriations and increasing tuition, they must integrate tuition and financial aid policies more effectively to maintain access and ensure persistence to degree completion.


If the consequence of today’s increased wealth is a reduction in the habit of giving of traditional donors, then universities that have made important and hard-to-retract changes in faculty compensation, scholarship programs, and tuition levels may find the future more difficult.