



NCHEMS

Unmet Needs for
Baccalaureate Education in Pima County

Submitted to
Pima County Community College District

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A. INTRODUCTION

The State of Arizona has struggled for several years to find a solution to the question of how best to meet the needs for baccalaureate-level education in the state. A concerted effort to respond to that question was made by the Arizona Board of Regents (ABOR) in 2004-05. The Board recognized that:

The fortunes of Arizona—and everywhere else—are tied to education. And this tie will only intensify in the future. Given the trends, it's a good bet that education will not only be the economic issue, but also the social, the political, and the cultural issue of our time. *A Redesigned Public University System*, page 37

The ABOR started with a proposal for governance realignment focused on institutions “tiered” in somewhat the same way as the California system of higher education. It ended with recommendations that there be:

- Mission differentiation within each university
- A process for expanding on demand (page 21)

The latter point was explicated in the report (page 31) as follows:

- First and foremost, the university system must coordinate its efforts to complement those of the community colleges in Arizona.
- As a need for university-level services emerges, the university system will initially establish distance learning centers, both on-site and on-line, until reaching the critical mass necessary for sustaining a more significant university presence.
- The university system will create 2+2 university facilities on community college campuses similar to the Northern Arizona University-Yuma model (or other particular models) when the demand reaches a sustaining level. The university system will develop full campuses when there is a critical mass (approximately 2,000 FTE upper-division students...).
- The university system will expand the mission services of institutions in the future beyond their current Regents-approved missions when it is demonstrated that the demand for services (instruction or research) from a community requires an expansion of mission and when there is the physical and financial capacity of the university system and the state to meet the increased demand for services.

This report indicates the path ABOR institutions propose to take in responding to unmet community needs for baccalaureate education. In the 2006 legislative session, an alternative mechanism was proposed. The Senate Amendments to HB2058 (Section 6) established guidelines under which community colleges could “conduct a study to explore the feasibility of establishing a pilot program to award four-year baccalaureate degrees.” While this particular legislation did not pass, it helped to foster discussions that are continuing.

It is within this context that the Pima County Community College District (PCC) contracted with the National Center for Higher Education Management Systems (NCHEMS) to undertake a study of unmet needs for baccalaureate education in Pima County and of the capacity of the higher education system of the state to respond to those needs. This report presents the results of that study.

B. PROJECT ACTIVITIES

In conducting this study, NCHEMS staff (primarily Dennis Jones) undertook a variety of activities. These included:

1. Analyses of data, especially data about populations and projected population growth, student enrollment patterns and workforce demands.
2. Review of materials. In addition to the ABOR report mentioned above, these materials include:
 - PCC planning documents;
 - Materials prepared by Public Works, especially those dealing with analyses of industries and occupations;
 - A presentation on the report *Perceptions and Opportunities*, 2006, by Tucson Regional Economic Opportunity (TREO);
 - *Economic Outlook 2006-07*, prepared by the Economic and Business Research Center at the University of Arizona (UA);
 - The report of the most recent accreditation review conducted by the Higher Learning Commission of the North Central Association of Colleges and Schools;
 - A report entitled *Arizona: Raising the Bar*, commissioned by the Arizona Community College Association; and
 - The WestEd report on the Pima County Education Pipeline project.
3. Interviews and conversations with education, business, economic development and political leaders in Pima County as well as representatives of the local media. As part of this process, a day was devoted to separate presentations of tentative findings to

business and community leaders and to the legislative delegation from the region. The resulting discussions were particularly helpful components of the information gathering process.

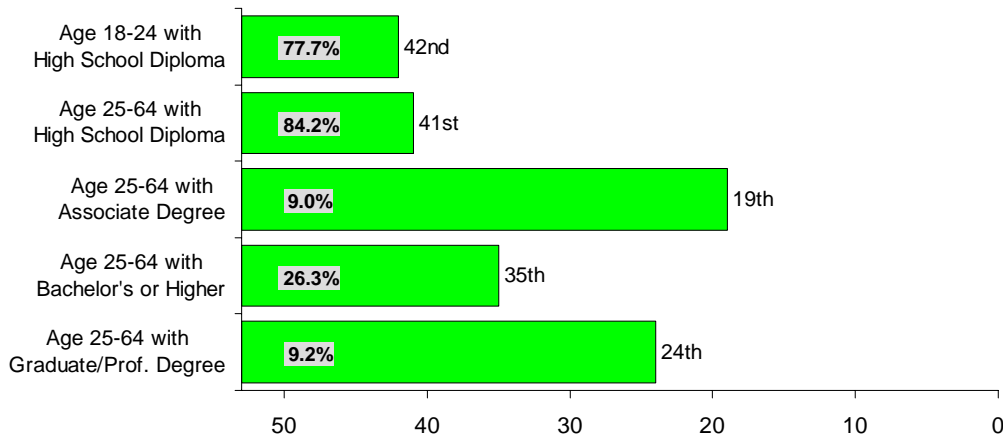
The information acquired through these various processes provided a sound base on which to build the conclusions and recommendations presented below.

C. FINDINGS AND OBSERVATIONS

The task assigned to NCHEMS by PCC was to address the issue of unmet needs for baccalaureate-level education in Pima County. In order to address this question meaningfully, however, it is useful to look more broadly—at the state of Arizona, as a whole, not at just a single county. If Pima County were underinvested in baccalaureate-level education, but the state as a whole was well positioned, the conclusions reached in a study such as this would have one complexion. If the state as a whole lacks baccalaureate-level human capital, the conclusions reached can legitimately be quite different.

The analytic results point emphatically to the fact that Arizona is in the bottom third of the 50 states with regard to the proportion of the working age (25-64) population that has attained a baccalaureate degree (see Figure 1).

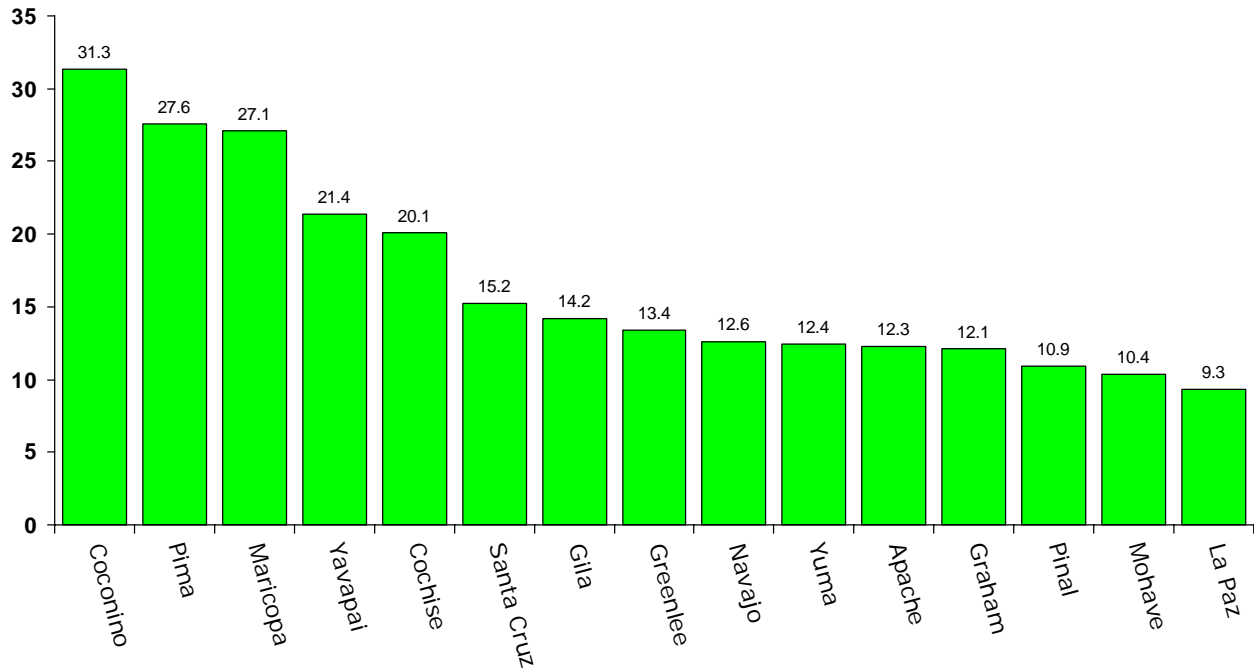
Figure 1.
Educational Attainment and Rank Among States—Arizona, 2005



Source: U.S. Census Bureau, 2005 American Community Survey

There is a substantial variation across the fifteen counties within Arizona—a high of 31.3% in Coconino County and a low of 9.3% in La Paz County (see Figure 2).

Figure 2.
Arizona Adults Age 25-64 per County with a Bachelor's Degree or Higher

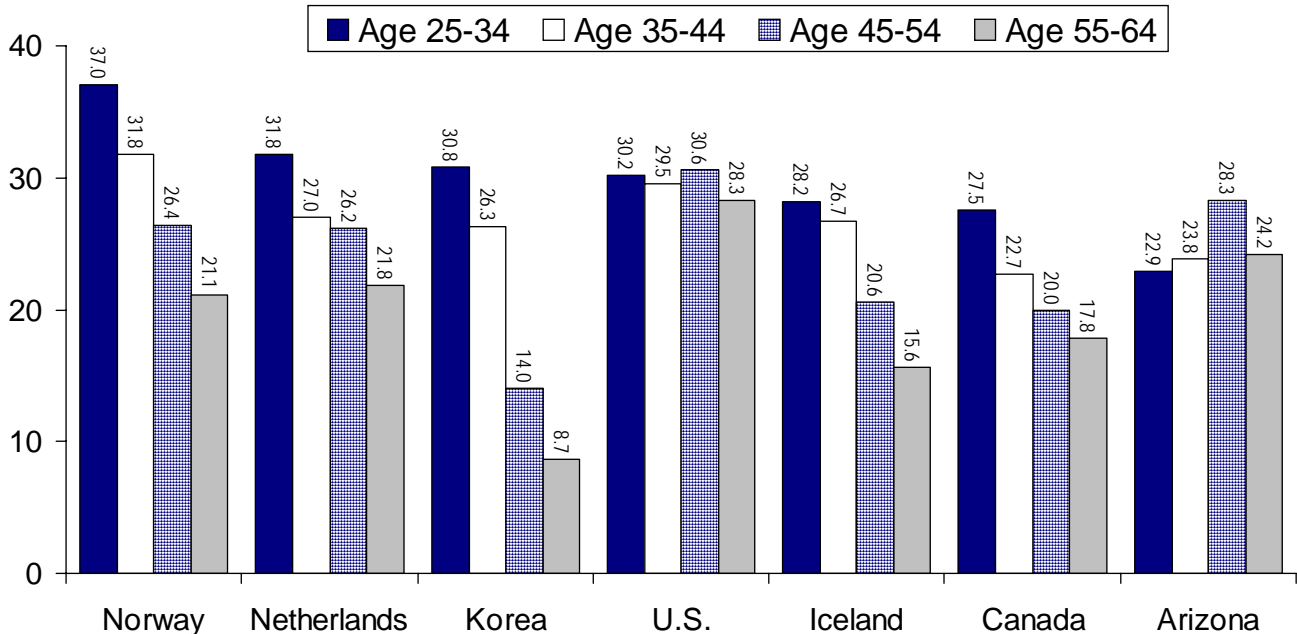


Source: U.S. Census Bureau, 2000 Census

Compared with the rest of Arizona, Pima County does well, ranking second only to Coconino County and slightly ahead of Maricopa. Figure 2 reveals an underlying phenomenon: more highly educated people congregate in the more heavily populated areas, largely because that's where jobs that take advantage of their education are located. In Arizona, these most populous counties are also home to the three Board of Regents (BOR) universities.

While Pima County does well relative to most counties in Arizona, the state of Arizona does not fare well in comparison with either the whole of the U.S. or several global competitor countries (see Figure 3).

Figure 3.
Differences in College Attainment (Bachelor's and Higher) by Age Group—
Arizona, U.S. and Leading OECD Countries, 2003



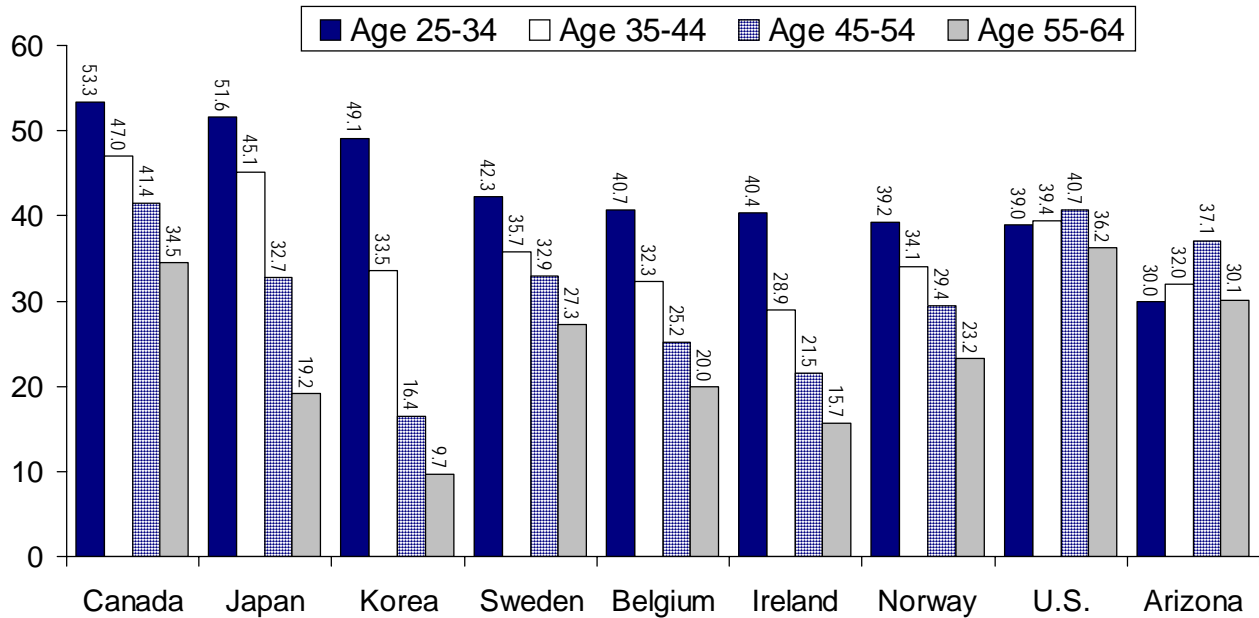
Source: Organisation of Economic Cooperation and Development (OECD)

Three worrisome conditions are revealed in Figure 3:

1. The U.S. basically has been stuck in one place for 30 years—adults age 25-34 are educated at about the same level as the cohort 30 years their elder, while the best-performing countries have been making very substantial decade-to-decade progress.
2. Using baccalaureate degree attainment as the benchmark, young Americans are much less well educated than their counterparts in many other nations. If this situation is allowed to continue for another decade, the American workforce will cease to be globally competitive.
3. Arizona's younger population (25-34) is considerably less well educated than the U.S. as a whole (22.9% with a baccalaureate versus 30.2%). More disconcerting is the fact that education attainment levels have been steadily decreasing; recent entrants into the workforce are much less well educated than those in their parents' generation.

The data on this chart, by themselves, make a compelling case for more baccalaureate education in Arizona. Data in Figure 4 reveal the same pattern for the population educated at the level of associate degrees or higher.

Figure 4.
Differences in College Attainment (Associate and Higher) by Age Group—
U.S. and Leading OECD Countries, 2003



Source: OECD

To put the deficiency in baccalaureate attainment in perspective, consider the following. Arizona currently has approximately 408,000 residents age 25-44 with a bachelor's degree. The numbers of additional degrees to meet various external benchmarks are as follows:

	Arizona
U.S. Average	79,000
Top Country (Norway)	156,000
Top State (Massachusetts)	286,000

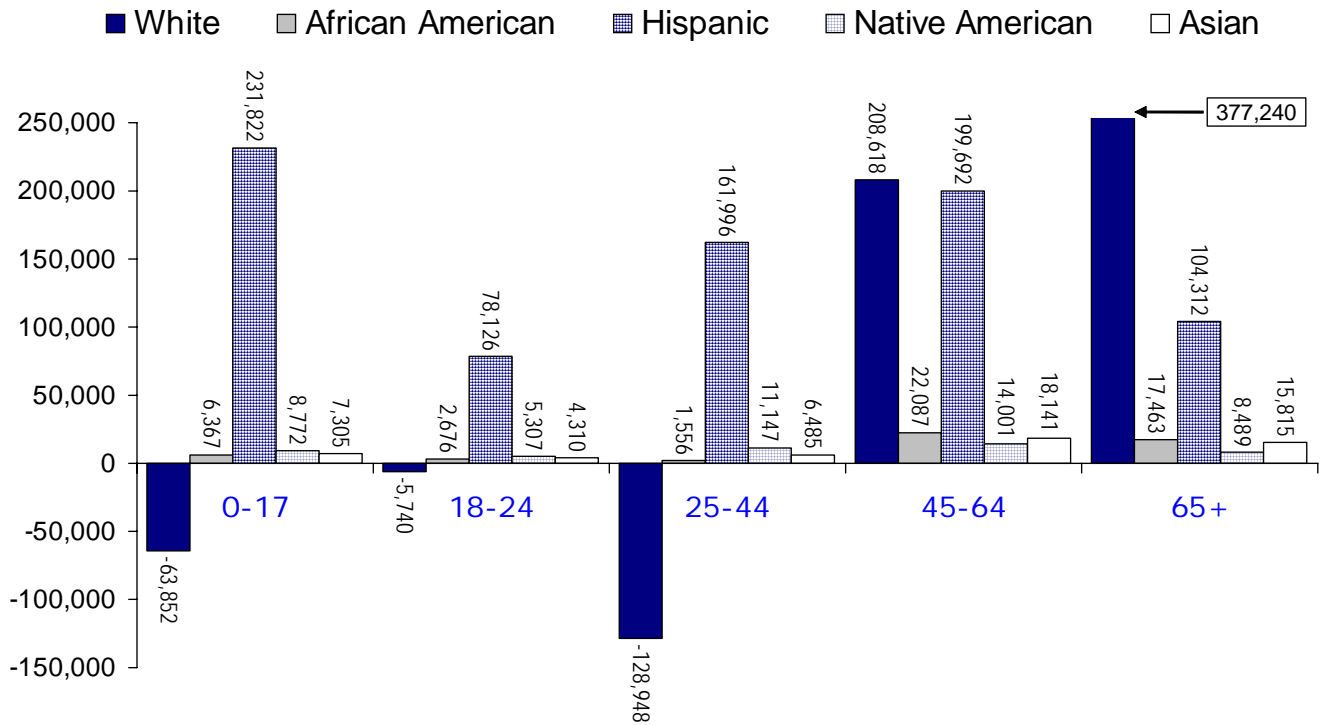
In other words, just to hit the U.S. average would require an increase of 20%.

If these same benchmarks were applied to Pima County (which has 68,115 residents age 25-44 with a bachelor's degree), the following numbers of additional degrees are needed:

	Pima County
U.S. Average	3,100
Top Country (Norway)	14,400
Top State (Massachusetts)	33,300

This represents a serious challenge for Arizona. Figure 5 indicates that a very high proportion of individuals entering the workforce in the coming years is expected to be Hispanic. A large proportion of the Anglo population will reach retirement age in this same period.

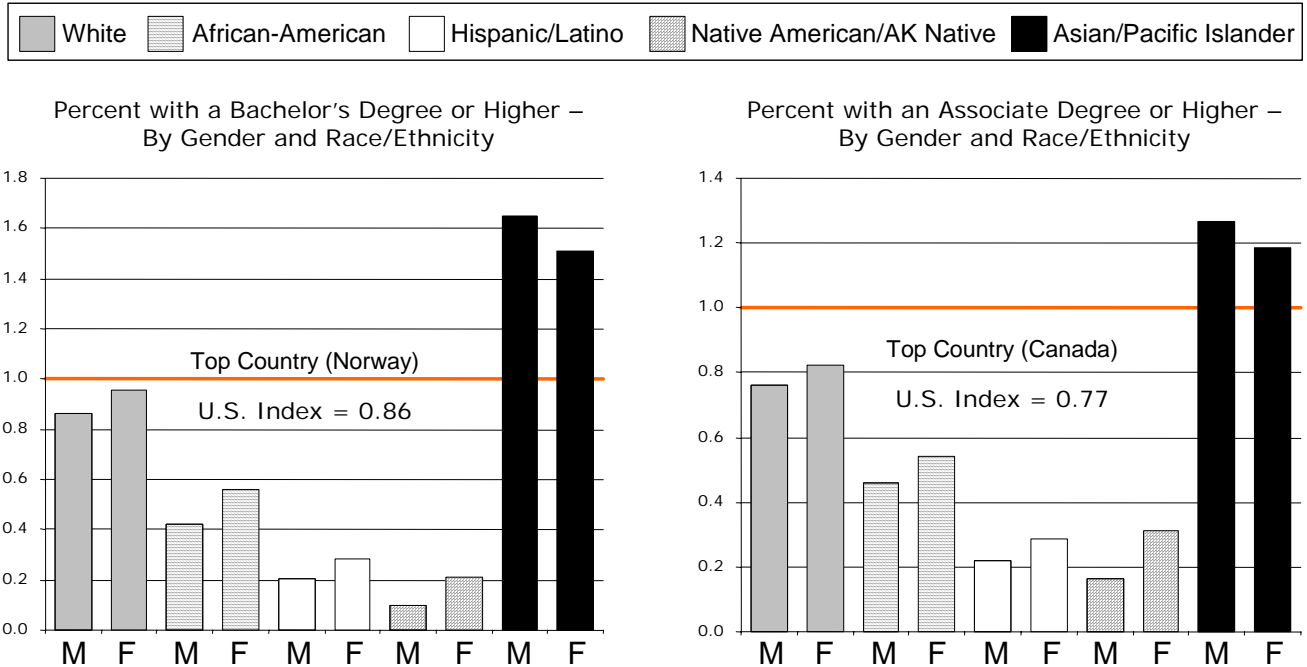
Figure 5.
Projected Change in Arizona Population by Age and Race/Ethnicity, 2000-20



Source: U.S. Census Bureau

This shifting demographic, coupled with the fact that Hispanics are much less likely to have attained bachelor's degrees (see Figure 6), means that without significant changes in minority attainment levels, the Arizona workforce of the future will reflect the downward trend in education attainment levels revealed in Figures 3 and 4.

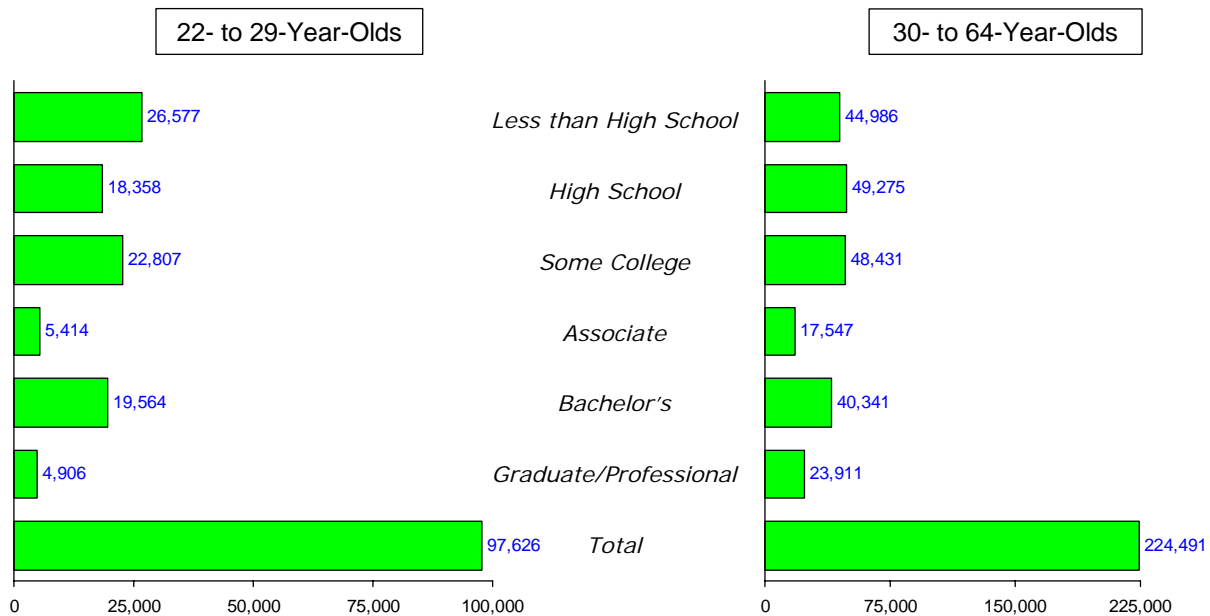
Figure 6.
Educational Attainment of Arizona Population Age 25-34—
Indexed to Most Educated Country



Source: U.S. Census Bureau, Public Use Microdata Samples (based on 2000 Census) and OECD

To overcome the deficiencies in baccalaureate production, Arizona has imported substantial numbers of individuals with baccalaureate degrees (see Figure 7).

Figure 7.
Arizona Net Gain of Residents by Degree Level and Age Group, 1995-2000



Source: U.S. Census Bureau, 2000 Census; 5% Public Use Microdata Sample (PUMS) Files

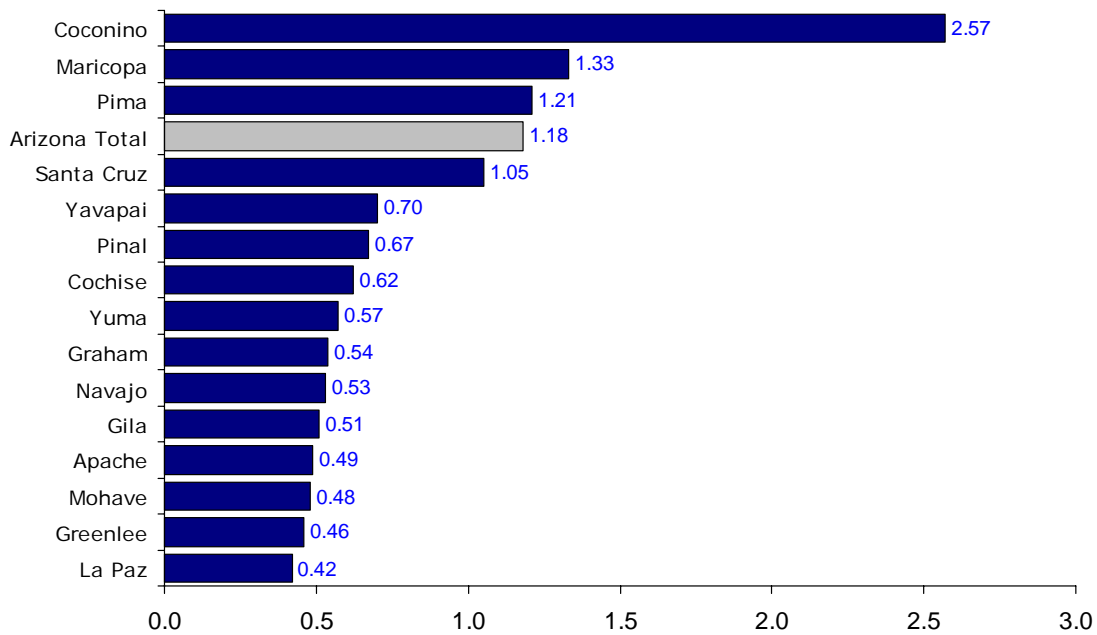
The data in this figure, however, reveal an importation of younger individuals with very little education (less than high school) that exceeds that of newcomers in the same age group who are highly educated. Highly educated immigrants are more numerous among individuals unlikely to be recent college graduates (those age 30-64). The skills brought with immigrants to Arizona are critical to the state's economy. Further, the pattern of in-migration is such that the proportion of young people with at least a baccalaureate degree is slightly higher than the overall state average. In other words, as poor as Arizona looks in comparison with the U.S. and other countries, it would be in even worse shape without the benefit of individuals who move to the state after being educated elsewhere. The numbers are such, however, that Arizona is not succeeding at being nationally competitive through importing talent from elsewhere.

With the state of Arizona as the unit of analysis, the data point to a situation in which:

1. The baccalaureate education attainment levels of the working age population is below that of the U.S. average. This is especially the case among the more recent entrants to the workforce (age 25-34).
2. Unless Arizona develops approaches to educating many more Hispanics at the baccalaureate level, demographic shifts will make education attainment gaps even wider in the future.
3. In-migration alone—at least at recent rates—will not suffice to close baccalaureate-level attainment gaps between Arizona and the U.S. average, let alone competitor countries that have made large gains in the education levels of workplace entrants.

The above analyses point to a statewide problem. But the purpose of the study is to focus specifically on Pima County. Compared to other states, the data resources in Arizona that provide a basis for making county-level assessments are weak. Nevertheless, sufficient data are available to inform judgments. Data are available indicating home counties of undergraduate students enrolled at the three BOR universities. The ratio of these enrollments to the number of high school graduates in a prior year are shown in Figure 8.

Figure 8.
Four-Year Undergraduate Enrollments at Board of Regents Institutions (2005)
Relative to High School Graduates, 2004

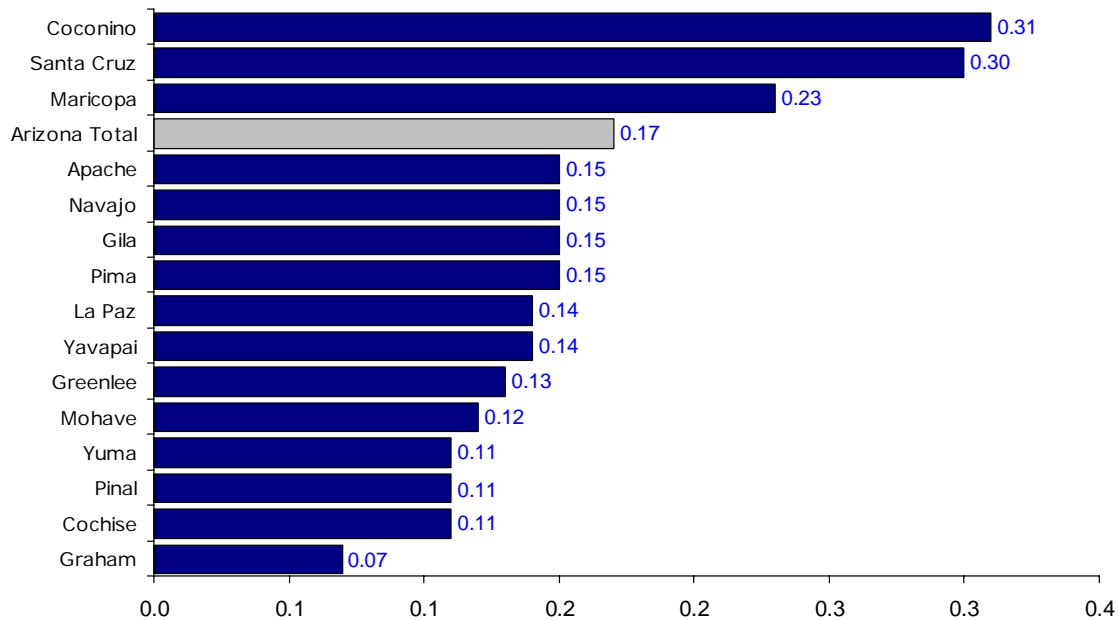


Source: Arizona Board of Regents

These data indicate that Pima County high school graduates enroll in BOR universities at a rate that is slightly above the statewide average, slightly below the rate of Maricopa County, and considerably below the rate of Coconino County. If Pima County residents enrolled at the same rate as Maricopa County residents, an additional 960 individuals would be enrolled. If Coconino County were the benchmark, the number of additional enrollees would be 10,850.

Figure 9 approaches the same question in a slightly different way—comparing the BOR university enrollments to the population age 18-24 who have completed high school but not attained a baccalaureate degree.

Figure 9.
Four-Year Undergraduate Enrollments at Board of Regents Institutions (2005)
Relative to Population Age 18-24 with High School Education But Not a Baccalaureate



Source: Arizona Board of Regents, U.S. Census

These data paint a somewhat different picture, showing Pima County somewhat below the statewide average, well below Maricopa and even further behind Coconino County. Using these data, an additional 5,100 students from Pima County would have to be enrolled as undergraduate students at BOR universities to match Maricopa County levels, another 10,225 to match Coconino County.

Regardless of the approach taken, one can make a case that more students from Pima County should be enrolled in baccalaureate-granting institutions than currently is the case. Data also reveal that students attend the university closest to home.

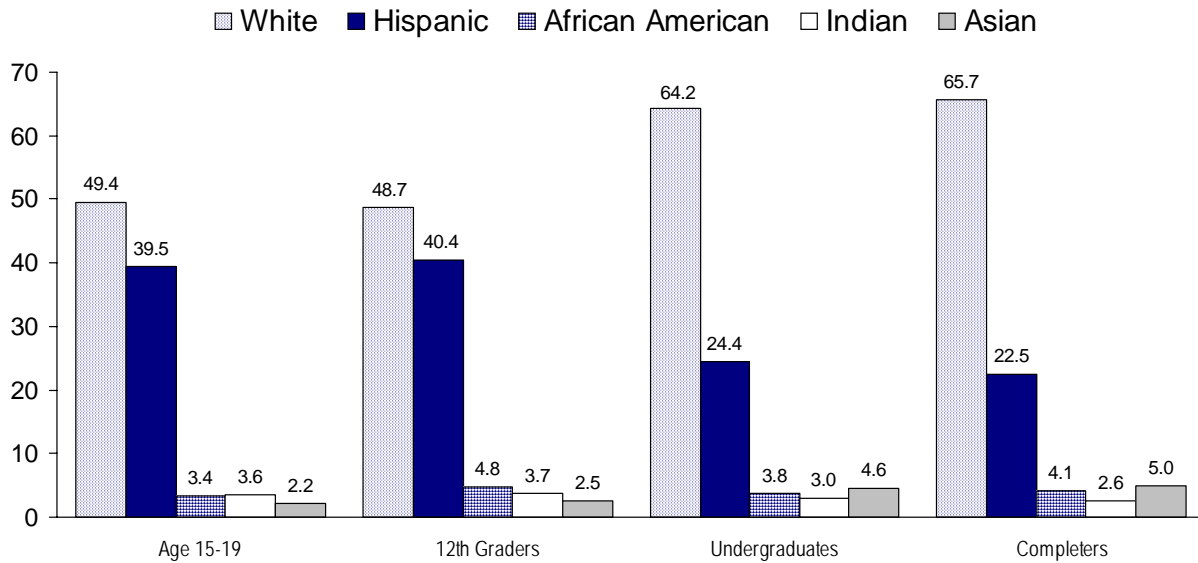
Figure 10.
University Enrollment Shares by County of Student Origin

County	ASU	UA	NAU
Coconino	8.9	11.0	80.1
Maricopa	78.0	14.2	7.8
Pima	9.2	79.2	11.6

The conclusion reached from these data is that if more Pima County residents are to be served, the service will have to be provided in Pima County. In Arizona, as in most other states, students attend college close to home. For reasons similar to those that impact attendance patterns in all

of Arizona, reaching more students in Pima County represents a serious challenge. Data in Figure 11 indicate that Hispanic students, by far the largest of the minority groups in Pima County, participate in college at rates far lower than their Anglo counterparts.

Figure 11.
Percent of Pima County Residents by Race/Ethnicity at
Each Stage of the Education Pipeline, 2005

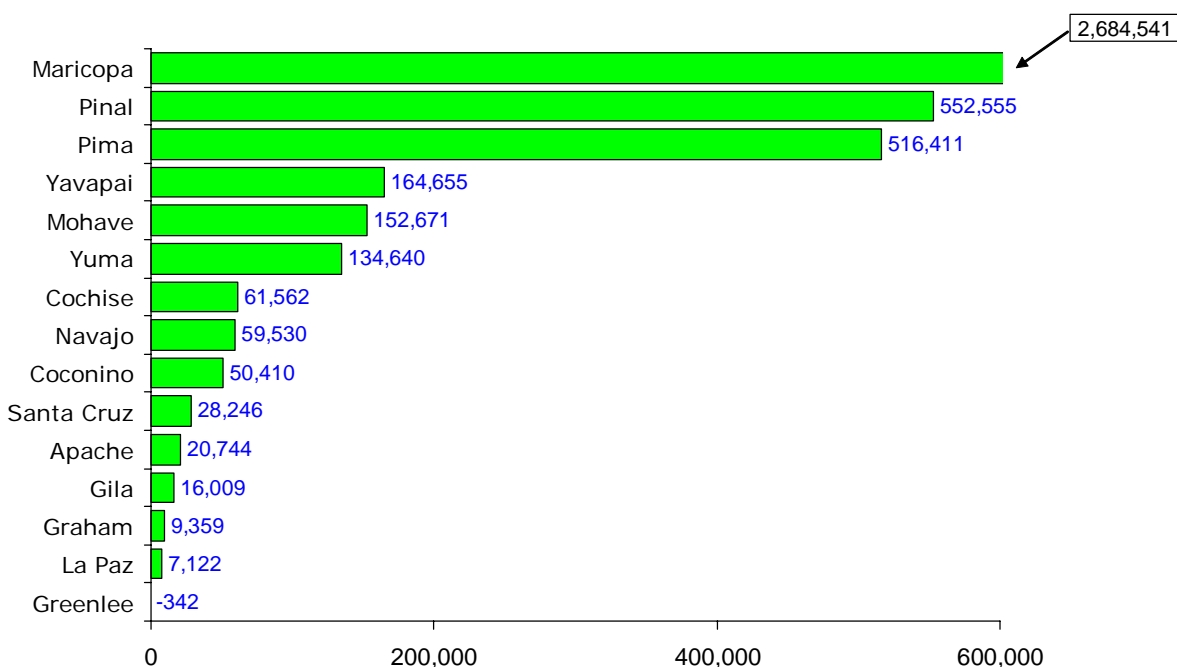


Note: Undergraduates and Completers for Pima CC and University of Arizona.

Source: U.S. Census Bureau 2005 Population Estimates, Arizona Dept. of Education 2005-06 12th Graders, NCES, IPEDS Fall 2004 Enrollments, 2004-05 Completions.

As a final note with regard to general levels of demand for baccalaureate-level education in Pima County, it should be pointed out that growth alone will fuel considerable additional demand for postsecondary education in Pima (and several other counties) in Arizona. Projected growth for each of the counties in Arizona is shown in Figure 12.

Figure 12.
Total Arizona Population Change by County, 2000-2025



Arizona Change = 4,458,113

Sources: Arizona Department of Economic Security, Research Administration, Population Statistics Unit.
U.S. Census Bureau, 2000 Census

This projected growth represents an 87% population increase in Maricopa County, 307% in Pinal and a 61% increase in Pima. Even if Arizona fails to improve high school completion and college participation rates, growth of this very considerable magnitude will create demand for additional capacity in baccalaureate-level programs in the county.

There is convincing evidence of unmet needs for baccalaureate-level education in Pima County. If additional opportunities were to be made available in the county, success in increasing enrollments to the levels the state will need for future economic strength will depend to a substantial degree on the ability to attract Hispanics and others (e.g., low income/first generation) who have historically not viewed a baccalaureate degree as an attainable goal.

While the data support a strong case for expanding the capacity to deliver four-year degree programs in Pima County, the data are less helpful in determining the specific programs most needed in the community. In trying to ferret out answers to this particular question, information was compiled from three different sources:

- Projections made by the Arizona Department of Economic Security, Research Administration regarding the expected annual number of job openings in occupations requiring a baccalaureate degree. A listing of these occupations is presented in Appendix A.

- Information gleaned from U.S. Census data concerning the kinds of jobs being filled by individuals holding college degrees who are migrating into the state. (These data are for the state as a whole, not just Pima County, and are attached as Appendix B.)
- Interviews with employers and economic and workforce development professionals who have their fingers on the pulse of the workforce needs in the community.

These data point to employment needs and opportunities in a limited number of key areas:

- Teacher education.
- Nursing and allied health professions—most of these occupations have the associate degree as a minimum requirement for licensure but there are needs for individuals with more advanced training (such as BSN nurses and allied health professionals with advanced certification).
- Engineers, particularly aerospace and systems engineers.
- Computer software engineers and systems analysts.
- Various business professions—accountants and auditors, management analysts, business operations, and loan officers.

In addition there are needs in such areas as construction management and recreation workers, less common fields and occupations in which numbers of openings are smaller.

Interviews with employers of engineers pointed to another need not currently very visible on either the supply or demand side of the employment equation. This is the area of engineering technologies beyond the level of the associate degree. Needed are individuals who can work alongside production workers to troubleshoot problems and improve production processes. Included are individuals who have expertise in process, industrial, and electrical technologies.

In two of the fields with the largest number of annual job openings—teacher education and business—the number of UA graduates is commensurate with the number of job openings. While the numbers of degree recipients would be sufficient to meet Pima County needs if all recipients stayed in the county, the fact that students move to other places still leaves gaps. Similarly a mismatch between specific job openings and the areas in which degree recipients are receiving degrees can lead to unmet needs. In teacher education there reportedly are shortages in specific fields such as math, science, and special education as well as teachers who are bilingual, especially teachers fluent in both English and Spanish. In business there are needs for more graduates with accounting backgrounds. The UA programs in fields such as aeronautical engineering and systems engineering produce fewer graduates than projected annual job openings suggest will be required. There are no baccalaureate programs in Pima County in fields such as social work, allied health fields (other than nursing), recreation, and construction management.

It is recognized that TREO is engaged in a strategic planning exercise intended to provide focus and impetus to economic development activities in the region. The report of this activity is not yet available. It is likely to reinforce the importance of health care, tourism, construction, aerospace, education, etc.—industries that already dominate the employment base in Pima County. It is also likely that the importance of an emphasis on biotechnology will be reinforced, a reflection of a major statewide initiative in this arena. The shape of this latter initiative and how it will impact the need for specific workforce capabilities in Pima County is currently speculative at best. The other industry clusters likely to be promoted as a result of this study are already present in the region.

In addition to consideration of specific programs, the answer to the question about the need for additional baccalaureate programs in Pima County must also take into account the nature of the students whose needs are not being met. The report, *A Redesigned Public University System*, presumes that “the University of Arizona in Tucson would proceed with its plans to become a premier research university, adopting more rigorous admissions requirements at both the undergraduate and graduate levels” (page 20). Even if the University decides to expand its undergraduate enrollments to a greater or lesser extent, it is assumed that their selectivity standards will not be relaxed. This means that the unmet needs will predominantly be found among students who are less well-prepared academically than the students being sought by the University—likely students from lower socioeconomic backgrounds and from families with little college expectation or experience. Such students typically require a set of student support services that major research universities are ill-equipped to provide.

D. CONCLUSIONS

As a result of the data analyses, materials reviews, and interviews and discussions, the following conclusions emerge:

1. Pima County is underserved with regard to baccalaureate-level education. The state of Arizona needs a more highly educated workforce and citizenry. There is no reason why Pima County should not be expected to enroll students in baccalaureate programs at least at the rates of the other counties that are home to BOR universities.
2. Programs from which more graduates are needed in the community—from the evidence available—are:
 - Nurses and allied health professionals
 - Teachers—especially math, science, and special education
 - Aeronautical and systems engineers
 - Social workers
 - Engineering technologists
 - Recreation workers/managers
 - Construction managers

3. Need is better viewed in the context of overall education attainment levels than rationalized on the basis of need for graduates of particular programs.
4. Responses are more usefully considered in terms of students to be served than of programs to be offered. Given UA's interest in maintaining selective admissions standards, it can be presumed that much of the demand to be served would be comprised of students who are not prepared, either academically or personally, to seek such an education at UA.

E. RESPONDING TO IDENTIFIED NEEDS

Arizona is one of the few states lacking an overarching mechanism for dealing with higher education policy issues. The ABOR sets policy for the three universities, each community college has an independent board, and there is no real means for coordinating initiatives among various two-year institutions or between community colleges and universities. Neither is there an entity that takes a proactive stance to ensure that the needs of the state (or a region within the state) are addressed. As a result, much is left to institutional initiative.

Such is the case in Pima County. From the work done as part of this study, there is evidence of unmet needs for baccalaureate-level education in the county. How best to respond to those needs? One way to respond would be for UA to change its admission requirements and become the Metropolitan Research University for Tucson—much the same role as has been embraced by ASU in Phoenix. Given the stated intentions of UA, this is unlikely. Absent this possibility, other options must be explored. There are multiple choices:

- The plan established by ABOR can be implemented with UA South (UAS) and/or Northern Arizona University (NAU) providing baccalaureate degree programs (on-site and on-line) to students in Pima County as 2+2 programs with PCC.
- Pima County Community College, as the institution most directly connected and concerned with meeting regional postsecondary education needs, can seek permission to offer baccalaureate-level programs on its own.
- Funds could be provided to PCC (or some other entity) to contract with private and/or out-of-state institutions to provide additional programmatic capacity in the county.
- A facility could be constructed to house programs from whatever institutions chose to bring their programs to the community—essentially relying on the student market to drive behavior.
- Some combination of the above.

As a strategy for developing a response to existing and emerging needs, it may be useful to develop a list of criteria that might shape such a strategy. The following are offered for consideration:

1. Build on Institutional Strengths and Reinforce Institutional Missions

It is difficult to effectively ask an institution to take a step backwards from a “high-status” mission. As a consequence, UA is unlikely to willingly loosen its more selective admissions policy and place greater emphasis on undergraduate education to the detriment of graduate education and research. The institutional culture is too strong to let that change occur without considerable internal upheaval.

On the other hand, it is very easy to get an institution to take an expansive step with regard to its mission—for example, to get a teaching institution to add research to its mission portfolio or, more to the point in Pima County, to get a community college to incorporate baccalaureate education programs within its mission. In this instance, considerable care must be taken to ensure that the two-year mission of the college is not sacrificed in the pursuit of four-year programmatic offerings. PCC is on record as saying that any baccalaureate degrees it offers would be confined to those that would strengthen its mission and build on current programmatic strengths. Such programs would also have to be offered under conditions that created no additional financial burdens to local taxpayers.

2. Implement the Commitments Made in *A Redesigned Public University System*

The ABOR institutions are the institutions expected to deliver baccalaureate education throughout the state. There is an assignment of responsibilities in place that would lead UAS or NAU to provide needed services in Tucson in a 2+2 partnership with PCC. The absence of an overarching policy leadership mechanism that could establish the “rules of the game” under which such partnerships could most beneficially be forged makes implementation questionable. Missing are fiscal and other policies that make it economically feasible and rewarding for both parties in such an arrangement.

3. Seek Cost-Effective Solutions

Any problem can be solved if sufficient resources can be brought to bear. Arizona is not a state given to expensive solutions. Therefore, making maximum use of low-cost providers is an imperative. In the overall scheme of things, community colleges are lowest cost providers with selective research universities anchoring the high end of the scale. Institutions such as UAS and NAU fall somewhere between.

4. Walk Before You Run

At some point in the future, it may be necessary to have a second free-standing baccalaureate institution in Pima County, much the same as Nevada has done in establishing Nevada State College not far from the University of Nevada-Las Vegas. The need to accommodate growth in a cost-effective manner led state policymakers to implement this particular strategy. If steps are taken to more fully utilize the existing capabilities of PCC and ABOR universities, such an expensive step would not be necessary at this time.

5. Remember the Students to Be Served

As noted previously, the Pima County students not being served by four-year institutions are likely to be students less well-prepared, either academically or in self-confidence, for the regimen of a selective research university. They are also likely to be economically disadvantaged or from families who have had little experience with college and university life. In other words, they are likely to look very like community college students with baccalaureate degree aspirations. This means that they will need more personal attention—both by faculty and by student service personnel—if they are to be successful. Being mindful of support needs and creating a form of baccalaureate program delivery consistent with such needs must weigh heavily in selecting among the options for responding to additional needs for baccalaureate-level education.

Combining information about the potential size and nature of unmet demand with the criteria stated above yields guidance as to the ways in which additional baccalaureate-level programming might appropriately be provided to the residents of Pima County. One scenario follows.

- Depend on UA to provide certain programs that only they are in a position to provide in Pima County.

Create a limited number of baccalaureate (or post-associate) programs at PCC in technical areas where the college already has strong associate-level programs.

- Work within the framework of the ABOR plan to develop 2+2 programs with the universities. It is particularly important that such programs be co-located on a PCC campus in order to allow students access to student support services once they have made the transition to the BOR institution. In the best of all worlds, a student would gain dual admission—to PCC and the university—and would work on an individualized education plan developed in concert with the two institutions.

Having made the latter suggestion, it must be recognized how difficult such a suggestion is in the implementation phase. The objective should be a branch university campus co-located on a PCC site, the model being NAU-Yuma. Such an arrangement allows for the hiring of university faculty who can provide both on-site instruction and academic support services. The difficulty comes in the absence of fiscal mechanisms that support the investment in either faculty or facilities at such sites and that allow reasonable recompense to the community college for the services provided, even after students move to junior status at a university. In the absence of supportive fiscal policy, universities embark on such ventures only when assured they can pay for themselves. This means doing things the cheapest way, not necessarily the most cost-effective way.

Given the absence of a policy leadership group that can broker arrangements between two- and four-year institutions on behalf of students and the community, the development of such arrangements is left to the discretion and initiative of the respective institutions. Such initiative is encouraged. A possibility worthy of exploration in the context of such discussions is the development of programs that are essentially 3+1 programs rather than 2+2.

- An alternative to the above arrangement is to create an arrangement in which PCC receives an allocation of resources from the legislature that lets it “purchase” or “contract” with ABOR (and potentially other institutions) for delivery of baccalaureate level programs in Pima County. This would build on PCC’s strength of connection to the community—it is arguably in the best position to be the ongoing “needs assessor” in the county—and creates market incentives to bring ABOR institutions to the table. Again, the absence of a policy leadership group in the state makes implementation of such approaches difficult. To say the least, it would be surprising if ABOR and its constituent institutions would be supportive of any scheme that allocated any part of “their” funding through another institution, in this case PCC.

Clearly, there are other scenarios that would lead to expanded baccalaureate-level access in Pima County. One is to broker a wider array of programs from out-of-state institutions, much as PCC is currently doing with Indiana University and its general studies program. This may be a stop-gap solution, but not satisfactory in the long run. If satisfactory 2+2 (or 3+1) arrangements cannot be forged with ABOR institutions, then seeking a wider array of baccalaureate programs at PCC becomes the preferred option. Again, finding ways to start small and get reassurance of demand before making major investments is important. Programs that might best be explored early on include:

- General studies
- Business/especially accounting
- Social work
- Recreation management

Mounting baccalaureate programs at PCC would constitute “substantive change” and would have to be approved by the Higher Learning Commission of North Central. There is no reason to think this would be a problem. Going into teacher education is a more difficult situation with regard to accreditation. While PCC already offers postbaccalaureate certification in teacher education, offering a complete baccalaureate program in this field creates a circumstance in which specialized accreditation of the program is the norm (although technically not mandatory). Meeting accreditation standards would require additional investment in faculty and other resources at PCC. Further, the education programs from which graduates are most needed—math, science, special education—are already available at the University of Arizona. As with aeronautical engineering, the issue is more one of demand than of supply.

This solution would undoubtedly raise a variety of governance questions—most specifically, should such an enterprise be part of the ABOR system rather than a component of a locally-governed community college? In the absence of a broadly constituted higher education policy entity, this issue would have to be resolved in the legislature and Governor’s Office.

This discussion will hopefully convince the reader that there are needs to be met and no easy solutions as to how best to do it. It is a problem eminently worth addressing; the people of Pima

County and of Arizona need and deserve the best efforts of all concerned to find a satisfactory path through the maze of politics and policy that must be traversed.

APPENDIX A

Occupations with Job Openings Requiring a Baccalaureate Degree—Tucson MSA

Occupation	Annual Openings		
	Growth	Replacement	Total
Elementary School Teachers	89	95	184
Secondary School Teachers	57	67	124
Accountants & Auditors	63	56	119
Business Operations	50	30	80
Middle School Teachers	25	38	63
Management Analysts	35	22	61
Recreation Workers	30	29	59
Other Teachers	44	14	54
Aerospace Engineers	14	42	56
Computer Software Engineers (Applications)	35	17	52
Child, Family, & School Social Workers	25	14	39
Computer System Analysts	27	11	38
Mechanical Engineers	2	35	37
Systems Software Engineers	25	11	36
Landscape Architects	24	9	33
Computer Programmers	2	28	30
Graphic Designers	19	11	30
Clinical Lab Techs	16	10	26
Loan Officers	14	10	24
Construction Managers	13	10	23
Electrical Engineers	3	20	23
Probation Officers	12	9	21
Civil Engineers	12	9	21
Industrial Engineers	5	15	20
Network Systems Analysts	16	4	20

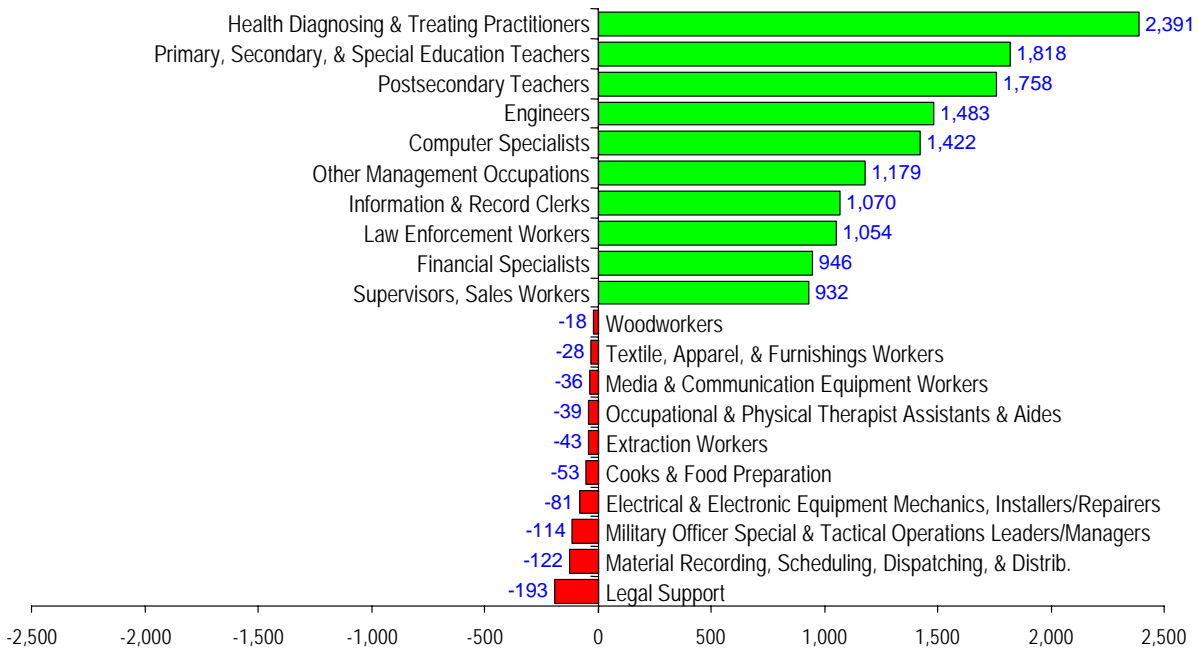
APPENDIX B Occupations of In- and Out-Migrants to Arizona—1995-2000

All Residents Age 22-29



Source: U.S. Census Bureau, 2000 Census; 5% PUMS Files

Residents Age 22-29 with College Degrees



Source: U.S. Census Bureau, 2000 Census; 5% PUMS Files

All Residents Age 30-64



Source: U.S. Census Bureau, 2000 Census; 5% PUMS Files

Residents Age 30-64 with College Degrees



Source: U.S. Census Bureau, 2000 Census; 5% PUMS Files