PimaCommunityCollege

Educational Master Plan 2015 - 2025

Contents

Acknowledgements

DISTRICT ADMINISTRATION

Lee D. Lambert, Chancellor

Dr. Dolores Duran-Cerda, Provost and Executive Vice Chancellor for Academic and Student Services (Acting)

Assistant Vice Chancellor for Academic/Student Services Certification and Development - In recruitment

Dr. Nicola Richmond, Assistant Vice Chancellor for Institutional Research, Planning and Effectiveness

Julian Easter, Assistant Vice Chancellor for Academic Affairs

Bruce Moses, Assistant Vice Chancellor for Accreditation and Quality Improvement

Dr. Karrie Mitchell, Assistant Vice Chancellor for Enrollment Management and Student Affairs

Dr. Jeff Thies, Executive Director of Developmental Education

Dr. David Bea, Executive Vice Chancellor for Finance and Administration

Daniel Berryman, Vice Chancellor for Human Resources

Dr. Stella Perez, Interim Vice Chancellor for Operations

Bill Ward, Vice Chancellor for Facilities

CAMPUS ADMINISTRATION

Campus Presidents

Dr. Morgan Phillips, Campus President of Desert Vista Campus and West Campus
Dr. Lorraine Morales, Campus President of Community Campus and East Campus
Dr. David Dore, Campus President of Downtown Campus and Northwest Campus

Campus Vice Presidents

Dr. Darla Zirbes, Campus Vice-President, East Campus
Dr. Aubrey Conover, Campus Vice-President, Northwest Campus
Mr. Ted Roush, Campus Vice-President, Desert Vista

Vice Presidents

Irene Robles Lopez, Vice-President of Academic Advising and Retention, Community Campus
Michael Amick, Vice-President of Distance Learning, Community Campus
Dr. Yira Brimage, Vice-President of Student Engagement, Downtown Campus
Dr. Ann Parker Vice-President for Student Transitions, West Campus
Dr. Ian Roark, Vice-President of Workforce Development, Community Campus
Regina Suitt, Vice-President of Adult Basic Education for College and Career, Community Campus
Vice-President of Instruction and Academic Operations, Downtown Campus - In recruitment
Vice President of Instruction and Transfer Pathways, West Campus - In recruitment
Vice-President of International Development, West Campus - In recruitment

Deans by Campus Location

Brian Stewart, Dean of Education and Student Affairs, Desert Vista
Dr. Jeff Thies, Dean of Developmental Education and Academic Assessment, Desert Vista
Greg Wilson, Dean of Applied Technology Programs, Downtown Campus
Pat Houston, Dean of Communications, Downtown Campus
Dr. Mary Beth Ginter, Dean of Business, East Campus
Nina Corson, Dean of Mathematics and Student Affairs, Northwest Campus
Jim Craig, Dean of Allied Health Division, West Campus
Joseph Gaw, Dean of Nursing, West Campus
Edgar Soto, Dean of Athletics, Fitness and Wellness, West Campus
Dean of Distance Learning, Community Campus - In recruitment
Dean of Workforce Development and Continuing Education, Community Campus - In recruitment, Acting
Dean of Social Sciences and Student Affairs, East Campus - In recruitment, Acting
Dean of Sciences, Northwest - In recruitment, Acting
Dean of Humanities and Fine Arts, West Campus - In recruitment, Acting

EDUCATIONAL MASTER PLAN COMMITTEE MEMBERS

Suzanne Desjardin , Dean of Student Development – Northwest Campus
Ted Roush, Vice President of Instruction – Desert Vista Campus
Jeff Thies, Executive Director of Developmental Education
Tim Cruz , Instructional Faculty – Sciences – Downtown Campus
Stella Perez, Vice Chancellor of Operations
Dolores Durán-Cerda, Executive Vice Chancellor and Provost (Acting)
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Joi Stirrup, Advanced Program Manager for Enrollment Services
Nina Corson, Academic Dean for Business, Science and Occupation
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Nick Richmond, Assistant Vice Chancellor for Institutional Research, Planning and Effectiveness
Eric Morrison, Instructional Faculty for Communications
Mays Imad, Instructional Faculty for Biology
Mike Tveten, Instructional Faculty for Sciences & Mathematics
Theresa Stanley, Educational Support Faculty Librarian

BOARD OF GOVERNORS

Pima County Community College District is governed by a five-member board representing County electoral districts. Members are elected to serve a six-year term.


Mark Hanna
District 1


Demion Clinco
District 2


Sylvia M. Lee, Ph.D.
District 3


Scott A. Stewart
District 4


Martha Durkin
District 5

PAULIEN & ASSOCIATES, INC.

Paulien & Associates, Inc. is a national higher education consulting firm focused on academic and campus planning. Over the last 37 years, Paulien & Associates has completed studies for more than 700 campuses in 49 states, including more than 250 community college campuses. Given this breadth of work, the firm brings a rich understanding of the diversity of missions among educational systems and institutions and is able to provide a national perspective on current issues and trends. Using a variety of analytical tools, the firm has conducted detailed studies in environmental scanning, strategic and academic planning, program pathways, as well as campus utilization and space planning.

SMITHGROUP/JJR

SmithGroup/JJR is a national campus planning firm that is currently developing the Pima Community College Campus Master Plan. Since its founding in 1961, SmithGroup/JJR has worked with more than 42 community colleges, achieving widespread acclaim for developing practical responses to planning issues facing community college leaders.

Paulien & Associates and SmithGroup/JJR have a 13 year history of working together on more than a dozen community college projects.

EDUCATIONAL MASTER PLAN AUTHOR

Dr. Frank A. Markley

Frank Markley started his higher education journey at Valencia Community College in Orlando, Florida. After two years, Frank transferred to the University of Colorado where he spent 10 years working and attending college as a part-time student. He graduated with the Bachelors of Science degree with honors in Business Administration. Dr. Markley furthered his education by completing an M.B.A. in Marketing and a Ph.D. in Higher Education Administration and Policy from the University of Denver.

Frank's higher education career began in institutional research at Arapahoe Community College in Colorado, reaching the vice presidential level after 10 years with responsibility for research and assessment, strategic and academic planning, workforce development, marketing and campus computing.

In 2002, Frank joined Paulien & Associates, Inc., a national consulting firm dedicated to all facets of higher education planning. Since joining the firm, Dr. Markley has worked with more than 225 community and technical colleges across the United States. Frank has published several articles and is a frequent presenter at national conferences.

Introduction

COMMUNITY COLLEGES IN THE UNITED STATES

To appreciate the role that community colleges play in reforming higher education today, you need to consider their long history of struggle and innovation.

The birth of the junior/community college concept is more than a century old (1901) and grew out of the classicism and elitism that molded the modern research university. At that time, the university was far removed from small town America, and tuition exceeded a worker's annual wage. As the link between advanced education and social mobility became evident, voices grew louder for a solution that would address both physical and economic access to college learning. In other words, a *"people's college."*

Community colleges have been at the forefront of nearly every major development in higher education since their inception. Besides access and flexibility, these junior colleges, as they were called, started to embrace vocational education during the 1930s to address the training needs of working-class Americans. Vocational training programs soon expanded to courses of study such as business, electronics, nursing, and drafting.

In the early to mid-1960s, community colleges underwent a period of unprecedented growth and evolution. Some historians note that community colleges were opening at an average rate of one per week during this decade, a direct response to G. I. Bill benefits and open-door admission policies.

In response to the social unrest of the 1960s, these colleges were some of the first to embrace diversity within the student ranks. At the same time, junior colleges were re-branding themselves to "community" colleges to reflect their role in local initiatives related to class mobility and economic prosperity.

The list of innovations is long: accelerated course formats, counseling centers, distance learning, adult education, workforce development, community education, student remediation... This list could go on and on.

Despite their long history of innovation, evolving state higher education policies, changing consumer attitudes, and economic realities are forcing these institutions to readapt. While access is important, retention, persistence, and student completion are at the forefront of newer reforms.

The documentation of student outcomes through key performance indicators (KPIs) is more critical now than ever before. From a holistic view, there is mounting evidence to suggest that the primary structure community colleges embraced in the 1960s may need to be fundamentally reevaluated.

Only through comprehensive institutional planning practices can community colleges begin to address many of higher education's most pressing issues.

In January 2015, President Obama unveiled a plan to make two years of community college education available free of charge to everyone who was willing to work for it. The president is joined by thousands of community college presidents, two-year faculty, current students, and alumni who see community colleges as playing a pivotal role in addressing education cost, inclusivity, economic vitality, and community engagement, all critical components of our nation's future.

"In the coming years, jobs requiring at least an associate degree are projected to grow twice as fast as jobs requiring no college experience. We will not fill those jobs – or keep those jobs on our shores – without the training offered by community colleges."

– President Barack Obama

"An educational master plan is a catalyst for modifications to instructional programs and key academic processes."

WHAT IS AN EDUCATIONAL MASTER PLAN?

Content varies considerably among educational master planning templates. Educational master plans (EMP) have been used as a key planning vehicle in California community colleges for a number of years. California policy states that an educational master plan is required before the creation of a campus master plan. (The Arizona Board of Regents has no EMP template.)

Reviewing completed plans created for other institutions revealed that key tasks have focused on developing academic and instructional goals and priorities, as articulated in the college's vision, mission, and current strategic plan. This usually includes justification for new programs, as well as for those rendered obsolete, and documenting the potential impact on college enrollment.

Another key task is aligning instructional programs and academic support services to changes in the external environment, plus implementation of best practices based on national two-year college trends. Alignment and overlap with key goals in student services is also addressed in many plans.

One commonality among all plans is that the EMP is a catalyst for modifications to instructional programs and key academic processes, through the development of goals, recommendations, action items, or priorities with outcomes directed toward enhanced student success and program completion. One example of an EMP definition is noted on the next page.

AN EDUCATIONAL MASTER PLAN IS NOT AN ACADEMIC PLAN

An educational master plan and an academic plan are not synonymous. An academic plan is usually considered the roadmap for the journey to academic excellence and generally focuses on goals related to building a strong faculty. Common themes include ways to improve the quality of the teaching and learning, creating more diversity in the faculty ranks, improving the delivery of instruction and faculty work environment. A good academic plan also turns inward and provides a candid assessment of current position, strengths, and weaknesses of units under the academic umbrella. Finally, most academic plans are resource-driven and provide strategies to acquire the resources necessary to support academic initiatives.

One College's EMP Definition

"The GCCCD Educational Master Plan is a long-range, comprehensive document that will serve as the District's blueprint for the next decade, and is intended to guide institutional and program development at both the college and district levels. The priorities established in the Educational Master Plan will serve to guide college and district decisions about growth, development and resource allocation, and align with the five strategic areas of focus established by the GCCCD Governing Board: student access; learning and student success; value and support of employees; economic and community development; and fiscal and physical resources."

Grossmont-Cuyamaca Community College District's Educational Master Plan, March 2012

PURPOSE OF EDUCATIONAL MASTER PLAN

Pima Community College's Educational Master Plan is one of many broad-based planning efforts currently underway at the College. The EMP has been developed in alignment with the 2014-2017 Pima Community College Strategic Plan. The EMP provides specific direction and recommendations for the implementation of academic and instructional strategies that will ultimately lead to greater student success and program completion. This document will also be used to support the development of yearly operational plans.

The purpose of the Educational Master Plan is to document best practices and identify relevant research that provides evidence for successful implementation. Successful outcomes will allow Pima Community College to regain its status of one of the premier community colleges in the county. It is a dynamic document, flexible enough to adjust to new issues as they emerge and is designed to guide decision-making at the College over the next ten years.

INTEGRATION WITH THE CAMPUS MASTER PLAN

The recommendations developed in this plan will be incorporated into the District's Campus Master Plan. The needs for facilities, staffing, and fiscal resources will be addressed and solutions developed so that allocations will be driven by the District's integrated planning model. The campus master planning process will be finalized and integrated with the Educational Master Plan.

PAST PCC PLANNING PROCESS

The 2002-2007 Educational Master Plan notes that "strategic and master planning have been ongoing processes at Pima Community College since the late 1980s."

In the past, all planning activities were captured in a systematic five-year strategic planning cycle, with the College updating its mission and value statements while developing a new set of strategic planning goals. According to internal PCC planning documentation, "the strategic goals are spelled out in a more detailed five-year Educational Master Plan, which specifies how the College will achieve its strategic goals".

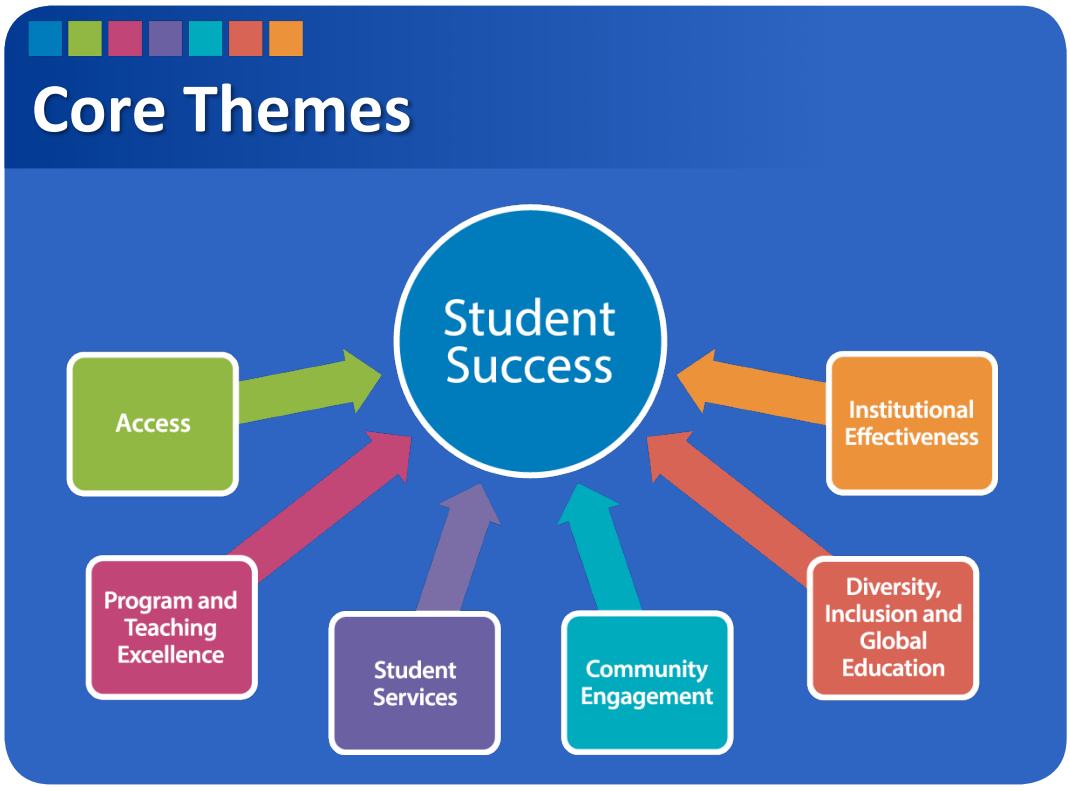
CURRENT PCC PLANNING PROCESS

Strategic and operational planning is outlined in Administrative Procedure (AP) 1.16.02. The administrative procedure was adopted on May 27, 2016 and provides procedures and processes form developing a multi-year comprehensive plan using the mission fulfillment framework as the foundation for planning priorities.

> "The goal of the plan is to lead the College toward the achievement of its vision to be a premier community college, while embracing the College values that guide the way the institutions will achieve success within its mission fulfillment framework."
>
> *AP 1.16.02 Purpose Statement*

Section 1 outlines six planning principles toward the development of the strategic plan. Step [1] states "The main focus of planning will be to ensure that the activities of the College support the Core Themes of Student Success and align with the mission of PCC."

These core themes are outlined in the diagram.



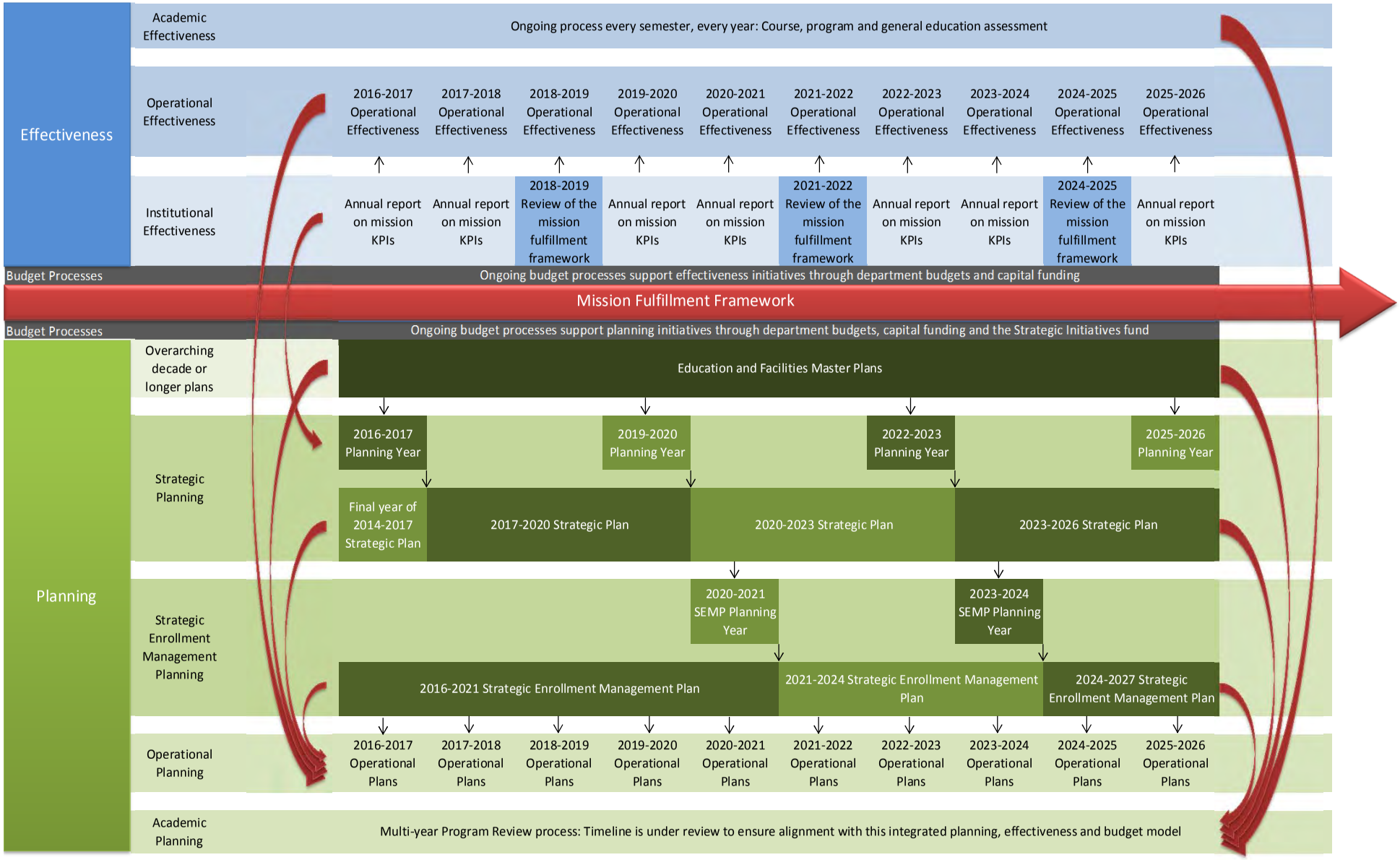
Section 2 describes the strategic planning process while Section 3 describes content and processes for the development of unit operational plans.

PCC's Integrated Planning, Effectiveness and Budget Processes

The figure summarizes the components of the planning, effectiveness and budget processes at PCC. The diagram notes a three year strategic planning cycle with development of a new plan during the final year of the current plan. For example, the planning process for the 2017-2020 Strategic Plan will begin during the 2016-2017 academic year. The red arrows not the primary inputs and outputs. The Educational and Facilities Master Plan are overarching decade or longer plans that feed into unit operational goals. AP 1.16.02 states that "Unit operations plans last one year in duration, but strategies can roll from year-to-year where needed."

Pima Community College's Integrated Planning, Effectiveness and Budget Processes

This figure summarizes the components of the planning, effectiveness and budget processes at PCC. Primary connections are indicated with arrows, but all processes within this system are linked. Inputs and outputs from each process feed into the other processes within the integrated system.



EMP PROCESS

This Educational Master Plan was developed over nine months in seven steps. All EMP activities were coordinated through the Office of the Provost and Executive Vice Chancellor for Academic and Student Services.

Step 1: Project Initiation

Initial conversations with the Provost clarified key components and boundaries of the EMP. Kickoff meetings were conducted with staff council, faculty, student services staff, provost & presidents, and faculty senate and were completed in August 2015. The EMP process was aligned with the Campus Master Plan schedule.

Under guidance from the Provost's Office, an Educational Master Plan Committee was created and assumed an advisory role throughout the development of the EMP.

Step 2: Data Collection and Documentation Review

More than 45 internal documents, dating from 2002 to 2016, were reviewed and summarized. Chapter 2 reviews the most salient documents and describes how each one links to the Educational Master Plan. At the same time, more than 100 nationally published documents were reviewed for current trends and

best practices. Chapter 3 summarizes these publications and the research findings that are convincing community college leaders to redefine their institutions.

State and regional population, demographic, and occupational level data were collected during the process. This information was critical to the formulation of recommendations. The sources and an overview of current and future projections are noted in Chapter 4. Findings from portions of these reports were shared with the Educational Master Planning Committee from September 2015 through March 2016.

Step 3: Research and Analysis

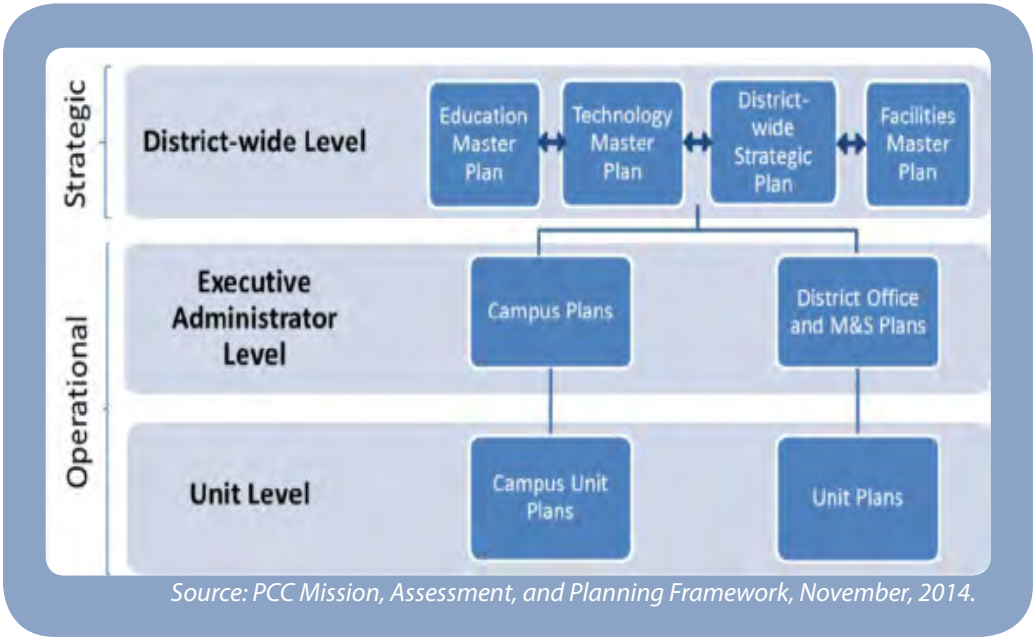
Three additional studies were commissioned as part of the EMP process:

- Economic Overview and Program Gap Analysis by Economic Modeling Specialist International (EMSI)
- A Geographic Information Systems (GIS) study of students patterns and Tucson population demographics by SmithGroup/JJR
- Comparative Analysis of best practices in student services

The results of these studies are described in Chapter 5 and were integrated into the planning framework.

Step 4: Campus Engagement

In addition to meetings with the Educational Master Plan Committee, interviews were conducted with vice chancellors, assistant vice chancellors, campus presidents, vice presidents, academic deans, executive directors and directors, student services managers, and campus librarians. The goal of these meetings was to gain additional insight into the various planning processes in place at PCC and develop a better understanding of how strategic and operational goals are being implemented at the unit level.



Source: PCC Mission, Assessment, and Planning Framework, November, 2014.

Step 5: - Analysis and Presentation of Findings

The results of the three commissioned studies and a summary of operational goals was presented to the Educational Master Plan Committee and the Board of Trustees for review and comment from January 2016 through March 2016. Summary results of the studies are presented in Chapter 5. The PCC Planning Framework is noted below.

Step 6: Educational Master Plan Framework

After synthesizing internal and external documentation and commissioned studies, a planning framework was developed. The framework relied heavily on institutional aspirations and PCC's overarching vision. At the same time, a structure for organizing EMP recommendations was developed and presented to the Provost's Office and Educational Master Planning Committee in March 2016.

EMP recommendations are divided into three main sections:

- **Student Success**
- **Community Engagement**
- **Access and Diversity**

These three areas define the "North Star" for Pima Community College. Chapter 6 provides the framework and key goals under each these overarching sections. Chapters 7 through 9 make up the majority of the EMP document and provide background data, key research findings, and concise recommendations.

Step 7: EMP Draft, Campus Review and Final Reports

After a review of the report structure and format, the development of the Educational Master Plan report began in earnest on April 1, 2016. A draft plan was completed in early August 2016 and will be followed by a period of campus review and comment. The final report will be use for the 2017-2020 planning cycle.

> Success depends upon previous preparation, and without such preparation there is sure to be failure.
>
> - Confucius

Action Items verses Recommendations

Several PCC planning documents are based on outcomes stated as "goals" or "action items". In project management, action items are work items requiring someone to perform follow up and are driven by execution.

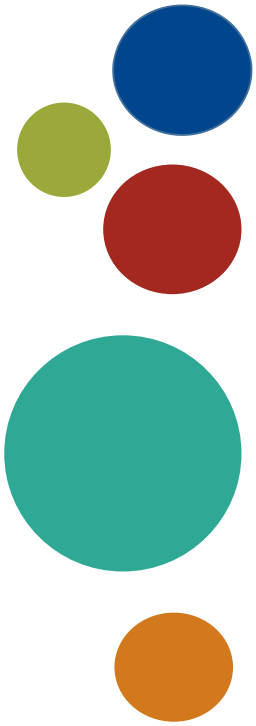
The outcomes of this Educational Master Plan are stated as recommendations. Properly defined, a recommendation is a suggestion as to the best course of action, especially one put forward by an authoritative or outside body.

Potential Impact of Recommendations

Educational Master Plan recommendations were developed to align with the current mission fulfillment framework and strategic planning process. While the recommendations in this plan have grounding in the higher education empirical research literature, that is not enough. Recommendations were also based on the successful application of these theories within the community college sector. For each recommendation, these strategies and their outcomes are described in the plan.

Despite this firm grounding, no single recommendation in this plan can be shown with absolute certainty to improve student success, engagement or completion. However, high levels of success and outcomes achieved at other community colleges with similar goals is not accidental. Implementation of this plan will need to be a continual process.

> ***The pace of progress will depend upon a number of circumstances, including faculty and staff commitment, the continued ability to create a culture of change, and the availability of financial resources.***



College Mission

PCC is an open-admissions institution providing affordable, comprehensive educational opportunities that support student success and meet the diverse needs of its students and community.

College Vision

PCC will be a premier community college committed to providing educational pathways that ensure student success and enhance the academic, economic and cultural vitality of our students and diverse community.

College Values

To guide Pima Community College, these values characterize the way in which we accomplish our mission:

- **People**
- **Integrity**
- **Excellence**
- **Communication**
- **Collaboration**
- **Open Admissions and Open Access**

1 | History, Physical Assets, and Institutional Trends

BRIEF HISTORY

The citizens of Pima County, Arizona, approved the formation of a junior college district and establishment of Pima College in 1966. A five-member governing board was appointed, quickly laying the groundwork for the new college, including developing educational goals, creating a financial plan, choosing a campus site, and naming the first president. In 1967, citizens held elections to replace the appointed officials and approved a $5.9 million bond issue for the purchase of land and the construction of a permanent campus. In 1969, construction on the first campus began on 267 acres on what is today known as the West campus.

While classes were offered in several temporary locations between 1969 and 1970, Pima College officially opened its doors to all students attending classes in 11 buildings on the new Anklam Road campus. To reflect student growth and the evolving mission of the college, the board renamed the institution Pima Community College in 1972.

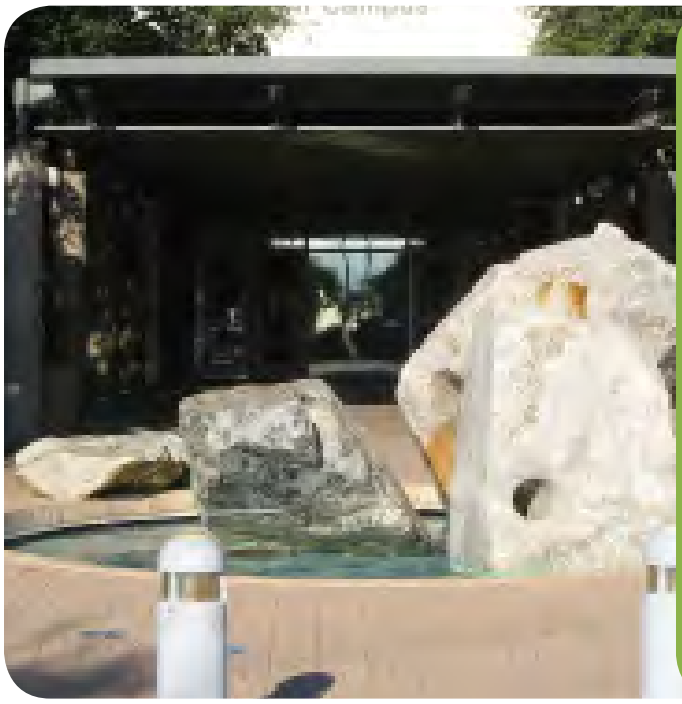
Today, Pima Community College (PCC) is a two-year institution of higher education serving the needs of residents in Pima County and the Tucson metropolitan area. The Pima County Community College District (PCCCD)consists of six campuses, three adult education learning centers, a district office, and a security and maintenance facility. The College provides traditional and online instruction, awarding certificates and two-year degrees in more than 185 program areas. PCC also offers workforce training, Adult Basic Education for College & Career programs, and non-credit personal interest classes.

PHYSICAL ASSETS: CAMPUSES AND CENTERS

Pima Community College includes six permanent campus locations throughout the greater Tucson metropolitan area and three adult basic education learning centers. EPL and El Rio are City of Tucson owned and the first buildings in the nation built from the ground up for the exclusive use of Adult Basic Education with city and county bonds and funds until 2024 through an IGA with the City. A stand-alone facility supports the maintenance and security needs of all campus locations. The Chancellor, Provost, other district leadership, and related staff are located in a centralized district office complex that is independent of campus locations.

WEST CAMPUS

The West Campus was the first permanent campus for Pima Community College. It is the largest of the six locations and offers the broadest range of academic programs. These include nursing and health-related professional programs, Digital Arts, and Visual and Performing Arts. The West campus is home to the College's athletics programs and houses facilities for the performing arts. The campus includes 19 buildings for a total of approximately 315,000 assignable square feet (ASF).

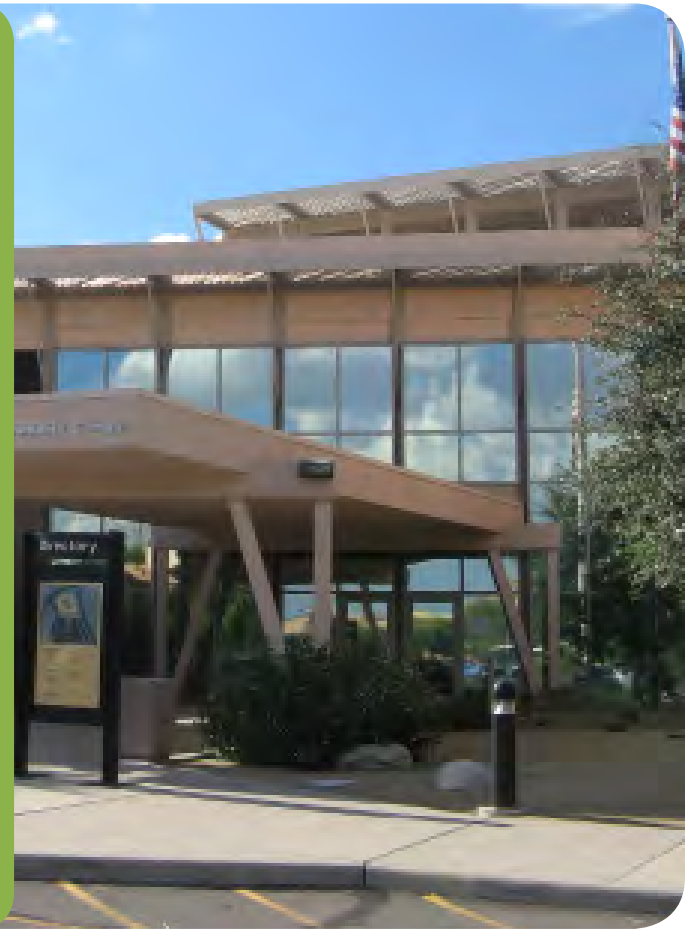


DOWNTOWN CAMPUS

The Downtown Campus opened in 1974. Classes were held in a remodeled post office building. The campus grew to 15 buildings after the purchase of neighboring structures, including the Roosevelt Building, and the construction of the Campus Center and Classroom Technology Building. Today, the Downtown Campus houses many of the laboratory-intensive applied technology programs for a total of approximately 140,000 ASF.

COMMUNITY CAMPUS

In 1975, the Community Campus was established to supplement traditional on-campus education. A new, larger facility was purchased in January 1997 adjacent to Interstate-10. Today, the Community Campus houses Workforce and Business Development, Continuing Education, Pima Online, and the registration, intake, orientation, and assessment of Adult Basic Education for College and Career students. While not physically on the campus, management of the Adult Basic Education for College and Career adult learning centers and programs is coordinated from this campus.. The three buildings contain approximately 41,000 ASF.

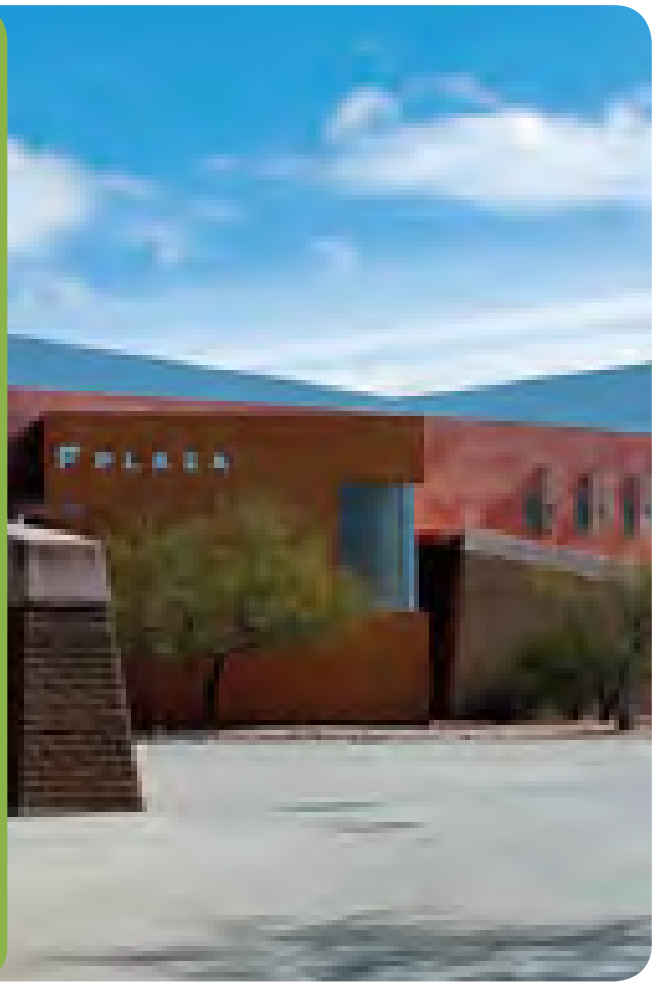


EAST CAMPUS

The East Education Center was established in 1976 on a desert site east of Davis-Monthan Air Force Base. As enrollments increased, the name was changed to the East Campus in 1981. By fall 1989, the campus had doubled in size with the construction of the student union and library. Current East Campus programs include Logistics and Supply Chain Management, Pharmacy Technician, Emergency Medical Technician, and Veterinary Science. The East Campus includes 15 buildings for a total of approximately 105,000 ASF, excluding the Clements Center.

DESERT VISTA CAMPUS

The Education Center-South opened in 1986; by 1993 it had relocated to an existing industrial facility the Desert Vista Campus. In 1973, Pima Community College became the local agency sponsor for the Tucson area's Skill Center. This workforce development unit is now the Center for Training and Development. Utilizing a $2.6 million federal Title V grant, the Desert Vista Campus is integrating and expanding student resources, including a redesign of the library to add an integrated Learning Center. This campus also houses the Culinary program and the Early Childhood program. While not physically on the campus, management of the Aviation Technology program coordinated is from this campus. This six buildings on this campus total approximately 105,000 ASF.



NORTHWEST CAMPUS

The College opened the Northwest Community Learning Center in 1998 to serve the needs of residents in the northwest region of Pima County. In 2000, the College opened the Northeast Community Learning Center. Construction was completed in 2003 on a permanent campus, called the Northwest campus. The Northwest Campus is home to programs in Therapeutic Massage, Clinical Research Coordinator, and Hotel and Restaurant Management. A total of eight buildings (excluding YMCA) total 114,000 ASF.

DAVIS-MONTHAN AIR FORCE BASE EDUCATION CENTER

Pima's Davis-Monthan Education Center offers academic instruction leading to a two-year Liberal Arts degree, an Associate of Science, or an Associate of Business Administration degree for transfer to an Arizona state university.

PUBLIC SAFETY AND EMERGENCY SERVICES INSTITUTE (PSESI)

As part of business and industry training, PSESI offers several certificates and degrees for careers or advanced training in law enforcement, fire and safety. Programs include Emergency Medical Technology – Paramedic, Fire Science, and Law Enforcement. The Institute shares the location with the Adult Basic Education Learning Center at the 29th Street Coalition Center. This facility contains approximately 7,000 ASF.

Adult Basic Education Learning Centers

These centers provides adult learners with opportunities to increase basic skills in math, reading and writing, prepare for high school equivalency testing, learn English, increase their civic engagement and develop the skills to transition to further education and jobs. The three centers include:

- El Pueblo Liberty Learning Center
- El Rio Learning Center
- PCC 29th Street Coalition Center

Together, these facilities contain approximately 53,000 ASF.

CRITICAL EVENTS IN THE COLLEGE'S RECENT HISTORY

Two recent events have had a profound impact on the College.

Accreditation

PCC is accredited by the Higher Learning Commission (HLC) of the North Central Association. The Higher Learning Commission is one of several non-governmental regional and national organizations that accredits colleges and universities. Until recently, PCC was on probation with the HLC. On February 26, 2015 this probation was rescinded. Although the probation was retracted, Pima continues to remain "On Notice" for deficiencies.

"On Notice" means that the College is in compliance with the HLC's Criteria for Accreditation but is at risk of being out of compliance with the Criteria for Accreditation and the Core Components. The College remains fully accredited while "On Notice." A focused visit will take place in September, 2016 (*Report to the Community, Spring, 2015*). Significant steps have been taken to restore full accreditation for the focused visit.

Budget

The State of Arizona's 2015-16 budget completely eliminated both operating and STEM funding for Pima Community College. This action represents a cut of $6.5 million in operating revenue and a loss of $600,000 in funding for STEM programs, for a total reduction of more than $7 million.

To make certain sufficient resources are available to support the College's mission, fund strategic initiatives, and ensure regulatory compliance, the Strategic Planning Committee and the Budget Subcommittee developed criteria that will be used to evaluate budgetary decisions. These criteria will allow the College to continually adapt to the changing landscape of higher education. (*Factors Impacting Pima Community College Fiscal Year 2016 Budget*, David Bea, Ph.D., Executive Vice Chancellor for Finance and Administration).

INSTITUTIONAL DATA AND STUDENT DEMOGRAPHICS

This section of the Plan focuses on a historical and current review of enrollments, student demographics, and completion data. The PCC Office of Institutional Research, Planning and Effectiveness has generated a significant amount of data regarding enrollments and student demographics. The following section contains key metrics that begin to define campus identities.

DISTRICT DATA

Headcount & FTSE

Over the last five years, unduplicated headcount has decreased by 33% while full time student equivalent (FTSE) has decreased by 32%.

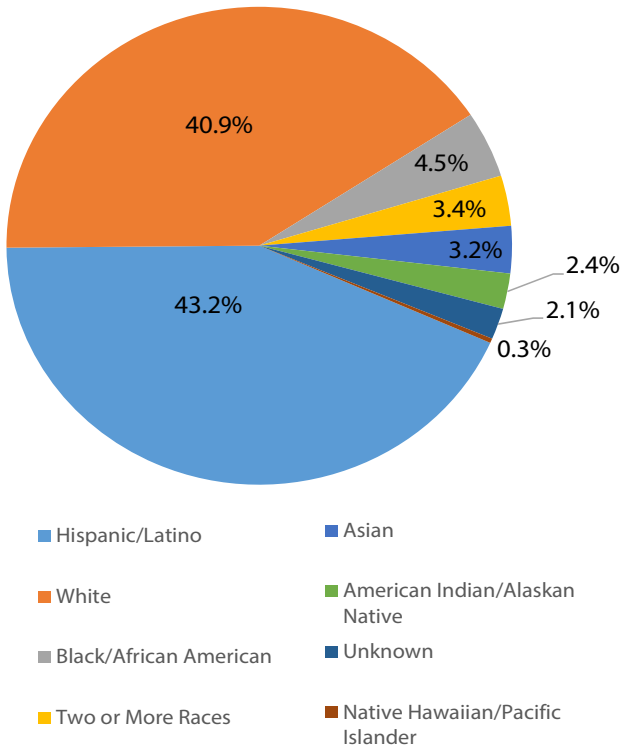
District Unduplicated Headcount & Annualized FTSE 2010 - 2015

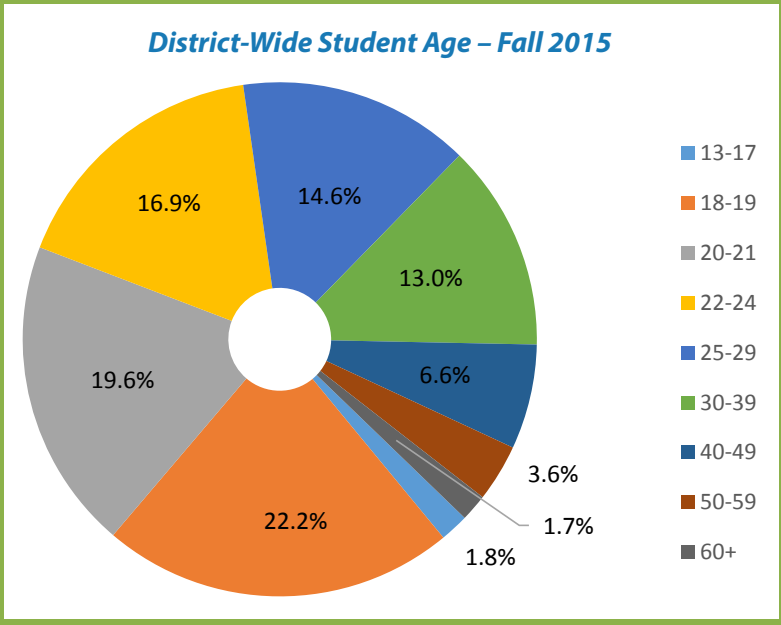
	Fall 2010	Fall 2015	% Change
Unduplicated Headcount	35,365	23,570	-33%
Full Time Student Equivalent	9,950	6,739	-32%

Ethnicity

Hispanics are currently the largest ethnicity (43.6%) of the student population at Pima Community College. While this ethnic group has accounted for the majority of students over the past five years, it has been steadily increasing as a percentage of the overall student body. For the Fall 2015 semester, the second largest ethnic group, White/non-Hispanic, currently accounts for 40.9% of the population. As the Hispanic population has increased, the White/non-Hispanic group has slowly been decreasing over the same time span.

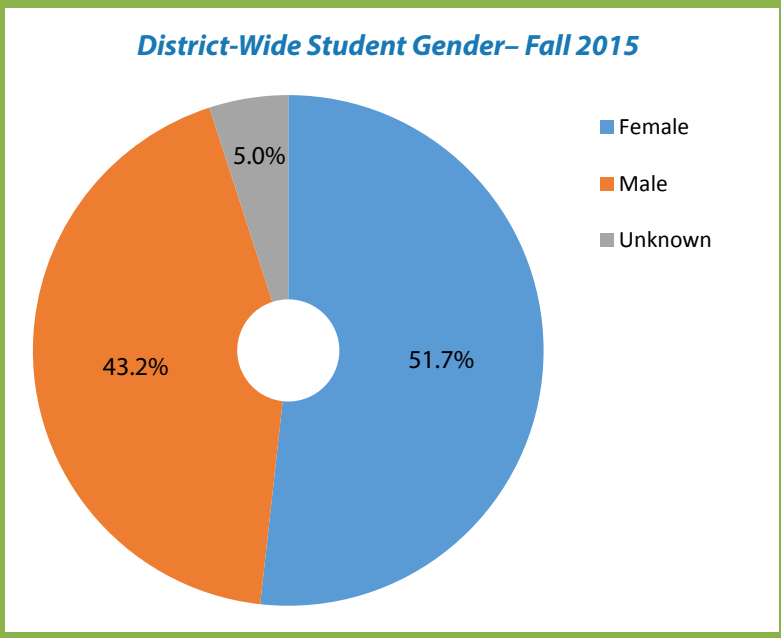
District-Wide Student Ethnicity – Fall 2015





Age

Traditionally, most community colleges target individuals between the ages of 19-24 years. In looking at student age for the Fall 2015 semester, 43.6% of the students were 21 years of age or less while less than 25% of the students were age 30 and older.



Gender

At the district level for the Fall 2015 semester, a higher percentage of females than males attended PCC. This pattern is replicated at the national level.

In terms of staffing, the 2014-15 IPEDS Human Resources Report stated that 350 full-time instructional and educational support faculty and 994 additional full-time employees were working at the College.

CAMPUS DATA

While the district-wide data provides a broad-based snapshot for Fall 2015, campus-level student data provides additional insights. Campus location and program mix create variances in enrollment and student demographics.

Duplicated headcount and annualized FTSE from Fall 2011 to 2015 is shown below for each campus. Over the four-year period, the Northwest Campus experienced the greatest enrollment decline. The smaller enrollment decline at the Community Campus is the result of moving online program oversight to this location.

Duplicated Headcount & Annualized FTSE by Campus

Campus/Center	Fall 2011		Fall 2015		
	Duplicated HC	FTSE	Duplicated HC	FTSE	% Change FTSE
Community Campus	5,193	801	4,449	670	-16%
Desert Vista Campus	5,376	1,080	3,861	775	-28%
Downtown Campus	10,492	1,974	7,012	1,322	-33%
East Campus	7,656	1,588	4,881	1,039	-35%
Northwest Campus	6,578	1,375	3,950	823	-40%
West Campus	12,567	2,804	9,167	2,032	-28%
Public Safety Emergency Insititute	229	53	145	32	-39%
Davis-Monthan AFB	0	0	327	46	
Total	**48,091**	**9,675**	**33,792**	**6,739**	**-30%**

There is also variability by campus in student attendance. Students who are taking 12 or more credits (full-time students) currently account for a high of 42% to a low of 26% of the college enrollments, based on the campus they are attending. District-wide, 36% of students attend PCC on a full-time basis. The majority of students at the College attend on a part-time basis (with fewer than 12 credits). This student load pattern has stayed relatively consistent over the past few years. The high proportion of part-time students is common in community colleges as the majority of students attending classes also work and/or have family commitments.

Percent Student Attendance Status by Campı

Campus/Center	Fall 2015	
	Full Time	Part Time
Community Campus	36.3%	63.7%
Desert Vista Campus	37.1%	62.9%
Downtown Campus	35.5%	64.5%
East Campus	39.8%	60.2%
Northwest Campus	38.0%	62.0%
West Campus	42.4%	57.6%
Public Safety Emergency Insititute	32.4%	67.6%
Davis-Monthan AFB	26.3%	73.7%
Average	**36.0%**	**64.0%**

The Northwest and Desert Vista campuses have a greater number of students in the 18 to 19 age range. While the West campus has the highest number of full time students, they tend to be slightly older.

Percent 18-19 Year Old Students by Campus

Campus/Center	Fall 2015
Community Campus	15.6%
Desert Vista Campus	27.7%
Downtown Campus	20.1%
East Campus	24.7%
Northwest Campus	26.4%
West Campus	23.0%
Public Safety Emergency Insititute	11.7%
Davis-Monthan AFB	8.0%

Percent Hispanic/Latino Students by Campus

Campus/Center	Fall 2015
Community Campus	37.3%
Desert Vista Campus	64.4%
Downtown Campus	44.1%
East Campus	37.4%
Northwest Campus	34.3%
West Campus	45.0%
Public Safety Emergency Insititute	39.3%
Davis-Monthan AFB	40.7%

The percent of Hispanic/Latino students attending PCC during Fall 2015 varies by campus location. Census data notes a higher density of Hispanic/Latino residents to the south and west of city center. The Desert Vista, West, and Downtown Campuses serve a large majority of the Hispanic/Latino population.

COMPLETIONS

In reviewing the 2014-15 Graduate Report (October, 2015), more than 49,000 degrees and certificates have been awarded by PCC over the last ten years.

While enrollments have been steadily declining from 2010 to 2015, the number of associate degrees has increased more the 19%, while the number of certificates has increased by 21%. The average number of awards per graduate has also increased slightly over the ten-year period.

During the 2014-15 academic year, the highest number of degrees awarded related to college transfer. This included Liberal Arts (AA degree), General Studies (AGS degree), and the AS in Science degree; these account for 1,537 or 56% of all degrees.

Nursing is quite strong at PCC and awarded 157 AAS Degrees. The fifth largest category for degrees awarded was 145 in Business Administration (AB Degree). It is important to note that while Hispanics and Latinos comprise 43% of the student population, they received only 17% of the associate degrees and 19% of the certificates during the 2014-15 academic year.

Number of Awards by Award Type from 2005-06 to 2014-15

Year	Associate Degrees	Certificates	Total Number of Awards
2005-06	1,918	2,836	4,754
2006-07	2,080	2,553	4,633
2007-08	2,359	2,095	4,454
2008-09	2,232	2,093	4,325
2009-10	2,162	2,242	4,404
2010-11	2,282	2,486	4,768
2011-12	2,549	2,622	5,171
2102-13	2,634	2,856	5,490
2013-14	2,644	2,880	5,524
2014-15	2,721	3,013	5,734
Five Year % Change	**19%**	**21%**	**49,257**

Top Ten PCC Degree Programs for 2014-15

Rank	Degree/Program	Number
1	AA liberal Arts	759
2	AGS General Studies	584
3	AS Science	194
4	AAS Nursing	157
5	AB Business Administration	145
6	AAS Computer Sytems Admin/Networking	57
7	AAS Business	44
8	AAS EMT Paramedic	46
9	AAS Early Childhood Studies	42
10	AA Administration of Justice Studies	42
	Top 10 Total	2,070
	Total Degrees for 2014-15	2,721
	Percent of Degrees in Top 10	76%

PCC awarded 3,013 certificates during the 2014-15 academic year. Of these, 1,466 were Arizona General Education Curriculum (AGEC) certificates in Liberal Arts (AGECA), Business Administration (AGEDB), and Science and Technology (AGECS). Additionally, 265 certificates were granted in Business & Industry Technology, 128 in Practical Nursing and 121 in Medical Assisting. The remaining 1,033 certificates were distributed among 65 certificate programs offered at the College.

AZ TRANSFER ASSIST PROGRAM

AZ Transfer helps students plan a seamless transition from their AZ community college to an AZ university. Baccalaureate degree recipients who entered as new transfers from Pima Community College between 2009-10 and 2014-15 are shown in the table below. The numbers only include students with 12 or more credits who entered an Arizona university as new transfers in a fall or spring semester.

Over the five year period, the number of students has increased for Arizona State University and the University of Arizona, despite a 30% decline in the number of students attending PCC.

Characteristics	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	Five-Year % Change
Total PCC Bacc Degree Recipients	**1,179**	**1,238**	**1,277**	**1,267**	**1,310**	**1,281**	**8.7%**
Arizona University							
Arizona State University	172	154	179	207	185	201	16.9%
Northern Arizona University	269	299	275	287	293	264	-1.9%
University of Arizona	738	785	823	773	832	816	10.6%

2 | Inputs – Internal Planning Documentation

The Higher Learning Commission directed Pima Community College to conduct an Institutional Self-Study. This review lead to the development of action teams to study all facets of the institution and its policies. The following reports, studies, and planning documents were reviewed in great detail and provided a comprehensive overview with regards to the development of recommendations for the Educational Master Plan.

PCC EDUCATIONAL MASTER PLAN 2002-2007

Pima Community College developed an Educational Master Plan for a five-year period from 2002 to 2007. The final document was published in February, 2003 and was the last published plan created by the institution. The plan was developed through a collaboration of multiple task forces and committees. The plan included seven chapters. The most significant included:

Curriculum and Instruction – All initiatives in this chapter were related to implementation of the Student Success System, which included assessment, advising, adult education gateways, and implementing a "culture of assessment."

Student Development – This section recommended mandatory assessment testing and placement, and a first-year college experience program.

"Strategic and master planning have always been ongoing processes at Pima Community College"

– Opening statement of the 2002-2007 PCC Educational Plan

Technology and Equipment – This section noted the need for a Pima Data Access model and a Technology Master Plan to provide remote access for students.

Facilities and Land – The plan noted the need for permanent sites for the Center for Training and Development and the Northeast Education Center.

The balance of the plan identified campus-by-campus strategic issues to support the strategic goals of the College.

Relationship to Educational Master Plan:

Many of the critical issues identified in 2002 are still areas of concern in 2016. The earlier plan discussed the need for a comprehensive developmental education plan and an enrollment management plan, both of which are addressed by current plans described in this section.

ENVIRONMENTAL SCAN

The January 2014 update of the environmental scan was instrumental in the development of the strategic plan. The scan reviews federal, state, and Pima County demographics, political climate, and occupational data. The scan also summarizes issues facing the College.

Relationship to Educational Master Plan:

Data portrayed in the environmental scan supports the changing landscape of Arizona and Pima County and documents some of challenges facing the College.

PCC FUTURES CONFERENCES (2014-2016)

In February 2014, PCC hosted its first Futures Conference with approximately 250 community members in atendence. The goal was to review community needs and possible strategic planning themes. The session engaged participants in a discussion of possible directions and choices related to strategic planning. A review of key principles and common themes was published in March 2014.

A second Futures Conference was held in April 2015. Approximately 100 community members and Pima Community College employees attended the event. The goal of the 2015 Futures Conference was to ensure the College's Mission Statement and Vision aligned with community needs and specific objectives. Conference activities were recorded and summarized in the form of notes by participant table.

The third Futures Conference took place in March 2016. Approximately 150 community and Pima Community College staff reviewed and drafted mission key performance indicators (KPIs). Once finalized, these indicators will help measure College performance against strategic goals and objectives.

Relationship to Educational Master Plan:
The Futures Conferences have focused on generating community input that is vital to formulating a viable district-wide strategic plan. Community input, as collected during each Futures Conference, is evident in the planning documentation.

First PCC Futures Conference – Common Themes

- Access
- Partnerships
- Culture of Student Success
- Faculty and Staff Development
- Global Education and Cultural Inclusiveness
- Proactive Student Support Systems and Structures

2014-2017 DISTRICT-WIDE STRATEGIC PLAN

Navigating an entity through the process of its reinvention requires a measure of disruption. One of the most common tools to create disruption is an empowered strategic plan. The development of the 2014-2017 District-wide Strategic Plan is described in the Chancellor's Message that precedes the plan. The eight-month process of data collection, analysis, and deliberation resulted in a succinct two-page plan which charts the College's future with six strategic directions and 31 goals that further clarify each directional statement.

Relationship to Educational Master Plan:

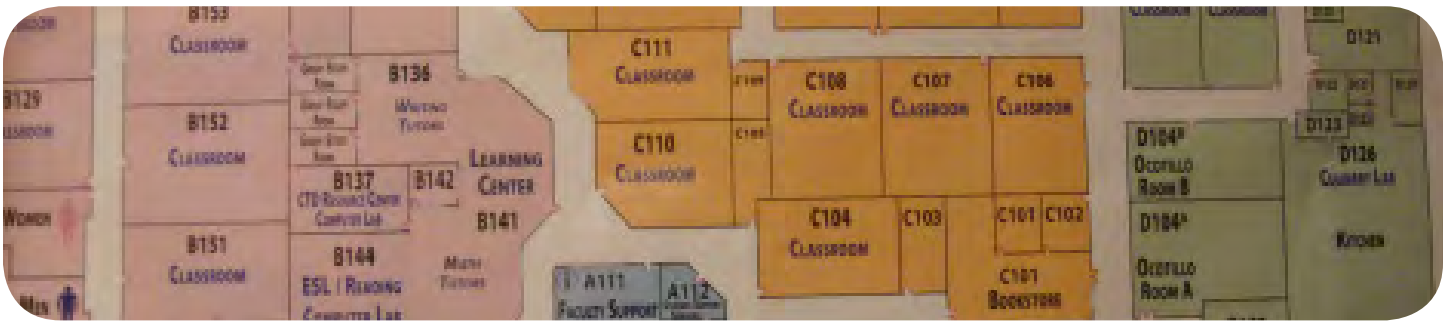
The College's future flows from the clear and powerful directions outlined in the plan. It is a document that Pima Community College faculty and staff, community, and other stakeholders must support as the ultimate expression of the College's future. The Educational Master Plan must align with all facets of the strategic plan.

STRATEGIC ACTION PLANS 2014-2017

Each of the six Pima Community College campuses and several key academic and administration units developed operational plans with a process that aligned with the District's strategic plan. Each Campus described their process as collaborative and inclusive, engaging the entire campus in developing the plan. The Strategic Action Plans reiterate the strategic directions of the district-wide Strategic Plan, adding additional goals, key performance indicators, unit responsibilities, resource needs, and completion dates.

Relationship to Educational Master Plan:

The six Strategic Action Plans further define the intentions of the District-wide Strategic Plan. A collective review of these plans uncovers subtle nuances in how district strategic directions were interpreted by campus constituents. Some campuses had better alignment between content and language and district directions than others, indicating a level of autonomy or greater understanding of the unique characteristics of each campus location. In a perfect planning scenario, instructional components of each Strategic Action Plan should align with the Educational Master Plan.



COLLEGE STUDENT SERVICES REVIEW (CSSR) – MAY 2014 DRAFT

In May 2013, PCC embarked upon an ambitious task of analyzing, assessing, and developing recommendations regarding the service centers, financial aid, and admissions and records, with the goal of improving student success and completion. More than 70 PCC participants contributed their expertise to the review process. The review was supplemented by an understanding of best practices as gleaned from publications of national associations, councils, and research organizations.

Three subgroups were created (Connect, Continue, and Complete) that closely follow a student from admission to graduation. In October 2013, members of each subgroup presented draft goals. After this review, a fourth group, financial aid, was incorporated into the review and started meeting in November 2013. By February 2014 action items and priority goals were established. The plan includes total of 20 action items and 66 action item activities. Due to funding limitations, the plan continued to be refined through 2015.

Relationship to Educational Master Plan:

The plan's action items mimic many of the strategies that forward-thinking community colleges are employing to enhance student success and completion. These include mandatory new student orientation, early alert systems, mandatory pre-assessment testing, first year experience, a mandatory student success course, and intrusive advising, which have all been associated with student success and completion within a student services framework. Built within many pathway models is a greater alignment or synergy between the various student services functions and academic affairs or instruction. Implementation of a career pathways model could require alteration of key strategies as noted in the plan.

DEVELOPMENTAL EDUCATION REDESIGN SUMMARY REPORT, MAY 2014

The Monitoring Report submitted to the HLC recommended that "the College needs to conduct a thorough review of developmental education" by July 2014. The Provost's Office took the lead in forming the Developmental Education Redesign Committee with representatives from all segments of the College. The newly formed Redesign Committee met for the first time in September 2013.

In January 2014, Dr. Kay McClenney, director of the Center for Community College Student Engagement, and Dr. Byron McClenney, program director for Achieving the Dream and co-chair of the 21st Century Initiative, conducted full-day workshops with the entire Developmental Education Redesign Committee. Initial recommendations, priorities, and timelines were made to the Acting Provost/Executive Vice Chancellor in March 2014 with the development of a summary report in May 2014.

In March 2015, a Dean of Developmental Education was hired. This person chairs the Developmental Education Council. A Developmental Education Program Redesign Update was presented to the Board of Governors Meeting in June 2015 using a Connect-Continue-Complete framework.

Relationship to Educational Master Plan:

As they should, many of the operational components of the redesign plan are closely aligned with student services. Examples include new student orientation, early alert, and advising processes. Components related to instruction include mention of pathways and meta-majors, learning communities, and professional development strategies for faculty and staff.

STRATEGIC ENROLLMENT MANAGEMENT PLAN 2015-2021

A three-page Strategic Enrollment Management Plan 2015-2018 is on the PCC website. The plan includes four strategic directions with completion dates through July 2016. Evidence suggest that this plan has not been implemented. In June 2014, an enrollment management presentation to the Board of Governors described multiple recommendations, as developed by the Enrollment Management Task Force. A new Strategic Enrollment Management Plan 2015-2021 is currently in the review process. The plan includes three strategic initiatives with nine goals focusing on outreach and recruitment, student persistence and retention, and academic pathways.

Relationship to Educational Master Plan:

Several of the proposed goals align with components of the Strategic Plan with focus on engaging community partners and organizations, adult basic education, aligning CTE programs with local business and industry needs, expansion of workforce training, credit for prior learning, and increasing completion by offering academic pathways for every degree and certificate.

ACADEMIC ADVISING TASK FORCE REPORT, MARCH 2016

The Academic Advising and Student Services Task Force was created in Fall 2015, with a goal of investigating the development of a new advising model, including the role of faculty in the advising process. Recommendations were intended to enhance the action items from the College Student Service Review. Membership includes approximately 35 PCC faculty and staff and meetings commenced in October 2015, with eight recommendations solidified by February 2016.

Relationship to Educational Master Plan:

Recommendations are clearly linked to action items in the College Student Service Review. The faculty role in the advising process is typically addressed in an academic plan.

HIGH SCHOOL DUAL ENROLLMENT TASK FORCE FINAL REPORT, APRIL 2015

The High School Dual Enrollment Task Force was created to evaluate the current PCC dual enrollment program and provide recommendations for improvement. During the 2013-2014 academic year, 1,016 high school students were enrolled at Pima Community College.

Task force membership includes representatives from multiple school districts, charter schools, PCC campuses, and the PCC district office. Meetings occurred from October 2014 through March 2015. Task force members used a framework and PCC's new assessment model to develop core themes within PCC's mission, and then linked them to strategic planning. The report provides a summary of findings, conclusions, and recommendations.

Relationship to Educational Master Plan:

Recommendations to improve and increase the number of high school students in dual credit courses are typically stated in a strategic enrollment management plan. Issues of oversight, compliance, faculty compensation, and professional development are usually outlined as operational goals in an academic plan. The goal is to increase the number of dual enrolled students that decide to stay at Pima CC for a post-secondary credential.

DRAFT DIVERSITY PLAN: 2015-2020

The purpose of the plan is recommend actions that PCC will take to fulfill its mission. As stated in the Introduction, "the intention of the College is developing this plan is that students, faculty, staff and administrators at Pima Community College will international and national diversity as well as identifying diverse local student and talent pools"

The 2014-15 Diversity Committee developed unique vision and missions statements that were aligned with and reinforced Strategic Direction Five (Increase Diversity, Inclusion, and Global Education) from the 2104-2017 Strategic Plan. Three goals are stated:

1) Expand and support the diversity of the College's workforce
2) Expand and support the diversity of the College's student population
3) Develop and increase the student population through global education

Recommendations include:

a. Recruit and select a Diversity Officer
b. Establish Office of Diversity & Inclusion
c. Ongoing Diversity Training
d. Establish Diversity Liaisons
e. Create a Diversity Advisory Committee

Relationship to the Educational Master Plan:
An effective diversity plan addresses unwavering access and works within the institutional framework to promote inclusion, engagement, and student success from a holistic or global perspective. The Diversity Plan operationalizes strategic goal five, and is critical to the success of the Educational Master Plan.

"As the Task Force worked on the development of a new vision for global education, committee members learned that our International Student Service Office was only a small component of a much large aspiration."

Statement in Introduction to the Strategic Plan for Internationalization.

STRATEGIC PLAN FOR INTERNATIONALIZATION: 2015 – 2020

In January 2015, an Internationalization Task Force was created. The Chancellor charged the taskforce to identify priorities and strategies around seven dimensions:

1) Infuse global knowledge into the curriculum
2) Create A Language Institute
3) Develop Community and Global Engagement
4) Develop a Study Abroad Program
5) Identify Opportunities for Workforce Development in the International Arena
6) Provide International and Cultural Development for Faculty, Staff, and Administrators
7) Expand International Student Outreach, Recruitment, and Services

Vision and Mission statements were developed after a SWOT analysis and benchmarking of 10 community colleges with large international student populations. A total of 65 objectives were developed around the seven strategic goals. Key recommendations were also established for each goal.

Relationship to the Educational Master Plan

The Plan takes its inspiration from one of the goals in PCC's Diversity Plan to increase global diversity and inclusion. In some ways, the title "Strategic Plan for Internationalization" is a misnomer, as the plan operationalizes Strategic Goal Five of the District-Wide Strategic Plan. This plan and its objectives is a critical component for the Educational Master Plan.

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RECOMMENDATIONS

The Pima Community College District-Wide Strategic Plan, combined with the Mission, Vision and Values statements, provide the over-arching direction for the College. In reviewing the aforementioned reports in succession, it is difficult to ascertain clear linkages between the documents. Several plans do not acknowledge their relationship to the District-Wide Strategic Plan or how goals or recommendations are integrated within the broader strategic planning framework.

Recommendation 2.1 *(Chapter 2, Recommendation 1)*

The various redesign plans and task force reports require continuity and integration within the six strategic planning directions, as outlined in the District's current strategic plan. All future planning activities, including this Educational Master Plan, should acknowledge and align with goals promulgated in the Pima Community College District-Wide Strategic Plan 2014-2017 and all future Strategic Plans.

Recommendation 2.2

Collectively, the various plans propose hundreds of goals, action items, strategies, and recommendations. Some of these items must be accomplished before others or are less "strategic" in the overall planning framework. Before implementation, efforts should be directed toward some level of prioritization and a continuity check with the goals, action items, strategies, and recommendations of other plans in related areas.

Recommendation 2.3

We live in a data-rich world. We also live in an era of outcomes and accountability when documenting success in higher education. As goals, action items, strategies, and recommendations are further visualized and implemented, including those in this plan, it will be critical to identify a set of metrics, benchmarks, or key performance indicators to measure success or failure.

Improvement tends to be incremental and some goals will require testing in small pilot studies. Regardless, metrics at clearly defined decision points will need to be integrated into the fabric of strategy implementation. Not every goal or strategy will be successful, and the key is to know when to stop doing something that does not work.

Given the sheer number of strategies, this may require an augmentation or refocusing of staff devoted to measurement and research. Timely and accurate information through regular and *ad hoc* reporting of institutional data and success metrics to internal and external audiences will be critical.

Recommendation 2.4

In Fall 2015, 43.2% of Pima Community College students identified themselves as Hispanic or Latino. PCC is also designated as a Hispanic-Serving Institution (HSI). As the number of Hispanic-Serving Institutions increase, an ever-expanding body of research has translated into publications on a wide array of topics, data sources, conceptual frameworks, and methodologies. These reports examine how HSIs can better serve their Hispanic/Latino students and provide scalable practices for success and completion. Such research, ideas, or strategies are absent in many of the operational plans noted in this chapter.

Many HSI institutions assemble a representative group of student service personnel and faculty to research current best practices and make recommendations for continued success of Hispanic/Latino students, as well as students from all backgrounds and ethnicities. Currently, the PCC Diversity Plan and Strategic Plan for Internationalization provide key strategies at a broad level. Success strategies based on best practices are also critical.

3 | Inputs – National Trends

Population and economic changes in the State of Arizona and City of Tucson have a direct influence on Pima Community College, as these changes affect jobs and available resources. At the national level, there are significant trends and best practices impacting community colleges. There are an increasing number of print and online resources to assist community colleges in collaborating to develop strategies to increase completion rates and student success.

Since Pima Community College has been designated as a Hispanic Serving Institution (HSI), a continued understanding of the Hispanic/Latino population is critical for success.

What is an HSI?

Colleges and universities with a full-time Hispanic/Latino enrollment of at least 25% federally quality for the designation of a Hispanic Serving Institution (HSI).

According to government reports for 2014-15, 13% of colleges and universities identified as HSIs, and they enrolled 62% of all Latino undergraduates in the U.S.

NATIONAL PUBLICATIONS AND REPORTS

American Association of Community Colleges (AACC)

The American Association of Community Colleges (AACC) is the primary advocacy organization for the nation's community colleges. The AACC represents nearly 1,200 two-year, associate degree–granting institutions and more than 13 million students. The AACC is at the forefront of publications on increasing completion rates for community college credentials.

The 21st-Century Commission report, *Reclaiming the American Dream, Community Colleges and the Nation's Future: A Report from the 21st-Century Commission on the Future of Community Colleges*, and the 21st-Century implementation report, *Empowering Community Colleges To Build the Nation's Future: An Implementation Guide*, have received widespread attention from community college leaders. The report set forth seven recommendations to drive transformation (see inset below).

Within the seven recommendations, there are four foundational strategies:

- Clear, coherent academic/career pathways;
- Stackable credentials based on clearly defined competencies;
- Alignment of learning across education sectors, within community colleges, and with labor-market demands;
- Transparency and accountability.

Recommendations for Transformation

- Increase completion rates by 50% by 2020
- Dramatically improve college readiness
- Close the American skills gap
- Refocus the community college mission and redefine institutional roles
- Invest in collaborative support structures
- Target public and private investments strategically
- Implement policies and practices that promote rigor and accountability

– AACC 21st Century Commission

League for Innovation in the Community Colleges

Since 1986, the non-profit League for Innovation in the Community College has been dedicated to the community college movement by sponsoring more than 200 conferences, institutes, seminars, and workshops. It has also published more than 200 reports, monographs, periodicals, and books, providing a storehouse of information of current trends and best practices.

Recent reports include *Career Pathways as a Systemic Framework: Rethinking Education for Student Success in College and Careers.* The authors of this report contend that career pathways are building blocks of a critically needed systemic transformation that will position community colleges as leaders in the effort to address some of the most pressing economic and social concerns facing the country today. Another key article focuses on Cuyahoga Community College (Tri-C) and the use of the Centers of Excellence model to increase student success.

Center for Community College Research (CCRC)

Housed at Teachers College, Columbia University, the Center for Community College Research (CCRC) is a leading independent authority on two-year colleges in the United States. Since 1996, CCRC has been conducting research on the issues affecting community colleges.

CCRC researchers Thomas Bailey, Shanna Smith Jaggars, and Davis Jenkins published a book in 2015 entitled *Redesigning America's Community Colleges: A Clearer Path to Student Success*, where they argue that to substantially increase student completion, community colleges must engage in fundamental redesign.

Using CCRC's intensive knowledge of community colleges, the authors provide a convincing argument for improving developmental education, instruction, academic support, student services, and the overall student experience.

Two additional topics germane to this plan have been studied extensively by CCRC. A *Research Brief on the Corridors of College Success Series* (Klempin, 2016) discusses the collective impact model within community colleges. This model is based on the premise that meaningful collaboration requires the development of a comprehensive partnership that brings together organizations from key sectors within a community. The goals of the Corridors to College Success Initiative is to "increase the attainment of postsecondary education credentials that lead to high-quality careers among students from underserved populations by creating more student-sponsored and seamlessly connected education-to-career pathways" (page 2).

Another area of research used in this study is related to structure in community college career-technical programs (Van Noy, et al, 2012). Program alignment refers to the ways in which programs of study are intentionally structured to be well aligned with pathways and institutions outside the college. There are three primary manifestations of program alignment. These include labor market alignment, alignment with local employer opportunities, and educational alignment. Research findings suggest that allied health, computer and information systems, science, and mechanics and repair programs were all found to be highly structured. Business and marketing programs were found to have a moderate level of structure. Research studies provide evidence of a connection between program structure and program performance. These findings have an impact on program location and the development of career pathways.

National Career Pathways Network (NCPN)

The National Career Pathways Network (NCPN) is a membership organization for educators, employers and others involved in the advancement of career pathways, career technical education (CTE), and related education reform initiatives. NCPN is housed at the Center for Occupational Research and Development (CORD). Since 1979, CORD, a nonprofit organization dedicated to leading change in education, has been creating educational tools and innovative programs to empower faculty and prepare students for greater success in careers and higher education.

CORD established its leadership and expertise in career pathways through publications and extensive professional development services. In 2005, CORD published *Career Pathways: Education with a Purpose* in conjunction with policy makers, researchers, and state and institutional leaders. Today, numerous community college personnel are being trained in their pathway framework.

Complete College America (CCA)

Established in 2009, Complete College America (CCA) is a national nonprofit with a single mission: to work with states to significantly increase the number of Americans with quality career certificates or college degrees and to close attainment gaps for traditionally underrepresented populations. CCA has studied the

research, evaluated the data, and searched the nation for best practices; every indication is that completion outcomes are impressive. CCA's five Game Changer strategies are receiving national attention. These include:

- ***Performance Funding***
- ***Structured Schedules***
- ***Corequisite Remediation***
- ***Guided Pathways to Success (GPS)***
- ***Full-Time is 15 Credit Hours***

CCA should become a national best practices resource for PCC.

Excelencia in Education

Excelencia in Education is a not-for-profit organization founded in 2004 to address Hispanic/Latino student success in higher education by providing data-driven analysis regarding the educational status of Latinos, and by promoting education policies and institutional practices that support Latino academic achievement. Excelencia sees college completion as the ultimate goal of a quality education.

Excelencia in Education is best known for their *"What Works for Latino Students in Higher Education,"* which recognizes programs that are making a positive difference in the educational achievement of Latino students in higher education. Excelencia in Education also conducts analyses on HSIs and releases a list of institutional statistics.

In 2014, the Center for Community College Student Engagement (CCCSE) joined with the National Survey of Student Engagement (NSSE) and Excelencia in Education in a special project, *Engaging Latino Students for Transfer and College Completion*. The publication *Finding Your Workforce: Latinos in Science, Technology, Engineering, and Math (STEM)* identifies top institutions graduating Latinos in STEM disciplines and spotlights replicable practices, as well as strategies for successful STEM pathways, to increase access and interest in these fields.

Several recommendations in the Pima Educational Master Plan were developed using the Excelencia in Education framework.

Center for Postsecondary and Economic Success at CLASP

The Center for Law and Social Policy (CLASP) is a national, nonpartisan, anti-poverty organization advancing policy solutions that work for low-income people. As part of CLASP, The Center for Postsecondary and Economic Success is concerned about the millions of low-income adults and youth that lack the skills and credentials to qualify for good jobs. CLASP also believes that postsecondary educational institutions have few effective models or incentives to serve these populations.

The root of many of the problems in our education, training, and support services systems can be found in public policies at the federal, state, and local levels. To overcome the educational and economic challenges, it is critical to rethink these approaches and strategies.

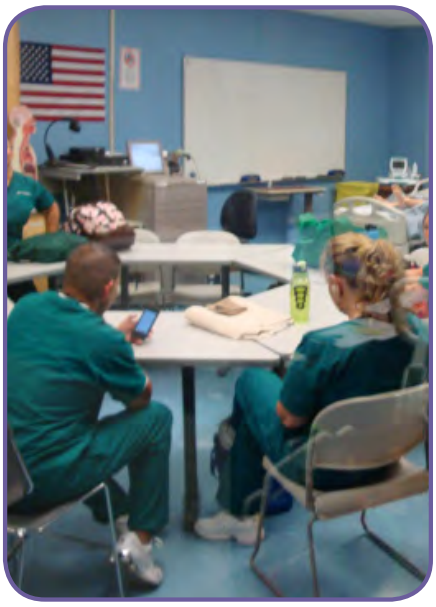
CLASP's publication *Scaling "Stackable Credentials" Implications for Implementation and Policy* by Evelyn Ganzglass (2014) provides analyses and examples based on interviews with state officials in Kentucky, Oregon, Virginia, and Wisconsin, all of which are participants in the CLASP's Alliance for Quality Career Pathways (AQCP), a state-driven initiative. One particular approach is related to stackable credentials, and draws on best practices and challenges in developing stackable credentials identified during four industry panel discussions.

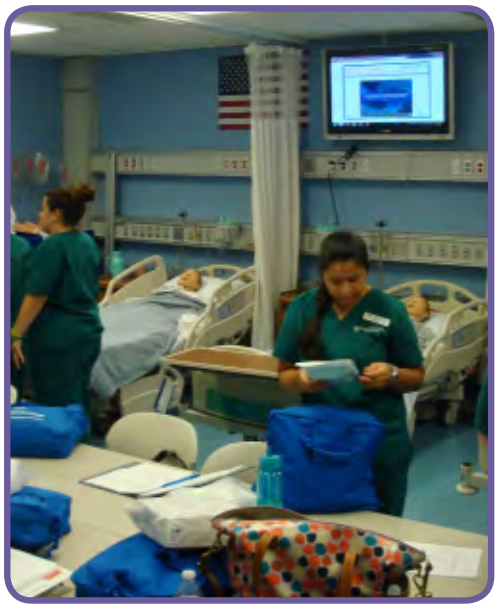
Academic Impressions

Academic Impressions is best known for their three electronic news publications under the title of *Higher Ed Impact,* and various other print publications.

One 2015 publication of relevance to the PCC Educational Master Plan is entitled *Spotlight on Innovation, Colleges and Universities that are Making a Difference* (Cook, Fusch, Seigle). The publication focuses on emerging trends based on the U.S. Department of Education's "First in World" grants that help colleges fund initiatives to improve college access and completion for lower income or first-generation students.

Of particular importance are the documented success of the active learning model; the redesign of developmental education at Gateway Community and Technical College; Degree Completion Pathways at Kennesaw State; and Gateway Math, an approach being developed by Miami Dade College. Many of these strategies are the basis for recommendations in this plan.





National Publications and Reports Summary

The organizations and publications noted in this section examine the challenges and opportunities confronting the nation's largest and fastest growing higher education sector. There is ample evidence to suggest that community colleges are taking a holistic view of their broad and continuously evolving mission to increase student success and improve student completion.

Increasingly, students are seeking post-secondary education to acquire new skillsets and credentials. There is an explosion of community college models that provide avenues for completion using career pathways, stackable credentials, corequisite remediation, and centers of excellence to achieve student success.

The College's Planning and Institutional Research office provides ongoing updates to the Environmental Scan. The highly readable report focuses on current socio-economic conditions at the federal, state, and local level in areas regarding demographics, political climate, business and industry, economy, and occupational demand.

Recommendation 3.1

Environmental scanning should be expanded to include a summary of emerging trends in higher education and their applicability to the College, especially in areas identified in the strategic plan. There is an expanding body of literature that provides evidence of effectiveness in student engagement and success, new student services models, career pathways, and remediation.

4 | Inputs – State/Regional Overview

The PCC Environmental Scan was updated in January 2014 and contains national, state, and local economic data from 2012 and 2013. Pima County demographic and business and industry data for the same time period is also summarized. Since publication of the Environmental Scan, more recent data has been released or acquired as part of the educational master planning process. This information is presented as a backdrop to economic development goals established by State and Tucson public and private agencies.

ARIZONA OFFICE OF EMPLOYMENT AND POPULATION STATISTICS

Through its website, the Arizona Office of Employment and Population Statistics provides a wide variety of labor market information for Arizona, including local area employment and unemployment statistics, occupation and industry employment estimates and projections, and wage survey data.

PIMA COUNTY COMPARISONS FOR 2014

The table notes demographic comparisons for Pima County State of Arizona and the United States. The slightly lower Civilian Labor Force Participation Rate in Pima County relative to Arizona could be explained by the higher median age (older people tend to drop out of the labor force) or by the higher rate of individuals with disabilities (even though not all disabilities preclude employment, some disabilities will prevent a worker from returning to the labor force).

The key points for Pima County are a lower median household income, a higher poverty status rate, a higher proportion of veterans, and a higher median age.

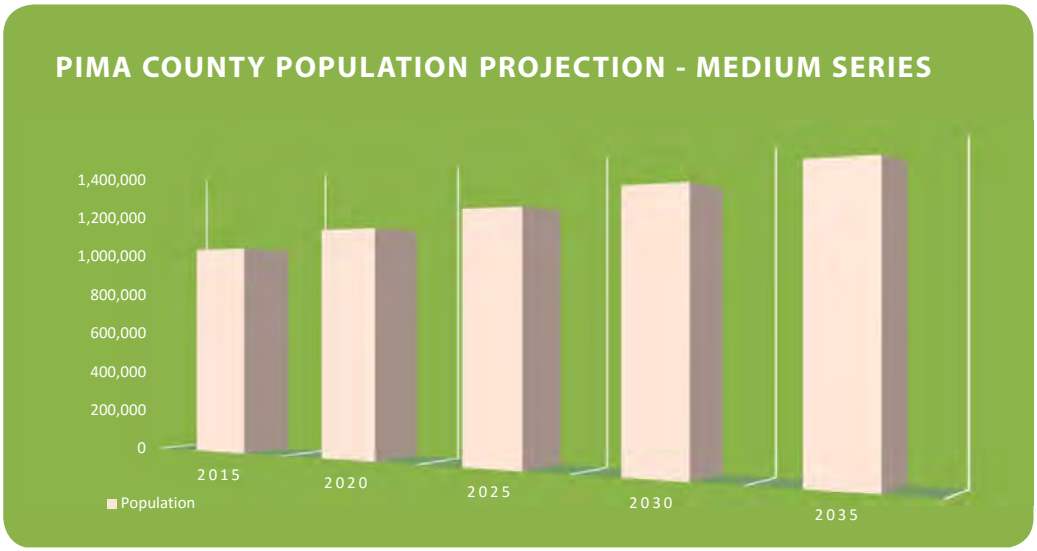
Pima County Quick Facts (2014)

	Pima County	Arizona	United States
Median Household Income	$46,233	$49,928	$53,482
Median Age	37.9	36.5	37.4
Individuals with a Disability Between 18-64	11.6%	9.9%	10.2%
Veterans	11.2%	10.0%	8.3%
Poverty Status	19.0%	18.2%	15.6%
Mean Travel Time to Work	24:12	24:42	25:42
Civilian Labor Force Participation Rate	58.8%	59.7%	63.5%
Population over 16	796,692	5,121,781	248,775,628

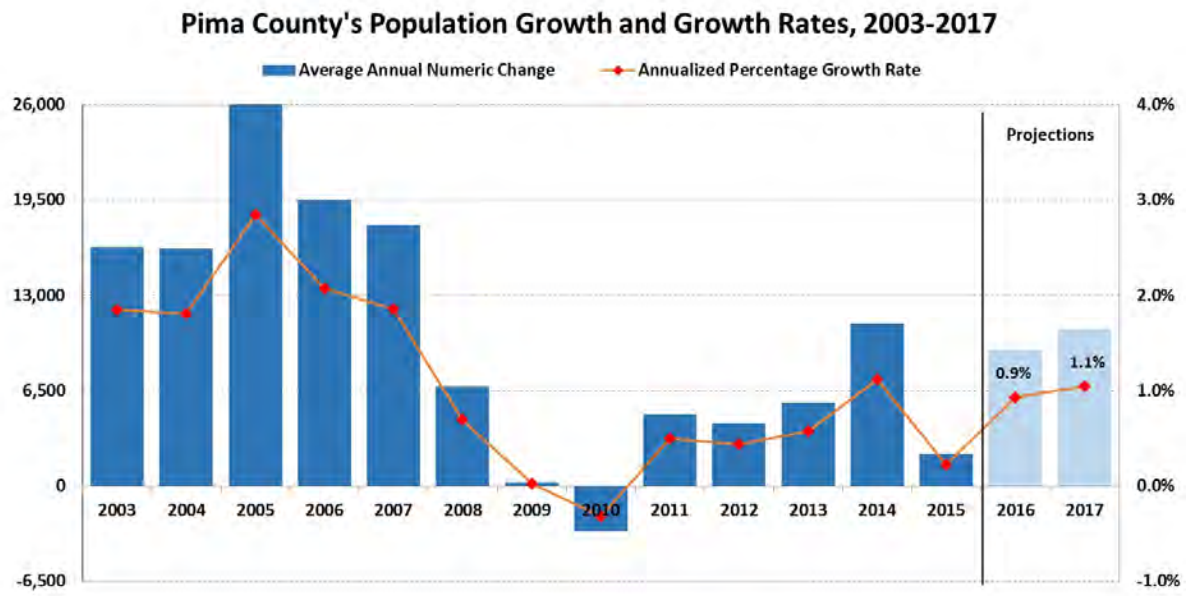
Source: Produced by the Arizona Office of Employment and Population Statistics using 2014 ACS 5-Year Estimates (DP03, S0501, S1810, S2101) in cooperation with the U.S. Census Bureau

Pima County Population Estimate

Using medium-range estimates, the Pima County population is expected to increase by 14.7% between 2015 and 2025. By 2035, the population of Pima County is estimated to grow to more than 1,312,000 residents.

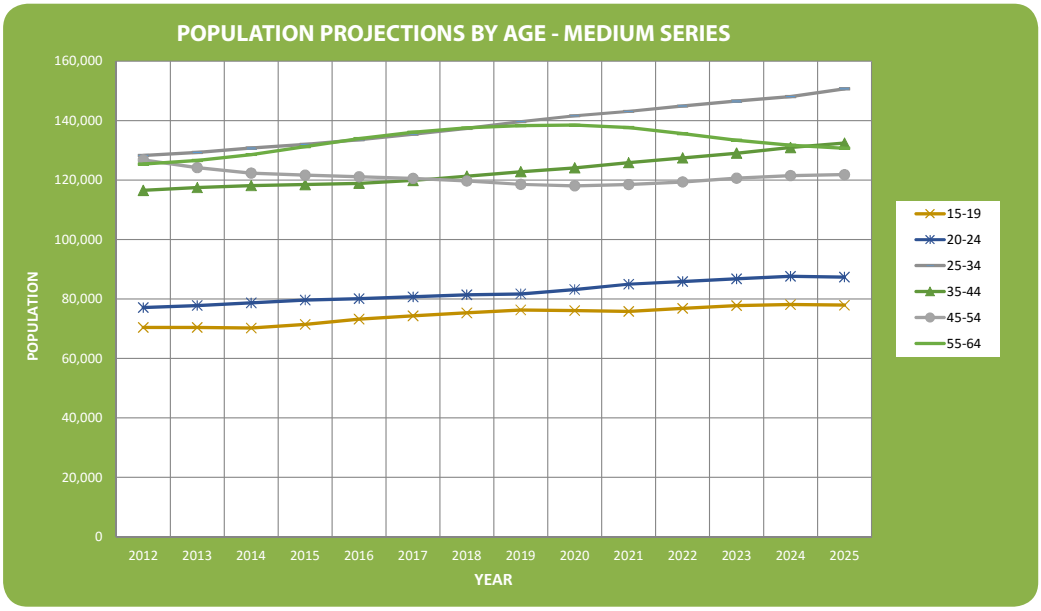


The next graph illustrates that average annual population growth rates for Pima County are significantly less than they were before 2010. Initially, 2015 growth rates in the county were projected at 1.4% but were reduced in late 2014. Estimates from 2016 and 2017 indicate modest growth moving forward.



"The 2010 U.S. Census population for Pima County was 980,263 residents. In July 2015, the U.S. Census Bureau estimated a population of 1,010,025, a five-year increase of only 3%."

While population growth is predicted for Pima County, it is not distributed equally across all age groups. In Fall 2015, 24% of all Pima Community College students were 19 years of age or younger while 36.5% were between the ages of 20-24. The following graph displays detailed population projections by age. The 15-19 and 20-24 age groups represent a small share of the total population and are anticipated to increase only moderately between 2015 and 2025.



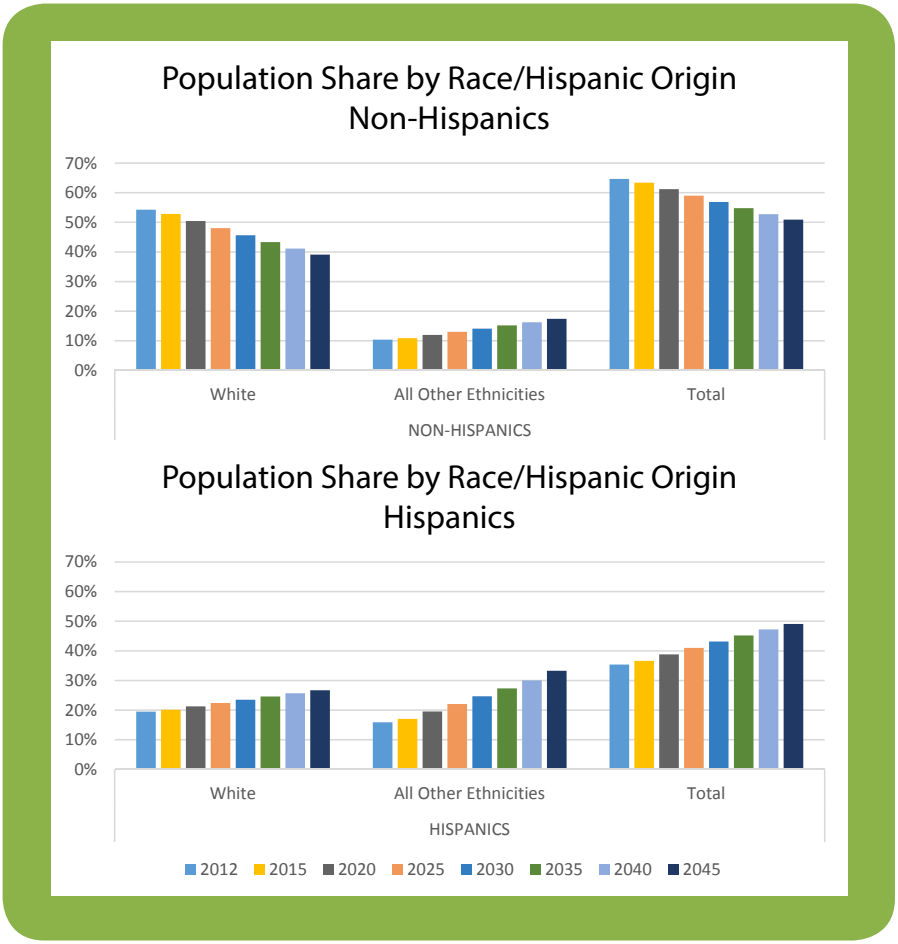
Between 2015 and 2025, the 15-19 and 20-24 age categories, the age groups that PCC relies upon for 60% of its enrollment, are estimated to increase (on average) by 9.4%. The largest population group, the 65-74 age range, is predicted to increase by 38%. Unfortunately, this group is no longer participating in higher education credit programs.

Pima County Populations Projections by Age - Medium Series

Year	15-19	20-24	25-34	35-44	45-54	55-64	65-74
2015	71,479	79,641	132,030	118,470	121,614	131,229	101,641
2020	76,067	83,205	141,606	124,133	118,055	138,467	124,926
2025	77,942	87,356	150,663	132,425	121,794	130,671	140,246
10 Year Change %	9.0%	9.7%	14.1%	11.8%	0.1%	-0.4%	38.0%

Arizona Department of Administration, Office of Employment & Population Statistics, 12/07/2012

The table *Population Share by Race/HIspanic Origin* illustrates anticipated increases in non-Hispanic and Hispanic Pima County residents between 2012 and 2045. Between 2015 and 2025, residents of Hispanic origin are anticipated to increase from 37% to 41%. It is predicted that by 2045, approximately one-half of all Pima County residents will be of Hispanic origin. In the Fall 2015 semester, a total of 43% of all Pima Community College students identified their ethnicity as Hispanic/Latino.



ECONOMIC OVERVIEW BY EMSI

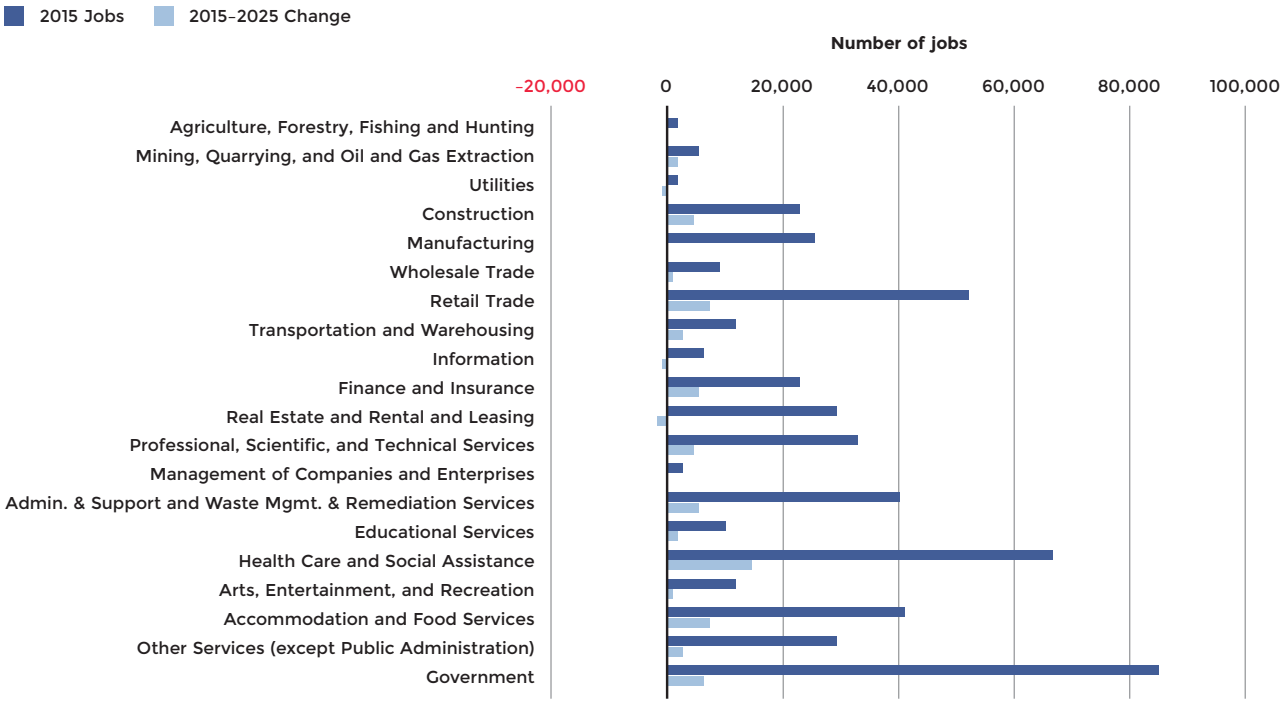
As part of the program gap analysis (see chapter 5), Economic Modeling Specialist International (EMSI) completed an economic overview of Pima County. The graphs, tables and narrative in this section come from the report entitled *Pima Community College Economic Overview and Program Gap Analysis*, dated March 2016.

JOBS BY INDUSTRY

As shown in the following figures, the three largest industry sectors in Pima County are Government, Health Care & Social Assistance, and Retail Trade. Together, these sectors made up 201,310 jobs, or approximately 40%, of total regional employment in 2015. Two of these industry sectors (Health Care & Social Assistance and Retail Trade) added new jobs between 2010 and 2015. Other industry sectors are projected to grow through 2025. These industries include Accommodation & Food Services (+7,016 jobs), Administrative & Support & Waste Management & Remediation Services (+5,786 jobs), and Finance & Insurance (+5,437 jobs). The industry sectors that are expected to lose jobs between 2015 and 2025 are Real Estate & Rental & Leasing (-1,487 jobs), Utilities (-557 jobs), and Information (-553 jobs).

Jobs and Job Change by Industry Sector in Pima County, 2015 to 2025

FIGURE 1.2: JOBS AND JOB CHANGE BY INDUSTRY SECTOR IN PIMA COUNTY, 2015 TO 2025



Source: EMSI Complete Data 2015.3

JOBS BY OCCUPATION

The table below shows employment in Pima County by major group, with information on current and projected jobs, job change, average annual openings, and wages.

Office and administrative support occupations comprise the largest occupation group in Pima County with 72,583 jobs, followed by sales & related occupations at 66,023 jobs. However, neither of these occupation groups ranks among the highest paid. The median earnings for architecture and engineering occupations are $35.36 an hour, the highest on the regional pay scale. Healthcare practitioners and technical occupations have median earnings of $35.20 an hour, the second highest on the regional pay scale. Healthcare support occupations and community and social service occupations are expected to grow by 24% and 20%, respectively, over the next ten years.

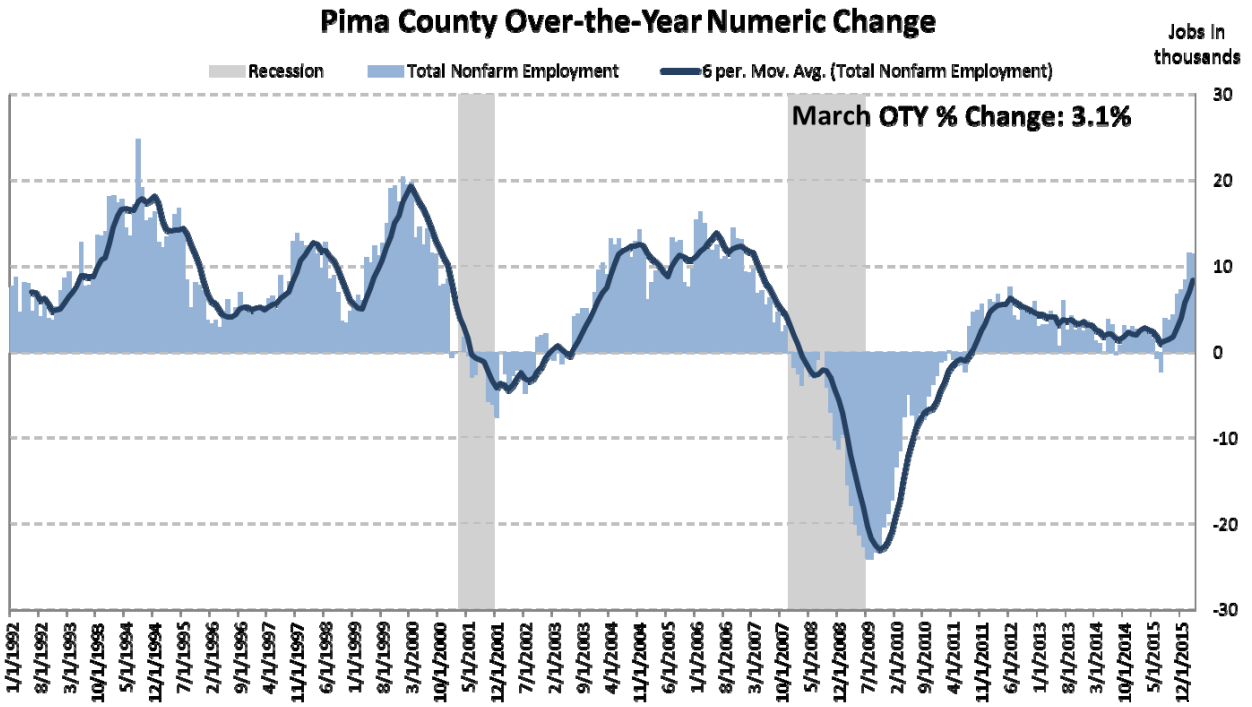
Current and Projected Jobs, Job Change, and Median Hourly Earnings by Major Occupation Group in Pima County, 2015 to 2025

SOC CODE	DESCRIPTION	2015 JOBS	2025 JOBS	CHANGE	% CHANGE	MEDIAN HOURLY EARNINGS	AVERAGE ANNUAL OPENINGS
11-0000	Management	30,946	35,095	4,149	13%	$31.69	950
13-0000	Business and Financial Operations	27,822	32,777	4,955	18%	$29.08	1,046
15-0000	Computer and Mathematical	11,715	13,849	2,134	18%	$33.02	398
17-0000	Architecture and Engineering	8,390	8,508	118	1%	$35.36	224
19-0000	Life, Physical, and Social Science	5,654	6,235	581	10%	$27.53	218
21-0000	Community and Social Service	9,023	10,819	1,796	20%	$18.81	371
23-0000	Legal	3,970	4,314	344	9%	$32.00	108
25-0000	Education, Training, and Library	23,409	26,155	2,746	12%	$21.64	732
27-0000	Arts, Design, Entertainment, Sports, & Media	16,194	16,933	739	5%	$14.80	421
29-0000	Healthcare Practitioners and Technical	26,179	31,087	4,908	19%	$35.20	1,016
31-0000	Healthcare Support	12,908	16,019	3,111	24%	$13.82	348
33-0000	Protective Service	12,269	12,946	677	6%	$22.19	320
35-0000	Food Preparation and Serving Related	37,163	43,814	6,651	18%	$10.37	873
37-0000	Building & Grounds Cleaning & Maintenance	22,342	25,532	3,190	14%	$10.64	220
39-0000	Personal Care and Service	29,166	33,397	4,231	15%	$10.11	542
41-0000	Sales and Related	66,023	70,931	4,908	7%	$15.65	1,531
43-0000	Office and Administrative Support	72,583	82,457	9,874	14%	$15.82	1,812
45-0000	Farming, Fishing, and Forestry	1,036	1,056	20	2%	$12.80	7
47-0000	Construction and Extraction	19,633	22,378	2,745	14%	$16.11	253
49-0000	Installation, Maintenance, and Repair	18,744	20,713	1,969	11%	$19.36	318
51-0000	Production	14,716	15,618	902	6%	$16.30	170
53-0000	Transportation and Material Moving	20,909	24,210	3,301	16%	$13.86	316

Source: EMSI Complete Data 2015.3

PIMA COUNTY OVER-THE-YEAR EMPLOYMENT CHANGE

The graph notes percentage change in nonfarm employment from 1992 through December 1, 2015. The gray vertical bars outline dates of recent recessions. The impact from the most recent recession is noted. Pima County reached a high employment level in 2012 before starting a gradual decline through mid-2015. Employment growth has recently spiked more than 10% from the previous year. As a general trend, community college enrollments decline in periods of economic growth.



Source: Produced by the Arizona Office of Employment and Population Statistics using CES data in cooperation with the U.S. Dept. of Labor, Bureau of Labor Statistics

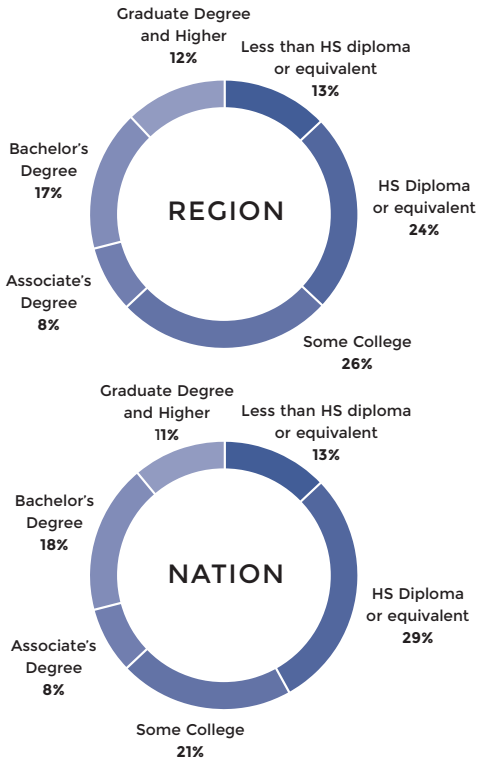
EDUCATIONAL ATTAINMENT

The graphic on this page displays the educational attainment of the overall adult population in Pima County, without reference to gender and ethnicity. In Pima County, the percentage of the adult population with a high school diploma or less is 37%, lower than the national average of 41%. These data suggest there is still an opportunity for educators in Pima County to boost the percentage of adults with an associate's degree or higher. Out of all the education categories, the people that are most likely to seek education and training from PCC are those in the "Less than high school diploma," "High school diploma," and "Some College" categories. Together, these categories total 418,352 people, or 63% of the entire adult population in the region.

In looking at educational attainment by ethnicity in Pima County, 5% of Caucasians have less than a high school diploma while 27% of Hispanics are included in this category. This differential continues through associate's, bachelor's, and graduate degrees.

NOTE: The "Some College" category includes individuals who attended college but did not successfully obtain a degree and individuals who have received a postsecondary vocational award or professional certification but did not receive an associate's or bachelor's degree.

Educational Attainment of Adult Population in Pima County



HIGHEST EDUCATION LEVEL ACHIEVED – OVER AGE 25

The following chart notes levels of educational achievement. High school graduates with some college are included in high school graduates. There is a perception that Pima County residents are less educated. Pima County consistently has better or equivalent educational levels as Arizona. Compared to the entire U.S., Pima County has higher levels of educational attainment with the exception of Bachelor's degrees. When combining both Bachelor's and post Bachelor's degrees, Pima Count exceeds the U.S. (30.0% vs. 29.3%).

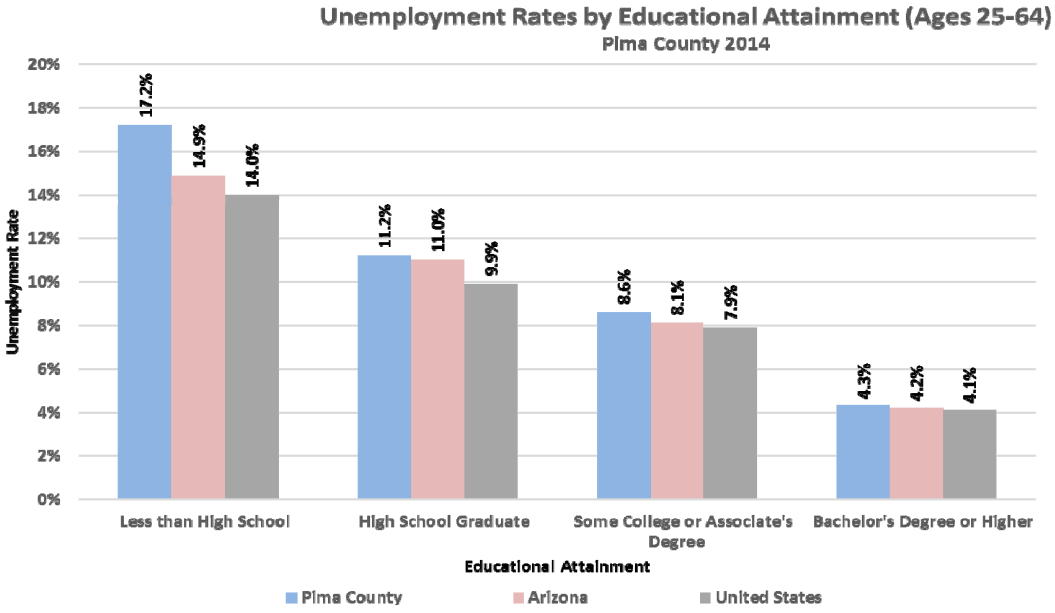
Highest Educational Level Achieved (Population over 25, 2014)

	Pima County	Arizona	United States
Less than High School	12.5%	14.1%	13.6%
High School Graduate (includes equivalency)	49.0%	50.4%	49.2%
Associate's Degree	8.4%	8.4%	7.9%
Bachelor's Degree	17.6%	17.1%	18.3%
Graduate or Professional Degree	12.4%	10.0%	11.0%

Source: Produced by the Arizona Office of Employment and Population Statistics using 2014 ACS 5-Year Estimates (S1501) in cooperation with the U.S. Census Bureau

UNEMPLOYMENT RATES BY EDUCATIONAL ATTAINMENT

Similar to the United States, unemployment rates in Pima County (2014) decrease with high levels of education. These data are critical in terms of PCC continuing to developing transfer pathways for students in multiple career and transfer programs.



Source: Produced by the Arizona Office of Employment and Population Statistics using 2014 ACS 5-Year Estimates (B23006) in cooperation with the U.S. Census Bureau

PIMA COUNTY WORKFORCE INVESTMENT BOARD

The Pima County Workforce Investment Board (WIB) is authorized by the Department of Labor and appointed by the Pima County Board of Supervisors. The WIB provides recommendations on local workforce policy and oversight of the local Arizona@Work system (formerly the One-Stop system) that connects eligible job ready youth, adults, and dislocated workers in local growth, high-demand industry occupations.

In 2014, the Pima County Workforce Investment Board adopted a new five-year Local Workforce Investment Area Plan. This plan lists the industries and occupations "most critical to the Local Workforce Investment Area," such as Aerospace and Defense, Emerging Technologies, Natural and Renewable Resources, Logistics, Health, Science, and Infrastructure.

The plan highlights collaboration with Pima Community College in multiple areas:

- Providing adult education at multiple centers;
- Facilitating partnerships with Joint Technical Education District (JTED), Pima Community College, and others to promote the development of new state of the art Applied Technology Training resources for all ages;
- Utilizing PCC staff at Arizona @Work One-Stop Centers to assess skills and to guide clients to the appropriate websites, forms, and scholarship options.

CITY OF TUCSON COMPREHENSIVE ECONOMIC DEVELOPMENT STRATEGY

The City of Tucson has an Office of Economic Initiatives. This team, connected to an extensive network of state and community partners, assists with business attraction, expansion, and retention in Tucson. In November 2015, a Comprehensive Economic Development Strategy plan was developed based on an extensive analysis of Tucson's regional economy that identified trade sector clusters, or those that drive growth in the regional economy. The analysis identified these established clusters:

- Aerospace and Defense
- Renewable Energy/Natural Resources
- Transportation and Logistics
- Bioscience/Healthcare

The plan discusses educational resources, incentives, and local assets for each cluster. The City of Tucson's Comprehensive Economic Development Strategy includes five goals:

- Retention, expansion and recruitment of companies
- Develop and retain talented workers
- Investment in key commercial areas
- Expand international trade
- Cultivate an environment for innovation and entrepreneurship

The retention of talented workers is closely aligned with the PCC Educational Master Plan. Strategies include:

- Create awareness and grants for workforce development and customized training programs in stated sectors;
- Support new and expand existing internship/apprenticeship programs that help place vocational/technology students with regional employers;
- Identify creative solutions for providing training in work settings to encourage incumbent workers to maintain and enhance their skills.

The PCC Office of Workforce and Business and Development, which has a contract with the Office of Economic Initiatives, has the ability to assist in providing viable and cost-effective solutions to each of the aforementioned strategies.

"People are the most important resource in an economy. Talent drives all market decisions when it comes to business relocation, expansion and retention. Labor skills and availability are the number one site selection criteria, year in and year out."

2014 Economic Blueprint Update

SUN CORRIDOR INC.

Sun Corridor Inc., formerly Tucson Regional Economic Opportunities (TREO), is an economic development organization representing Southern Arizona and Sonora, Mexico. It represents four counties in Arizona (Pinal, Pima, Santa Cruz, and Cochise) and 72 municipalities in Sonora Mexico, and a total of 4.25 million people.

Sun Corridor Inc. is comprised of private companies, public sector agencies, higher education, and non-profit entities. It is a CEO-driven regional alliance whose members aggressively champion mega-regional issues that impact economic competitiveness and quality of life.

In 2007, TREO gathered Southern Arizona's leadership to develop a comprehensive plan to impact the long-term regional economy. The end result was the Economic Blueprint, designed to guide economic development efforts. In the midst of the current economic recovery, TREO embarked on a process to update the Economic Blueprint in 2014.

The 2014 Economic Blueprint Update focuses on four areas: talent, infrastructure, business environment and healthcare. Each area in includes multiple recommendations. The 2014 Update establishes new goals for job growth in the Tucson region: 40,000 jobs over five years, or 8,000 jobs per year. The new talent development strategies make no mention of career and technical programs offered at Pima Community College.

2014 Economic Blueprint Update: Alignment with the EMP

TALENT – Align to Demand

"The industry sectors and education and training institutions (K-12, Career-Technical education and higher education) must engage with each other on a more productive and frequent basis to better understand industry needs. Enhanced industry/education structures must focus on developing skills the industry sectors need to become more competitive. The University of Arizona STEM Center is creating strategies to build programs."

Grow 21st Century Skills

"TREO should lead a discussion to determine the specific skills industry needs in order for K-12 districts to build specified curriculum to better instruct those skills."

Adopt and systems Planning Approach

"A systemic approach is needed to connect these pockets of excellence. The region should combine a regional talent strategy with industry cluster planning and implementation."

Support Key Talent / Support Constituents

"TREO should partner with Tucson Young Professionals (TYP) and veterans to develop strategies."

"The Tucson region was named as one of the Top 5 emerging locations for startup companies in a 2013 issue of Entrepreneur magazine."

2014 Economic Blueprint Update

CITY OF TUCSON ECONOMIC DEVELOPMENT

In 2014, the Pima County Workforce Investment Board adopted a new Local Workforce Investment Area Plan. In November 2015, this plan listed the industries and occupations most critical to the Local Workforce Investment Area as Aerospace and Defense, Emerging Technologies, Natural and Renewable Resources, Logistics, Health, Science, and Infrastructure.

PIMA PROSPERS

Pima Prospers, Pima County's second update of its 1992 comprehensive plan, was unanimously passed by the Board of Supervisors on May 19, 2015 as recommended by the Planning and Zoning Commission. The plan takes a comprehensive approach to include the broad, interconnected, and interrelated service areas of the County.

TUCSON HISPANIC CHAMBER OF COMMERCE

The Tucson Hispanic Chamber was founded in 1989 and is the largest Latino business organization in the state of Arizona and one of the top ten Hispanic Chambers in the nation. In 2014, the Chamber launched affiliate Chambers in Sierra Vista, Nogales, and Douglas. In 2015, it entered into a strategic partnership with the Arizona Chamber of Commerce and Industry.

The Chamber offers economic and business development services to members with small businesses. Their publication, *Hispanic Market Outlook*, provides data on Tucson Hispanic demographics, education, small businesses, and segmentation. Several tables are noted from this publication.

The Pursuit of a College Education is Important to *U.S. Hispanics*

Five Facts About U.S Hispanics and Education

1 Hispanic Dropout Rates Have Dropped Considerably

Has dropped from **32%** in 2000 to just **14%** in 2013 Among Hispanics 18-24

2 College Enrollment Among Hispanics Is Growing

Since 1993, Enrollment at Two- or Four-Year College Up **201%** Among Hispanics 18-24

3 Hispanics Are Behind in Obtaining 4-Year Degrees

In 2013, **15%** of Hispanics 25-29 Received a 4-Year Degree Compared to **40%** for Whites

4 Hispanics Are More Likely to Attend a 2-Year Public College

In 2013, Nearly Half **(46%)** of All Hispanic College Students Attended a 2-Year Public College

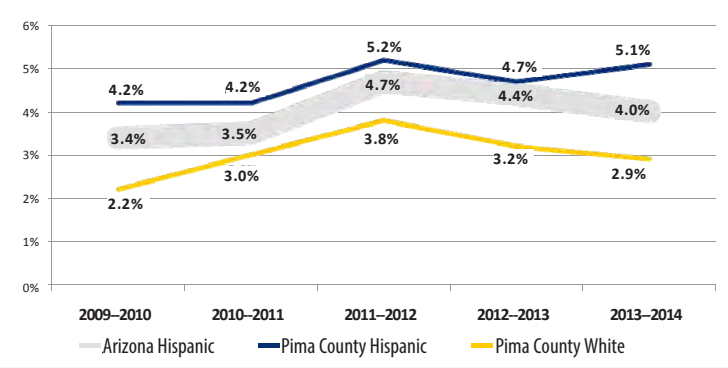
5 Hispanics Are Less Likely to Have Student Loan Debt

Only **22%** of Hispanic Households Have Education Loans, Compared to **42%** for White Households

Source: Pew Research Center, Five Facts About Latinos and Education (May 26, 2015)

The *Pima County* Hispanic Dropout Rate is Above the State Average

Dropout Rate Trends Among Hispanics in Pima County



Source: Arizona Department of Education, Dropout Rate Study Report

Hispanics Are Very Prominent at *Tucson Area* Colleges and Universities

Share of Hispanics Enrolled at Tucson Area Universities and Colleges (Fall 2013)

University/College	Under Grad Enrollment	% Hispanic	Hispanic Graduation Rate
University of Arizona	31,670	24%	54%*
Pima Community College	30,082	40%	10%†
Cochise College	4,453	42%	22%†

*Graduation Rate based on students who began their studies in Fall 2008 †Graduation Rate based on students who began their studies in Fall 2011

THE UNIVERSITY OF ARIZONA. Pima Community College COCHISE COLLEGE

Source: National Center of Education Statistics: College Navigator

5 | Inputs – Plan Specific Research

As part of the Educational Master Planning process, two separate studies were completed. These included a Program Gap Analysis conducted by Economic Modeling Specialist International (EMSI) and a Geographical Information Systems (GIS) analysis of Pima Community College students and the Tucson community, as developed by SmuthGroupJJR.

The findings from each of these studies assisted in the development of recommendations for the Educational Master Plan.

PROGRAM GAP ANALYSIS

The information that appears in this section is a summary of data and findings from the full report.

A program gap analysis is a quantitative study that analyzes the difference between the number of graduates or **completers** in a given career and technical program as compared to the number of projected occupational openings for that given program.

Programs are analyzed at two different levels: postsecondary certifications and associate's degrees, according to the program completion level offered by PCC.

Calculation of Occupational Demand

EMSI data were used to calculate the projected number of annual job openings from 2015 to 2025. These projections take into account openings due to job growth and openings due to replacement needs.

To capture a complete picture of industry employment, EMSI gathers and integrates economic, labor market, demographic, and education data from over 90 government and private-sector sources, creating a comprehensive and current database that includes both published data and detailed estimates with full coverage of the United States.

Projections are based on the latest-available EMSI industry data, 15-year past local trends in each industry, growth rates in statewide and (where available) sub-state area industry projections published by individual state agencies, and (in part) growth rates in national projections from the Bureau of Labor Statistics.

Each table includes the Classification of Instructional Programs (CIP) code and title, the average annual openings associated with that program, the average annual completers between 2012 and 2014, and the gap or surplus figure occupations in Pima County.

If the numbers are positive, there is a shortage or "gap" of completers—i.e., there are more job openings in those occupations than there are graduates or completers.

If the numbers are negative, then there are fewer annual job openings compared to the "surplus" of completers for those program groups.

The median hourly wage rate for related occupations is included. Due to data limitations, the wages are aggregated for all education levels.

It is important to keep in mind that the labor market is not so simple or efficient that one could expect supply and demand to be at perfect equilibrium for any extended period of time. As such, only programs with considerable gaps or surpluses should be considered long-term strategic issues worthy of closer examination. Given the size and characteristics of Pima County, any gap or surplus that is 10 or more jobs above or below zero should be considered within the normal range of labor market fluctuations.

CERTIFICATE PROGRAM GAP ANALYSIS

The *Supply and Demand for PCC Certificate Level Programs* table lists all certificate programs offered by the College. At the certificate level, PCC is one of 19 institutions in Pima County offering programs, and their completers comprise 55% of total regional supply. As shown in the table, Retailing & Retail Operations has the largest gap in Pima County. There are 1,242 annual openings but only one average annual completer. Food Preparation/ Professional Cooking/Kitchen Assistant (gap of 792; median hourly wage of $9.40) and Home Health Aide/Home Attendant (gap of 360; median hourly wage of $10.19) are the second and third largest gaps.

It is important to keep wages in mind when reviewing the gap analysis. In the instance of Child Development, for example, there may be a large gap of 155, but because the wages of the occupations associated with this program are low (less than $9 an hour), the returns to education may not be justified, and by extension, expanding the program may not be warranted.

There are often some programs preparing students for fields where they may compete with many other graduates.

- There are 24 programs at PCC that are training for occupations with a significant surplus of workers.
- Dental Assisting/Assistant has the largest surplus of 174. The region produces 201 completers per year (22 from PCC), yet there are only 27 annual openings.
- Pharmacy Technician/Assistant is second with a surplus of 157 completers; followed by Massage Therapy/Therapeutic Massage (surplus of 148) and Veterinary/Animal Health Technology/Technician & Veterinary Assistant (surplus of 102).

It is possible that the additional annual openings in areas outside of Pima County are being filled by PCC completers. A review of placement rates could provide additional information.

Surplus:

Oversupply of specific education completers may lead to higher attrition rates (i.e., brain drain). In other words, the region is educating a workforce that is leaving after program completion because of a lack of jobs. Note: In the analysis of Pima County where the region includes the Tucson MSA but not some of the outlying area, a surplus of completers may indicate the need for some county residents to commute outside of the county to find job opportunities.

Gap:

Undersupply of specific program completers may lead to missed opportunities for economic growth and put stress on local businesses to find necessary human capital elsewhere. In other words, the region's educational institutions are not providing the necessary workforce for the region, thereby shifting the burden on the industries to move workers from other economies to fill the needed occupations. This translates into higher human resources costs and decreased efficiencies in the economic system. This also provides an opportunity for institutions to develop new programs and/or strengthen their current programs.

Supply and Demand for PCC Certificate Level Programs

CIP CODE	CIP TITLE	AVERAGE ANNUAL OPENINGS	AVERAGE ANNUAL COMPLETERS	AVERAGE ANNUAL PCC COMPLETERS	TOTAL GAP OR SURPLUS	MEDIAN HOURLY WAGE
52.1803	Retailing and Retail Operations	1,242	1	1	1,241	$12.66
12.0505	Food Preparation/Professional Cooking/Kitchen Assistant	801	9	9	792	$9.40
51.2602	Home Health Aide/Home Attendant	366	6	6	360	$10.19
12.0503	Culinary Arts/Chef Training	215	3	1	212	$12.68
19.0706	Child Development	157	3	2	155	$8.99
52.0302	Accounting Technology/Technician and Bookkeeping	144	17	17	126	$16.20
52.0401	Administrative Assistant and Secretarial Science, General	144	24	16	120	$16.61
52.0201	Business Administration and Management, General	157	50	35	107	$31.16
46.0401	Building/Property Maintenance	120	26	26	94	$17.73
12.0504	Restaurant, Culinary, and Catering Management/Manager	99	14	14	86	$14.49
47.0201	Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician	64	10	10	53	$22.20
47.0604	Automobile/Automotive Mechanics Technology/Technician	78	41	41	37	$17.34
48.0501	Machine Tool Technology/Machinist	32	6	6	27	$17.90
12.0501	Baking and Pastry Arts/Baker/Pastry Chef	30	5	4	25	$13.59
49.0205	Truck and Bus Driver/Commercial Vehicle Operator and Instructor	276	253	26	23	$14.66
52.1001	Human Resources Management/Personnel Administration, General	45	23	23	22	$28.45
48.0503	Machine Shop Technology/Assistant	23	1	1	21	$17.11
51.0711	Medical/Health Management and Clinical Assistant/Specialist	73	54	54	20	$24.23
31.0501	Health and Physical Education/Fitness, General	24	7	5	17	$17.55
51.3801	Registered Nursing/Registered Nurse	16	2	2	14	$31.71
51.0904	Emergency Medical Technology/Technician (EMT Paramedic)	17	4	4	13	$19.10
52.0901	Hospitality Administration/Management, General	12	2	2	10	$14.95
50.0102	Digital Arts	12	3	3	9	$34.14
13.1001	Special Education and Teaching, General	38	30	30	8	$16.52
51.1503	Clinical/Medical Social Work	12	4	4	8	$26.39
52.0301	Accounting	23	16	16	7	$27.14
12.0599	Culinary Arts and Related Services, Other	12	6	6	7	$12.04
13.1314	Physical Education Teaching and Coaching	9	4	4	5	$18.43
9.0702	Digital Communication and Media/Multimedia	5	2	2	4	$16.81
13.9999	Education, Other	4	1	1	3	$17.63
11.0901	Computer Systems Networking and Telecommunications	22	19	19	2	$27.76

Supply and Demand for PCC Certificate Level Programs *(continued)*

CIP CODE	CIP TITLE	AVERAGE ANNUAL OPENINGS	AVERAGE ANNUAL COMPLETERS	AVERAGE ANNUAL PCC COMPLETERS	TOTAL GAP OR SURPLUS	MEDIAN HOURLY WAGE
41.0101	Biology Technician/Biotechnology Laboratory Technician	4	3	3	1	$14.66
10.0105	Communications Technology/Technician	2	1	1	1	$20.05
50.0401	Design and Visual Communications, General	3	2	2	1	$17.05
52.0207	Customer Service Management	3	2	2	1	$22.49
11.1001	Network and System Administration/Administrator	6	6	6	0	$28.46
15.0507	Environmental Engineering Technology/Environmental Technology	1	1	1	(0)	$22.47
51.0802	Clinical/Medical Laboratory Assistant	2	2	2	(0)	$20.66
11.0899	Computer Software and Media Applications, Other	0	1	1	(1)	$15.79
15.1201	Computer Engineering Technology/Technician	1	2	2	(1)	$25.76
31.0507	Physical Fitness Technician	8	8	8	(1)	$18.05
11.1006	Computer Support Specialist	1	1	1	(1)	$22.86
15.1305	Electrical/Electronics Drafting and Electrical/Electronics CAD/CADD	0	1	1	(1)	$26.44
15.0306	Integrated Circuit Design	0	1	1	(1)	$25.76
50.0602	Cinematography and Film/Video Production	3	4	4	(1)	$18.75
23.1303	Professional, Technical, Business, and Scientific Writing	2	3	3	(2)	$15.99
46.0399	Electrical and Power Transmission Installers, Other	8	10	10	(2)	$22.73
11.0501	Computer Systems Analysis/Analyst	3	5	5	(2)	$27.76
9.0701	Radio and Television	0	2	2	(2)	$17.64
47.0609	Avionics Maintenance Technology/Technician	0	3	3	(2)	$21.74
50.0407	Fashion/Apparel Design	1	3	3	(3)	$19.23
44.0799	Social Work, Other	5	8	8	(3)	$20.65
45.0301	Archeology	0	3	3	(3)	$32.00
22.0302	Legal Assistant/Paralegal	18	21	21	(3)	$21.69
13.1099	Special Education and Teaching, Other	0	5	5	(5)	$21.00
51.1504	Community Health Services/Liaison/Counseling	0	5	5	(5)	$17.50
46.0415	Building Construction Technology	8	14	14	(6)	$21.91
16.0103	Language Interpretation and Translation	1	8	8	(7)	$18.14
15.1102	Surveying Technology/Surveying	1	8	8	(7)	$23.16
51.0603	Dental Laboratory Technology/Technician	3	15	15	(12)	$19.41
47.0608	Aircraft Powerplant Technology/Technician	7	19	19	(12)	$25.45
51.071	Medical Office Assistant/Specialist	12	25	25	(13)	$14.78
15.1303	Architectural Drafting and Architectural CAD/CADD	1	15	15	(14)	$21.41
43.0106	Forensic Science and Technology	3	19	19	(16)	$23.62
52.0203	Logistics, Materials, and Supply Chain Management	3	20	20	(17)	$38.42

Supply and Demand for PCC Certificate Level Programs *(continued)*

CIP CODE	CIP TITLE	AVERAGE ANNUAL OPENINGS	AVERAGE ANNUAL COMPLETERS	AVERAGE ANNUAL PCC COMPLETERS	TOTAL GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.0899	Allied Health and Medical Assisting Services, Other	14	33	33	(19)	$15.82
51.1502	Psychiatric/Mental Health Services Technician	5	24	24	(19)	$53.29
13.121	Early Childhood Education and Teaching	10	32	32	(22)	$12.40
51.0707	Health Information/Medical Records Technology/ Technician	19	44	12	(25)	$17.85
13.1202	Elementary Education and Teaching	2	28	28	(26)	$19.04
11.0602	Word Processing	1	29	29	(28)	$12.66
43.0203	Fire Science/Fire-fighting	22	51	51	(28)	$19.82
13.0101	Education, General	21	50	50	(29)	$25.91
47.0607	Airframe Mechanics and Aircraft Maintenance Technology/Technician	31	62	62	(31)	$25.64
52.0499	Business Operations Support and Secretarial Services, Other	27	74	74	(47)	$16.79
51.3901	Licensed Practical/Vocational Nurse Training	18	90	77	(72)	$22.62
51.3999	Practical Nursing, Vocational Nursing and Nursing Assistants, Other	114	188	188	(74)	$25.87
47.0105	Industrial Electronics Technology/Technician	12	101	101	(89)	$20.70
51.1009	Phlebotomy Technician/Phlebotomist	19	119	17	(100)	$18.85
51.0808	Veterinary/Animal Health Technology/Technician and Veterinary Assistant	20	122	25	(102)	$12.06
51.3501	Massage Therapy/Therapeutic Massage	31	180	7	(148)	$15.28
51.0805	Pharmacy Technician/Assistant	32	189	11	(157)	$15.08
51.0601	Dental Assisting/Assistant	27	201	22	(174)	$16.60

Source: EMSI Gap Analysis Model
Numbers may not sum due to rounding. Some median hourly earnings figures are not available.

ASSOCIATE'S DEGREE GAP ANALYSIS

The Supply and Demand for PCC Associate's Level Programs table provides an illustration of the top gaps. PCC had a total of eight gaps greater than or equal to 10 jobs at this education level. Similar to the previous table, supply and demand for all associate's level programs for which PCC provides degrees are noted.

Again, the table only includes program groups available at PCC., which is one of eight institutions offering associate's degree level programs in the region. As such, their completers account for 78% of total regional supply.

The top program that is training for undersupplied occupations at the associate's degree level is Administrative Assistant & Secretarial Science, General (gap of 144; median hourly wage $16.61). Along with Building/Property Maintenance (gap of 86; median hourly wage $17.73) and Restaurant, Culinary, & Catering Management/Manager (gap of 67; median hourly wage $14.49), these are the top three gaps in Pima County.

For Pima County, there are also 23 fields at the associate's level with a significant surplus. The largest reported surplus is in the Business/Commerce, General program. There are 87 annual openings compared to 273 regional completers (260 from PCC). The Registered Nursing/Registered Nurse program is associated with the second largest surplus (132 jobs). Radiologic Technology/Science - Radiographer is the third largest surplus (surplus of 93), and Criminal Justice/Safety Studies is the fourth surplus in Pima County (with a surplus of 83).

As alluded to earlier, it is highly likely that PCC completers are finding jobs outside Pima County or that PCC is pulling students from other counties. A review of placement rates could provide additional information.

What about Transfer Degrees?

A number of students attend PCC with the intention of transferring to a four-year school to receive a bachelor's degree. Though these students study any number of topics, a large number of them receive associate of arts degrees in liberal arts. Over the past three years, an average of 2,039 students have completed liberal arts, pre-engineering, or general studies certificates or degrees, which composes 36% of the College's annual production of certificates and degrees.

Once these students leave PCC, their educational and career track is difficult to predict. They could attend a four-year college in the region or outside the region, and they could study any number of different programs that will ultimately determine their future career.

Over the next 10 years, jobs that require a bachelor's degree are projected to be in high demand. In any given year between 2015 and 2025, 4,879 jobs will require a bachelor's degree and 17,212 will require a bachelor's degree or less, making 89% of all regional job openings available to PCC students.

Supply and Demand for PCC Associate Level Programs

CIP CODE	CIP TITLE	AVERAGE ANNUAL OPENINGS	AVERAGE ANNUAL COMPLETERS	AVERAGE ANNUAL PCC COMPLETERS	TOTAL GAP OR SURPLUS	MEDIAN HOURLY WAGE
52.0401	Administrative Assistant and Secretarial Science, General	150	5	5	144	$16.61
46.0401	Building/Property Maintenance	108	22	22	86	$17.73
12.0504	Restaurant, Culinary, and Catering Management/ Manager	97	30	30	67	$14.49
43.0107	Criminal Justice/Police Science	72	37	12	36	$32.24
47.0604	Automobile/Automotive Mechanics Technology/ Technician	47	13	13	35	$17.34
48.0508	Welding Technology/Welder	38	8	8	30	$18.70
48.0501	Machine Tool Technology/Machinist	30	8	8	22	$17.90
52.1902	Fashion Merchandising	21	3	3	18	$20.34
50.0701	Art/Art Studies, General	4	1	1	3	$8.53
52.0901	Hospitality Administration/Management, General	12	9	9	3	$14.95
51.3501	Massage Therapy/Therapeutic Massage	9	6	6	3	$15.28
51.0603	Dental Laboratory Technology/Technician	1	1	1	(0)	$19.41
51.0802	Clinical/Medical Laboratory Assistant	1	2	2	(1)	$20.66
51.0719	Clinical Research Coordinator	0	1	1	(1)	$29.71
51.0602	Dental Hygiene/Hygienist	20	22	22	(2)	$38.90
15.1201	Computer Engineering Technology/Technician	0	2	2	(2)	$25.76
47.0105	Industrial Electronics Technology/Technician	2	4	4	(2)	$20.70
45.1101	Sociology	0	3	3	(3)	$34.79
13.0101	Education, General	8	11	11	(3)	$25.91
16.1603	Sign Language Interpretation and Translation	0	4	4	(4)	$18.14
51.0805	Pharmacy Technician/Assistant	10	14	14	(4)	$15.08
45.0201	Anthropology	0	5	5	(5)	$32.00
51.1004	Clinical/Medical Laboratory Technician	15	20	11	(5)	$20.66
45.1001	Political Science and Government, General	0	6	6	(6)	$45.88
11.0501	Computer Systems Analysis/Analyst	1	8	8	(6)	$27.76
47.0607	Airframe Mechanics and Aircraft Maintenance Technology/Technician	9	16	16	(7)	$25.64
16.0103	Language Interpretation and Translation	0	10	10	(10)	$18.14
11.1001	Network and System Administration/Administrator	3	13	1	(10)	$28.46
51.0707	Health Information/Medical Records Technology/ Technician	5	15	15	(11)	$17.85
50.0411	Game and Interactive Media Design	0	11	11	(11)	$43.42
52.0301	Accounting	22	34	34	(11)	$27.14
52.0203	Logistics, Materials, and Supply Chain Management	1	13	13	(12)	$38.42

Supply and Demand for PCC Associate Level Programs *(continued)*

CIP CODE	CIP TITLE	AVERAGE ANNUAL OPENINGS	AVERAGE ANNUAL COMPLETERS	AVERAGE ANNUAL PCC COMPLETERS	TOTAL GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.0904	Emergency Medical Technology/Technician (EMT Paramedic)	18	31	31	(12)	$19.10
50.0101	Visual and Performing Arts, General	8	23	23	(15)	$8.80
51.0808	Veterinary/Animal Health Technology/Technician and Veterinary Assistant	6	22	15	(16)	$12.06
50.0602	Cinematography and Film/Video Production	1	18	18	(17)	$18.75
50.0401	Design and Visual Communications, General	2	21	14	(19)	$17.05
15.1303	Architectural Drafting and Architectural CAD/ CADD	1	22	22	(21)	$21.41
43.0203	Fire Science/Fire-fighting	8	37	37	(29)	$19.82
50.0102	Digital Arts	13	42	42	(29)	$34.14
13.121	Early Childhood Education and Teaching	3	42	42	(39)	$12.40
51.1503	Clinical/Medical Social Work	12	57	57	(45)	$26.39
22.0302	Legal Assistant/Paralegal	7	57	30	(49)	$21.69
51.0908	Respiratory Care Therapy/Therapist	15	71	23	(56)	$23.49
11.0901	Computer Systems Networking and Telecommu- nications	12	82	53	(70)	$27.76
43.0104	Criminal Justice/Safety Studies	11	94	64	(83)	$35.56
51.0911	Radiologic Technology/Science - Radiographer	15	108	17	(93)	$28.34
51.3801	Registered Nursing/Registered Nurse	110	242	194	(132)	$31.71
52.0101	Business/Commerce, General	87	273	260	(186)	$33.08

Source: EMSI Gap Analysis Model
Numbers may not sum due to rounding. Some median hourly earnings figures are not available.

Between the postsecondary certificate level and associate's degree level, there are a total of 30 programs that have significant workforce gaps, with five programs having gaps at both levels. There were 47 programs associated with significant workforce surpluses, with 24 having a surplus at the certificate level.

POTENTIAL NEW PROGRAMS

The *Programmatic Areas of Opportunity* table addresses programs that are not currently being offered but would address considerable regional workforce gaps. In addition to knowing how well PCC's current educational programs are serving the local labor market, it is helpful to know the fields of opportunity where the College could create new program offerings. The following table contains a list of 34 programmatic areas of opportunity that could fill gaps in the labor market by postsecondary certificates and associate's degrees. These selected occupations present unmet annual openings by completions within the region. Please note that these tables highlight particular occupations, and in many cases a program can be designed to train for multiple occupations. Once these occupations are grouped with other similar occupations, the actual workforce gap may be larger. Therefore, several programs with relatively small gaps are included. The median hourly earnings for workers in Pima County are included as well. The education level at which the analysis was performed is listed for each occupation.

There are 33 postsecondary certificate level areas of opportunity. Occupations like real estate managers, carpenters, and plumbers appear to be undersupplied in Pima County. At the associate's degree level, forest and conservation technicians appear to be undersupplied in the region. This opportunity has a gap of 10, the minimum significance level, and should be taken into consideration.

Programmatic Areas of Opportunity

SOC	SOC TITLE	AVERAGE ANNUAL OPENINGS	AVERAGE ANNUAL COMPLETERS	GAP	MEDIAN HOURLY EARNINGS	EDUCATION LEVEL
11-9141	Property, Real Estate, and Community Association Managers	109	0	109	$15.88	Certificate
47-2031	Carpenters	69	0	69	$13.50	Certificate
47-2152	Plumbers, Pipefitters, and Steamfitters	60	0	60	$17.37	Certificate
33-3012	Correctional Officers and Jailers	53	0	53	$19.50	Certificate
41-9022	Real Estate Sales Agents	49	0	49	$14.88	Certificate
47-2073	Operating Engineers and Other Construction Equipment Operators	40	0	40	$18.79	Certificate
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	34	0	34	$21.00	Certificate
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	30	0	30	$22.97	Certificate
49-9041	Industrial Machinery Mechanics	27	0	27	$20.89	Certificate
41-3021	Insurance Sales Agents	26	0	26	$24.33	Certificate
47-2211	Sheet Metal Workers	25	0	25	$19.78	Certificate
49-9098	Helpers--Installation, Maintenance, and Repair Workers	25	0	25	$16.04	Certificate
33-9099	Protective Service Workers, All Other	24	0	24	$13.64	Certificate
49-9099	Installation, Maintenance, and Repair Workers, All Other	24	0	24	$14.02	Certificate
47-2221	Structural Iron and Steel Workers	23	0	23	$20.15	Certificate
47-5081	Helpers--Extraction Workers	23	0	23	$15.54	Certificate
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	22	0	22	$20.56	Certificate

Programmatic Areas of Opportunity *(continued)*

SOC	SOC TITLE	AVERAGE ANNUAL OPENINGS	AVERAGE ANNUAL COMPLETERS	GAP	MEDIAN HOURLY EARNINGS	EDUCATION LEVEL
51-2092	Team Assemblers	21	0	21	$13.02	Certificate
47-2121	Glaziers	20	0	20	$15.50	Certificate
13-1199	Business Operations Specialists, All Other	19	0	19	$31.34	Certificate
25-4031	Library Technicians	19	0	19	$17.54	Certificate
47-2111	Electricians	57	38	18	$20.16	Certificate
51-1011	First-Line Supervisors of Production and Operating Workers	17	0	17	$25.98	Certificate
13-1031	Claims Adjusters, Examiners, and Investigators	16	0	16	$22.92	Certificate
41-9021	Real Estate Brokers	14	0	14	$22.18	Certificate
49-3021	Automotive Body and Related Repairers	13	0	13	$18.13	Certificate
39-9041	Residential Advisors	13	0	13	$16.03	Certificate
51-2099	Assemblers and Fabricators, All Other	13	0	13	$14.29	Certificate
11-9013	Farmers, Ranchers, and Other Agricultural Managers	12	0	12	$13.28	Certificate
31-9099	Healthcare Support Workers, All Other	11	0	11	$15.52	Certificate
47-2171	Reinforcing Iron and Rebar Workers	11	0	11	$23.10	Certificate
47-4011	Construction and Building Inspectors	10	0	10	$20.85	Certificate
49-2097	Electronic Home Entertainment Equipment Installers and Repairers	10	0	10	$18.50	Certificate
19-4093	Forest and Conservation Technicians	10	0	10	$16.93	Associate's

Source: EMSI Gap Analysis Model

GEOGRAPHICAL INFORMATION SYSTEMS (GIS) ANALYSIS

A geographic information system (GIS) is a system designed to capture, store, manipulate, analyze, manage, and present all types of spatial or geographical data. A GIS analysis was conducted for Pima County to gain a visual understanding of demographic and academic data in a spatial context. Visual analysis maps were created using census and enrollment data:

What are the Benefits of Using GIS?

GIS benefits organizations of all sizes and in almost every business and industry. Higher education analysts are beginning to realize that making correct decisions about the location of programs is strategic to the success of the institution, especially community colleges with multiple campus locations. GIS provides a very effective means of graphically conveying complex information, especially in reports and presentations where patterns are quickly and more clearly observed when viewing mapped data

2010 and 2013 U.S. Census Data

Data gathered by the 2010 and 2013 Census was successfully mapped by pairing the information with geographic Topologically Integrated Geographic Encoding and Referencing (TIGER) files. Regional demographic attributes such as educational attainment, ethnicity, vehicle ownership and household income were then mapped for analysis.

Fall 2015 PCC Student Enrollment Data

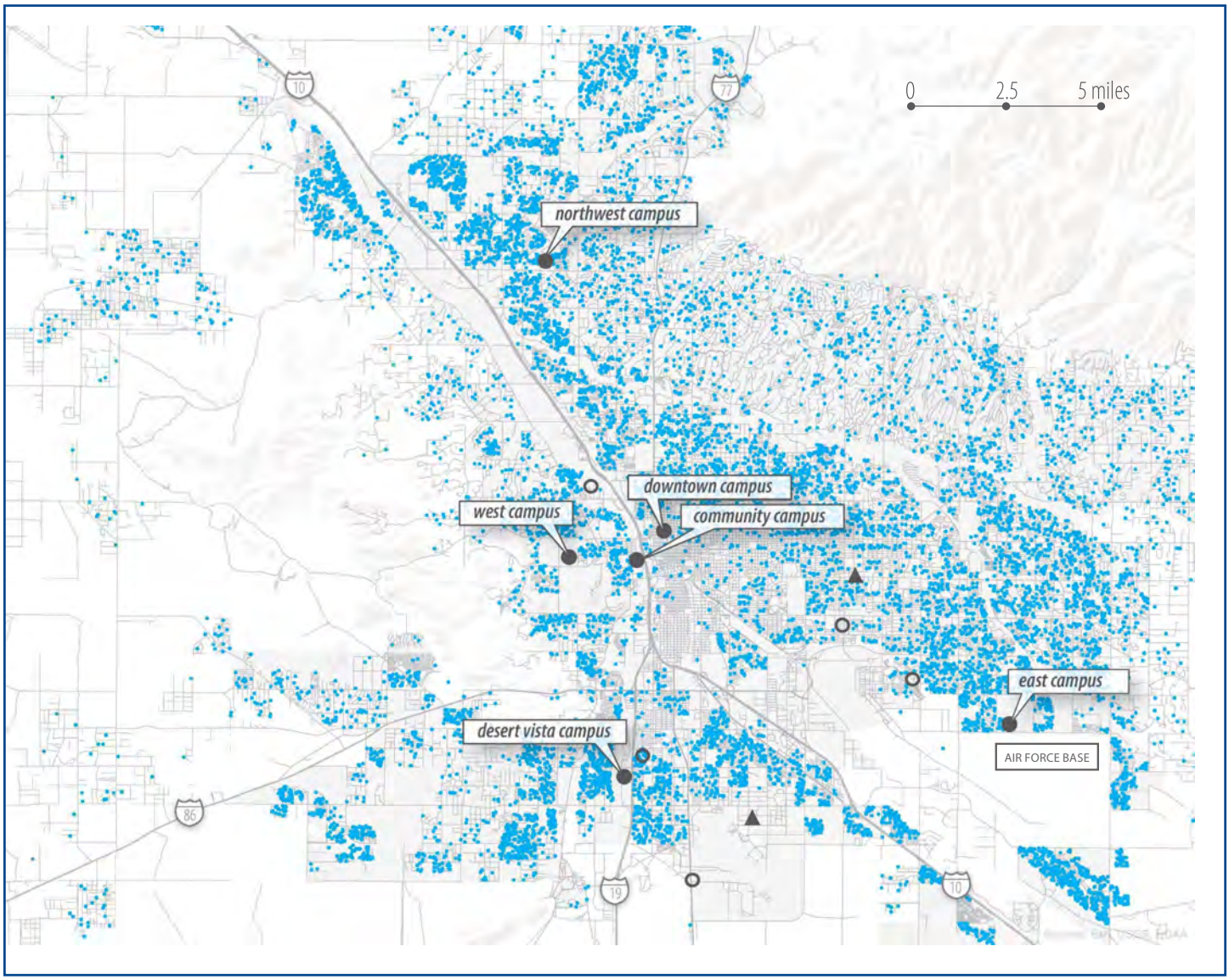
Over 97% of PCC students were successfully geo-located. Characteristics such as which campus students attend, gender, academic majors, and grade point average were then mapped for analysis.

The combination of analysis at the student specific scale and at the regional demographic level allows for a comprehensive geospatial understanding of PCC's students and their connection to the various Tucson communities.

MAPPED STUDENT DEMOGRAPHIC DATA

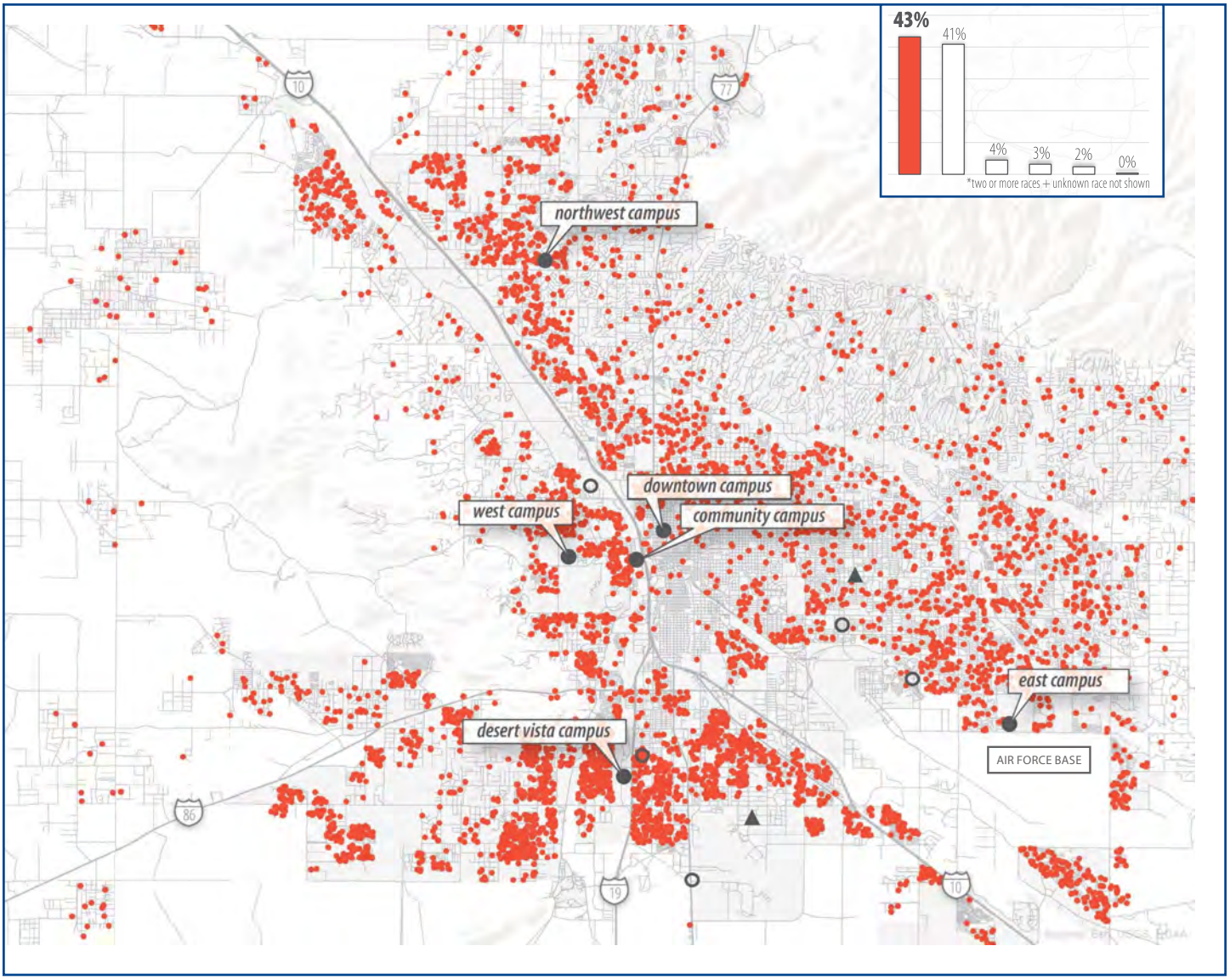
Residence - All Pima Students

This map displays the residence address of students attending Pima Community College for Fall 2015. Each blue dot represents one student. The physical location of each campus is also noted on the map. The greater concentration of dots, the greater density of students. Students are concentrated to the north of Tucson along Interstate 10 and the southeast.



Ethnicity: Hispanic/Latino

This GIS map illustrates students of Hispanic or Latino origin attending the College. Each dot represents one student. Overall, 43% of the students attending PCC in the fall 2015 were of Hispanic or Latino origin. The dots are more tightly clustered to the south of downtown along Interstate 10 and Interstate 19 and west of the downtown Tucson area.

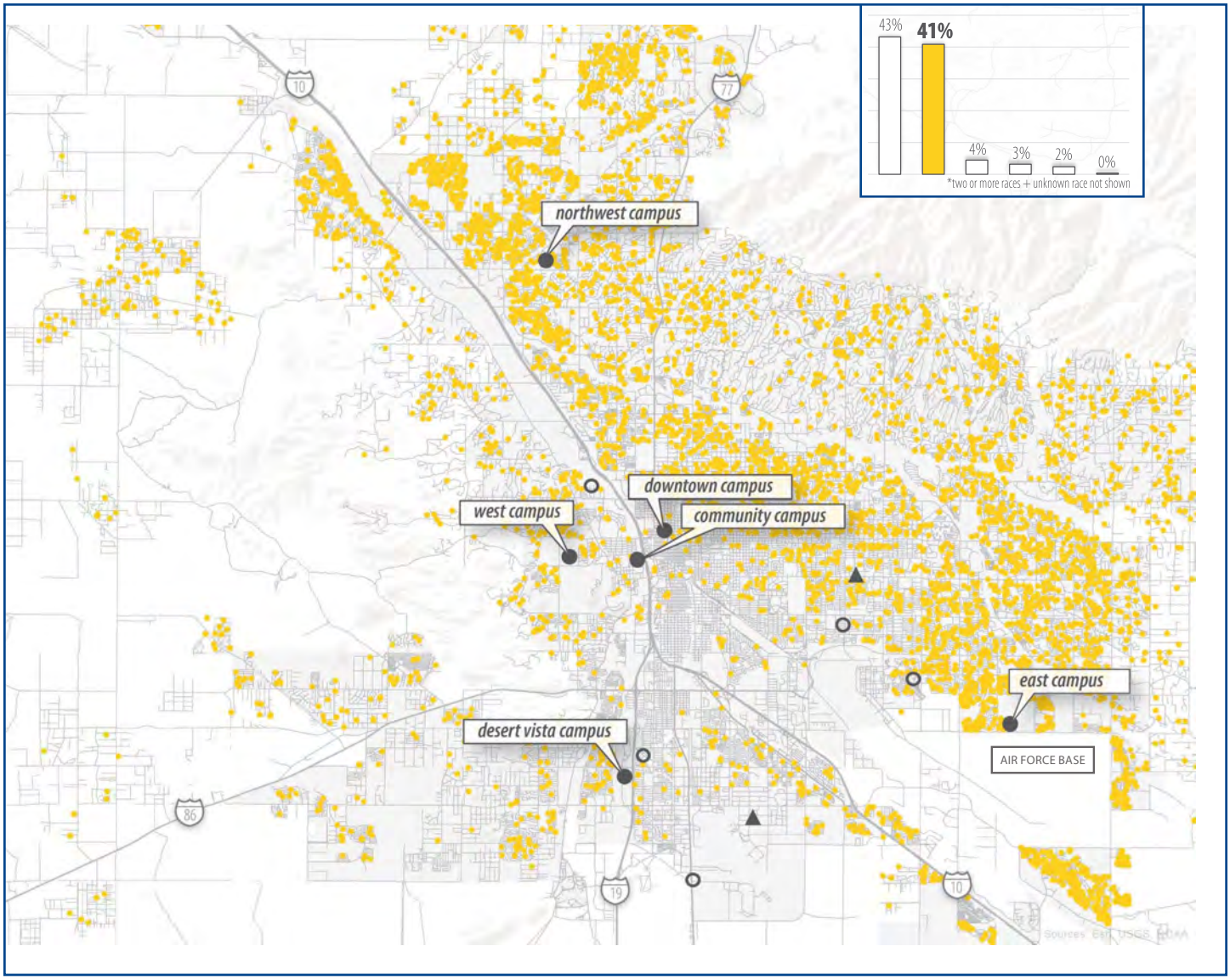


Ethnicity: White

This map portrays the number of white or Caucasian students enrolled at the College. One dot represents one student. These students are more clustered to the west of Interstate 10 and extending east of the city.

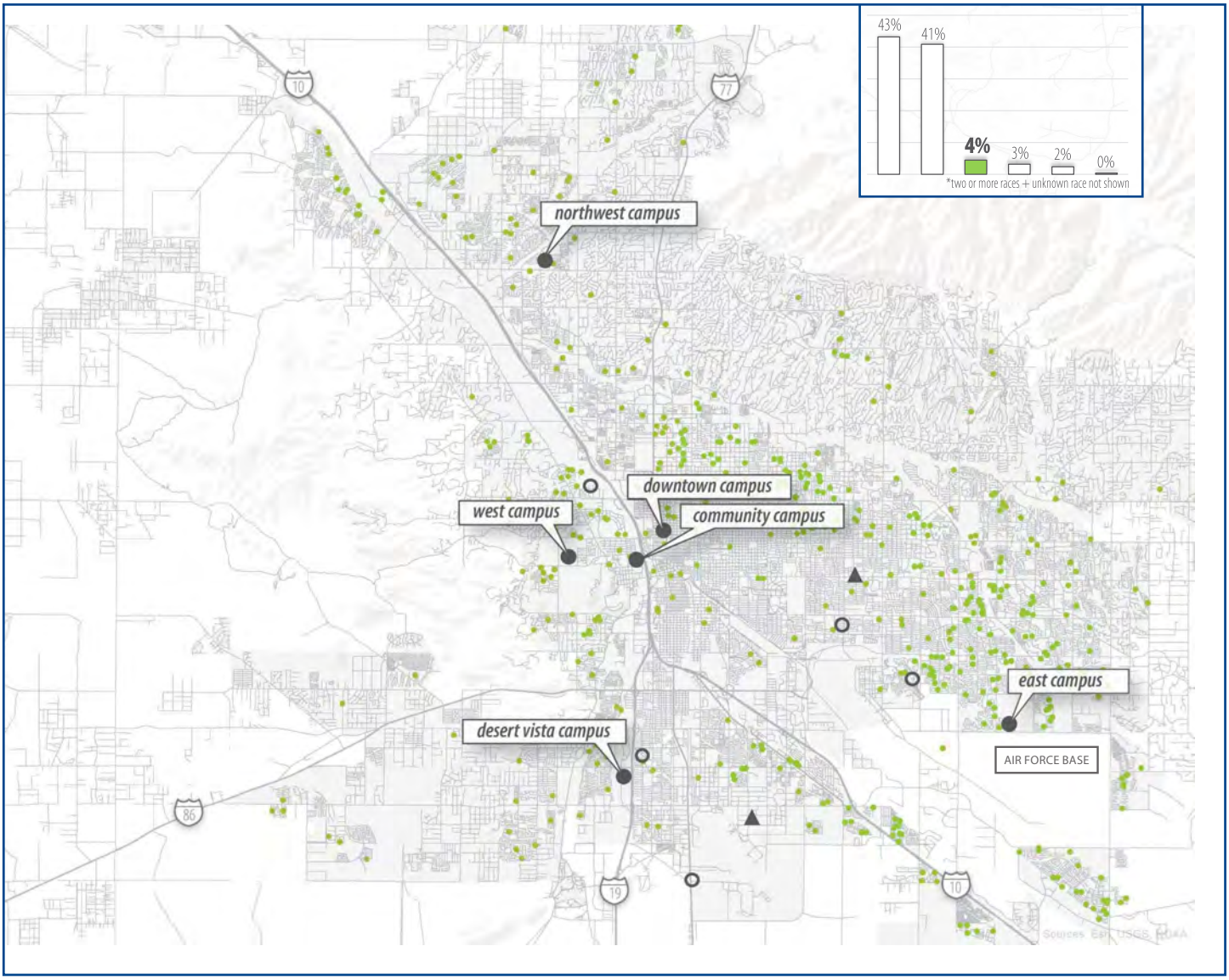
PCC STUDENTS
(1 dot = 1 pcc student)

- pima campus
- pima center
- pima office



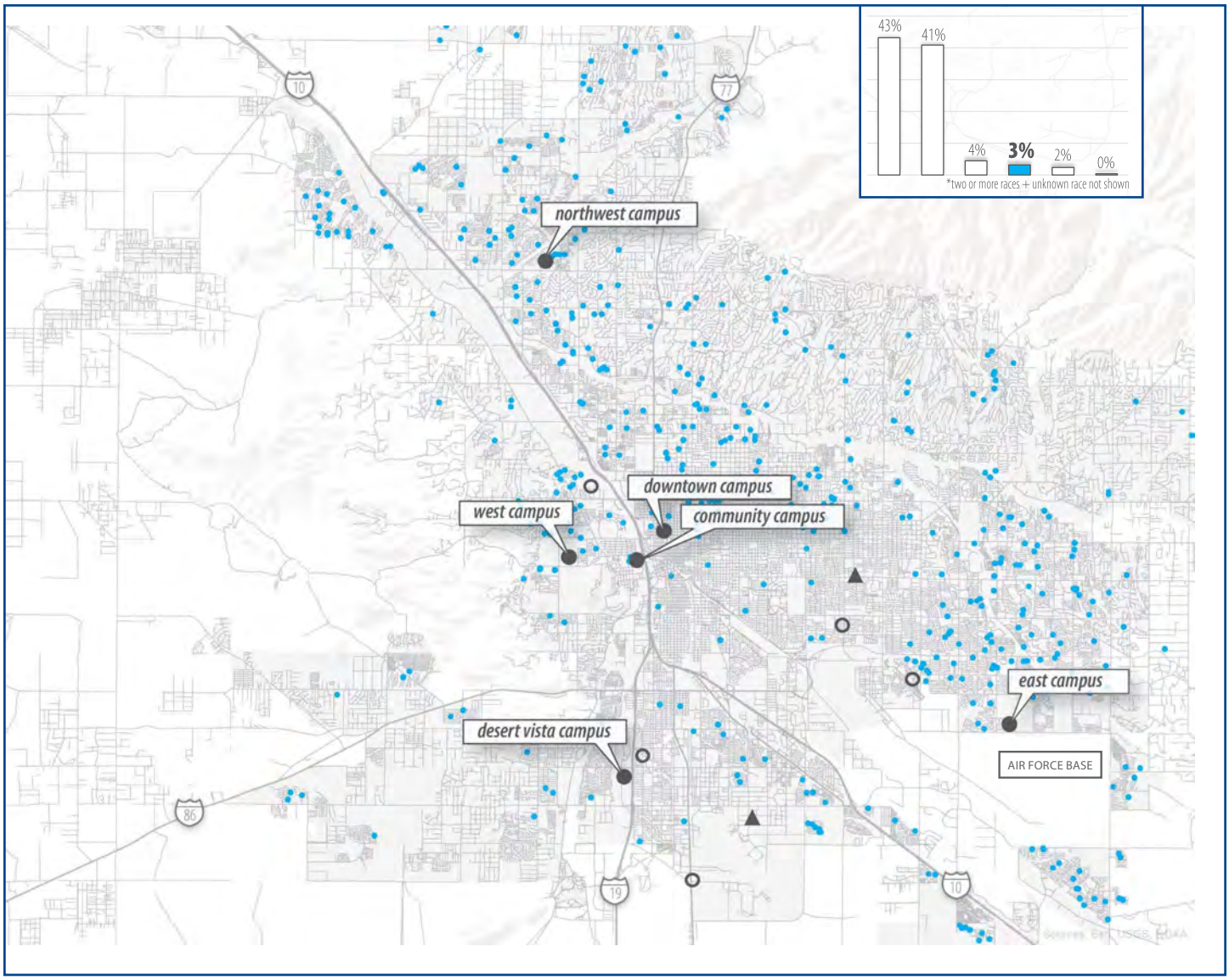
Ethnicity: Black/African American

Pima Community College has a small Black or African American population. Students that attend PCC are clustered to the north and to the east of downtown Tucson.



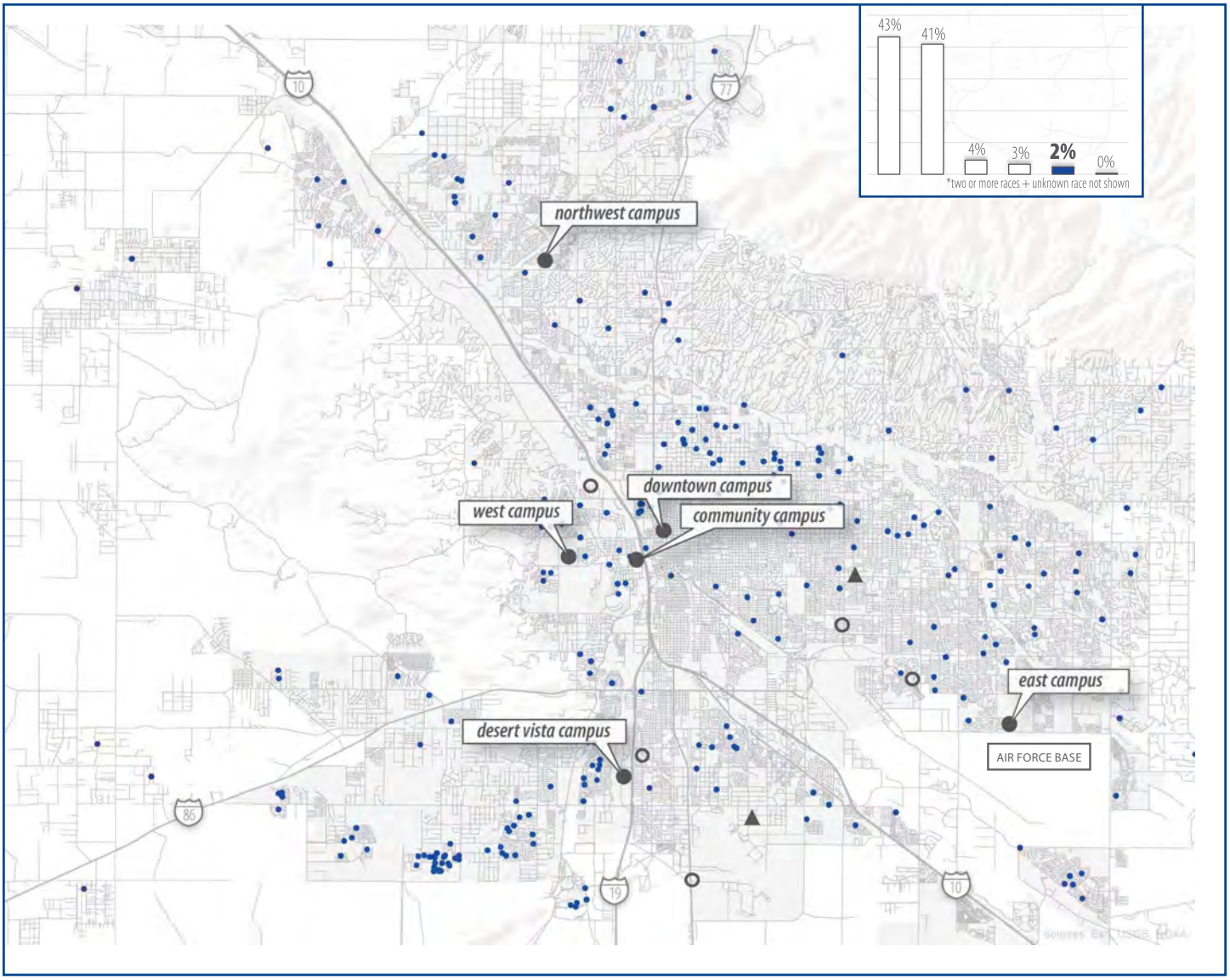
Ethnicity: Asian

Asian students represent 3% of the PCC population. The students are mainly scattered east of Interstate 10. One dot represents one student.



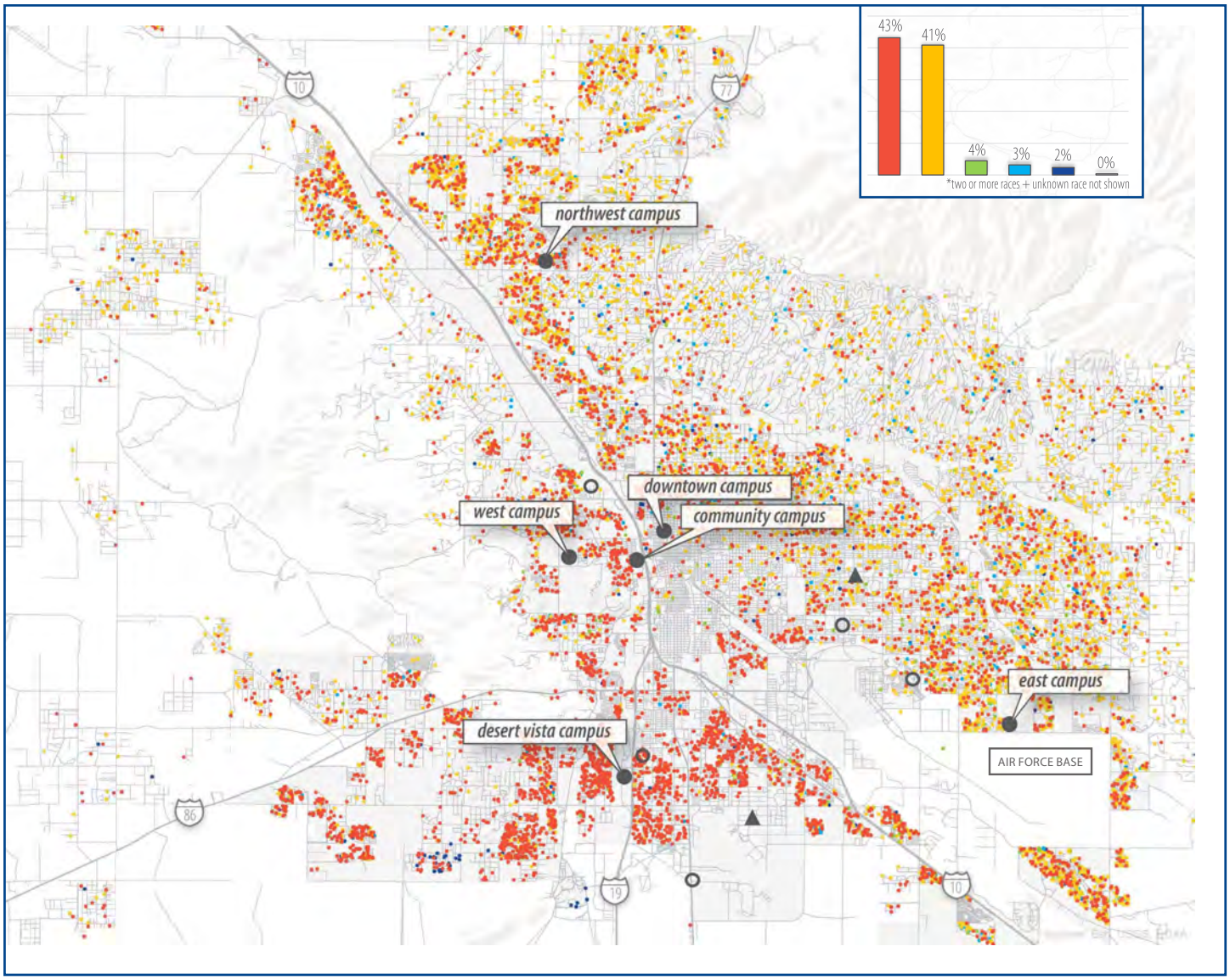
Ethnicity: American Indian/Alaska Native

The number of American Indian or Alaska Native students are represented in the following map. This group is dispersed throughout the Tucson area with a slightly greater concentration to the south.



Ethnicity of All PCC Students

This GIS map displays a composite of all students attending PCC by race or ethnicity. The legend identifies a unique color for each group. One dot on the map represents one student. There is a greater density of Hispanic and Latino students living south of the city between Interstate 86 and Interstate 10. The population becomes less diverse moving from west to east near the Santa Catalina and Rincon Mountains.



ATTENDANCE

The next series of maps illustrate student attendance by campus.

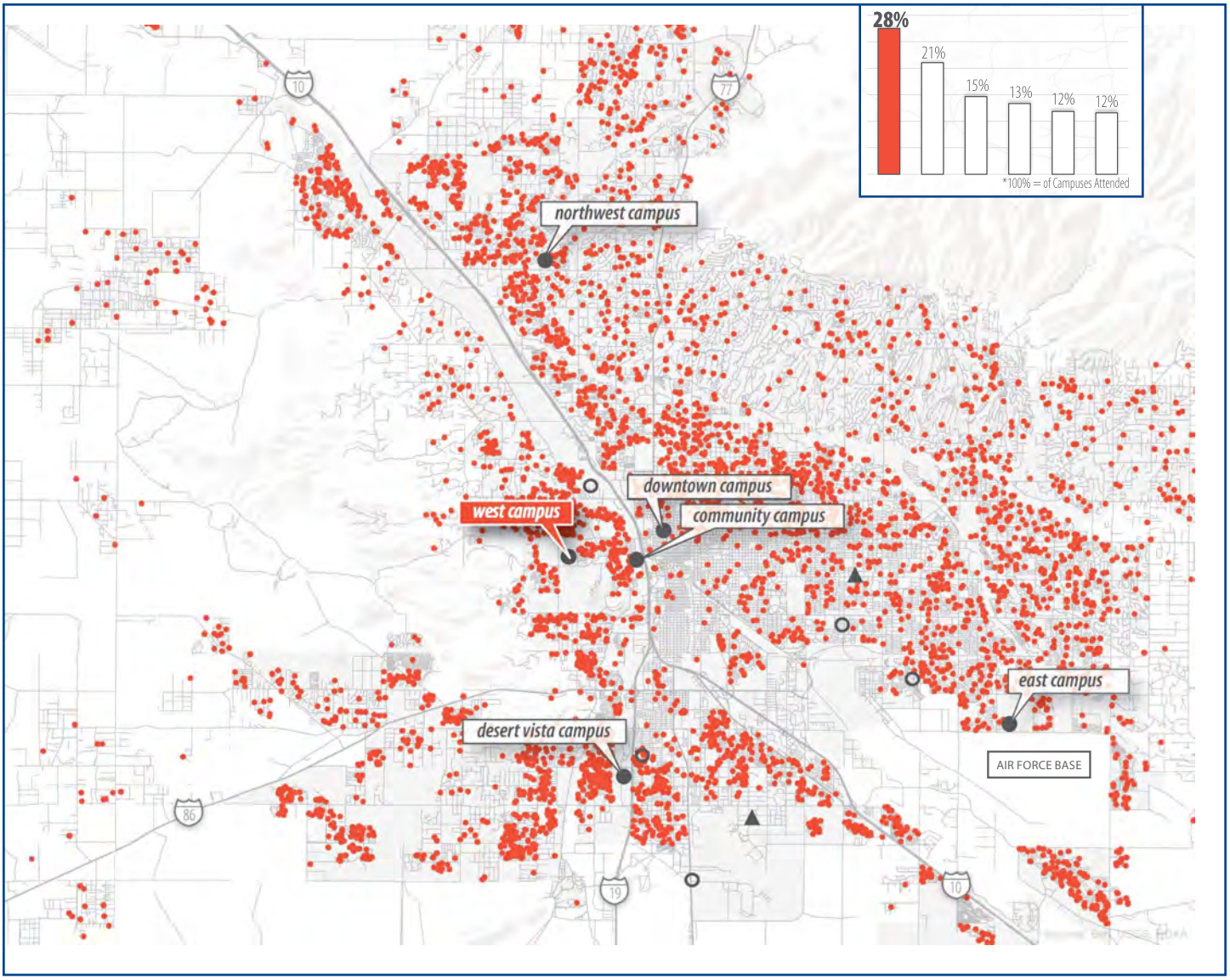
PCC STUDENTS
(1 dot = 1 pcc student)

- pima campus
- pima center
- pima office

Attendance: West Campus

A total of 28% of all PCC students attended the West Campus in Fall 2015.

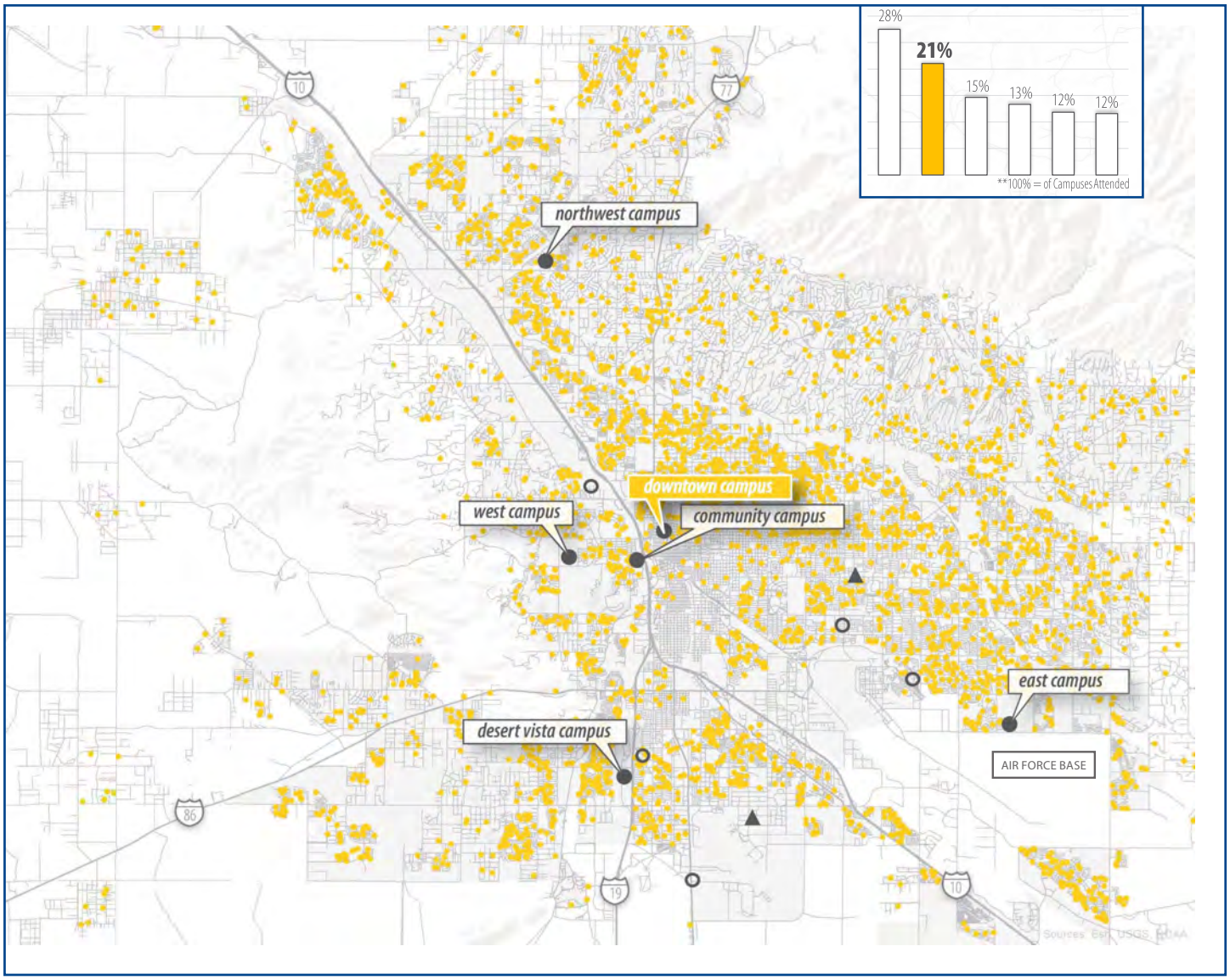
In reviewing PCC students attending the West Campus during the Fall 2015 semester, there is a slightly greater density to the south and west of Interstate 10. Overall, West Campus students are distributed somewhat uniformly throughout the Tucson area.



Attendance: Downtown Campus

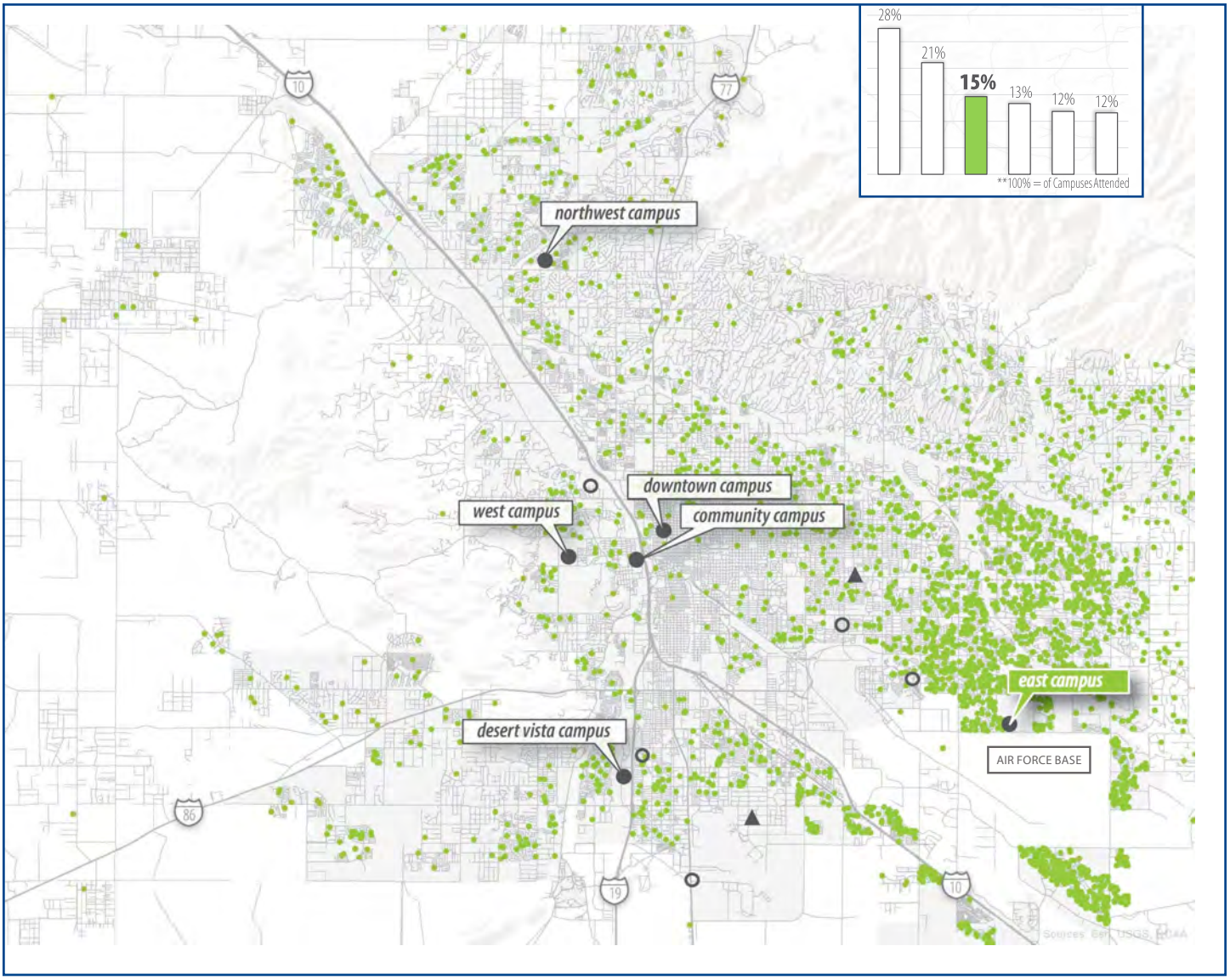
A total of 21% of all PCC students attended the Downtown Campus for Fall 2015. There is a slightly higher density of students living north and east of the campus.

Again, students are widely dispursed among the City.



Attendance: East Campus

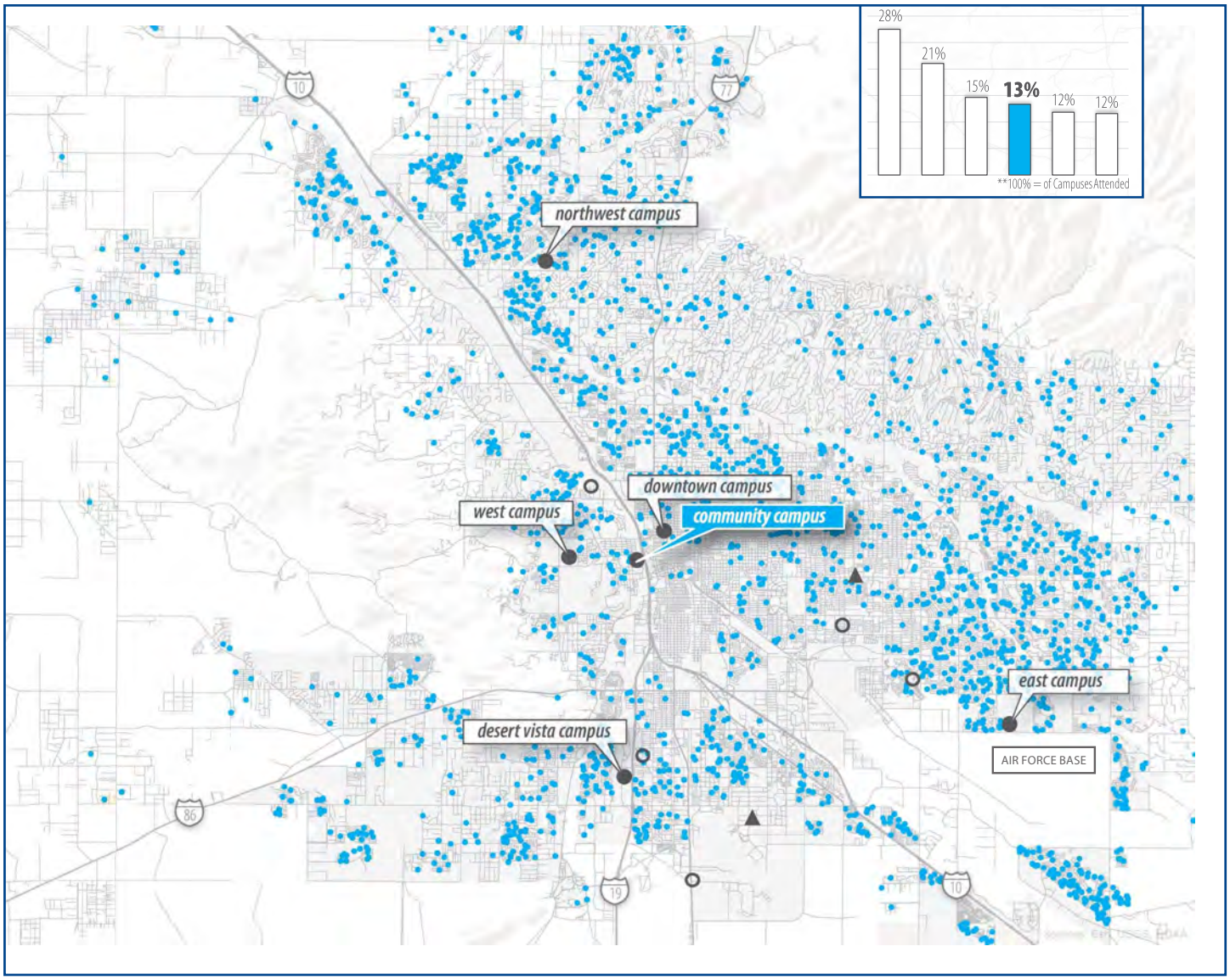
East Campus students, which represent 15% of the total PCC population for Fall 2015, are more tightly clustered to the north of the campus. There is also a higher density to the south of the Air Force base. Students attend the East Campus from as far as Marana. This indicates that students are willing to travel for unique programs on each of the campuses.



Attendance: Community Campus

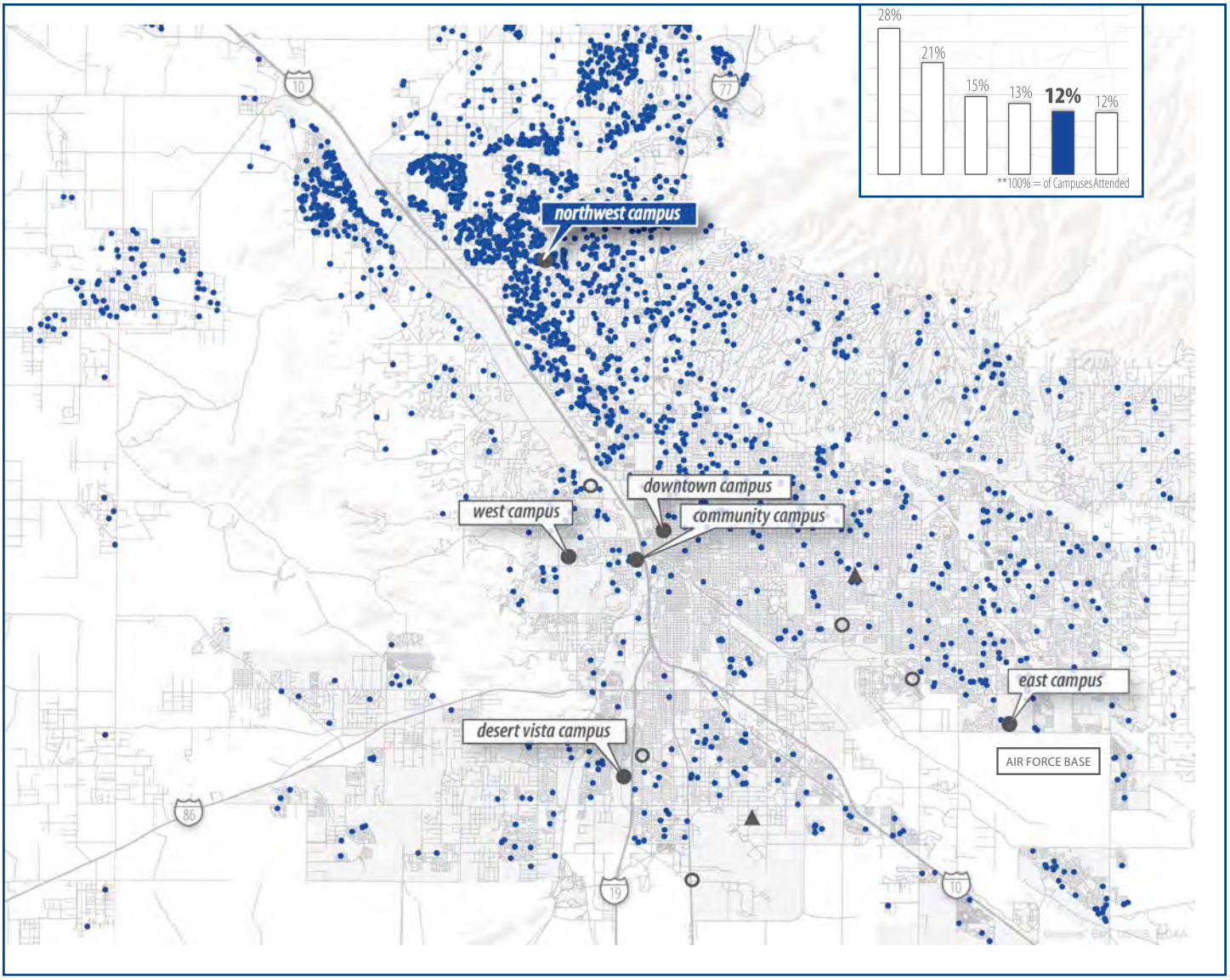
For the Community Campus, students are distributed throughout the Tucson metropolitan area. As the Community Campus does not offer on-site courses, most of the students at this campus are engaged in online learning or Adult Education.

Density is greatest north and east of the greater Tucson Metro area.



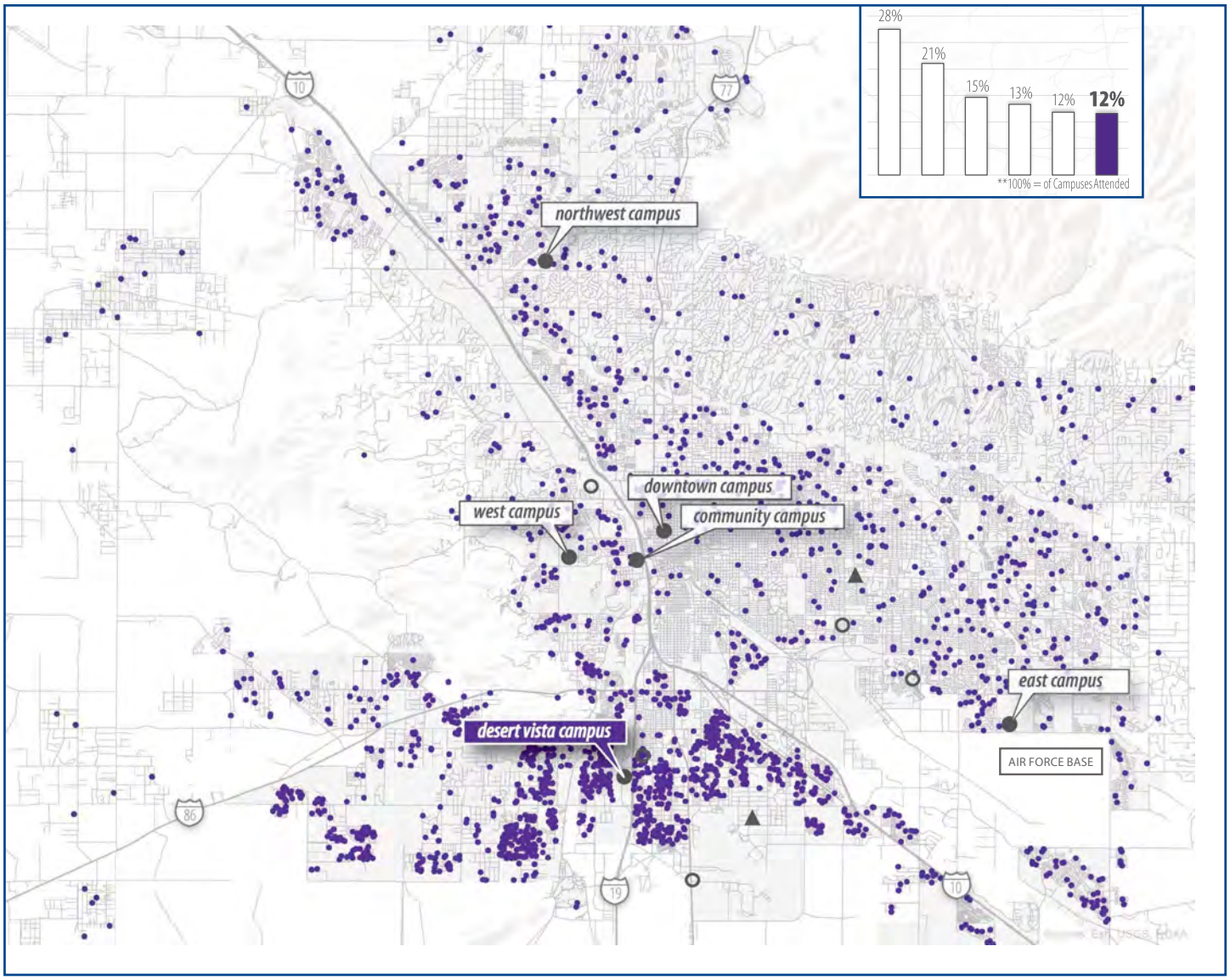
Attendance: Northwest Campus

Students attending the Northwest Campus represented 12% of all PCC students for Fall 2015 and are more tightly clustered east of Interstate 10 and east toward the Tortolita Mountains. The number of the dots to the far south and east of the city indicate that students are willing to drive some distance to attend a particular campus or program.



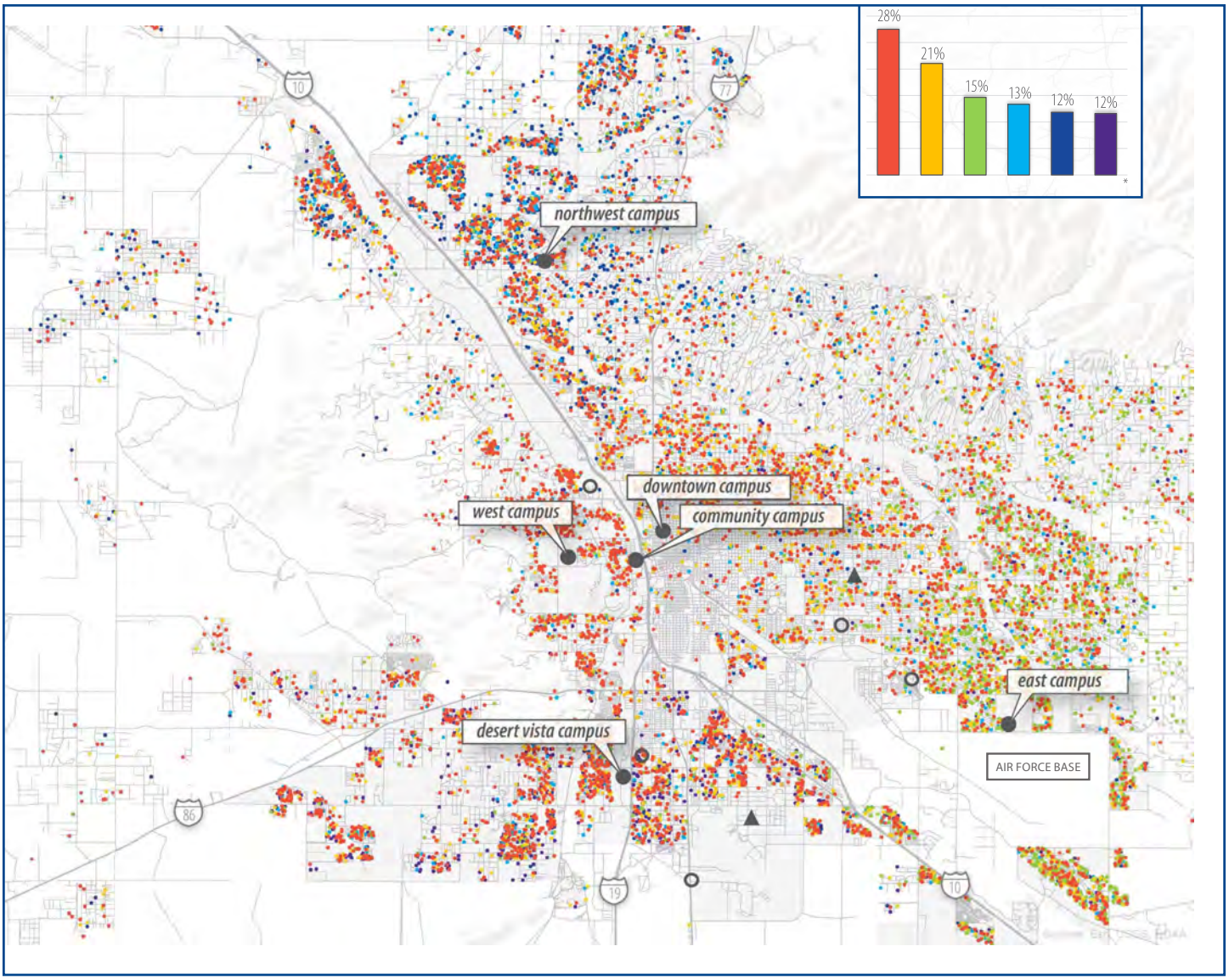
Attendance: Desert Vista Campus

For the Desert Vista Campus, the 12% of the students who attend this location in Fall 2015 live in greater proximity to the campus. This may be due to higher poverty rates south of the city. Again, the number of dots to the far north and east of the Tucson metropolitan area indicates that students are willing to drive to a specific campus for their education.



Attendance: All PCC Students

The final map in this section is a composite of all PCC students by location of campus attendance. In general, the areas with the greatest density of students are also locations of Pima Community College campuses. It is relatively easy to see the cluster of students attending the East Campus as well as those attending the West Campus.

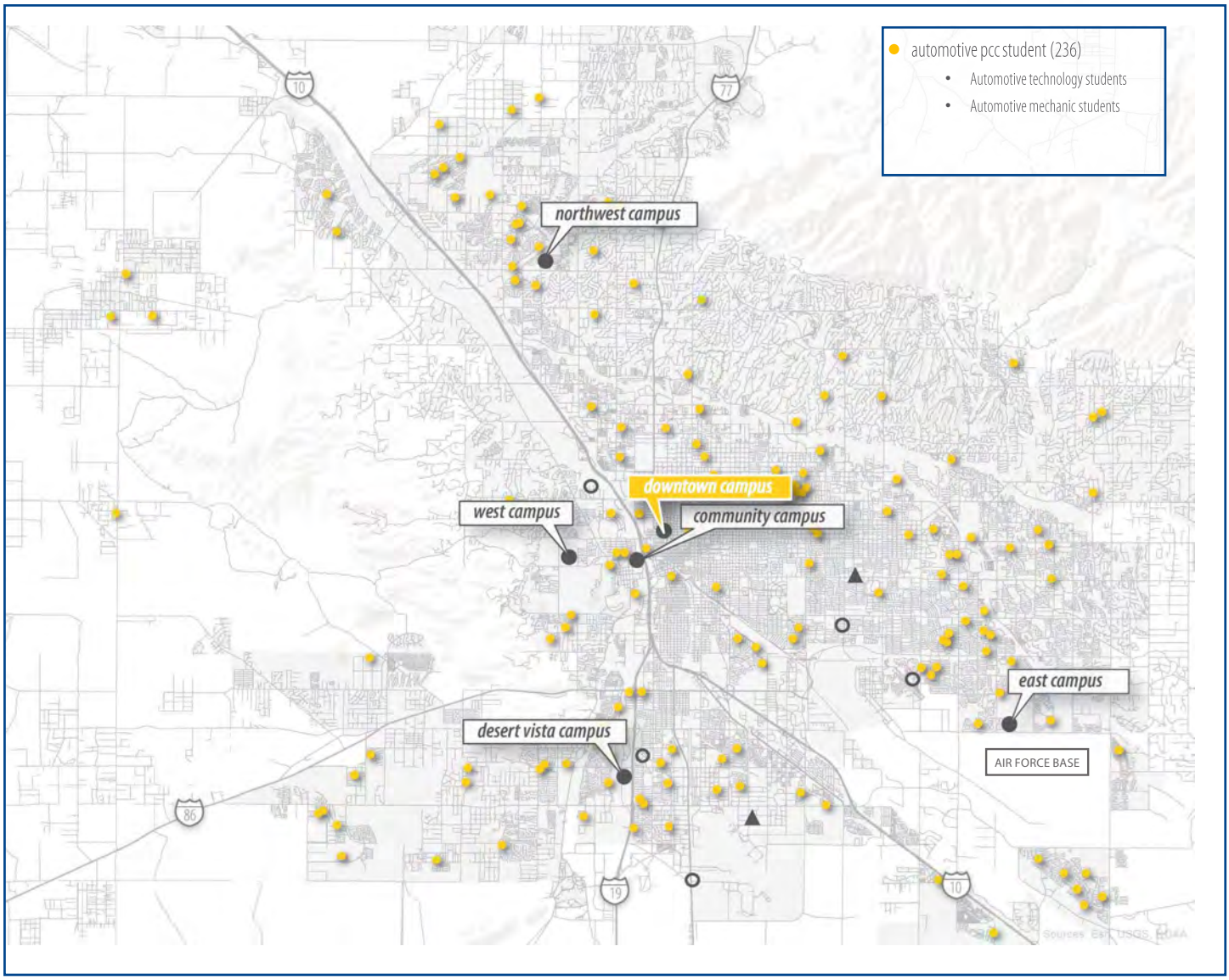


RESIDENCY BY DECLARED MAJOR/PROGRAM

The next group of GIS maps illustrate student residence by declared major or program. This level of analysis further explores the ability of students to travel from the various suburbs of the Tucson metropolitan area to attend a career and technical programs of their choice. This will be important as some programs are realigned.

Declared Major/Program: Automotive Technology

The first GIS map looks at the Automotive Technician program located at the Downtown Campus. As noted on the map, students in this program reside throughout the Tucson metropolitan area.

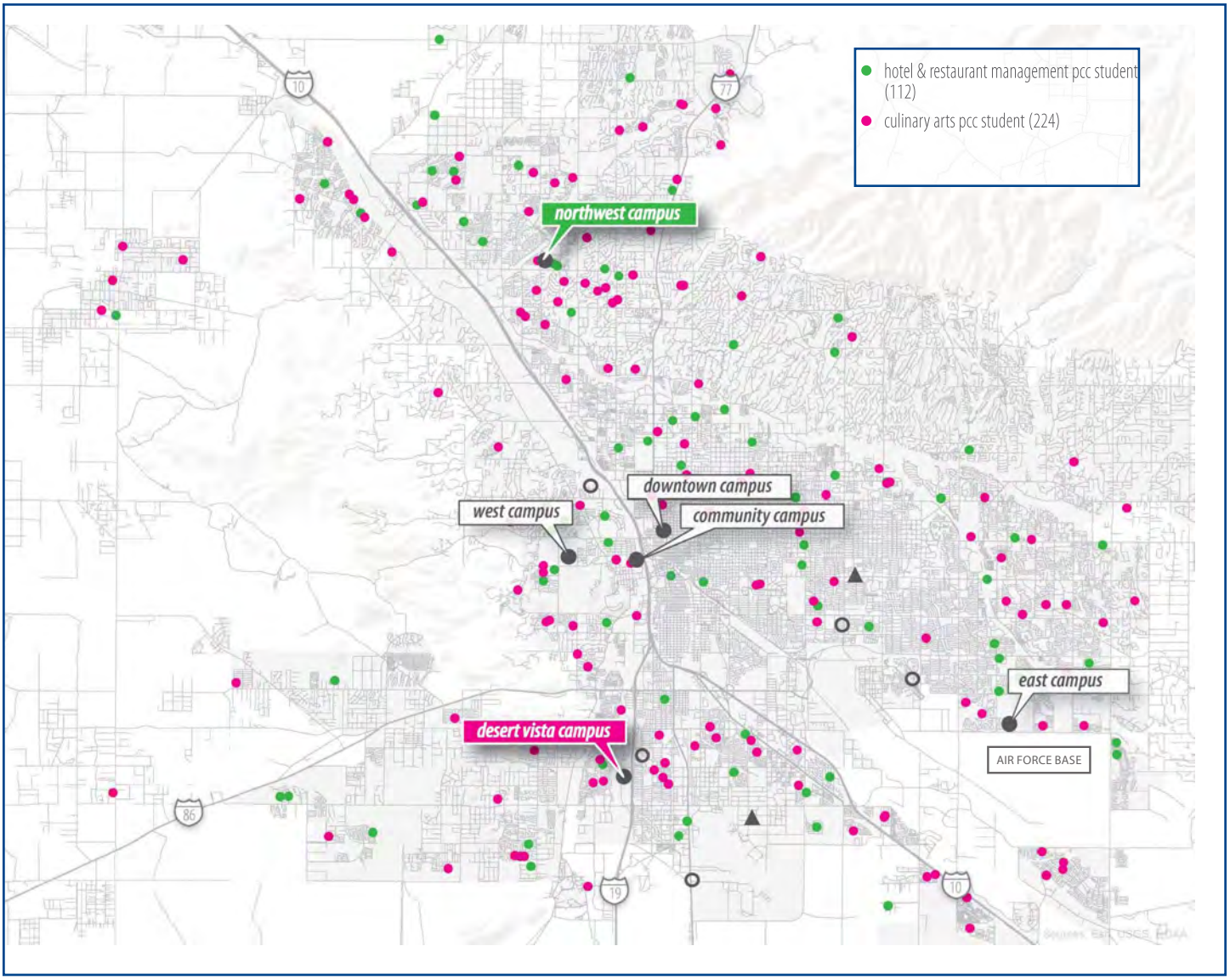


Declared Major/Program: Culinary Arts

This map illustrates the number of students enrolled in the Culinary Arts program at the Desert Vista Campus (pink dots) and the Hotel and Restaurant Management program (green dots) at the Northwest Campus for Fall 2015. Again, the dots are evenly distributed around the Tucson metropolitan area indicating that students are able to travel to attend these two programs.

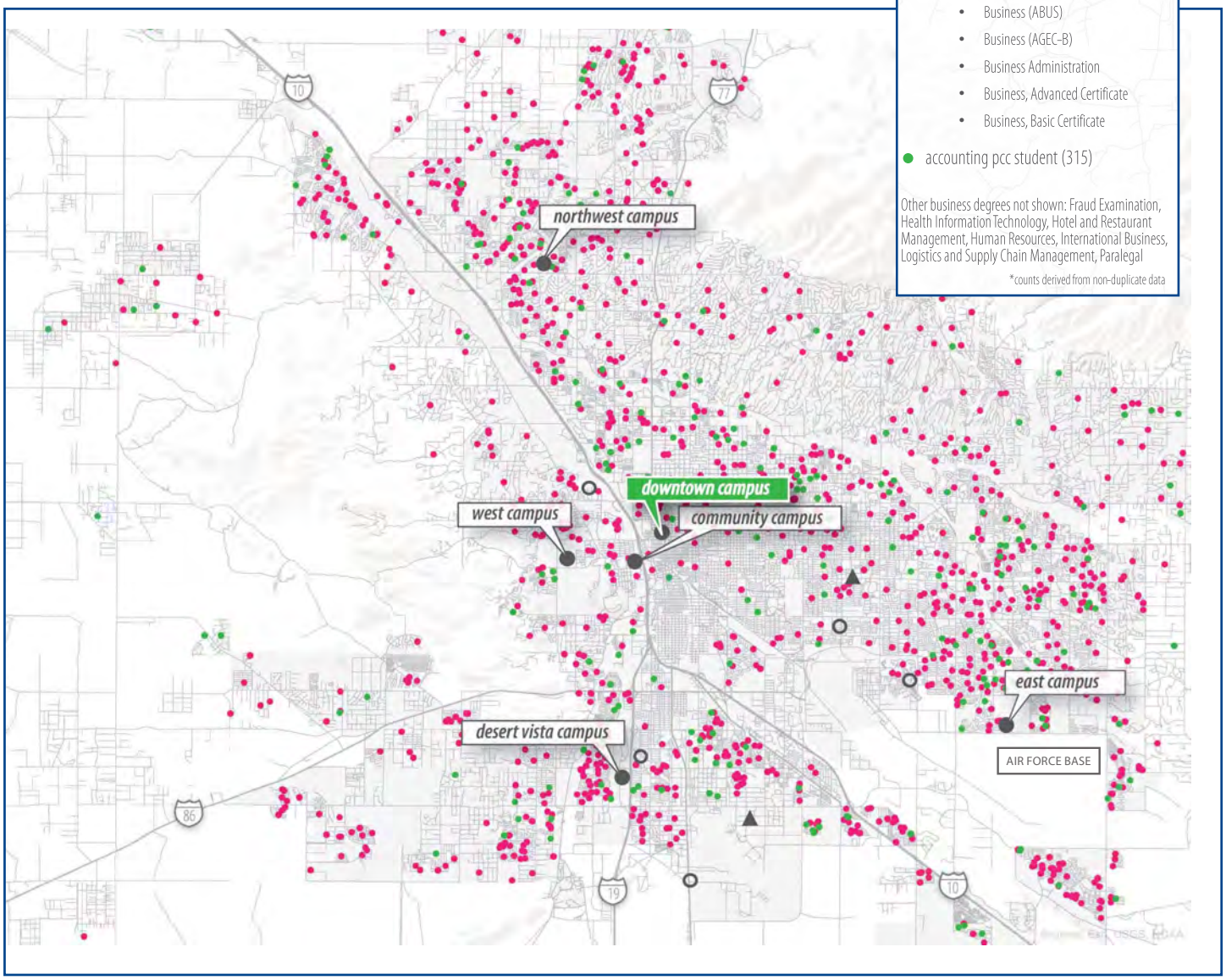
PCC STUDENTS
(1 dot = 1 pcc student)

- pima campus
- pima center
- pima office



Declared Major/Program: Business and Accounting

Business and accounting students who were enrolled during Fall 2015 and taking courses at the Downtown Campus for Business (red dot) and Accounting (green dot) are noted on the map. Similar to other programs, students in these two degree and certificate programs are distributed north and east of the Tucson area.

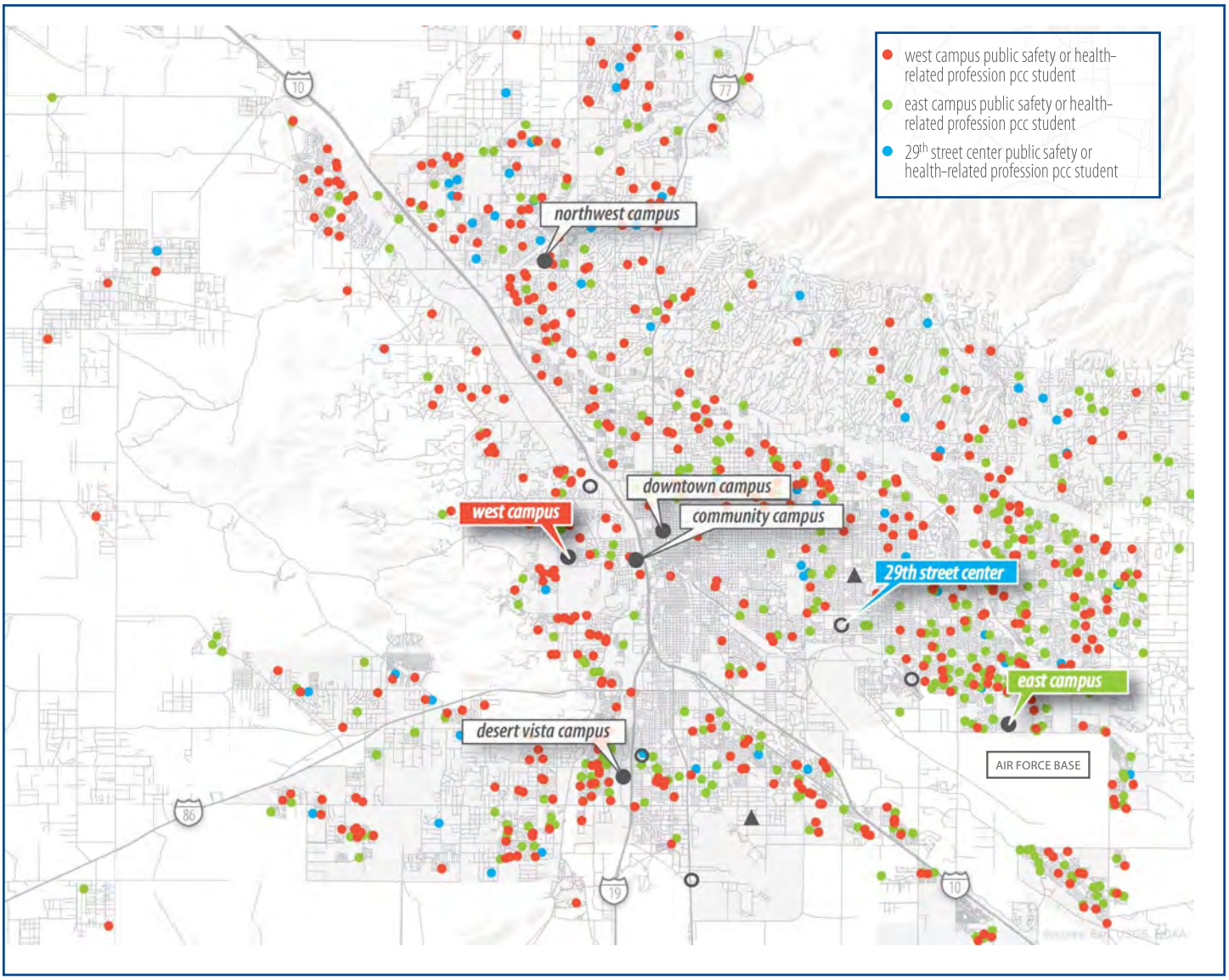


Declared Major/Program: Public Safety

Fall 2015 students in Public Safety or health-related professions from the West Campus are noted in red, while students enrolled in similar Health programs at the East Campus are noted in green. Students attending the 29th Street Public Services Institute are noted as blue dots. There is a slightly higher density of students in public safety or health programs surrounding the East Campus. The West Campus is centrally located for all students on this map.

PCC STUDENTS
(1 dot = 1 pcc student)

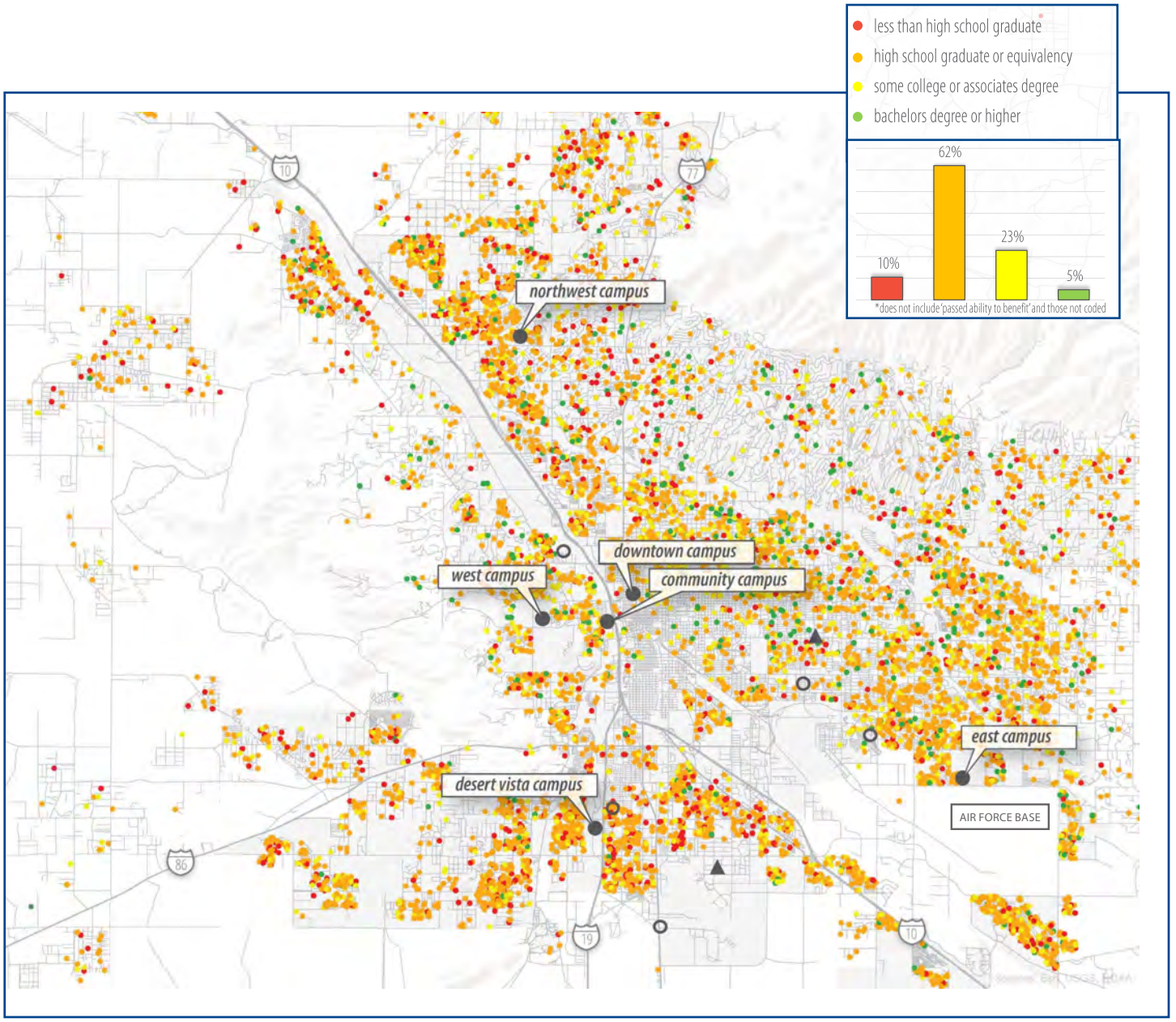
- pima campus
- pima center
- pima office



EDUCATIONAL ATTAINMENT

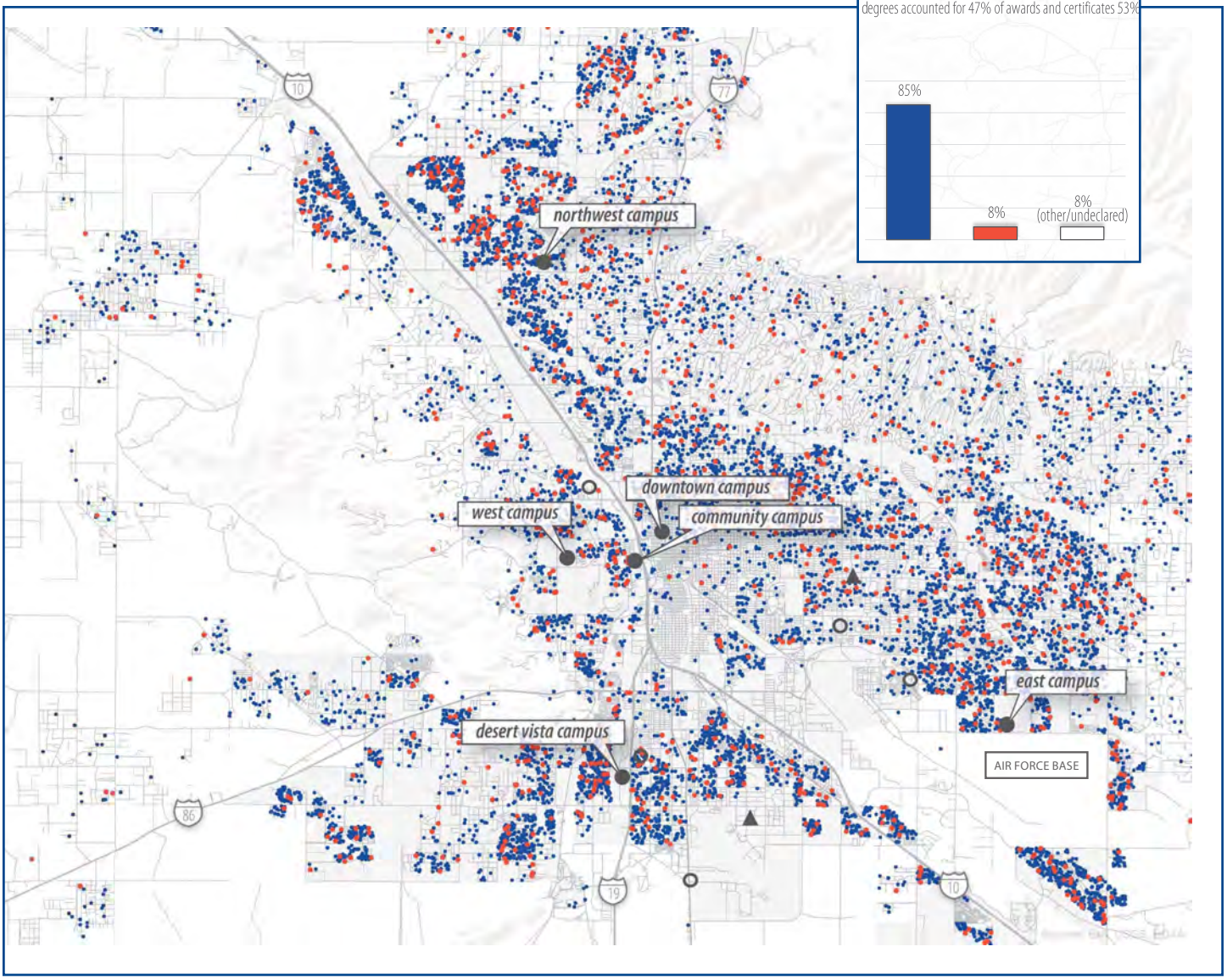
The next map looks at the educational attainment of students enrolled at Pima Community College for the Fall 2015 semester. One dot represents one PCC student.

The large majority of these students, noted as gold dots on the map, represent students with a high school diploma or equivalency. Those less than a high school graduate (red dot) are scattered throughout the city but a slightly larger density exist south of the city between Interstate 19 and Interstate 10.



Educational Attainment: Associate's Degree or Certificate Degree

The following map portrays students attending PCC by the type of degree they were pursuing in Fall 2015. The blue dots, which represent the majority of students, are working towards an associate's degree. The red dots represent students who are working towards a certificate degree. While students seem to be evenly distributed across the Tucson metropolitan area, red dots seem more dense surrounding the Northwest Campus and East Campus.



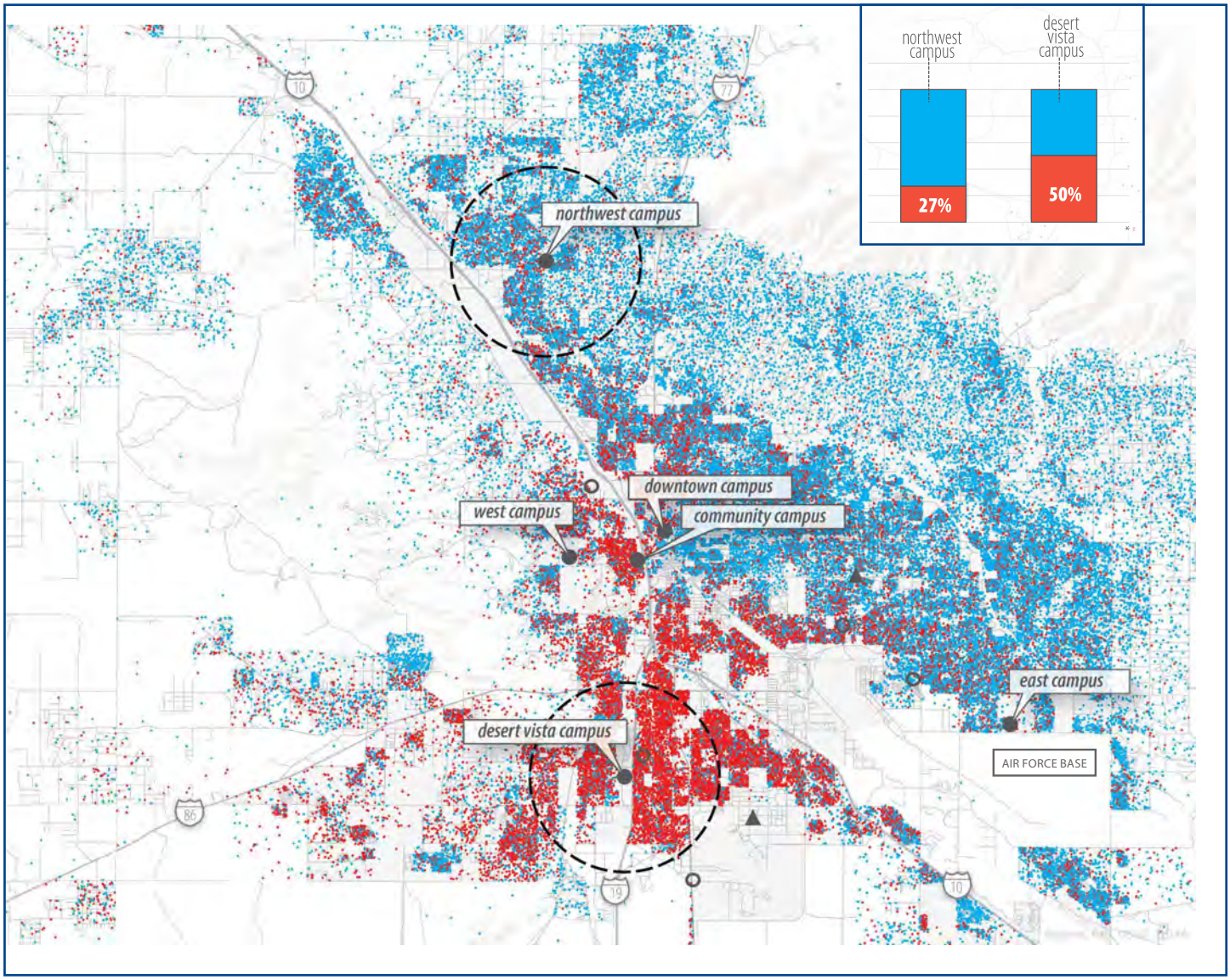
MAPPED TUCSON CENSUS DATA

The next group of GIS maps relate to the population of residents living in the Tucson area. This review is intended to foster an understanding of demographic differences in the broader Tucson metropolitan area.

Tucson Residents: Hispanic/Latino

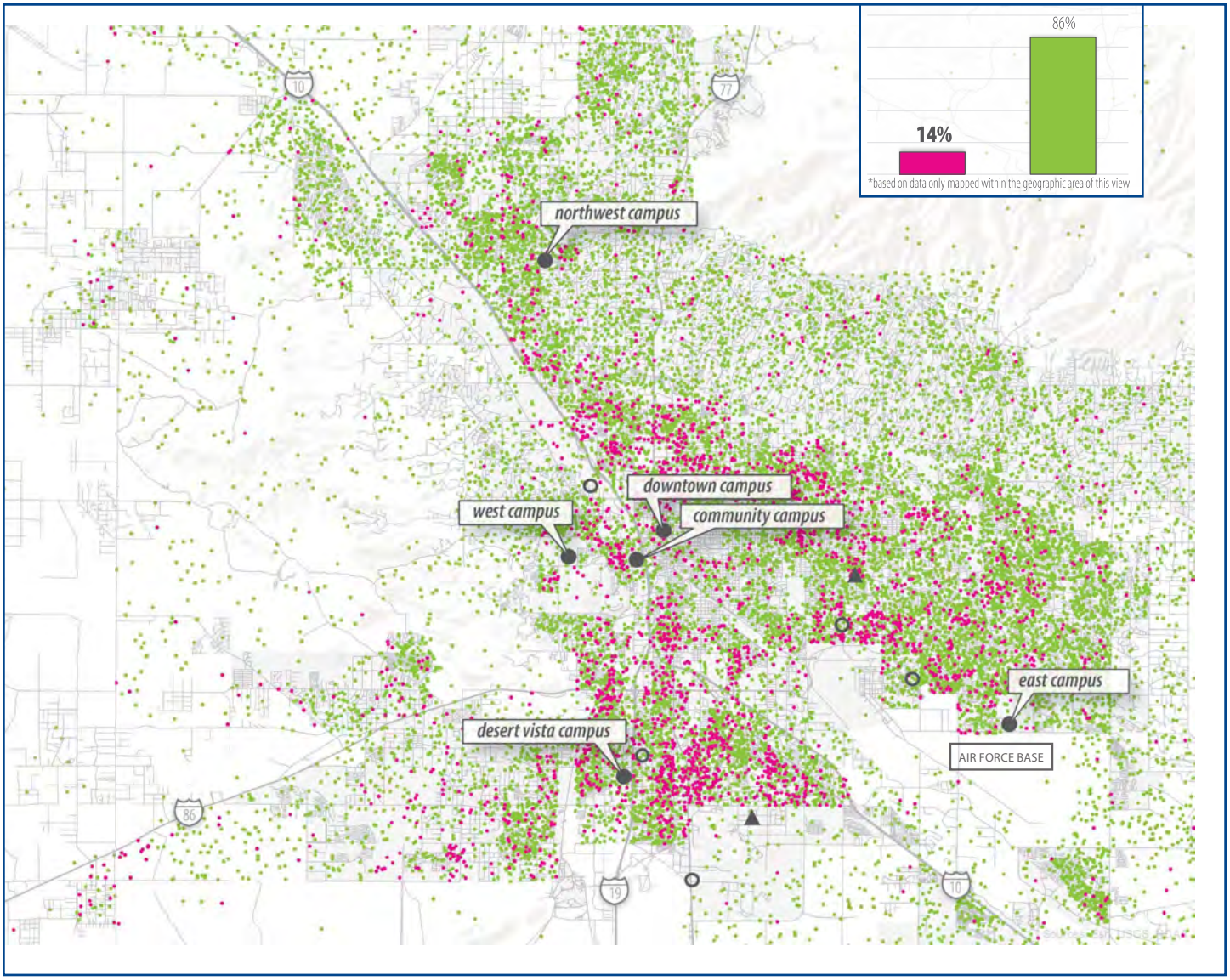
The first map illustrates the number of residents of Hispanic or Latino origin. The red dots represent the number of Hispanic or Latino residents living in the Tucson area. The blue dots represent all other ethnicities or races. For this analysis, each dot represents 10 people.

Each Pima Community College campus is noted on the map. As illustrated, a clear picture emerges. A large majority of the Hispanic or Latino population reside west and south of downtown Tucson. The Desert Vista Campus is located in the largest density of Hispanic or Latino residents. The Northwest Campus, by comparison, has a significant number of residents from other ethnicities or races surrounding the campus.



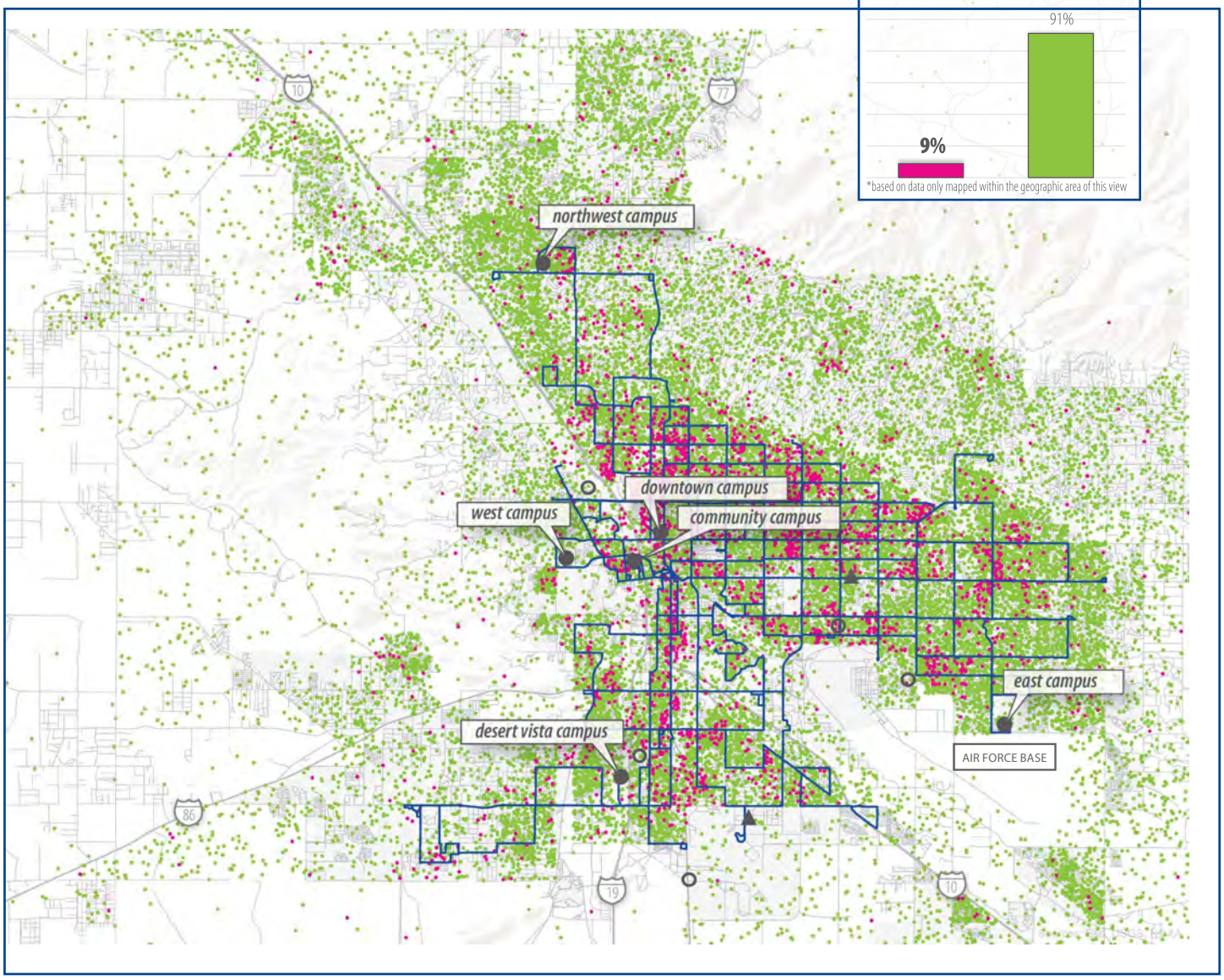
Tucson Residents: Poverty Level

Based on 2013 Census block group data, the number of residents living in poverty was mapped for the Tucson metropolitan area. Based on this data, approximately 14% of the residents were living at or below the poverty level. As Illustrated, a large majority of these residents are located east of I-10 and directly south of the intersection of I-19 and I-10.



Tucson Residents: Car Ownership

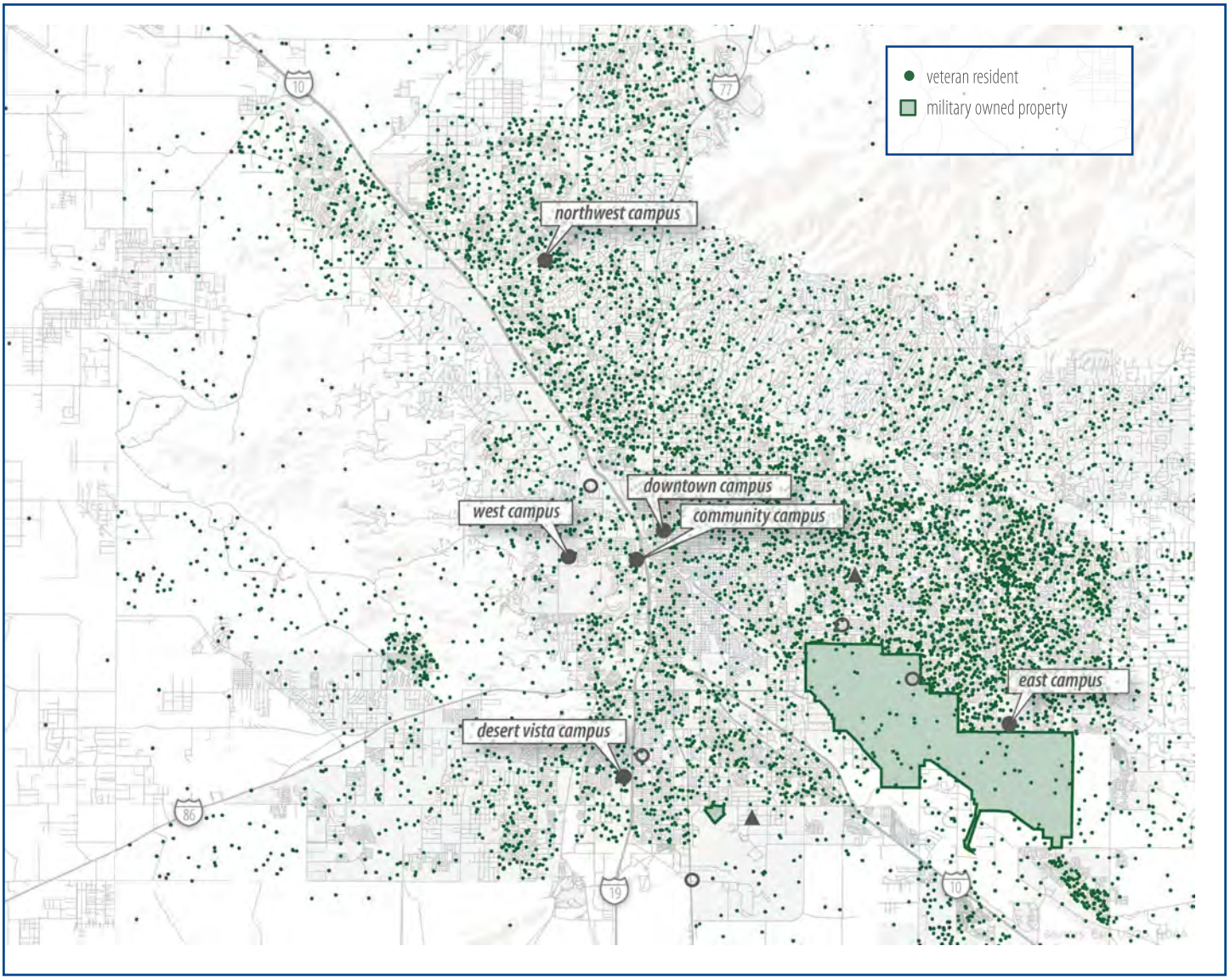
Car ownership was also mapped based on census 2013 block group data. One dot represents 10 people for this analysis. Based on this data, 91% of residents have at least one car. Red dots represent residents without a car. Most of these are within the limits of the city or reside directly south of the city. The map shows a correlation between poverty and car ownership. Bus routes are also noted on the map.



Tucson Residents: Veterans

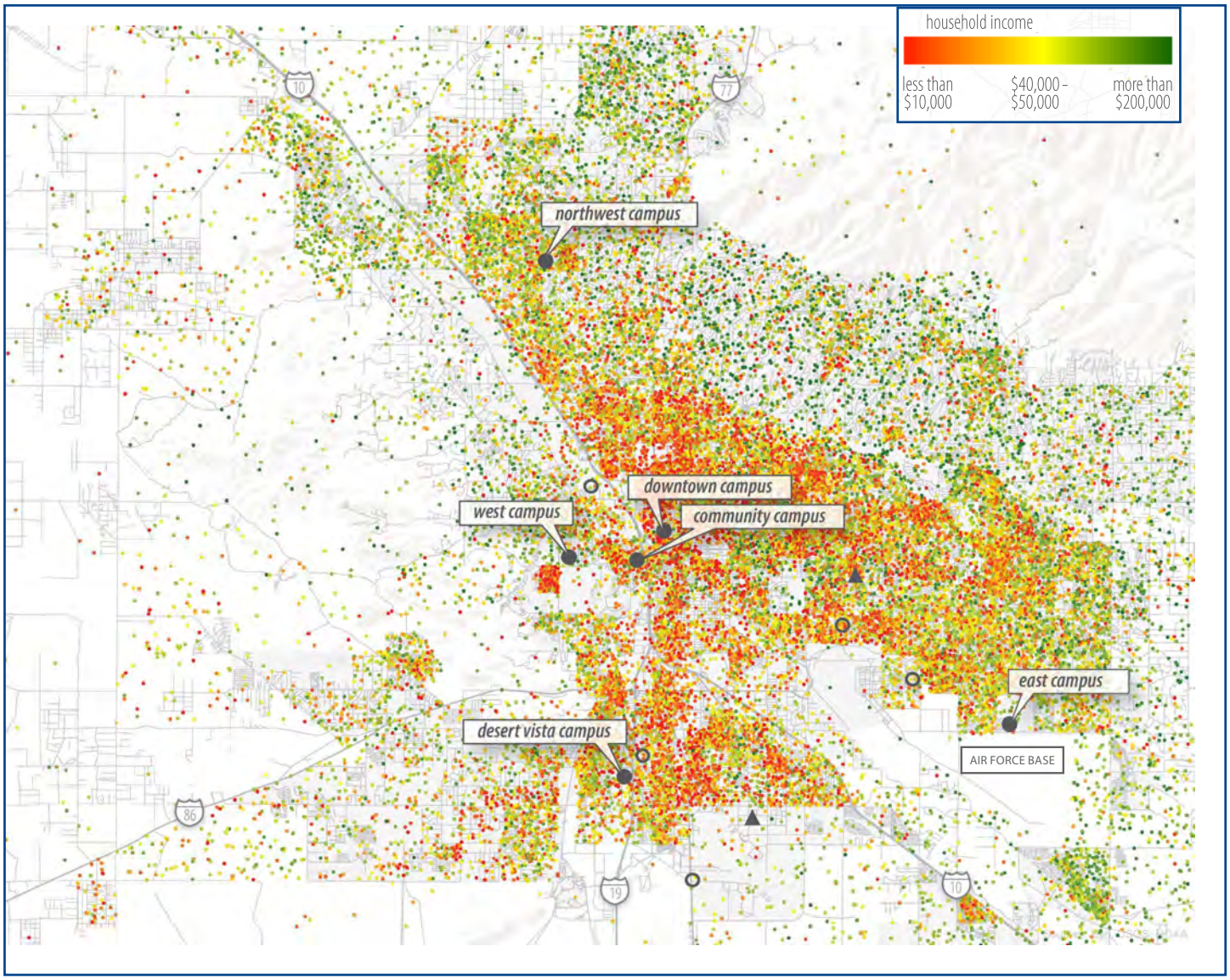
When you consider that one dot represents 10 residents , the number of veterans is substantial in the Tucson metropolitan area. The GIS map notes the number of veterans based on 2010 census tract data. Military-owned property, which includes the Davis-Monthan Air Force Base, is noted to the southeast of the city. There is a significant density of veterans directly north of the military base and in close proximity to the East Campus.

- pima campus
- pima center
- pima office



Tucson Residents: Income Distribution

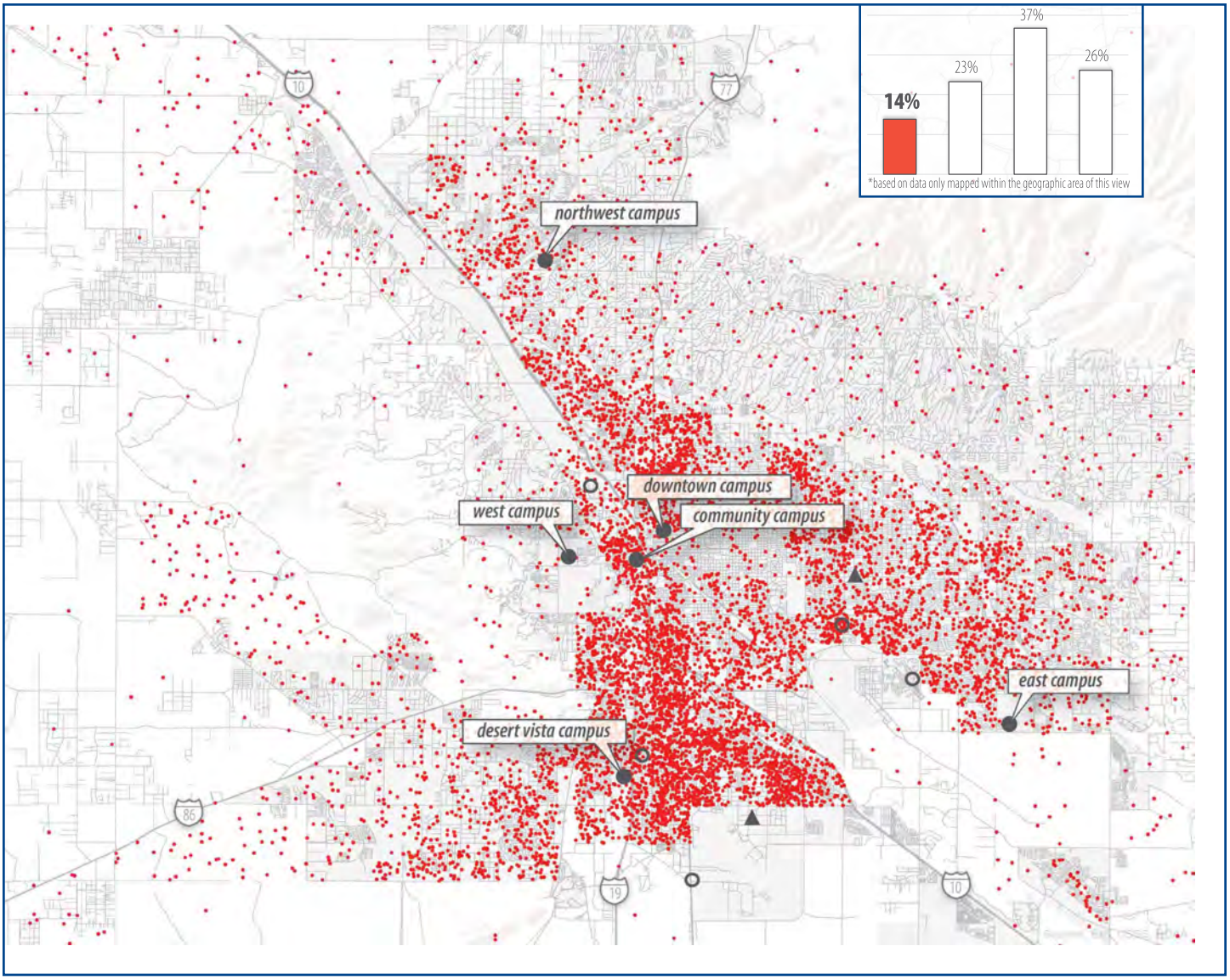
This colorful map shows income distribution by 2013 Census block group data. One dot equals 10 people. Red dots represent a household income of $10,000 or less, while the dark green dots represent household incomes of more than $200,000. The yellow dots represent residents with household incomes between $40,000 and $50,000. Residents with lower incomes are located closer to the city center and to the south of the city. The dots become increasingly greener closer to the base of the Tortolita, Santa Catalina and Rincon Mountains.



Tucson Residents: Educational Attainment Less Than High School

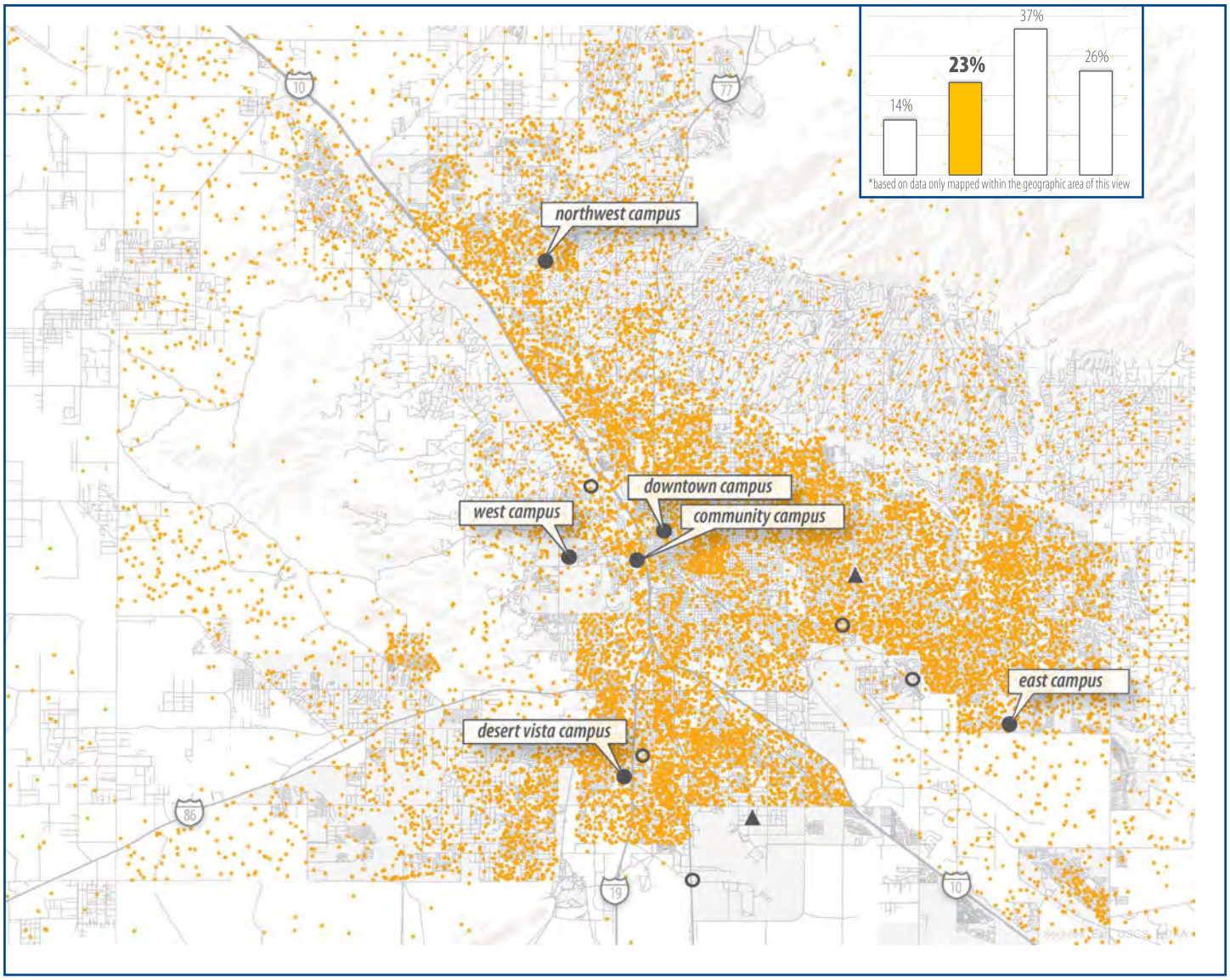
The next series of GIS maps relate to educational attainment of Tucson residents based on 2013 Census tract data. In Tucson, 14% of the residents have less than a high school education. For this map, one dot equals 10 people. The map illustrates that a large majority of residents with less than a high school education are located to the north and east of downtown Tucson. The greatest residence density is located south of the city between of Interstate 10 and Interstate 19.

- pima campus
- pima center
- pima office



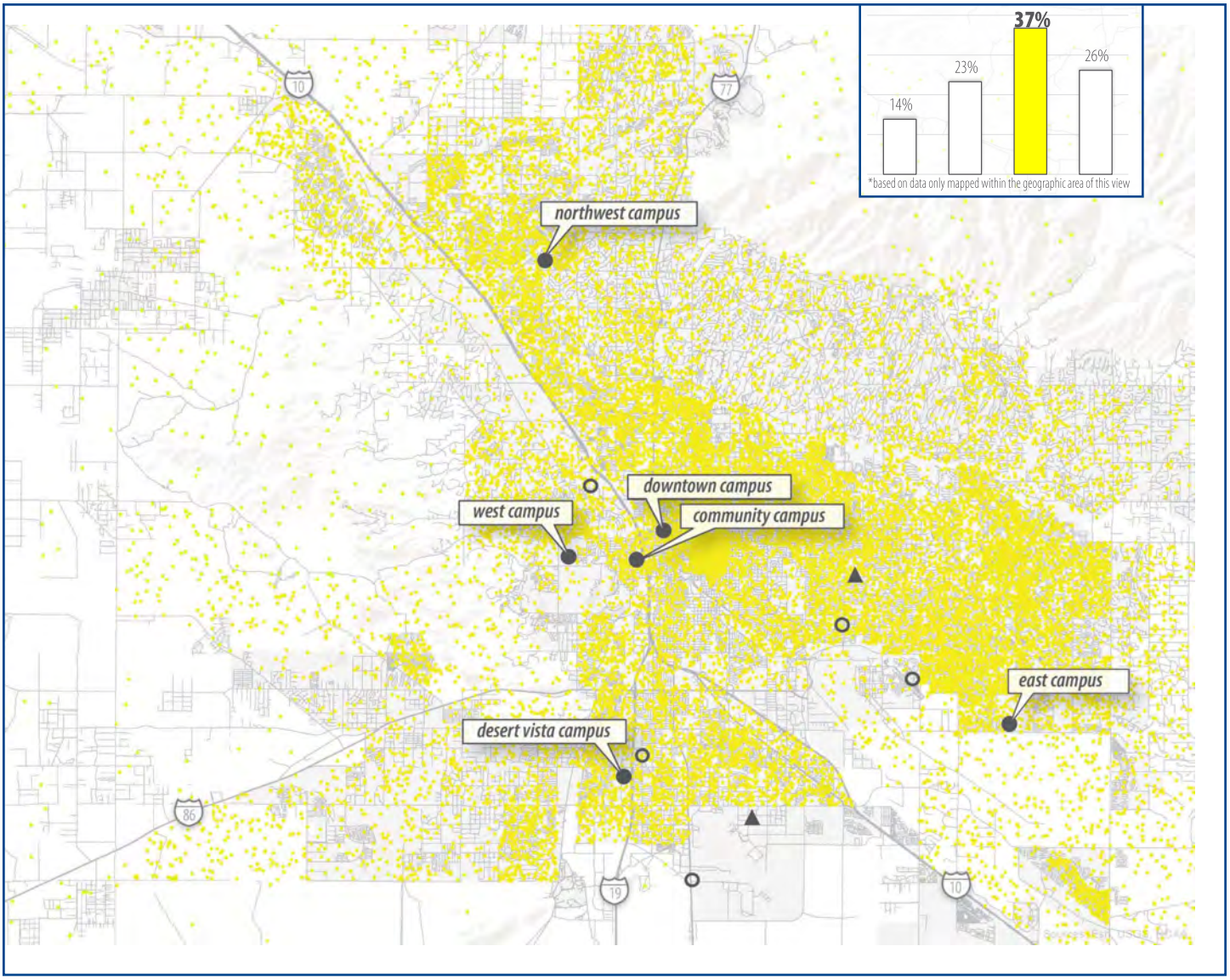
Tucson Residents: Educational Attainment High School Degree

Approximately 23% of Tucson residents have a high school degree. Overall, there is a large density of residents surrounding the city proper and extending to the east, as well as the south.



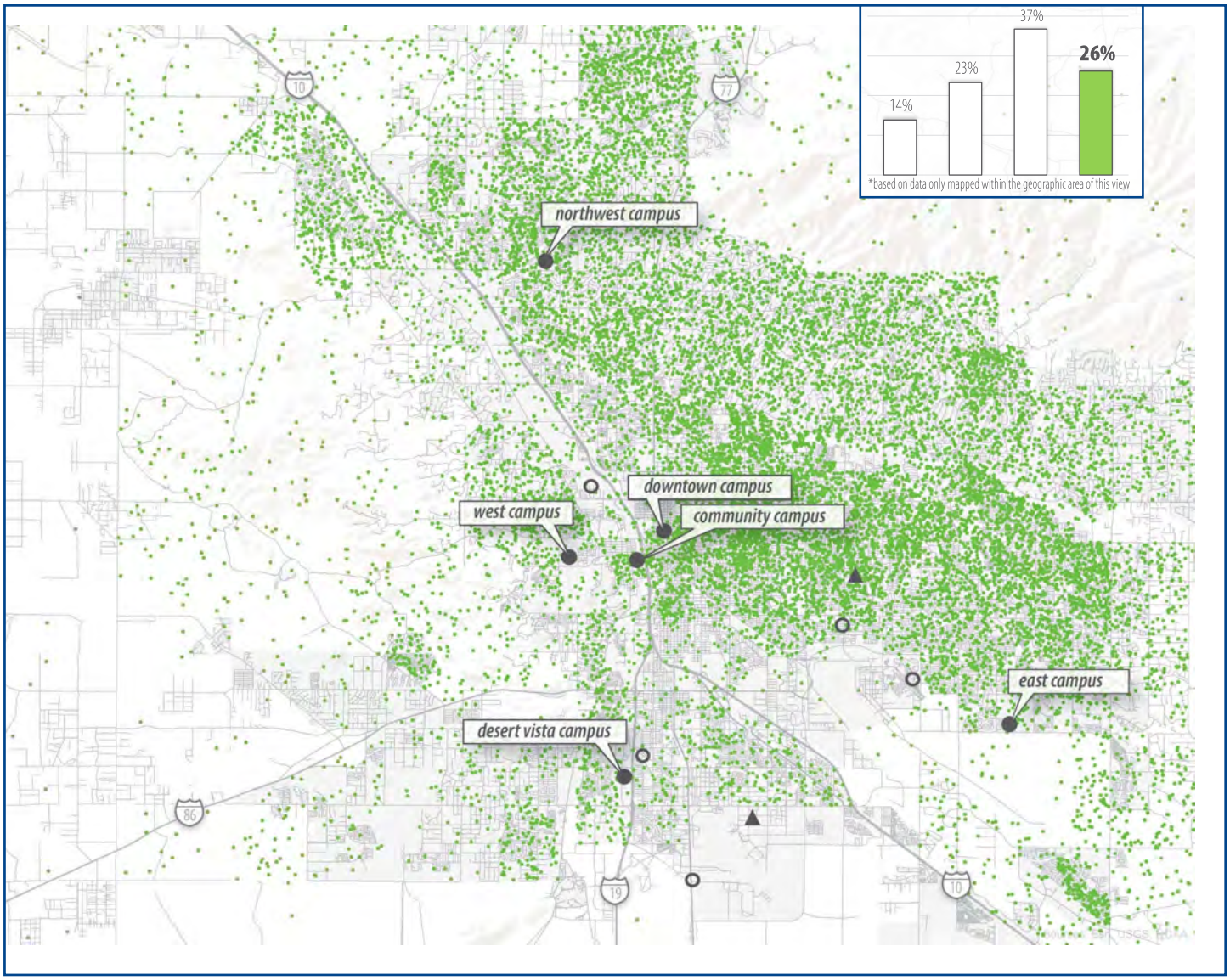
Tucson Residents: Educational Attainment - Some College

Students with some college or an associate's degree, which represent the largest majority of Tucson residents, are concentrated directly to the north and east of the city area. In many ways, I-10 seems to be a dividing line. The concentration is less focused to the far north and southwest of the Tucson metropolitan area.



Tucson Residents: Educational Attainment - Bachelor's Degree or Higher

The final group includes residents with a bachelor's degree or higher and represents 26% of the Tucson population based on 2013 Census tract data. The largest density of population with this degree attainment level is located east of Interstate 10 and clustered around formal city limits and to the north.



GIS IMPLICATIONS

The GIS analysis sheds light on the demographic and commuting patterns of Fall 2015 PCC students. In general, travel distance may not be a major factor for many of students pursing degree and certificate programs at the College. These data also highlight low educational attainment and high poverty areas that should be evaluated In terms of delivery of PCC services and programs.

In addition, the 2010 and 2013 GIS analysis of Census data for many of the demographic variables suggests that each PCC campus location is uniquely situated to address the needs of specific communities in the Tucson area. These findings will be factored into the analysis of programs and resulting recommendations.

Recommendation 5.1

During the review of GIS outcomes presenting campus attendance by student residence, many members of the Educational Master Plan committee and several PCC administrators commented about "misperceptions" about the mobility of the student population and their willingness to commute to specific campuses. One comment from PCC staff stated that "These misperceptions are driving decisions that are not based on factual knowledge and are costing us precious resources. **The GIS analysis suggest that Pima does not need to duplicate every service on every campus**."

The GIS analysis is one form of evidence that can be used to clear up misperceptions regarding student travel patterns with all faculty and staff. The GIS analysis needs further validation with additional insights from structured student focus group sessions at each campus. The outcomes of these sessions is an important factor in decision-making for campus programs and services.

6 | District-Wide Strategic Directions / Planning Framework

A concerted effort has been made to align this Educational Master Plan with other PCC internal planning documents, as noted in Chapter 2. The most significant recommendation in this document is to align the planning cycles of key planning documents. The benefit of this structuring will become evident in this chapter.

In reviewing PCC planning processes, an evaluation indicated some goal overlap between several of the plans. An educational master plan typically precedes the completion of a campus master plan. A stepped or multi-year planning process will benefit the College. Also, in examining the process, it is important that functional or operational plans be integrated into the comprehensive planning cycle. Some of this work has already started with API.16.02.

This chapter has two purposes:

- To identify and align existing strategic goals to the Educational Master Plan
- Justify and present the broader educational master plan framework

"For a diverse, dynamic institution such as Pima Community College, our strategic plan describes our institutional North Star. It is a shared vision...."

– Chancellor's Message, 2014-2017 Strategic Plan

STRATEGIC DIRECTIONS

The strategic direction for the college has been established in the 2014-2017 Strategic Plan and is in the process of implementation. The institution has spent considerable time and effort developing this plan with broad-based input from internal constituents and the larger Tucson community. The following strategic directions and goals were viewed as critical in establishing a direction for the EMP:

Strategic Direction 1

(Reaffirm HLC reaccreditation and fully commit to the HLC guiding values. Not directly a component of the EMP.)

Strategic Direction 2

2.3 Increase college enrollment, especially in first-generation students, students over 25, Hispanic students, and other underrepresented populations.

2.6 Reconfigure career programs using instructional pathways built upon stackable credentials and completion points.

2.4 Increase the rate at which students with a transfer goal successfully transfer to a four-year college/university.

Strategic Direction 3

3.3 Expand community partnership to more fully engage all demographic segments associated with traditionally marginalized populations.

3.5 Develop community-based partnerships to encourage enrollment in college, especially for those students who would be first-generation students.

Strategic Direction 4

4.1 Redesign/reinvent occupational programs/curriculum based upon clearly defined industry-recognized credentials in partnership with industry.

4.2 Partner with industry to customize educational/training programs (content and format).

4.3 Utilized multiple delivery formats, including non-traditional, non-term based and accelerated courses instructional modes as needed based on industry input.

4.4 Establish internal processes that enable the College to respond to current and emerging workforce/industry needs in an accelerated manner.

4.6 Develop and foster career pathways in collaboration with industry, including:

Readiness –

a. Adult Basic Education
b. Developmental education
c. Job Readiness
d. Contextualized ABE and ESL (IBEST, Bridge)

Career –

a. Contextualized ABE and ESL (IBEST, Bridge)
b. Transfer and occupational programs using instructional pathways built upon stackable credentials and multiple completion points.

Strategic Direction 5

5.1 Strengthen the commitment to global education and infuse international awareness within our institution – for students, for faculty, for staff and the community we serve.

Strategic Direction 6

6.4 Create structures and mechanisms to build a culture of data-informed decision-making at all levels. This will include people, process, and technology supporting business intelligence.

STRATEGIC ENROLLMENT MANAGEMENT PLAN

The Strategic Enrollment Management Plan was in draft form during the development of the EMP. This plan has several linkages to both the Strategic Plan and to the EMP. These include:

Strategic Initiative #1

Goal 1.3 Increase the number of Adult Basic Education for College and Career students transitioning to certificate and or degree programs.

Goal 1.4 Increase enrollment in career and technical education programs that prepare students for current and future employment opportunities and career and technical industries

Strategic Initiative #2

Goal 2.1 Analyze persistence and retention rates for students along academic pathways

Strategic Initiative #3

Goal 3.2 Provide a system to align courses and programs with industry credentials.

Goal 3.3 Cultivate academic pathways for transfer in occupational degree and certificate completion. Strategies include semester-by-semester course sequences, and systematic credit for prior learning.

> *"A paradigm shift from transactional and passive advising practices to a personalized and focused approach to academic advising became a focus of paramount significance."*
>
> *– Description of Process from the Academic Advising Task Force*

After the completion of the strategic plan, the College's six campuses used this milestone document as a guide in developing plans of their own. Together, these comprise the Operational Plan. The 2014-2015 plans are the latest available. The operational goals for each of the six colleges and the Provost's Office were reviewed.

Academic Advising Task Force

The Academic Advising Task Force (2015-2016 Executive Summary) has several recommendations related to the EMP, including the need to "incorporate future integration of faculty and programmatic experts into the career and academic pathway."

One of the core themes of the High School Dual Enrollment Task Force Final Report (April 14,2015) focuses on Pathways/Student Success.

GOAL CONGRUENCE

The most common theme among all PCC planning documents centers on the creation of career and/or academic pathways. Goal 4.6 of the 2014-2017 District-Wide Strategic Plan states that career pathways will be built for both academic transfer and occupations programs, using stackable credentials and multiple completion points. Presently, Indiana, Oregon, Georgia, Texas, Tennessee and Florida have prescribed or are in the process of prescribing career or guided pathways at a statewide level. To test congruence of district-wide to campus goals using an established goal congruence taxonomy, (Markley, 1995), Career Pathways Goal 4.6 was reviewed at the "operational" level:

- ***Provost's Office: No goal established.***
- ***Community Campus: Restructure workforce and business development, establish a College-wide workforce advisory committee, and establish incubator program.***
- ***Desert Vista Campus: Develop work-based educational programs to serve special populations, strengthen and expand career pathways.***
- ***Downtown Campus: No goal established.***
- ***East Campus: No goal established.***
- ***Northwest Campus: Monitor outcomes of Hotel and Restaurant Hotel/IBEST program.***
- ***West Campus: No goal established.***
- ***Building I-BEST and Bridge Programs***

The development of career or instructional pathways for both academic and occupational programs using stackable credentials is not something that can be implemented at a single campus. For example, Oregon's Pathways Initiatives program includes occupational programs at all of the state's 17 community colleges. In summary, Goal 4.6 is "incongruent" between the strategic plan and the operational plans created at the campus level.

MULTI-COLLEGE DISTRICT VERSES MULTI-CAMPUS DISTRICT – THE NEED TO WORK TOGETHER

Multi-college community college districts include several individually accredited community colleges within one district. Each college is independent with distinct local administration, but they share a single board of trustees and report to a non-instructional central administrative office.

In a **multi-campus** District, larger institutions implement a multi-campus system and generally share a single accreditation. Campuses report to the district administration or a central administrative office with a single board of trustees. This is how Pima Community College District is structured.

A review of the pertinent literature reveals that, in a multi-college district, as much autonomy as possible should be allocated to each campus for the purpose of planning its own educational programs; the district office should be located apart from all campuses; the fiscal, data processing, and personnel functions should be centralized.

A multi-campus district may have different philosophical commitments or value systems from a multi-college district. Each of the six Pima Community College campuses have a unique history and program mix. Over time, campuses aligned more with the multi-college philosophy and were encouraged to compete among themselves for students and were often rewarded for such actions. Given fiscal realities and the need for continuous improvement, this competitive philosophy is counter-intuitive to accomplishing current far-reaching systemic goals at the strategic level. The recent consolidation of presidents' and the administrative realignments among campuses is a step in the right direction.

Each Pima Community College campus is part of one single system. With campuses working together, the system can be more effective and efficient in serving Tucson's diverse communities. Students walk through the doors of each of the six Pima Community College campuses seeking educational opportunity and consistency among programs and services. It was originally believed that students select a campus near their home or place of work. The GIS analysis suggests that students seek out educational opportunities based on the location of career programs or courses that complement their transfer aspirations.

Recommendation 6.1:

Creating a "premiere community college" requires a philosophy that is tailored to the needs of students, not past assumptions and competitive habits. All students should receive a quality education, regardless of location. Congruency between strategic and operational goals should be emphasized moving forward.

The implementation of current and future strategic goals will require campuses to work together in ways that have never been realized before. As an example, the development of career pathways and stackable credentials will require some realignment of programs between campuses and extending workforce programs to several campus locations. In a world where colleges now have to compete for students, the need to work together is greater than ever before. The challenges of providing continuity and accountability in this increasingly competitive world cannot be met by six campuses that are unwilling to collaborate and think differently and more creatively about their future.

"The implementation of current and future strategic goals will require campuses to work together in ways that have never been realized before."

EDUCATIONAL MASTER PLAN FRAMEWORK

Similar to a campus master plan, effective educational master plans require a structured framework. After several discussions with the Educational Master Planning Committee, a reoccurring theme emerged: the framework had to ***embrace student success***.

The core themes, as formulated by the Mission Fulfillment Framework, all point to student success. The theme of student success is not only referenced in all recent planning documents, but it is also part of Strategic Direction 2: Improve access and student success.

While the concept of student success was powerful. It could not stand alone as a framework. There were too many themes and ideas that did not fit well within the range of recommendations that were being promulgated for the EMP. During the April, 2016 Educational Master Plan Committee meeting, discussions around aspirational statements pointed to Chancellor Lambert's institutional North Star.

"What is your North Star? In other words, what is your unwavering goal, your passion, the aspiration that other aspects of your life revolve around?"

Like a three-legged stool, the three aspirations of the North Star provided the ideal framework for the Educational Master Plan. Themes that needed to be embraced by the Educational Master Plan were categorized into each of the three areas.

STUDENT SUCCESS

- **Strategic Campus Framework Plan**
- **Clear, Coherent Academic/Career Pathways and Stackable Credentials**
- **Campus Program Framework Plan**
- **Occupational Demand and Program Development Process**
- **Active Learning and other Engagement Strategies**
- **Program Review and Area Action Plans: Program Health and Vitality**

COMMUNITY ENGAGEMENT

- **Collective Impact and Partnerships**
- **Workforce Development and Service Learning**
- **Community and Industry Engagement/ Partnerships**
- **Expansion of Workforce and Career Development**
- **Certificates, Credentials, and Credit for Prior Learning**
- **Middle College and High School Partnerships**

ACCESS AND DIVERSITY

- **Diversity at PCC**
- **I-BEST Skills Training and Bridge Programs**
- **Reform Initiatives**
- **Statewide Developmental Education Pathway Models**
- **Strengthen Existing Adult Education Learning Centers**
- **PCC Online – Expansion of Alternative Delivery**

Each one of these elements will be addressed in four chapters. When viewed as a whole, they contain the majority of recommendations for the Educational Master Plan.

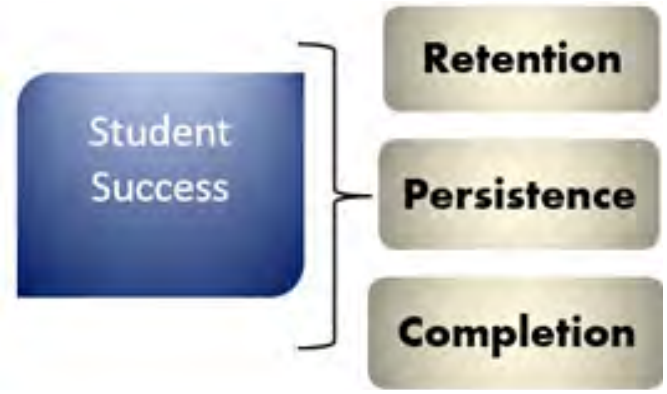
7 | Recommendations – Student Success

STUDENT SUCCESS

The most important strategic issue being discussed by two-year institutions, particularly HSIs, is student success. It is imperative that institutions focus their key strategies on the students' goal of completion. It is also important to recognize that "student success" can be defined in numerous ways, depending on the type of institution, its mission, its student demographic, and the needs of its community. Regardless, each institution's definition of student success should be at the center of the strategic planning process. For Pima Community College, *Strategic Direction 2: Improve Access and Student Success* provides this connection.

Before developing recommendations regarding student success, it is critical to look at existing literature and understand how two-year colleges, especially HSIs, have defined the **"student success"** concept. According to Excelencia in Education (2006), student success is generally defined as **"graduation and retention rates."** In reviewing multiple definitions of student success, the two metrics represent indicators of student success rather than a specific definition. Regardless, these terms are used widely to refer to student success when addressing the issue. Other definitions also include "**improved GPA**", "**student engagement**", and "**achievement of students' educational goals**." These definitions generally help institutions establish a set of indicators to measure student success. Pima Community College's planning documents commonly define student success as **retention**, **persistence**, and **completion**.

"Pima Community College's planning documents commonly define student success as retention, persistence, and completion."



Closely aligned with student success is the changing role of the student. The student of today will not be the student of tomorrow, and this is critical in the understanding of student success. Generation Z, the cohort of people born after the Millennials, is generally defined with birth years ranging from 1995 to 2007. These students are currently entering two-year colleges. In 2015, Generation Z comprises the largest portion of the U.S. population, at nearly 26%, edging out Millennials at 24.5%. They have been exposed to an unprecedented amount of technology in their upbringing, including widespread usage of the internet, and spend a significant amount of time interacting via social media.

According to a Northeastern University survey, 81% of Generation Z believes that obtaining a college degree is necessary in achieving career goals (*Northeastern News*, 2015). Bauerlein (2011) highlights Generation Z's heavy reliance on technology in the classroom and other learning environments. They prefer fast and efficient productivity and are masters of multitasking.

Cory Seemiller, in her book *Generation Z Goes to College*, provides research showing that "Generation Z college students prefer intrapersonal and independent learning over group work, yet like to do their solo work alongside others in a social manner when studying." She also states that "They like their learning to be practical and hands-on and want their professors to help them engage with and apply the content rather than simply share what they could otherwise find on their own online."

Arthur Levine's latest book, *Generation on a Tightrope: A Portrait of Today's College Student* (2012) provides additional insight into Generation Z students based on interviews with college student affairs officials. He notes that Gen Z students are "much more pragmatic. They say their primary reason for going to college is to get training and skills that will lead to a job, and let them make money. They're willing to have a college major they're not really interested in if they think there will be job growth in that field." Levine goes on to note that "They're much less likely than their predecessors to say they're in college to develop their personal values, or learn to get along with different people. These are kids who come with real digital skills, who are interested in global issues, and who deal with diversity better than any generation before them."

Why a Campus Framework Plan for Pima Community College?

The goal of developing a **"Campus Framework Plan"** for Pima Community College is in the interest of making informed program decisions for both the short- and long-term. This type of plan reduces ambiguity when decisions need to be made about the placement of new programs and reassigning existing programs to one of PCC's six campus locations.

Justification for this framework was reviewed with the Educational Master Planning Committee and includes the following:

- The GIS analysis and community demographic data presented in Chapter 5 suggests the communities surrounding each campus vary significantly. Each campus attracts students from multiple communities.
- Some level of consistency with research on multi-campus systems regarding student engagement and completion is needed. Student engagement strategies differ by ethnicity, age, and work status. In the article, *Facilitating College Success among Emerging Hispanic Serving Institutions: Multiple Perspectives Yield Commonly Shared Diversity Goals* (2014), the authors note that "…the background of many Hispanic/Latino students is very complex. These complexities may serve as a barrier in engaging students to consider the long term. To get them to say that they are going to college for 4-6 years – they cannot even fathom that." In addition to offering two-year degrees, campuses situated in areas with greater densities of Hispanic/Latino populations need to provide a greater number of shorter-term certificates and academic support services than other campus locations.
- The elimination of state funding necessitates the need to eliminate costly program duplication. As Lee Lambert, Chancellor, stated in the Master Plan Kickoff Meeting (August 18, 2015) "Fiscal realities dictate that we cannot be at all locations for every program. This is not going to work anymore."
- Standardization will allow more effective deployment of resources and greater clarity for the placement of new programs based on occupational demand and the potential location of that demand.
- A Campus Framework Plan also provides the ability to streamline and clarify future changes in the organizational structure.

Each campus has unique strengths and opportunities that reflect the characteristics of the surrounding community. As the competitive strengths of each campus are understood, program inconsistencies begin to emerge. The current strengths, as listed below, assisted in shaping the overall campus framework. The following were noted as part of EMP development:

Community Campus

- Recent restructuring of service functions
- Centrally located near downtown with easy access
- More of a service center – no classes taught on the campus
- Location of Workforce Development and Business Development
- Administration for noncredit Continuing Education
- Small Business Development Center
- Administration of three Adult Education centers
- Hub for PCC Online
- Community events and meetings
- Leased space for University of Northern Arizona
- Television station and working production studio

Desert Vista Campus

- Large Developmental Education component
- Diverse student population in one of the most diverse areas of Tucson
- Comprehensive student success center
- Shorter term Career and Technical Development (CTD) programs with wrap-around student support
- Opportunity grant HOPES (Health Career Opportunities with Personalized Educational Supports) supports low-income eligible students through training for careers in high-demand healthcare fields
- Project BLAST (Bridge, Launch, Academic Success and Transition) grant to help student's complete science, technology, engineering and math degrees
- Center for Integrated Learning (CIL) supports student instruction by providing instructional and collaborative spaces for students to develop critical academic skills
- Close association with Pima County One Stop

Downtown Campus

- Central location close to downtown Tucson and the University of Arizona
- Diverse campus with transit access
- A large number of programs in construction, applied technologies, and business
- Urbanized area provides additional opportunities for food and socializing
- Active veterans population based on program offerings
- Full service academic support facilities

East Campus

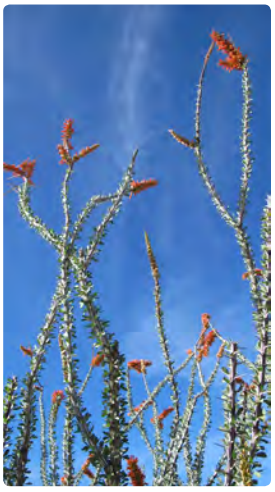
- A focus on STEM and Science (as facilities permit)
- Technology alignment with UA South and Tech Park serving interstate commerce and international trade sectors
- Large military population and higher density of veterans in the local community
- Emphasis on transfer based on traditional and charter high school to college partnerships through Upward Bound
- Dual/Concurrent enrollment programs
- TRiO Student Support Services program for students with disabilities

Northwest Campus

- Transfer oriented campus where Honors College and involvement in Phi Theta Kappa Society are important to students
- More traditional student population with greater emphasis on student life
- Higher percentage of students who are college-ready means less emphasis on basic academic support services
- New science facilities support a focus on STEM and sciences, emerging technologies
- Concentration on high school and transfer pathways with Arizona State University and the University of Arizona
- Emphasis on more advanced and complex workforce competencies, especially in engineering, medicine, and management related areas

West Campus

- Comprehensive hub for a significant number of PCC programs
- Rich diversity of students who travel from all areas of Pima County
- Comprehensive array of nursing, dental, and other allied health programs
- Centrally located in the region
- Only campus with fine and performing arts and student athletics
- Focus on industry partnerships related to existing programs
- Many programs require pre-requisites, as the campus is a feeder from other locations
- A full library with adjacent areas for academic success



CAMPUS FRAMEWORK PLAN COMPONENTS

For multi-campus systems, there are three major framework approaches. Each one of these will be discussed in detail.

Centers of Excellence Approach

A Center of Excellence (COE) can be defined as a team, a shared facility, or an entity that provides leadership, best practices, support and/or training for a focus area. In higher education and at two-year colleges, the term refers to a collection of academic or technical programs that are strategically aligned to pursue excellence in a particular discipline or field of study. Distinguished Centers of Excellence like those at Cuyahoga Community College, the seven centers at Washington State community colleges, and the 13 centers at Houston Community College have become national models.

Characteristics of successful Centers of Excellence include:

- Providing structure through formal degree and certificate programs and flexibility through short-term training opportunities via stackable credentials and multiple on-ramps.
- Facilitating collaborative partnerships with local businesses, industry, workforce development centers, and area school districts.
- Providing leadership in workforce development at the highest possible level.
- Building a concentration of resources and specialized expertise through shared faculty and industry partners using best practices.
- Striving to integrate credit, non-credit, workforce and industry certifications/ credentials.
- Providing enriched student engagement and cross-program understanding by focusing on developing top-notch faculty who are committed to developing an outstanding workforce.
- Using real-time regional economic development and local labor data to understand and respond to community, business, and industry needs.

Centers of Excellence are site- or location-specific as the facilities, faculty, and equipment costs are difficult to duplicate across multiple campus locations.

Focused Approach

Community colleges not interested in establishing COEs often develop a focused approach for select programs or courses (Markley, 2015). With a focused approach, career and technical education programs and some academic program offerings are exclusive to each site or campus location. This may be due to the need for specialized facilities, equipment, or faculty resources. In a multi-campus district, programs or courses may be focused near hospitals or clinics, manufacturing facilities, or four-year colleges or universities. Programs using a focused approach framework may require large tracts of land for agriculture, precision farming technology, and crop and livestock management, while programs with clinical components such as culinary arts and cosmetology are better situated in more urbanized areas.

This approach is heavily based on credit programs that require prerequisites where the goal is often credentialing or licensure. Similar programs are grounded in specialized facilities and student engagement

spaces that are shared to create synergies and opportunities for students to understand relationships among related programs. A concentration of faculty allows interdisciplinary collaboration. A common example is a nursing program and focused allied health programs such as medical laboratory technician, physical therapy assistant, radiography, and surgical technology. Together, these programs create synergies by sharing resource areas and an interdisciplinary simulation center, as well as student study collaboration areas.

Sometimes this approach is misinterpreted. A focused approach does not mean that every course in each program using this framework is contained on a particular campus. The placement of entry level courses on multiple campuses allows students to test their interest in entry level courses while obtaining valuable skills in a variety of areas.

Distributed Approach 

With a distributed approach, similar programs, concentrations, or courses are distributed among campuses or instructional sites (Markley, 2015). Such an approach provides greater access to programs and courses across a district or community college system. Typically, equipment is less intensive and program space is less demanding, often requiring only a general classroom or computer laboratory. Programs or courses can stand alone without a significant loss of context. A good example is a broad array of liberal arts or humanities courses.

For career and technical education programs, more certificates than degrees are included under this framework. This also provides additional opportunities for high school to college transition programs, on-ramps, and workforce courses. The following two examples of the distributed approach will help solidify the concept.

Program progression is often used within a distributed approach when there are wide variations in demand within a broad occupational category. Central Piedmont Community College serves the larger Charlotte, North Carolina area with six campus and center locations. As occupational demand is significantly greater for certified nursing assistants (CNAs), the short-duration program is 'distributed' among multiple sites. CNA graduates desiring to progress to an Associate's Degree in Nursing (ADN) must travel to the Central Campus for this program.

A distributed approach is viable for career and technical education programs where occupational demand varies or is limited. At Cuyahoga Community College, short term certificates (6 months to 1 year) are offered in Microsoft Certification Training, Web Application Development, Computer Programming, and Mobile Application Development. These certificate programs are 'distributed' among multiple campus locations around the Cleveland area. Degree programs are offered through the Center for Information Technology are more focused.

These three approaches will be used to develop a framework for Pima Community College.

PROGRAM LEVEL FRAMEWORK PLAN RECOMMENDATIONS

The official name and campus designation for each PCC credit certificate and degree program was obtained from the 2016/2017 Pima Community College Catalog. Each program was organized by area of study or potential career cluster (see chapter 8).

Duplicated enrollment for Fall 2015, by campus, retention and persistence rates, and the number of full-time faculty in each program were obtained from dashboards provided by PCC Institutional Research, Planning and Effectiveness, dated November 11, 2015. EMSI occupational gap analysis data was also summarized by program based on the data reviewed in Chapter 5. Finally, GIS information regarding the ethnicity, poverty level, income distribution, and educational attainment of Tucson residents was studied based on the location of each program (see Chapter 5).

To assist in reviewing the outcomes of this analysis, some of this data is contained in multiple tables. This section provides a program level review based on the following components:

1. Current Degree and Certificate Program or Pathway
2. Current Lead Campus Designation
3. Proposed Campus Designation
4. Programs with Low Enrollments and Occupational Demand
5. Potential New Programs

The areas of study or career clusters are presented in no particular order and are noted as recommendations.

Recommendation 7.1

Nursing and Allied Health Sciences Framework Plan

Given the number of allied health programs and the co-location of these programs on the West Campus, a Center of Excellence framework is recommended. In alignment with nursing, together these programs provide a synergy in terms of interdisciplinary simulation, student resource areas, and student collaborative study areas. As the many of these programs require specialize teaching facilities, the majority of courses should be aligned with the West Campus. A Center of Excellence framework will require significant upgrades in terms of space to the current nursing bed labs and simulation area. The simulation center should of significant size to accommodate simulation in many of the allied health programs. A recent partnerships with NAU in the nursing area could also assist in building the center of excellence.

EMSI and the Competition

In reviewing EMSI average annual completers and PCC completers, there are several other higher education entities in Pima County offering allied health programs. For example, an average of 108 students in Pima County received an AAS degree in Radiologic Technology over the last three years. A total of 17 of these completers graduated from Pima Community College. This trend is

more pronounced at the certificate level, where PCC had an average of 282 certificates over the last three years while other competing colleges awarded 732 certificates in health related professions. Altogether, EMSI notes that there is a surplus or oversupply of education completers in most of the allied health occupations. The occupational demand indicates a small gap or undersupply for fitness certificates.

Program Relocation

The large majority of allied health programs are already located on the West Campus.

- In the future, Pharmacy Technology should be relocated to the West Campus.
- The Veterinary Technician AAS and the Veterinary Practice Assistant program certificate, utilizes animal kennels and small animal operating rooms that are slightly different than those used for humans. However, students would benefit from being clustered with other health science students. The East Campus should be able to provide the necessary science prerequisites to maintain the program on this campus in the near term. As health facilities are expanded or renovated on the West Campus, there should be a concerted effort to relocate this program to West Campus.
- At the certificate level, Medical Assistant and Phlebotomy programs provide opportunities for underserved students to obtain entry level credentials at the Desert Vista Campus. In many ways, these programs complement Medical Office, Nursing Assistant, Practical Nurse, and Surgical Technical, as offered through Career and Technical Development.

Program Concerns

- Therapeutic Massage at the certificate level has less than 10 students. According to EMSI, other higher education programs are producing an average of 173 completers and saturating the market by almost 150 graduates. Given the nature of the program and space demands, it is suited for the Northwest Campus.

Potential New Programs

- EMSI identified a need for healthcare support workers. This would be an entry-lever certificate with a broad-based knowledge of the healthcare or hospital system. This could be an entry pathway from high school to college, or an on-ramp for residents in Tucson area without a high school diploma.

Nursing & Health Sciences

Center of Excellence				Fall 2015 Duplicated Headcount						EMSI Report			
Pathway & Program	Award	Current Lead Campus	Proposed Lead Campus	CC	DV	DT	EC	NW	WC	Average Annual Openings	Average Annual Completers	PCC Completers	Total Gap or Surplus
Nursing (RN)	AAS	WC	WC	10	5	12	10	12	313	110	242	194	(132)
Dental Hygiene	AAS	WC	WC	4	0	3	0	1	47	20	22	22	(2)
Dental Laboratory Technology	AAS	WC	WC	0	0	2	2	1	12	1	1	1	0
Medical Laboratory Technician	AAS	WC	WC	13	11	21	28	20	38	15	20	11	(5)
Pharmacy Technology	AAS	EC	WC	21	10	25	59	12	21	10	14	14	(4)
Radiologic Technology	AAS	WC	WC	3	5	5	4	3	54	15	108	17	(93)
Respiratory Care	AAS	WC	WC	3	0	0	4	3	44	15	71	23	(56)
Therapeutic Massage	AAS	NW	NW	4	3	11	4	15	5	9	6	6	3
Veterinary Technician	AAS	EC	EC/WC	19	24	32	99	23	37	6	22	15	(16)
Subtotal				**77**	**58**	**111**	**210**	**90**	**571**	**201**	**506**	**303**	**(305)**
Practical Nursing	CERT	WC	WC	0	0	0	0	0	1	114	188	188	(74)
Dental Assisting Education	CERT	WC	WC	2	2	1	0	0	23	27	201	22	(174)
Medical Assistant	CERT	DV	DV	12	13	11	14	15	23	2	2	2	0
Pharmacy Technology	CERT	EC	WC	1	4	1	11	0	2	32	189	11	(157)
Phlebotomy	CERT	DV	DV							19	119	17	(100)
Therapeutic Massage	CERT	NW	NW	0	1	1	1	5	1	31	180	7	(148)
Veterinary Practice Assistant	CERT	EC	EC/WC	4	5	2	15	5	2	20	122	25	(102)
Biotechnology	CERT	WC	WC	9	2	11	8	4	18	4	3	3	1
Fitness - Coaching	CERT	WC	WC	1	5	1	4	3	8	9	4	4	5
Fitness Professional	CERT	WC	WC	12	14	12	8	11	65	24	7	5	17
Subtotal				**41**	**46**	**40**	**61**	**43**	**143**	**282**	**1015**	**284**	**(732)**
Areas of Opportunity													
Healthcare Support Workers	CERT									11	0	0	11

Recommendation 7.2

Culinary, Hospitality & Tourism Framework Plan

Programs that make up the Culinary Hospitality and Tourism career cluster are scattered among three different campuses. The Desert Vista Campus includes the culinary arts credit programs and short term culinary and food industry programs under Career Training and Development.

The facilities on the Desert Vista Campus are inadequate compared to comparable programs at the two-year level across the country. Typically there would be several theory kitchens, a food quantity production kitchen, a pastry/baking kitchen, a chocolate lab, a demonstration kitchen for community programs, and a space for ice sculpting and guar mache. Most programs also have a small bistro and retail bakery that allow students to receive hands-on instruction. Given the emphasis on viticulture in the region, a sensory free wine tasking room could also be developed.

If the culinary, hospitality, and tourism program is to thrive in Tucson's growing food service and tourism industry, a new facility is needed. The addition of retail management and customer service management programming fits well with in this service-oriented framework.

To make this program a Center of Excellence, it would ultimately mean that the culinary, hospitality, and tourism program would seek new facilities with the potential to be co-located near shopping or

business areas with a high density pedestrian population, where the College could open a limited hours bistro and retail bakery. The most ideal situation would be to partner with a four-year college and national hotel operator to provide service-oriented components for students. In this scenario, retail and customer management students in short-term and certificate programs would work with culinary students to assist in retail and customer service strategies. EMSI notes a significant need for managers at the food service and retail management level.

Finally, there is a significant potential for community education, as home cooks want to learn cooking and baking techniques from professional chefs. In a demonstration kitchen, these courses could be recorded and offered online.

EMSI and the Competition

In reviewing EMSI average annual completers and PCC completers, PCC is providing the largest share of training in these programs. There is significant occupational demand in many of these areas.

Program Relocation

- Culinary arts, tourism, hotel and restaurant management, retail and customer management would all relocate to a single location.

Program Concerns

Certificates in retail management and customer service have few students. It may be that these programs are not meeting the needs of local employers or are connected to other career pathways.

Potential New Programs

- The EMSI report included no new programs.

Culinary, Hospitality & Tourism													
Focused or Center of Excellence				Fall 2015 Duplicated Headcount						EMSI Report			
Pathway & Program	Award	Current Lead Campus	Proposed Lead Campus	NC	CC	DC	WC	DV	EC	Average Annual Openings	Average Annual Completers	PCC Completers	Total Gap or Surplus
Culinary Arts	AAS	DV	DV or NEW	30	10	25	29	116	23	97	30	30	67
Tourism Concentration - Business	AAS	EC	DV or NEW	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	12	9	9	3
Subtotal				**30**	**10**	**25**	**29**	**116**	**23**	**109**	**39**	**39**	**70**
Culinary Arts	CERT	DV	DV or NEW	26	0	5	5	23	0	215	3	1	212
Hotel and Restaurant Management	CERT	NW	DV or NEW	24	2	5	6	1	5	99	14	14	86
Retail Management	CERT	DC	DV or NEW	0	0	3	2	2	1	1,242	1	1	1,241
Customer Service Management	CERT	DC	DV or NEW	1	0	0	0	0	1	3	2	2	(1)
Subtotal				**51**	**2**	**13**	**13**	**26**	**7**	**1,559**	**20**	**18**	**1,538**

Recommendation 7.3

Education Framework Plan

The Education cluster at PCC includes programs in early childhood education and teacher education. Both degree and certificate programs are offered on the Desert Vista Campus with teacher education programs managed from the Community Campus. The majority of students in early childhood

programs are located at the Desert Vista Campus. Given the number of occupational openings, a focused program strategy is warranted. Basic educational technology and teacher education are online programs offered through the PCC online campus.

EMSI and the Competition

In reviewing EMSI average annual completers and PCC completers, PCC is providing the majority of training in these programs. There is significant occupational demand for the basic Early Childhood Studies certificate. In most other programs, EMSI notes a surplus of graduates.

Program Relocation

- No recommendations

Program Concerns

The basic Early Childhood Studies certificate should be a pathway to the AAS degree or the AA in early childhood education. The number of PCC completers in this program is low compared to occupational demand.

Potential New Programs

- EMSI identified a modest need for library technicians.

Education

Focused				Fall 2015 Duplicated Headcount						EMSI Report			
Pathway & Program	Award	Current Lead Campus	Proposed Lead Campus	NW	CC	DC	WC	DV	EC	Average Annual Openings	Average Annual Completers	PCC Completers	Total Gap or Surplus
Early Childhood Education													
Early Childhood Studies	AAS	DV	DV	22	29	22	21	105	13	3	42	42	(39)
Basic Early Childhood Studies	CERT	DV	DV	2	3	5	5	19	0	157	3	2	154
Advanced Early Childhood Studies	CERT	DV	DV	2	5	1	3	14	0	10	32	32	(22)
Basic Educational Technology	CERT	CC	CC	0	0	0	0	3	0	4	1	1	3
Teacher Education													
Elementary and Secondary Certification	CERA	CC	CC							2	28	28	(26)
Special Education - Mild Disability Cert.	CERA	CC	CC							38	30	30	8
Special Education - Mild Disability for Teachers	CERA	CC	CC							0	5	5	(5)
			Subtotal	26	37	28	29	141	13	214	141	140	73
Areas of Opportunity													
Library Technicians	CERT									19	0	0	19

Recommendation 7.4

Applied / Digital Arts and Design Framework Plan

The applied and Digital Arts and Design cluster is an opportunity for a Center of Excellence. All of the digital arts programs are currently located on the West Campus. This campus also houses a significant share of Fine Arts and Performing Arts.

At many community colleges, fine arts & applied arts students are working together in a large makerspaces or fabrication labs that provide hands-on experiences (see next section of this chapter).

While the maker movement has developed in out-of-education spaces and has mostly involved adult participants, there is a growing number of college educators bringing 'making' into higher education to enhance opportunities for students to engage in collective design and collaborative team practices.

One of the features of a makerspace is the use of new and newly affordable digital tools. As these tools provide new ways of interacting with physical materials, they also offer new opportunities for learning. Digital physical tools (also called rapid prototyping tools or digital manufacturing tools) shape materials or material objects into new forms. Some of these include 3D printers, laser cutters, vinyl and paper cutters, and digital embroidery machines. While faculty tend to focus on ways in which digital tools can support student projects and small-scale making, others see makerspace as the beginning of a much larger social and economic transformation. Studies have been completed that demonstrate that students who use these spaces are more likely to engage with faculty and other students and complete their program of study.

This Center of Excellence also brings together fashion design and Fashion Consumer Sciences as part of the design component of the center for excellence.

EMSI and the Competition

In reviewing EMSI average annual completers and PCC completers, PCC is providing the majority of completers in these programs. The EMSI gap analysis report notes lackluster occupational demand in most of the digital arts and fashion design programs. The majority of certificate programs have a low number of completers averaged over the last three years. It may be that these programs can be retooled into shorter-term programs to fit a career pathways model tailored more specifically to student interest. This is described in more detail in chapter 8.

Program Relocation

- While the Fashion Consumer Sciences certificate at the Downtown Campus is heavily focused on the merchandising and marketing side of the industry, these students would benefit greatly from being immersed into more creative environments that emphasize the digital and design components. It is suggested that the program be merged together at the West Campus with multiple pathways.

Program Concerns

Partnerships with local design and creative agencies in the Tucson area should be emphasized. If a makerspace is developed, there are potential partnerships with business and industry and community education components that should be explored.

Potential New Programs

- EMSI identified no new programs in this area.

Applied / Digital Arts & Design

CENTER OF EXCELLENCE				Fall 2015 Duplicated Headcount						EMSI Report			
Pathway & Program	Award	Current Lead Campus	Proposed Lead Campus	NW	CC	DC	WC	DVC	EC	Average Annual Openings	Average Annual Completers	PCC Completers	Total Gap or Surplus
Digital Arts	AAS	WC	WC	13	18	28	105	11	14	13	42	42	(29)
Digital and Film Arts	AAS	WC	WC	9	13	21	52	6	10	1	18	18	(17)
Digital and Film Arts - Animation	AAS	WC	WC	8	8	17	51	4	10	0	0	0	0
Digital Game & Simulation	AAS	WC	WC	13	9	14	84	9	25	0	11	11	(11)
			Subtotal	43	48	80	292	30	59	14	71	71	(57)
Digital Arts	CERT	WC	WC	7	5	4	23	2	1	3	2	2	1
Digital and Film Arts	CERT	WC	WC	2	2	2	12	2	1	3	4	4	(1)
Fashion Design	CERT	WC	WC	2	0	2	18	1	3	1	3	3	(2)
Fashion Consumer Sciences	CERT	DC	WC	0	0	2	2	1	1	1	3	3	(2)
			Subtotal	11	7	10	55	6	6	8	12	12	-4
Areas of Opportunity	None												

Recommendation 7.5

Industry, Manufacturing, Construction, and Transportation Framework Plan

Perhaps the great of areas of promise for a program cluster is in the Industry, Manufacturing, Construction and Transportation area. Not only does this program cluster have a large number of openings in many occupations, it also has a significant number of potential new programs. The majority of these programs are housed at the Downtown Campus. The aviation and avionics program is located in a facility near the Tucson airport, but should be connected to this cluster of career programs. The proximity to the Desert Vista Campus should continue.

In many cases facilities are completely inadequate for the programs that are being offered. One such area is in Building and Construction Technologies. Another major area with space constraints is in Welding.

During on-campus tours, the method of instruction (such as the curriculum in the automotive technology program) is outdated and needs to be replaced with a more contemporary course-based content. There is also a need for industry sponsored programs such as FORD ASSET, TOYOTA T-TEN or GM ASEP. There is a significant opportunity to make this cluster a Center of Excellence for Pima Community College, especially if Workforce Development, credentialing, and apprenticeships are integrated into this center and partnerships with local business and industry are actively pursued.

EMSI and the Competition

In reviewing EMSI average annual completers and PCC completers, PCC is providing the majority of completers in these programs. The EMSI gap analysis report notes strong occupational demand in building trades, automotive, machine tool, welding, and truck driver training.

Program Relocation

- The truck driving facility is located next to the Maintenance & Security complex in south Tucson.

The program is administered from the Community Campus. The feasibility of relocating the oversight of this program to the Desert Vista Campus should be explored.

- The Downtown Campus will require new facilities to accommodate the growth of existing programs and new occupations programs such as diesel technology. The Downtown Campus is also the most urban campus and is landlocked t with limited opportunities to purchase additional land. A viable Center of Excellence will require a more singular focus with the relocation of several existing programs to other sites over the master plan horizon.

Program Concerns

A large number of certificate programs have a low number of completers averaged over the last three years. The most significant include Cabinetmaking, Minor Home Improvements, Limited Remodeling & Repair, and General Residential Contractor. It may be that these programs are not in line with the current needs of the industry, or that students do not see a benefit to completing these certificates. These programs may need to be retooled into shorter-term credentials to fit a career pathways model tailored more specifically to industry needs. This is described in more detail in chapter 8.

Partnerships with local design and creative agencies in the Tucson area should be emphasized. If a makerspace is developed, there are potential partnerships with business and industry and community education components that should be explored.

Potential New Programs

- As noted in the table, the EMSI gap analysis identified multiple new programs in this cluster. The two clusters with the largest gaps are in construction trades and heavy equipment/diesel mechanics. These programs are also some of the most costly in terms of equipment and require large amounts of space. In some cases, demand may not be sufficient to justify the startup costs, such as the 13 annual openings in automotive body repairers.

Industry, Manufacturing, Construction, & Transportation														
Center of Excellence				**Fall 2015 Headcount**						**EMSI Report**			
Pathway & Program	**Award**	**Current Lead Campus**	**Proposed Lead Campus**	**CC**	**DV**	**DC**	**EC**	**NW**	**WC**	**Average Annual Openings**	**Average Annual Completers**	**PCC Completers**	**Total Gap or Surplus**
Automotive Technology	AAS	DC	DC	13	14	140	18	8	18	47	13	13	35
Aviation Technology	AAS	DV	DV	12	118	23	6	10	20	9	16	16	7
Building & Construction Technologies	AAS	DC	DC	63	23	160	12	8	17	108	22	22	86
Advanced Computer Aided Drafting/Design	AAS	DC	DC	5	3	80	10	6	16	1	22	22	(21)
Machine Tool Technology	AAS	DC	DC	1	2	61	4	4	8	30	8	8	22
Welding	AAS	DC	DC	9	7	115	13	8	17	38	8	8	30
Subtotal				**103**	**167**	**579**	**63**	**44**	**96**	**233**	**89**	**89**	**159**
Automotive Mechanics	CERT	DC	DC	0	3	58	3	6	4	78	41	41	37
Advanced Aviation Technology	CERT	DV	DV	4	22	2	1	2	2	31	62	62	(31)
Avionics Technician	CERT	DV	DV	1	5	4	2	2	3	7	3	3	4
Basic Building & Construction Technologies	CERT	DC	DC	0	1	14	1	0	0	120	26	26	94
Advanced Building & Construction Technologies	CERT	DC	DC	3	5	47	3	0	2	64	10	10	53
Cabinetmaking	CERT	DC	DC	0	0	3	0	1	0	NA	NA	NA	NA
Minor Home Improvements	CERT	DC	DC	0	0	0	0	0	0	NA	NA	NA	24
Limited Remodeling & Repair	CERT	DC	DC	0	0	2	0	0	0	NA	NA	NA	24
General Residential Contractor	CERT	DC	DC	0	0	7	0	0	0	8	14	14	(6)
Solar Installer	CERT	DC	DC	1	1	10	1	0	2	NA	NA	NA	NA
Basic Computer Aided Drafting/Design	CERT	DC	DC	1	0	15	2	2	2	1	2	2	(1)
Advanced Computer Aided Drafting/Design	CERT	DC	DC	0	1	9	2	0	2	1	15	15	(14)
Integrated Circuit Layout Design	CERT	DC	DC	0	0	3	0	0	0	0	1	1	(1)
Machine Tool Technology	CERT	DC	DC	0	2	26	0	1	0	32	6	6	27
Truck Driver Training - Class A Vehicle	CERT	CC	CC	0	1	1	0	0	3	276	253	26	23
Truck Driver Training - Transit Bus Driver	CERT	CC	CC	na	na	na	na	na	na	276	253	26	23
Subtotal				**10**	**41**	**201**	**15**	**14**	**20**	**894**	**686**	**232**	**256**
Areas of Opportunity										**EMSI Report**			
										Average Annual Openings	**Average Annual Completers**	**PCC Completers**	**Total Gap or Surplus**
Carpenters	CERT									69	0	0	69
Plumbers, Pipefitters, Steamfitters	CERT									60	0	0	60
Mobile Heavy Equipment Mechanics	CERT									30	0	0	30
Industrial Machining Mechanics	CERT									27	0	0	27
Sheet Metal Workers	CERT			No formal Pima Community College Programs						25	0	0	25
Bus and Truck Mechanics / Diesel Engine Specialists	CERT									22	0	0	22
Glaziers	CERT									21	0	0	21
Electricians	CERT									57	38	0	18
Automotive Body Repairers	CERT									13	0	0	13
Construction and Building Inspectors	CERT									10	0	0	10
Subtotal										**334**	**38**	**0**	**295**

Recommendation 7.6

Public Safety and Emergency Services Institute (PSESI) Framework Plan

The Public Safety and Emergency Services Institute is located at the 29th Street Coalition Center and managed from the Community Campus; it functions much like a Center of Excellence. Current programs include paramedic, fire and emergency services, and law enforcement (AAS and Academy). The Emergency Medical Technology basic certificate is offered at the East Campus. The lack of adequate facilities at the 29th Street facility and the divided EMT/Paramedic program between two sites are barriers to moving forward as a fully viable Center of Excellence.

EMSI and the Competition

In reviewing EMSI average annual completers and PCC completers, PCC is providing the majority of graduates in these programs. Students are also obtaining law enforcement credentials from other higher education institutions in the region. While the EMSI gap analysis notes double-digit demand in many of the programs and a surplus of completers, their analysis does not take into consideration

those students attending the program from outside of Pima County. This is typical for an institute or Center of Excellence that attracts students from outside the immediate region.

Program Relocation

- The EMT/EMS program on the East Campus should be integrated with, and be part of, a career pathway with the paramedic program at the 29th St Location. The program at the East Campus includes a classroom, skill demonstration and practice areas, equipment and supply storage, and offices. The amount of space at the current PSESI site is cramped, especially in the paramedic program. The master plan will need to provide a physical solution before these programs can be collocated.

Program Concerns

None at this time.

Potential New Programs

- As noted in the table, the EMSI gap analysis identified the need for correctional officers. There is also a need for continued training for security personnel to continue to refine their skills and knowledge in related law enforcement areas.

Public Safety and Emergency Services Institute

Center of Excellence				Fall 2015 Duplicated Headcount							EMSI Report			
Pathway & Program	Award	Current Lead Campus	Proposed Lead Campus	CC	DV	DC	EC	NW	WC	29th St.	Average Annual Openings	Average Annual Completers	PCC Completers	Total Gap or Surplus
EMT – Paramedic	AAS	EC/CC	29th St.	15	8	13	13	4	9	0	18	31	31	(12)
Fire & Emergency Services Higher Education	AAS	CC	29th St.	20	13	23	24	13	22	29	8	37	37	(29)
Law Enforcement	AAS	CC	29th St.	14	29	32	30	21	33	3	72	37	12	36
Subtotal				**49**	**50**	**68**	**67**	**38**	**64**	**32**	**98**	**105**	**80**	**(5)**
Emergency Medical Technology Basic	CERT	EC	29th St.	7	5	7	40	7	11	5	17	4	4	13
Fire Science Academy Track	CERT	CC	29th St.	5	2	7	12	6	4	14	22	51	51	(28)
Law Enforcement Academy	CERT	CC	29th St.	2	6	1	4	2	3	0	11	94	64	(83)
Subtotal				**14**	**13**	**15**	**56**	**15**	**18**	**19**	**50**	**149**	**119**	**(98)**
Areas of Opportunity														
Correctional Officers	CERT										53	0	0	53

Recommendation 7.7

Social and Human Services Framework Plan

The Social and Human Services Career Cluster is comprised of multiple programs that, at first glance, may not seem to have much in common. This cluster is one of the most difficult with respect to program placement on many community colleges campuses. The concentration of social services programs are offered at the West Campus. As many of these programs have specific areas of emphasis that can be offered independently on different campuses. As a result, a distributed program framework is recommended.

EMSI and the Competition

In reviewing EMSI average annual completers and PCC completers, PCC is providing the majority

of social and human services program graduates with the exception of Administration of Justice Studies degree. With many of these programs there is a greater demand at the degree level than at the certificate level. The greatest exception is in the direct care professional certificate. This is a very basic certificate that can lead to entry-level jobs in care centers, nursing homes, and home health aide. Due to the aging population, the number of average annual openings is significant over the next ten years.

Program Relocations

- It is recommended that the core Social Services degree and certificate programs remain at the West Campus, as there is some relationship with other caregiving programs, especially in Allied Health.
- In reviewing the Direct Care professional certificate offered at the Northwest Campus, it can be justified through Fall 2015 duplicated headcount enrollments that demand is equal or stronger at other campus sites that are closer in proximity to campus locations in the central Tucson area. This program would work well with the medical assistant and phlebotomy programs, as well as those offered by the Center for Training and Development (CTD). In fact, the direct care professional program could be also offered in a CTD format or as part of an I-BEST program through Adult Education.
- The Behavioral Health Sciences certificate currently located at the Desert Vista campus would be more appropriately suited at the West Campus and integrated within the social services framework.
- Translation interpretation studies seems to be well attended on the Downtown Campus but could relocate to the West Campus if space becomes an issue at the Downtown location.

Program Concerns

The number of students in certificate programs in the Behavioral Health Sciences, Substance Use Disorder Specialty, Domestic Violence Intervention, and Community Health Advisor are significantly low. These programs should be reviewed carefully to determine their viability for the future. The EMSI average annual openings is also relatively low in for these programs.

Potential New Programs

As noted in the table, the EMSI gap analysis identified a need for residential advisors. While this program may seem disconnected to the social services cluster, the skills needed for this occupation are in line with this cluster.

- Customer and Personal Service – Knowledge of principles and processes for providing customer and personal services. This includes customer needs assessment, meeting quality standards for services, and evaluation of customer satisfaction.
- Psychology – Knowledge of human behavior and performance; individual differences in ability, personality, and interests; learning and motivation; psychological research methods; and the assessment and treatment of behavioral and affective disorders.
- Therapy and Counseling – Knowledge of principles, methods, and procedures for diagnosis, treatment, and rehabilitation of physical and mental dysfunctions, and for career counseling and guidance.

- Sociology and Anthropology – Knowledge of group behavior and dynamics, societal trends and influences, human migrations, ethnicity, cultures and their history and origins.

Social & Human Services

Distributed				Fall 2015 Duplicated Headcount						EMSI Report			
Pathway & Program	Award	Current Lead Campus	Proposed Lead Campus	NW	CC	DC	WC	DV	EC	Average Annual Openings	Average Annual Completers	PCC Completers	Total Gap or Surplus
Administration of Justice Studies	AAS	EC	EC	27	16	27	31	29	77	73	131	76	(47)
Translation and Interpretation Studies	AAS	DC	DC	1	7	45	9	11	5	0	4	4	(4)
Social Services	AAS	WC	WC	4	11	21	61	14	7	12	57	57	(45)
Youth Services Specialty	AAS	WC	WC	1	4	8	19	8	8	12	57	57	(45)
Substance Use Disorder Specialty	AAS	WC	WC	8	9	16	41	3	6	12	57	57	(45)
			Subtotal	41	47	117	161	65	103	109	306	251	(186)
Translation and Interpretation Studies	CERT	DC	DC	0	0	9	0	2	2	1	8	8	(7)
Direct Care Professional	CERT	NW	DV	13	11	9	10	6	10	366	6	6	(360)
Behavioral Health Sciences	CERT	DV	WC	5	1	3	3	4	1	17	28	28	(11)
Substance Use Disorder Specialty	CERT	WC	WC	0	0	1	4	1	1	5	8	8	(3)
Domestic Violence Intervention	CERT	WC	WC	0	0	0	3	1	0	5	8	8	(3)
Community Health Advisor	CERT	WC	WC	0	0	2	2	0	0	5	8	8	(3)
Basic Social Services	CERT	WC	WC	2	0	2	4	3	0	5	8	8	(3)
			Subtotal	20	12	26	26	17	14	404	74	74	(390)
Areas of Opportunity													
Residential Advisors										13	0	0	13

Recommendation 7.8

Business, Management, and Administration Framework Plan

Business, Management and Administration programs are located on five of the six PCC campuses. This is typical for community colleges with large districts. The Dean of Business has recently been assigned to the East Campus. Programs in Paralegal and Health Information Management are located at the Downtown Campus, while Accounting is located at the West Campus. Due to the nature of these programs, many stand alone in academic content as they're not as tightly interconnected as programs in health or Public Safety. As a result, a distributed framework plan is recommended.

EMSI and the Competition

In reviewing the EMSI data from the table, other higher education institutions in the surrounding area are offering degrees is General Business and Paralegal. The EMSI data suggest that this is producing a surplus of higher education completers in business related programs. In many instances, a business degree is applicable to many occupations. At the certificate level, competing higher education institutions are offering a certificate in Health Information Management and Advanced Business.

There is a significant number of average annual openings for graduates with a certificate in basic business and advanced business credentials. Otherwise, PCC is providing the majority of graduates in business related programs.

Program Relocations

- The human resources certificate is fully online and is managed from the Community Campus.
- The Health Information Management degree and certificate program at the Downtown Campus

were reviewed in great detail. Several community colleges with like programs in this area were studied to understand the location placement. In addition, the types of tasks, tools, knowledge skills, abilities, work activities, and work content were studied to understand the best alignment for this program. While this program does include the security, management, and administration of patient medical records, it is best suited on a campus with Allied Health and robust Information Technology programs. It is recommended that this program be relocated to the West Campus.

- Logistics and supply chain is well suited for the East Campus due to its proximity to distribution centers.

Program Concerns

Several of the certificate programs have low enrollments and also have low average annual openings. These include logistics and supply-chain basic and advanced certificates, the technical writing and communication certificate, and the fraud examination certificate. These programs should be reviewed for relevancy of content and the ability to meet employer needs. These programs may be better suited for short-term workforce development programs than credit instruction.

Potential New Programs

EMSI has identified several new potential programs as listed in the table. The property real estate and community association manager's average annual openings is significant. This could be a short-term credit or workforce development credential. Certificate in supervision of production workers could be connected to a pathway as part of several industry programs located at the Downtown Campus. There is also a need for a certificate in real estate to assist in students passing the real estate exam. This could also be completed as part of a workforce or community education program.

Business, Management & Administration

Distributed

Pathway or Program	Award	Current Lead Campus	Proposed Lead Campus	Fall 2015 Duplicated Headcount						EMSI Report			
				NW	CC	DC	WC	DV	EC	Average Annual Openings	Average Annual Completers	PCC Completers	Total Gap or (Surplus)
Accounting	AAS	WC	WC	45	43	117	90	21	83	22	34	34	(12)
Business w/ Concentrations	AAS	EC	EC	59	68	150	130	25	102	87	273	260	(186)
Health Information Management	AAS	DC	WC	25	10	152	23	23	19	5	15	15	11
Logistics and Supply Chain - Advanced	AAS	EC	EC	3	7	8	11	2	23	1	13	13	(12)
Paralegal	AAS	DC	DC	2	4	39	5	0	2	7	57	30	(49)
Subtotal				**134**	**132**	**466**	**259**	**71**	**229**	**122**	**392**	**352**	**(248)**
Accounting	CERT	WC	WC	3	12	23	22	2	21	23	16	16	7
Human Resources	CERT	CC	CC	1	35	2	3	3	3	45	23	23	22
Fraud Examination	CERT	DC	DC	0	0	0	0	0	2	23	16	16	7
Health Information Management	CERT	DC	WC	1	1	32	1	3	5	19	44	12	(25)
Basic Business	CERT	EC	EC	33	23	40	31	5	26	144	17	17	127
Advanced Business	CERT	EC	EC	5	9	20	19	5	14	157	50	35	107
Logistics and Supply Chain - Basic	CERT	EC	EC	0	1	1	2	0	1	3	20	20	(17)
Logistics and Supply Chain - Advanced	CERT	EC	EC	0	0	3	1	0	4	3	20	20	(17)
Computer Software Applications	CERT	EC	EC	6	5	10	12	3	6	1	30	30	(29)
Paralegal	CERT	DC	DC	13	36	125	23	16	18	18	21	21	(3)
Technical Writing & Communication	CERT	DC	DC	4	4	4	1	0	0	2	3	3	(1)
Subtotal				**66**	**126**	**260**	**115**	**37**	**100**	**438**	**260**	**213**	**178**
Areas of Opportunity													
Property, Real Estate, and Community Association Managers	CERT									109	0	0	109
Business Operations Specialist	CERT									19	0	0	19
Insurance Sales Agents	CERT									26	0	0	26
Supervisors of Production Workers	CERT									17	0	0	17
Claims Adjusters	CERT									16	0	0	16
Real Estate Agents and Brokers	CERT									63	0	0	63

Engineering and Technology Framework Plan

This collection of programs fits within a Science Technology Engineering and Math or STEM cluster. This cluster includes Computer Information Systems, Archaeology, and more interdisciplinary programs such as Histotechnician and Clinical Research Trial Coordinator. As these programs are located on two different campuses, a distributed program framework is recommended. In the future, additional interdisciplinary programs involving a STEM Focus could be distributed across multiple campuses based on the program focus.

EMSI and the Competition

A review of the EMSI data indicates the average annual openings are limited in most programs. The largest number of openings is at the certificate level and Systems Administration and Networking. EMSI shows no openings for clinical research trial coordinators at the degree level. Occupational demand information on this program at the certificate level was non-existent.

There are other higher education institutions in the Tucson area that are supplying graduates in Systems Administration Networking degrees. When combined with Pima Community College graduates, the number of students is creating a significant surplus in the market based on occupation of the demand.

Program Relocations

No programs are suggested for relocation.

Program Concerns

Certificates in Archaeology and Clinical Research Trial Coordinator indicate low student enrollments and lack of viable occupational demand for the foreseeable future. Decisions need to be made about the viability of these programs. The goal of a certificate program based on the Association of Clinical Research Professionals is obtaining a Certified Clinical Research Associate certification after completing a minimum number of hours performing essential duties. This could be accomplished in a workforce or CTD delivery system.

Potential New Programs

One potential degree program is noted in the table. Training for this program could be interdisciplinary with a focus on fire prevention and suppression within a public safety pathway or more science focused on natural resources.

Science, Engineering, Technology & Math

Distributed				Fall 2015 Duplicated Headcount						EMSI Report			
Pathway & Program	Award	Current Lead Campus	Proposed Lead Campus	CC	DV	DT	EC	NW	WC	Average Annual Openings	Average Annual Completers	PCC Completers	Total Gap or Surplus
Clinical Research Trial Coordinator	AAS	NW	NW	5	1	9	5	22	9	0	1	1	(1)
Computer Programmer Analyst	AAS	WC	WC	41	11	23	78	20	88	1	8	8	(7)
Systems Administration / Networking	AAS	WC	WC	69	21	64	69	32	264	15	95	54	(80)
Histotechnician - Approved May 9, 2016	AAS	NW	NW	na	na	na	na	na	na	na	na	na	na
Subtotal				**115**	**33**	**96**	**152**	**74**	**361**	**16**	**na**	**63**	**(88)**
Clinical Research Trial Coordinator	CERT	NW	NW	0	0	1	0	3	2	na	na	na	na
Computer Program Specialist	CERT	WC	WC	3	1	7	17	9	25	4	6	6	2
Systems Administration / Networking	CERT	WC	WC	1	3	0	5	5	21	28	24	24	4
Biotechnology	CERT	WC	WC	3	2	11	8	4	18	4	3	3	1
Archaeology	CERT	WC	WC	0	0	0	5	1	2	0	3	3	(3)
Subtotal				**7**	**6**	**19**	**35**	**22**	**68**	**36**	**36**	**36**	**4**
Areas of Opportunity													
Forest and Conservation Technicians	AAS									10	0	0	10

Recommendation 7.10

Transfer Program Framework

The official designation for each PCC transfer credit certificate and degree disciplines and program was obtained from the 2016/2017 Pima Community College Catalog. Duplicated enrollment for Fall 2015, by campus, retention and persistence rates were obtained from dashboards provided by PCC Institutional Research, Planning and Effectiveness, dated November 11, 2015. As transfer programs typically do not result in direct employment, there is no EMSI occupational gap analysis data. The distribution of enrollment by campus was reviewed based GIS information regarding the ethnicity, poverty level, income distribution, and educational attainment of Tucson residents.

The table summarizes the distribution of enrollment by program. As noted, a significant number of courses are offered at each of the five campus locations, especially in programs with large enrollments such as Business Administration, Education, Engineering, and Science. While a distributed program framework is recommended, the evaluation of courses by discipline or program is more effective at the course level.

Transfer Programs

Distributed		Fall 2015 Duplicated Headcount					
Pathway or Program	Award	CC	DV	DT	EC	NW	WC
Administration of Justice Studies	AA	70	78	89	265	58	123
American Indian Studies	AA	2	0	4	1	1	3
Anthropology	AA	9	6	14	5	5	39
Business Administration	ABUS	352	151	567	340	309	622
Early Childhood Education	AA	16	30	26	39	76	21
Education	AA	168	236	108	74	84	138
Engineering	AS	165	91	213	199	162	411
Fine Arts	AFA	33	17	58	34	36	217
Honors Program	CERT	0	0	1	0	0	1
Hotel and Restaurant Management	AA	20	11	20	10	43	16
International Buisness Management	CERT	1	1	1	1	2	3
Political Science	AA	16	9	26	11	10	35
Retailing and Fashion Consumer Sciences	AA	9	0	23	9	6	13
Science	AS	481	345	539	433	442	949
Social Services	AA	51	24	60	31	25	154
Sociology	AA	34	12	29	10	18	29
Subtotal		**1,427**	**1,011**	**1,778**	**1,462**	**1,277**	**2,774**

The recent reorganization of academic deans suggests that general education and liberal arts disciplines are aligned with selected campuses. For example, social sciences will be administered from the East Campus, Humanities and Fine Arts on the West Campus and Sciences and Mathematics on the Northwest Campus.

In very large community college districts, the delivery of 100 level (Freshman) and 200 level (Sophomore) courses can be dispersed and duplicated among multiple campuses as significant enrollment and physical resources (i.e., science labs) exist within the district. In smaller districts, enrollments often justify duplicating courses on multiple campuses at the 100 level but selectively distributing the number of campuses offering 200 level course sections. As PCC offers more than 1,200 courses per semester, recommendations at the course level are not within the parameters of the Educational Master Plan.

As PCC continues to reorganize academic administration, attention must be focused on course section enrollments at the 200 level. This is especially critical for disciplines and programs that require dedicated resources such as science, computer and training laboratories.For example, popular introductory level science course sections could be offered at each campus. A larger number of 100 level science course sections and all 200 level science course sections may only be offered at West, Northwest, and East Campuses as these locations are dispersed around the Tucson metropolitan area and adequate facilities are in place to meet student demand. This strategy also ensures higher laboratory utilization rates as courses sections can be more limited, with the goal of filling lab sections in a limited number of campuses.

For those disciplines or programs that are not space dependent on dedicated space, the focus should be on actual enrollment levels, as compared optimum course section sizes. The recent classroom utilization study suggests that multiple classrooms at each campus location were scheduled for courses with low enrollments for Fall 2014. If the number of course sections could have been reduced, the utilization would have increased, while at the same time reducing the overall cost of instruction. This study is being replicated for Fall 2015 as part of the master planning process.

In the end, 200 level course sections should be given as much attention in terms of campus placement as programs in career and technical education. Additional transfer recommendations are included in Chapter 8.

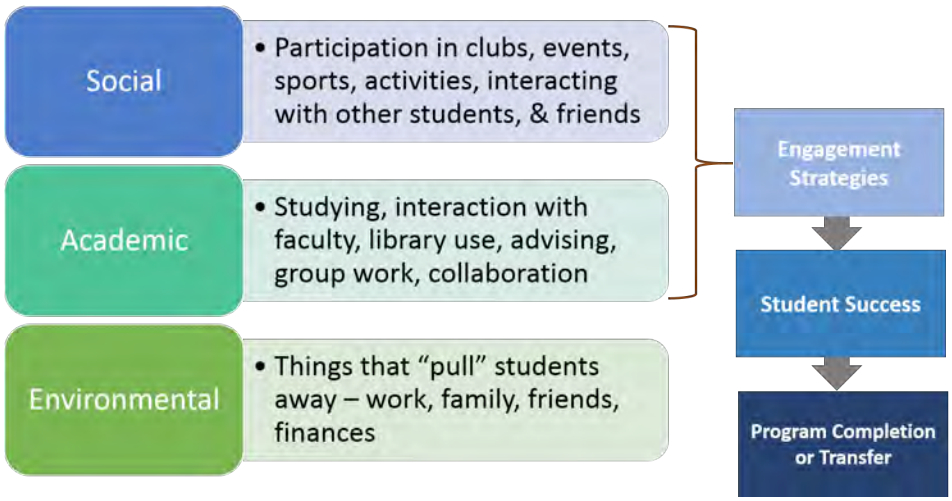
Active Learning Spaces and Other Engagement Strategies

Active Learning and Student Success

National commissions and blue-ribbon reports on the status of American higher education have criticized the college experience for its failure to actively involve students in the learning process (Boyer, 1987). It is more difficult to increase retention rates if students are not engaged academically and socially in their college experience. Multiple research studies suggest that **when students take an active role in their own learning by participating in activities and reflecting on their learning, they are more successful in not only completing the class, but in completing their degree.** This section is not about the pedagogy of active learning, but is rather focused on the spaces where most learning takes place on college campuses.

Tinto's Theory of Student Engagement and Student Success

Vincent Tinto is an award-winning distinguished university professor and noted theorist and researcher in the field of higher education, particularly concerning student retention and learning communities. His central idea is that of "integration." Tinto claims that whether a student persists or drops out is quite strongly predicted by their degree of academic and social integration (Tinto, 1975). Over the years, engagement strategies have been developed and tested that are directly linked to student success and student completion. Tinto's model is noted below.



Active and Collaborative Learning Spaces

Multiple studies have been completed that examine how the design of the physical learning space contributes to enhanced learning outcomes at the undergraduate level. Recently, education researchers have emphasized the redesign of learning spaces to better accommodate pedagogical change (e.g., lecture model to learner-centered model, group-oriented experiential model). Most of this research is focused on the impact of active learning classrooms.

Findings are typically based on data collected from two classrooms where the course content, instructor, pedagogy, and diverse student demographic characteristics were held constant while the physical design of each space varied—one was a traditional, desks-in-rows classroom and the other an active learning, technology-enhanced classroom.

Study after study concludes that the development of an active learning pedagogy in a space that affords student collaboration produces superior learning outcomes when compared with a traditional (desks in rows) environment. (Beichner et al. 1999; Alberts 2005; Handelsman et al. 2004; Lage, Platt, and Treglia, 2000).

Active learning is most effective when the technology and furnishings support the ability for faculty to arrange students in ways that support the active learning paradigm. The research also extends this theory to places outside of the classroom for student collaboration and social interaction.

Recommendation 7.11

It was noted during campus tours that PCC has a large number of forward-facing table and chair classrooms. Faculty on the Educational Master Plan Committee discussed lack of adequate technology and inflexibility of furnishing in many of the classrooms. Observation suggests that this varies by campus. The images in this section display some of the most recent trends in classrooms.

There is a shortage of collaborative and social spaces at the Desert Vista, East, and Downtown campuses. The need for classrooms and collaborative areas on each campus will be addressed in more detail in the Campus Master Plan.

Maker Spaces, Idea and Fab Laboratories

Many community colleges are encouraging creativity with the creation of idea labs or maker spaces. These spaces have been a boon to student engagement and have particularly contributed to strategies to broaden participation in some majors.

Maker spaces and fab labs have been created for a diverse array of activities ranging from robotics, 3D printing to capstone projects for the goal of engaging enrolled students in experiential real world experiences. These types of initiatives often focus on increasing enrollments and completion of a critical demographic that comprises under-represented, under-prepared, and/or low-income students through the unique integration of networked "evidence of promise" strategies. The workforce now requires greater social skills, teamwork, cognitive abilities, and technological skills. (Heerwagen, 2005). As a result, these types of innovative, multi-faceted spaces must have the appropriate physical, computational, and collaborative/social infrastructure. (McGrath and Sparks, 2006).

A review of student outcomes and best practices suggest that maker spaces "contribute to student retention and persistence by fostering innovation and entrepreneurship." (Pine, Sullivan, Nogales, 2015). Other studies note the transferability of knowledge gained to real-world application. Perhaps the best reason for the surge in maker spaces and idea labs is the network of collaborations across multiple occupational programs, which reinforce the concepts of teamwork, creativity, innovation, collaboration, critical thinking, and project management.

Recommendation 7.12

A part of broader student engagement strategies, PCC needs to consider the creation of maker spaces or idea labs, especially for program pathways using a center of excellence approach. The requirements for these spaces will be part of the Campus Master Planning process.

Program Review and Area Action Plan

Existing Program Review Components

Documentation was sampled for 15 occupational programs to develop an understanding of the program review process at Pima Community College and the level of variability in responses among the different programs. All programs completed three documents:

- Program Area Action Plan (Summary)
- Action Plan and Action Plan Activities
- Discipline/Program Action Plan Recommendation and Assessment Summary

For 2015, action items are consistent across programs and include Student Learning Outcomes, Enrollment, Persistence, Retention, and Completion.

Program Review and Process Improvement

Program review processes in the community college sector vary widely and are closely linked to regional accreditation standards. At some community colleges, the program review process occurs every five years and is used to justify the programs continuance. More recently, there is a trend to annually update program review data elements and improvement goals.

Development of program review processes are typically part of academic plans as they are often faculty intensive. At the same time, the process has a direct impact on the Educational Master Plan. An effective Educational Master Plan must integrate the needs of all instructional programs. A robust program review process lets others know with assurance what programs are growing enrollments, providing quality instruction, and meeting the needs of the local community. On the flip side, the program review process should be robust enough to pinpoint major weaknesses and provide clear direction to strengthen shortcomings or begin the process of discontinuation. In this model, program review is an essential component of aligning college and mission review.

Recommendation 7.13:

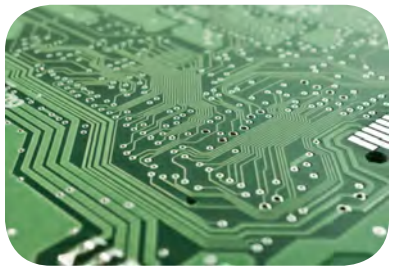
It might be hearsay, but interviews with College constituents note that the current PCC program review and action plan process has not been used to determine program health or vitality. In other words, the process has not been used in the past to start the process of program discontinuation. Likewise, the process does not allow programs to provide evidence of the need for potential new programs in similar areas.

The following questions, taken from various program review documents, begin to illuminate the need for change at PCC.

1. How is your advisory committee helping you achieve your program goals? How are they promoting your program to others in the community?
2. Where are students that are enrolling in the program coming from? What is the retention rate for students who started in remedial courses? Is there a viable career pathway from high school to this program?
3. Is the program "state of the industry"? What specifically prevents the program from reaching that goal? What faculty development goals will create opportunities for excellence?
4. How is the program responding to changes in population and occupational projections? What strategies are being developed to address these trends? Are there potential capacity concerns?
5. What are employers who are hiring graduates in your programs saying about their level of preparation and on-the-job skills? What additional training is necessary?

Occupational Demand

The Gap Analysis and Occupational Demand



During kickoff meetings for the Educational Master Plan, the Program Gap Analysis was a major tool in helping PCC understand current occupational surpluses and gaps in the workforce and identify potential opportunities for new programs. The Program Gap Analysis has been widely distributed among instructional units for review and interpretation.

Best Practices Using Program Gap Analysis Data

AACC's report, *Empowering Community Colleges to Build the Nation's Future: An Implementation Guide,* reviews best practices for closing the skills gap by securing current labor market information, such as projected jobs, employment trends, and wage data, to inform student advising. Colleges also use current occupational demand data to learn about demand for skills in key local industries. With this information, colleges better understand labor force demands and can more readily discover potential opportunities to develop new programs to serve community needs.

Other best practices take it a step further. In the book *What Excellent Community Colleges Do, Preparing All Students for Success* (Wyner, 2014) found that excellent community colleges "assess trends in job growth and salaries to determine the degrees that will be needed for high-demand jobs that are likely to offer good wages. They then structure their programs and enrollments in accordance with those demands." (p.96).

Wyner further states that "community colleges that align program decisions to employment opportunities do not do so just when opening and closing programs; they routinely adjust enrollment in the programs based on workforce needs." (p. 99).

Wyner's statements are more the ideal than practice in most community colleges. Routinely adjusting enrollments in CTE programs based on workforce needs requires more "informed" data than found in the EMSI program gap analysis. The gap analysis is only the first step in the process. Program gap data requires additional validation by conversations with local employers and extensive engagement in regional economic development.

The following example illustrates this point.

The programs' gap analysis was confined to occupational demand for Pima County. Reviewing the program gap analysis indicates that the Airframe Mechanics and Aircraft Maintenance Technician certificate program (CIP 47.0607) is oversupplying the market by 31 graduates per year. After researching this gap, it was evident that the aviation program has a national reputation and recruits graduates both regionally and nationally. These students obtain a certificate and then return to their place of residence, which is often outside of Pima County. In reality, there is a high demand for the skills offered through this program. Adjusting enrollments downward based solely on the results of the EMSI program gap analysis would be imprudent. It is not until you dig into the program and student demographic data that a different picture emerges.

In questioning the Educational Master Plan Committee, one of the primary reasons for the focus on the program gap analysis was based on a statement that "Pima never closes programs once they are started." Closing unsuccessful programs (no matter the number of full-time faculty) makes it possible to create or expand successful ones, a hallmark of highly effective community colleges.

Closing unsuccessful programs (no matter the number of full-time faculty) makes it possible to create or expand successful ones.

Program closure requires more data than found in the EMSI program gap analysis. However, this data can indicate the first sign of program decline.

Recommendation 7.14

A review of occupational demand and program gap analyses data should be required at all Occupational Program External Advisory Committee (OPEAC) meetings. This includes longitudinal trend data on the number of certificate or degree completions. Many of the larger community colleges have a "new ventures" employment position that is charged with working with regional and local employers to validate program gap findings. Decisions regarding program closure or program correction need to be specified on a step-by-step basis as part of comprehensive program review process.

Occupational Demand at the Pathway Level

Pathway recommendations were developed from detailed employment projections (EMSI Program Gap Analysis, Table A5.1) and GIS maps of student residence by program type. IPEDS completion for the last three academic years was also reviewed to better understand the type and quantity of degrees by program area. The following illustration reviews projected annual job openings, as sorted by pathway area. The greatest areas of growth are projected to be in the Business, Management & Administration and Health Sciences Pathways. The demand for Computer Information Technology employees continues to stagnate. A STEM category was developed as a potential pathway. In reviewing employment demand, a larger number of STEM related programs were in Mathematics and Physical Sciences, which cannot directly be translated to career and technical programs. Current and future STEM related CTE programs can be placed within the STEM pathway.

Recommendation 7.15

The projected annual openings for each pathway area are based on more than 300 occupational titles. As stated in the previous section, some existing CTE programs at PCC will need to expand, while others may need to retool or retract as the demands of the labor force change. In a few instances, lack of occupational demand may indicate the first sign of program closure. The detailed employment projections need to be factored into the future planning process for each program. Program enrollment and staffing projections are a critical component as space needs analyses will need to be calculated for each program as part of the Campus Master Plan.

Cluster	Projected Annual Job Openings
Arts, Humanities, Communication & Design	328
Business, Management & Administration	2274
Education	569
Culinary, Hospitality & Tourism	1230
Science, Technology, Engineering, & Math	259
Health Sciences	1392
Social, Behavioral, & Human Services	539
Public Safety	245
Industry, Manufacturing, Construction, & Transportation	854

Potential New Programs

EMSI's *Economic Overview & Program Gap Analysis* provided to PCC in March 2016 includes detailed employment projections related to potential future programs. The following illustration summarizes those programs by pathway area based on data provided in the report Table A5.2. By far, the greatest number of annual openings are predicted to be in the Engineering, Manufacturing, Construction, and Transportation pathway with more than 830 annual openings. The greatest need will be in Auto Collision, Diesel Engine Mechanics, and multiple areas for construction trades. The occupational demand for many of these programs fluctuates as part of economic cycles. Creating a Center of Excellence for this pathway should provide an impetus to build relationships with local businesses and industries that can assist in predicting and meeting the supply of graduates in the workforce.

Recommendation 7.16

Similar to the previous recommendation, EMSI data on potential programs is disaggregated by occupational title. This information must be reviewed in greater detail. In a handful of cases, the projected annual opening are high enough to warrant additional investigation about the viability of these programs.

Programs such as Automotive Collision Technician and Diesel Engine Mechanic will require a tremendous amount of instructional space and expensive equipment. This investment warrants serious conversations with local employers and economic development entities to accurately predict student demand.

Pathway Area	Potential New Programs – EMSI Recommendations
Business, Management & Administration	Property Managers, Business Operations Specialist, Real Estate Agents, Production Managers
Public Safety	Protective Service and Security Workers
Engineering, Manufacturing, Construction, & Transportation	Carpenters, Electricians, Glazers, Plumbers, Sheet Metal, Building Inspectors, Auto Collision, Bus and Diesel Mechanics, Industrial Machinery Mechanics, Production Operators, Installation Workers

8 | Recommendations – Career Pathways

INTRODUCTION

Tiffany was juggling general-education courses at North Arkansas College and caring for two small children when she learned of a death in her family. Not knowing what to do about missing class, she called a "case manager," Ms. Conner, director of a North Arkansas program called Career Pathways. Ms. Conner, in turn, called Tiffany's s instructors, told them she would be absent, and asked what assignments, if any, would need to be made up. The logistical support was something Tiffany had never before experienced.

"With our students being poverty-level," Ms. Conner says, "they're not used to anybody other than family being there for them, so knowing there is somebody else out there who can help them through something like that means a lot to them."

Colleges across the country have worked to create similar "pathways programs" to help low-income students navigate two- and four-year public institutions. But administrators of the Arkansas program say they have a unique model because, unlike the others, theirs works with every community college in the state and involves multiple agencies teaming up.

Since 2006 more than 30,000 students, many them single mothers, have been helped by the program, including financial aid for tuition and books, child care, gasoline vouchers, tutoring, mentoring, counseling, and more. Each student is assigned a case manager who acts as a one-stop shop for all educational needs.

A recently released study mined data collected by the program from 2006 to 2013. A report on the study, "College Counts: Evidence of Impact," found that the **program's participants received a degree or certificate at twice the rate of their peers in Arkansas community colleges.** The completion rate of students in the program was 52 percent, while the figure for other Arkansas students was only 24 percent. The study also found that, in 2011, the average wage of graduates who had participated in career pathways was $3,100 more than for others who received similar state and federal assistance.

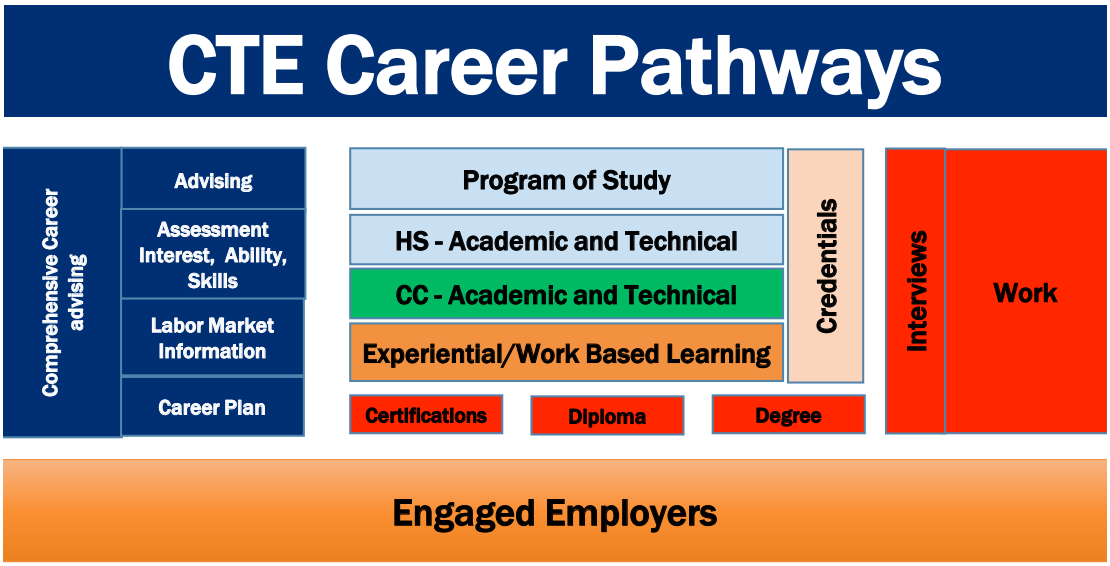
Arkansas' 'Pathways' Program Could Be a Model for Spurring Completion
Gabriel Sandoval, July 01, 2016

THE CASE FOR CAREER PATHWAYS

Gretchen E. Schmidt is executive director of the Pathways Project for the American Association of Community Colleges. She says the Arkansas program takes a similar approach to the City University of New York's Accelerated Study in Associate Programs, which has produced promising results and been replicated in three Ohio colleges. Through comprehensive support, Ms. Schmidt says, students in such programs benefit tremendously because they often are the neediest.

It costs $1,500, on average, to provide services for each student in Arkansas' Career Pathways program. By analyzing data on the state's tax revenue, researchers are on the cusp of determining how financially sustainable the program really is. Preliminary figures suggest that for every taxpayer dollar spent on Career Pathways, Arkansas gets $7 back. However, without an investment, either on the state or federal level, it is overwhelmingly difficult to expect Arkansas institutions to provide this type of case management for their entire population, even though the overwhelming majority of them would benefit from it. Right now, Arkansas has more people interested in the program than can be supported.

Success stories like this are becoming more common as states and community college districts rush to implement career pathway models. In reviewing the literature, some are more successful than others. While career pathways have been around from some time, there is still a tremendous amount of variability as to what exactly is a career pathway. For example, North Carolina Community Colleges CTE Career Pathways is a high school-to-work model that includes comprehensive career advising, which includes job shadowing, project-based learning, internships, service learning, and apprenticeships. This comprehensive model is noted.



Chapter 8 reviews the basic concepts of career pathways and some of the various models that are being used to increase student persistence and completion. Despite this somewhat lengthy review, the body of literature is immense and is changing rapidly.

CAREER CLUSTERS AND PATHWAYS

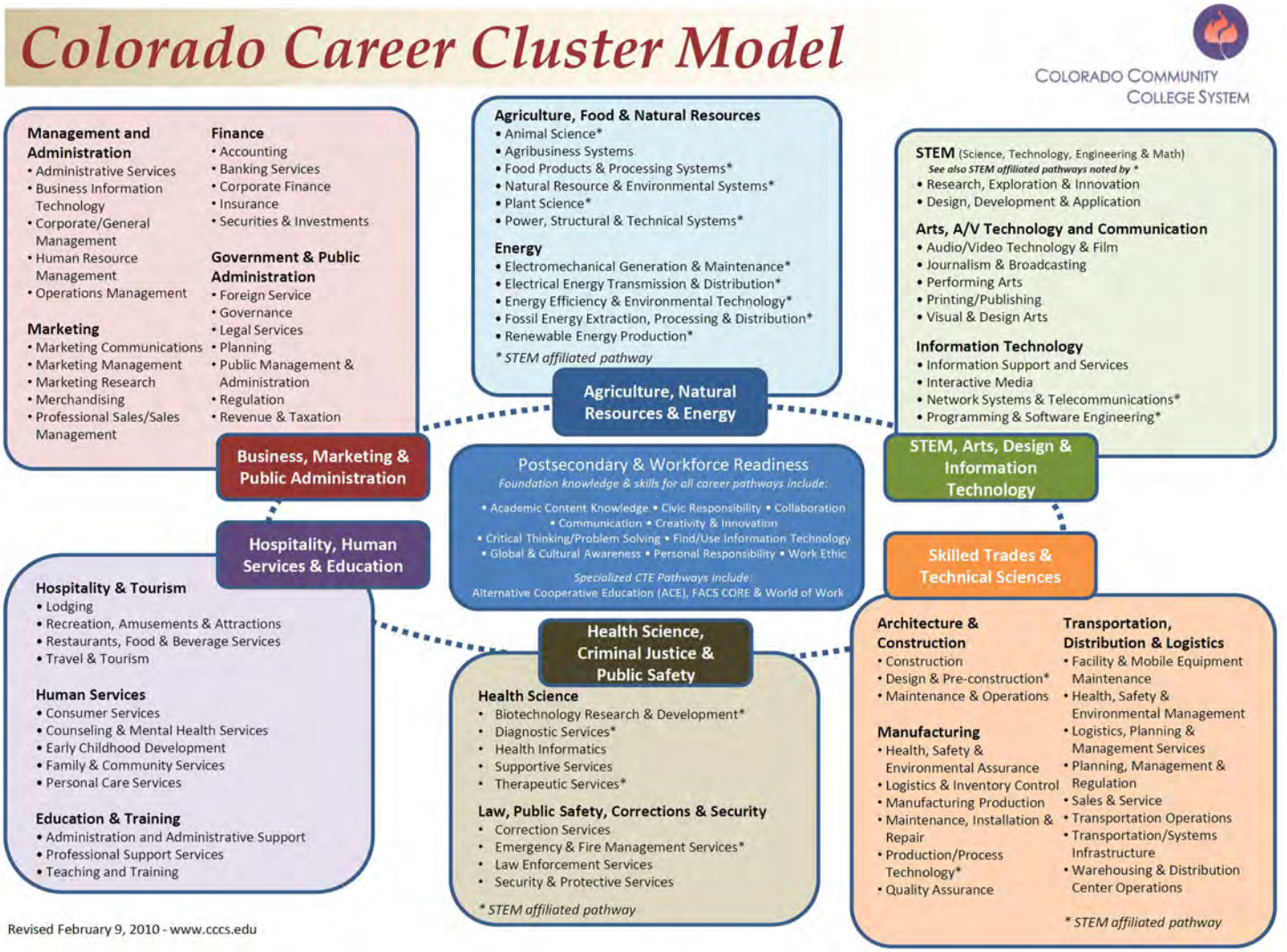
The District-wide Strategic Plan and the draft Enrollment Management Plan, as well as several other PCC planning documents, discuss the development of career pathways. Several pathway models were reviewed with the Educational Master Plan Committee to better understand which pathway approach is viable for PCC. Several members of the Committee were unfamiliar with the various approaches and why career pathways are important to PCC's future. After interviews with campus administration and a review of career technical educational (CTE) program descriptions on the PCC website, there is little evidence to suggest that a formal career pathways model has been researched and selected.

The intent of the next section is not to bore the reader with the history of pathway models, but to illuminate the variation in these models.

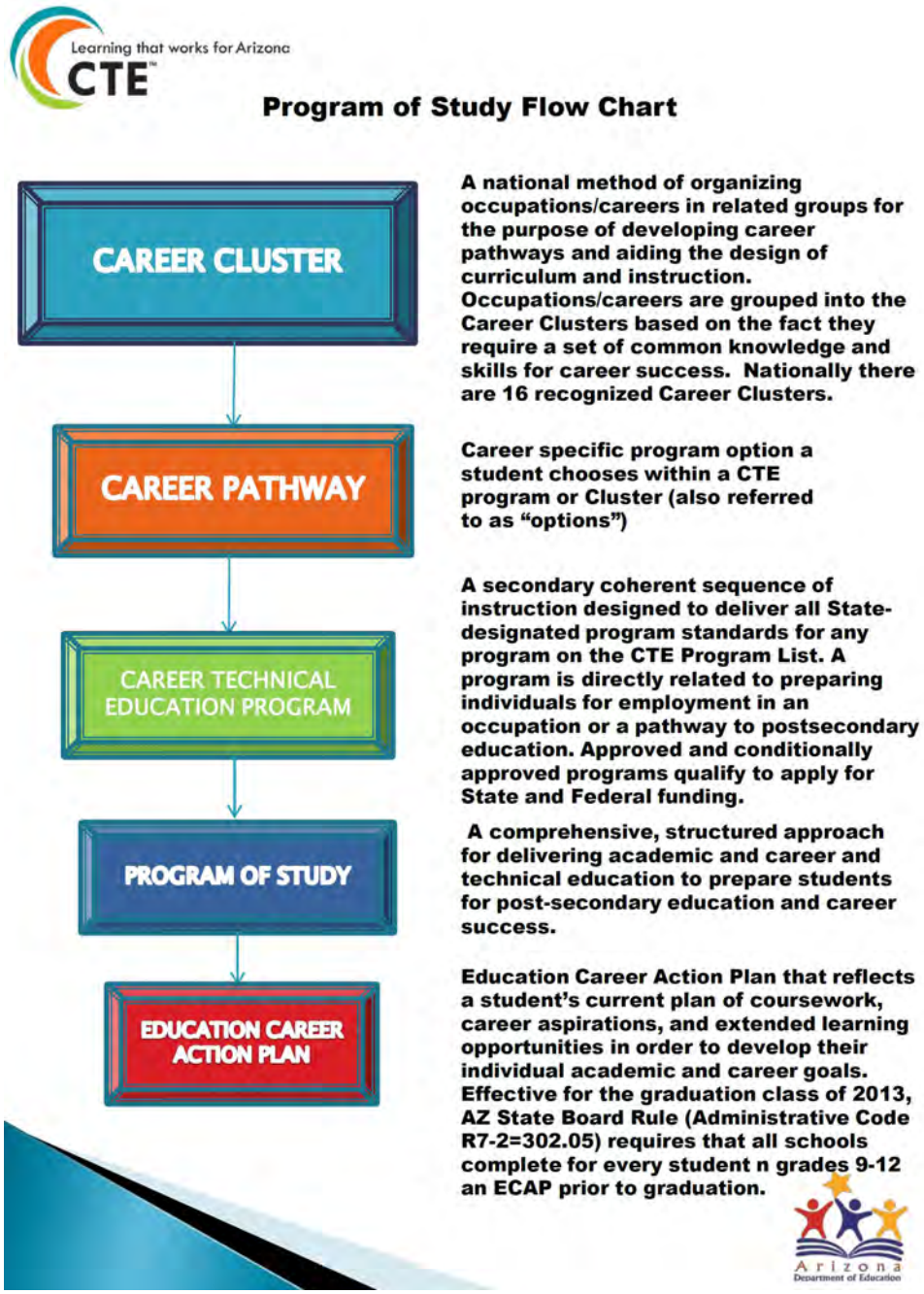
TRADITIONAL CAREER CLUSTERS AND CAREER PATHWAY DEFINITIONS

Career Clusters are broad groups of occupations and industries. Career clusters are subdivided into "career pathways." Career pathways are a series of courses that prepare you for an occupational field (*States' Career Clusters Initiative*. 2007). Career clusters and pathways are NOT organized according to career interests; they are organized around broad industry or economic areas. Career clusters and pathways function as useful guides in developing programs of study bridging secondary and postsecondary curriculum and for creating individual student plans of study for a complete range of career options.

There are several models. The U.S. Department of Education (DOE) model has 16 career clusters linked to more than 70 specific Career Pathways – each have their own knowledge and skills requirements. Within the over 70 career pathways, 1,800 career specialties are defined. The structure has evolved over time and varies by state. An Internet search of "state career clusters" indicates that most state and numerous community college systems have adopted a variation of the DOE model. The Colorado Community College System Career Cluster model is illustrated below.



Arizona CTE programs are not directly organized around a career clusters framework, but rather the state organizes CTE delivery through 71 programs of study. Arizona views career clusters as a tool for career guidance and a platform to organize sequences of courses. The Arizona Department of Educational CTE model is shown below.



Other career clusters models are also extant. The National Career Clusters® Framework provides a vital structure for organizing and delivering quality CTE programs through learning and comprehensive programs of study (Advance CTE website, 2016). In total, there are 16 career clusters in the National Career Clusters Framework, representing more than 79 career pathways to help students navigate their way to success in college and career.

U.S. Department of Education Career Clusters

- Agriculture, Food and Natural Resources
- Architecture and Construction
- Arts, A/V Technology and Communications
- Business Management and Administration
- Education and Training
- Finance
- Government and Public Administration
- Health Science
- Hospitality and Tourism
- Human Services
- Information Technology
- Law, Public Safety, Corrections and Security
- Manufacturing
- Marketing
- Science, Technology, Engineering and Mathematics
- Transportation, Distribution and Logistics

Meta-Majors

Like career clusters, meta-majors are a collection of academic programs that have common or related content. Meta-majors have been endorsed by national education groups seeking to increase the percentage of students earning college degrees or certificates.

Meta-majors are in the news as the Florida State Board of Education has established legislation requiring first-time-in-college students to select one of eight meta-major pathways. Florida legislators hope that meta-majors will allow students to narrow down their choice in major and begin developing an educational plan that leads to degree completion.

At Valencia Community College students take a career review assessment that provides more in-depth information on meta-majors. Students select two meta-majors of interest after reviewing specific careers related to each area. During new student orientation, advisors review these choices with students and discuss possible degree programs and math pathways. Students register for their first term in the appropriate courses that align with their educational path.

Florida College System students have eight meta-majors or pathways to choose from that are aligned with academic and career goals.

1. Arts, humanities, communication and design
2. Business
3. Education
4. Health sciences
5. Industry/manufacturing and construction
6. Public safety
7. Science, technology, engineering, and mathematics
8. Social and behavioral sciences and human services

Campus Program Framework Recommendations

In reviewing the PCC 2016 Summer & Fall Student Success & Registration Guide, credit programs and degrees are organized into broad categories that include transfer as well as career and technical certificates and degrees. Secondary schools typically use all 16 career clusters, while community colleges consolidate clusters into smaller groups that are more aligned with pathways. Program types at PCC include:

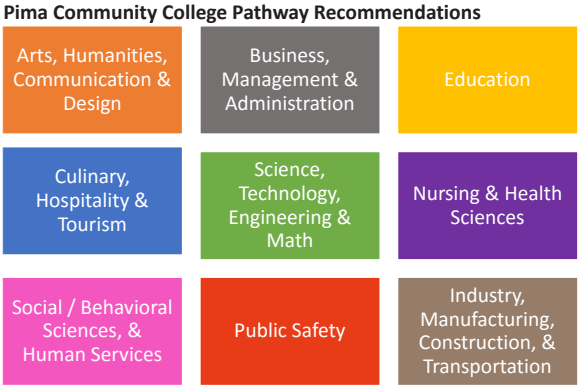
ARTS, HUMANITIES & COMMUNICATION
BUSINESS CAREERS
COMPUTER INFORMATION TECHNOLOGY
EDUCATION CAREERS
HEALTH-RELATED PROFESSIONS
PUBLIC SAFETY CAREERS
SCIENCE & ENGINEERING
SOCIAL SCIENCES
TRADE PROFESSIONS
GENERAL STUDIES

Recommendation 8.1

After a review of all CTE and transfer certificate and degree programs offered by Pima Community College, nine clusters emerged.

Transfer pathways were also developed as part of this process.

Pima Community College Pathway Recommendations



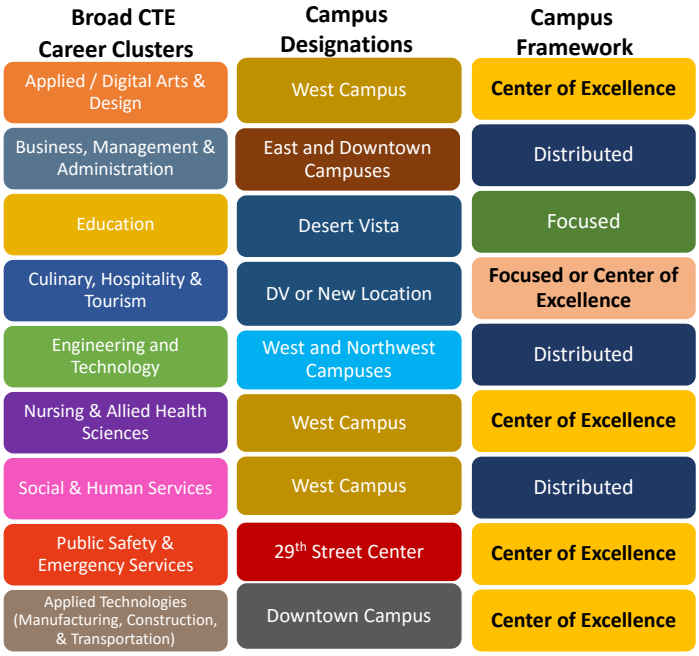
Recommendation 8.2

All PCC career and technical programs should fit within this proposed structure. In reviewing the EMSI Occupational Gap analysis, these clusters were aligned with occupational demand and regional economic development initiatives. This structure is also critical in terms of the Campus Framework Plan, as described in Chapter 7. The following illustration reviews recommendations regarding CTE program of study alignments with proposed pathways.

Pathway Area	CTE Program of Study
Arts, Humanities, Communication & Design	Applied Arts, Archaeology, Digital Arts, Digital and Film Arts, Fashion Design, Translation and Interpretation Studies, Technical Writing and Communication
Business, Management & Administration	Accounting, Business, Fraud Examination, Health Information Management, Logistics and Supply Chain Management, Human Resources, Computer Software Applications
Education	Early Childhood Development, Education (K-12), Educational Technology, Child Development Associate, Teacher Education,
Culinary, Hospitality & Tourism	Culinary Arts, Hotel and Restaurant Management, Tourism
Science, Technology, Engineering, & Math	Computer Information Systems, Computer Software Applications, Clinical Research Coordinator,
Nursing & Health Sciences	Nursing, Dental Studies, Direct Care Professional, Fitness and Sport Sciences, Medical Assistant, Medical Lab Technician, Pharmacy Technology, Phlebotomy, Radiographic Technology, Respiratory Care, Therapeutic Massage, Veterinary Science , Biotechnology
Social, Behavioral, & Human Services	Interpreter Training, Social Services, Behavioral Health Services,
Public Safety	Administration of Justice, Paralegal, Crime Scene Management, Emergency Medical Technology, Paramedic, Fire Science, Law Enforcement Academy, Corrections, Security and Protective Services
Industry, Manufacturing, Construction, & Transportation	Automotive Technology, Aviation Technology, Building and Construction Technologies, Machine Tool Technology, Truck Driver Training, Welding and Fabrication, Computer Aided Drafting, Design Technology

Recommendation 8.3

At the broadest level, each campus location should have a designated pathway. In addition, each pathway is linked to a campus framework strategy. As an example, the Industry, Manufacturing, Construction, and Transportation pathway should be strategically aligned with the Downtown Campus (Chapter 7). Given workforce and regional economic demand, there is a need to integrate academic and workforce programming within this pathway. Based on national examples, this framework would work well for a Center of Excellence in Manufacturing and Applied Technologies.



Recommendation 8.4

This broad Framework Plan, as discussed in Chapter 7, will need to be reviewed at the degree and certificate level. Overlaying this framework on the existing taxonomy of certificates and degrees by campus location generated some discrepancies. During implementation, there should be a conscious effort to eliminate any duplication of **programs** across different sites. In many cases, duplicate CTE **courses** can be offered at multiple campus locations, especially broad-based entry level courses at the 100 level that do not require dedicated equipment or large amounts of space, as described in the distributed approach.

Career Pathway Models

Career and guided pathway models are not new. Career pathways were the first to appear, followed by a more comprehensive model called guided pathways.

In 2001, the League for Innovation in the Community College partnered with the American Association of Community Colleges to establish The College and Career Transitions Initiative (CCTI) with the goal of developing **career pathways** and implementation strategies that ease student transitions from secondary to postsecondary education. The career pathways align a series of challenging academic and career related courses from high school through college and are organized around broad occupational areas. As defined by the initiative,

> ***A career pathway is a coherent, articulated sequence of rigorous academic and career courses, commencing in the ninth grade and leading to an associate degree, an industry-recognized certificate or licensure, or a baccalaureate degree and beyond. A career pathway is developed, implemented, and maintained in partnership among secondary and postsecondary education, business, and employers. (CCTI, 2005).***

The Oregon Career Pathways Initiative launched in 2004 with initial investments at five colleges, expanded to 11 colleges in 2006. By 2007 the state had scaled to all 17 community colleges. The guiding vision of the Career Pathways Initiative is to ensure that Oregonians can obtain the skills to enter and advance in demand occupations.

Oregon Career Pathways Goals:

- To increase the number of Oregonians with certificates, credentials, and degrees in demand occupations, and
- To articulate and ease student transitions across the education continuum from high school to community college, from pre-college (ABE/GED/ESL) to credit postsecondary, and from community college to university or a job.

(Oregon Community College Workforce Development, 2013)

According to the plan, "The Pathways Initiative addresses a long standing tension between job seekers needing to up-skill or change careers quickly and postsecondary education's traditional sequential structure, which challenged the timely turnaround needs of the workforce." The plans state that, "It was the perception of workforce agencies that students who enter Career Technical Education (CTE) programs take several years to complete a degree or certificate before they can go out and work in their field. This is where career pathways offered an innovation within the educational system and in service to regional economic development- to provide education that quickly jumpstarts a student into a skilled worker, getting them into an entry-level job in their chosen field. As a higher percentage of community college students both work and go to school, short term 'stackable' certificates offer an approach that can meet multiple needs for both students/workers and employers." (Oregon Community College Workforce Development, 2013).

The Oregon State Board of Education approved Career Pathway Certificates in July 2007. Since then, more than 350 certificates have been developed and are currently offered at all of Oregon's 17 community colleges. In addition, the colleges offer more than 100 Less Than One Year (LTOY) programs (Community Colleges and Workforce Development, 2013).

Guided Pathway Models

Guided pathways were developed out of the concern for the low student completion rates, especially among low income students. Success not only depended on a coherent pathway, but multiple student engagement strategies.

The most widespread and highly publicized pathways model is from the work of Thomas Bailey, Shanna Smith Jaggers, and Davis Jenkins, researchers at the Community College Research Center (CCRC) at Teachers College, Columbia University. Their book, *Redesigning America's Community Colleges: A Clearer Path to Student Success,* argues that to substantially increase student success, colleges must make fundamental changes. Their ideas have led to comprehensive reform movement in the community college sector.

An extensive literature review conducted by Melinda Karp at the Community College Research Center documents a mounting body of evidence that "offering students multiple courses and degree options, major choices, and course delivery models . . . may overwhelm students, create barriers to their success, and contribute to their ultimate failure" (Karp, 2013).

According to CCRC, "The idea behind guided pathways is straightforward. College students are more likely to complete a degree in a timely fashion if they choose a program and develop an academic plan early on, have a clear road map of the courses they need to take to complete a credential, and receive guidance and support to help them stay on plan" (CCRC, Research Overview, 2015).

The guided pathways approach "presents courses in the context of highly structured, educationally coherent program maps that align with students' goals for careers and further education. Incoming students are given support to explore careers, choose a program of study, and develop an academic plan based on program maps created by faculty and advisors. This approach simplifies student decision-making and allows colleges to provide predictable schedules and frequent feedback so students can complete programs more efficiently" (CCRC, Research Overview, 2015).

Based on years of study, the design principles behind the guided pathways model are supported by research in organizational, behavioral, and cognitive science. While the design principles of guided pathways are well supported by research in a range of fields, no rigorous research to date has been conducted on whether whole-college guided pathways reforms improve student outcomes, but that is about to change.

In 2012, more than 100 individuals came together to craft guidelines for implementing recommendations set forth in the American Association of Community Colleges report, *Reclaiming the American Dream: Community Colleges and the Nation's Future*. The ambitious report provided a blueprint to transform community colleges. In 2014, AACC's 21st-Century Initiative moved from idea to action with their

report, *Empowering Community Colleges to Build the Nation's Future: An Implementation Guide* (AACC, 2014). The report was organized around seven recommendations that were designed to drive transformation. Four foundational strategies addressed multiple recommendations; the two most important include:

- Clear, coherent academic/career pathways, and
- Stackable credentials based on clearly defined competencies.

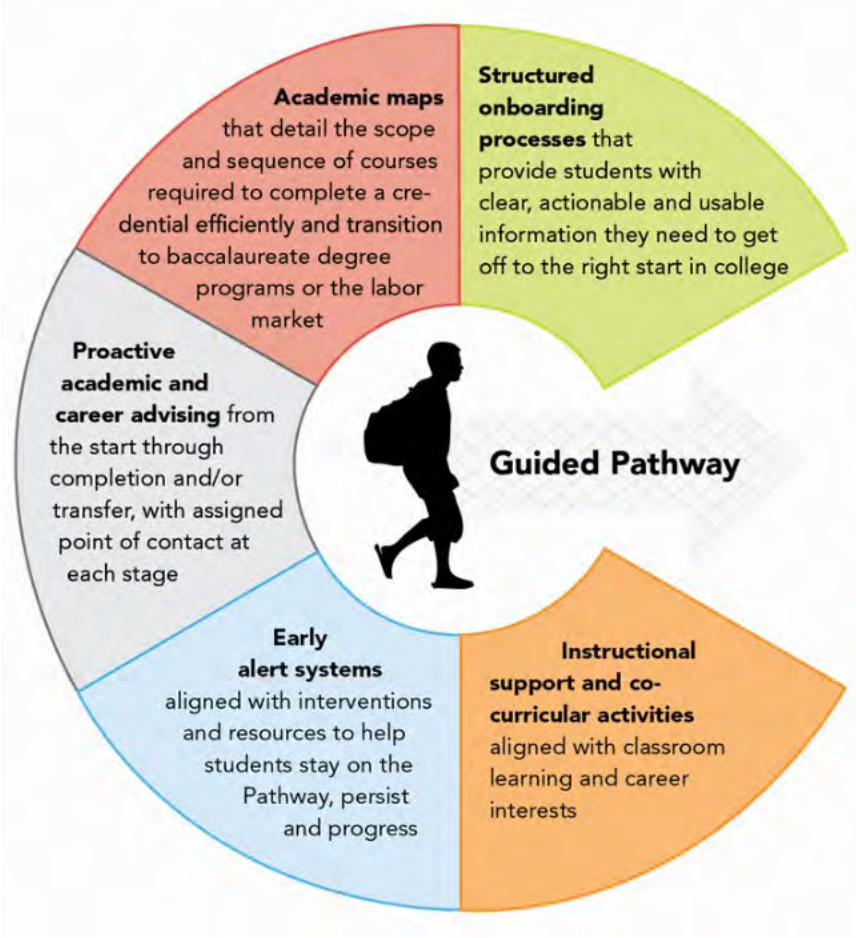
The AACC report borrowed heavily from the work of **Completion by Design**, a Bill & Melinda Gates Foundation initiative.

Completion by Design is a five-year Bill & Melinda Gates Foundation signature initiative , which works with community colleges to significantly increase the completion and graduation rates for low-income students under the age of 26. Three groups of community colleges in Florida, North Carolina, and Ohio were awarded competitive grants to help transform their students' experience.

In the Completion by Design model, a "Guided Pathway is a clear and coherent map that integrates academic and support services across the student experience. It starts at students' entry points to higher education and guides them at each step of their journey to keep them on track to completion." Completion by Design has identified a set of integrated pathway design principles drawn from research, practice, and participating colleges' experience during the planning phase, as illustrated below. To date, this is one of only a few successful examples of large scale systemic reform of the student experience by creating conditions that allowed participating colleges such as Miami-Dade College (FL), Davidson County Community College (NC), Lorain County Community College (OH), and Sinclair Community College (OH) to become leaders in the guided pathways movement.

The American Association of Community Colleges (AACC) Pathways Project, which includes CCRC as a partner, is one major initiative built around the guided pathways model, as developed in part by Completion by Design. Over the next three years, the project will help 30 colleges in 17 states develop more structured programs with clearer pathways to transfer and careers. For this project:

> *The Pathways Model is an integrated, institution-wide approach to student success based on intentionally designed, clear, coherent and structured educational experiences, informed by available evidence, that guide each student effectively and efficiently from her/his point of entry through to attainment of high-quality postsecondary credentials and careers with value in the labor market. (AACC, 2016).*



Other organizations are also promoting models to increase student success and completion. Complete College America is a national nonprofit established in 2009 with a single mission: to work with states to significantly increase the number of Americans with quality career certificates or college degrees and to close attainment gaps for traditionally underrepresented populations. To date, Complete College America has built an alliance with 35 states that are taking bold actions to significantly increase the number of students successfully completing college.

Through research, advocacy, and technical assistance, the organization helps states put in place the five Game Changers that help all students succeed in college. One of the Game Changers is Guided Pathways to Success (GPS). The essential components of the GPS model include:

- Default pathways
- Whole programs of study
- Informed choices and meta-majors
- Math alignment to majors
- Critical path courses
- Intrusive, just-in-time advising

In 2013, Complete College America received a $2.8 million Lumina Foundation Grant to mobilize postsecondary institutions in Georgia, Indiana, and Tennessee to adopt the guided pathways model in an effort to increase student credential completion. In 2015, Complete College American was granted $1.2

million to increase the awareness, adoption and student outcomes of the Complete College America five Game Changer strategies among colleges and universities in 33 states and the District of Columbia.

Colleges have moved far beyond extremely targeted changes that have been found to be of limited effectiveness and are instead implementing reforms that involve the entire student experience.

For example, Texas Completes is a network of colleges and districts that are using proven strategies to turn the tide on the achievement gap. The institutions, which include over 35 colleges and educates 41% of the state's community college students, includes managing partner Lone Star College (LSC), Alamo Community College District (ACCD), Austin Community College (ACC), Dallas County Community College District (DCCCD), El Paso Community College (EPCC), Kilgore College (KC), Odessa College (OC), and South Texas College (STC). The goals are to 1) create a clear path to both associate's degree attainment and improved transfer, 2) break down silos within colleges to enable stronger support and engagement, and 3) create the infrastructure for coherency between the segments in much of the state.

Kentucky provides another a good example of a statewide approach to rethinking workforce education and career pathway systems. In 2002, the Kentucky Community & Technical College System (KCTCS) developed its Community College Bridges to Opportunity Initiative. Since 2006, all of the KCTCS colleges have developed multiple career pathways programs and all students entering KCTCS technical programs are enrolled in career pathways. New initiatives, such as the online, modular KCTCS Learn on Demand and Accelerating Opportunity models, are efforts to further refine this approach (Austin, et. al, 2012).

Another statewide example is the Commonwealth of Virginia, which in 2008 launched the process of building a statewide career pathways system designed to meet the needs of its regional labor markets and create career opportunities for its residents. This ambitious effort weaves together the state's education, workforce development, and economic development systems at all levels to drive efficiencies, leverage resources, and maximize impact.

The guided pathways approach presents courses in the context of highly structured, educationally coherent program maps.

At the federal level, both the U.S. Department of Education (DOE) and the U.S. Department of Labor (DOL) have taken important steps to support portable/stackable credentials and career pathways. Along with the U.S. Department of Health and Human Services, the U.S. Departments of Labor and Education issued a letter in April 2012 highlighting the joint commitment of all three agencies to "promote the use of career pathways approaches as a promising strategy to help adults acquire marketable skills and industry- recognized credentials ...." (DOE Letter, 2012).

Pathways and Student Success

Oregon's Career Pathways Initiative has been in operation for eight years. Data regarding student completion and employment impacts of the program are being measured annually. Between 2008 and 2012, 5,020 certificates were awarded statewide. Despite the state's worst recession in 25 years, 44.5% of certificate completers entered employment at $12/hour or more within four quarters of completing their certificate, with many completers earning more than $15/hour. Oregon is currently working with nine other states and the Center for Law and Social Policy (CLASP) in an effort to develop a national framework for Career Pathways benchmarks and metrics, which will further inform future research and analysis (CCWD, 2013).

States and institutions that have implemented the Completion by Design model are reporting increased numbers of students earning college credentials. One study notes a 71% increase between the class of 2009 and 2013. Studies also report a 42% increase in the number and share of ABE / GED / ESL students who advance and succeed in college-level courses.

Recommendations on the Implementation of Career Pathways

Recommendation 8.5

Making the kinds of district-wide changes called for in the development of career or guided pathways will be challenging and require commitment from College leaders, faculty and staff across all Pima Community College campuses and centers. As the state of Arizona is not affiliated with a particular career or pathways model, PCC will need to spend time reviewing the various models and frameworks before making decisions in this direction. *All PCC pathways must be aligned with the Arizona Program of Study framework.*

Recommendation 8.6

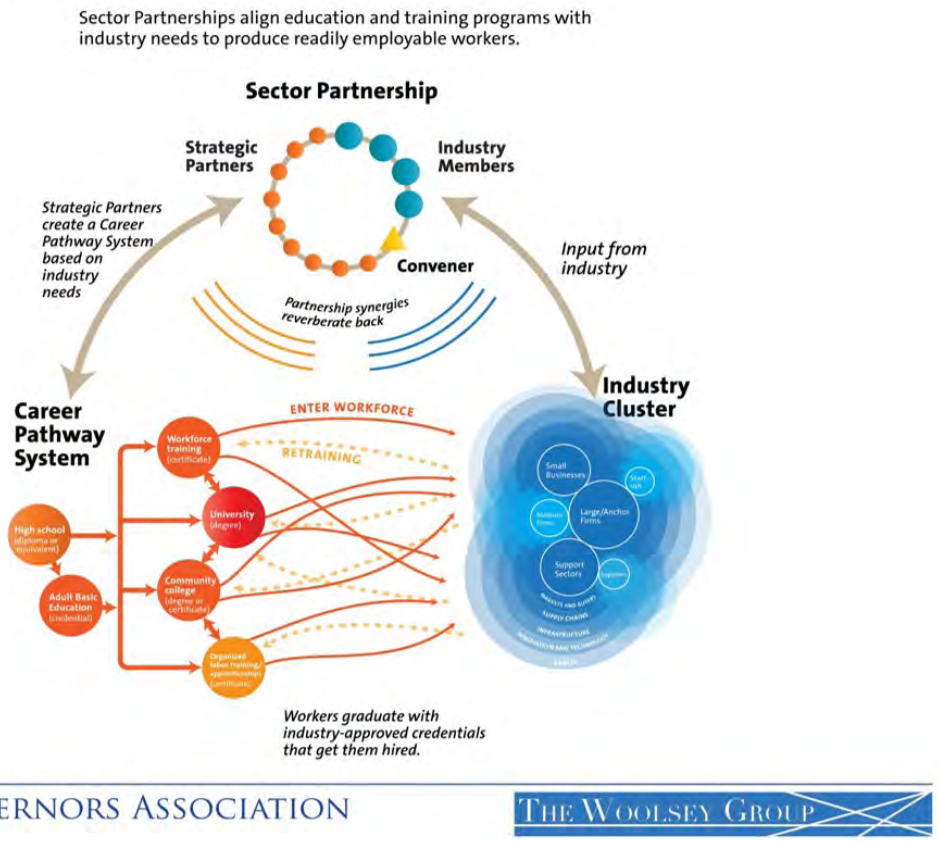
Many of the current pathway models integrate student services and instruction into clearly structured programs of study. Pathway decisions need to be investigated with involvement from student affairs and academic affairs, as well as workforce development representatives. Many institutions use a task force approach to review and select pathway models. Institutions that ultimately elect to implement career and guided pathway models develop a director or higher position to oversee and implement the process.

Pathway resources are plentiful:

- The Community College Research Center website has a practitioner's packet for implementing guided pathways.
- The American Association of Community Colleges Pathways Project is in full implementation. Representatives from 30 institutions are attending a series of six institutes that will provide detailed strategies to develop pathway models. The AACC website provides the materials used in these institutes as well as links to recent articles about pathway models.
- The Complete College America website has a mix of multi-state reports, issue briefs, event presentations, and other resources for institutions, including publications regarding implementation strategies for their pathways model.

Recommendation 8.7

The separate systems of secondary and post-secondary education need to be bridged. Any forward moment in the areas of career and guided pathways at Pima Community College will not work without input and cooperation from stakeholders in secondary education, local government, and Tucson business and industry representatives, as well as those involved in economic development at the regional level. For example, Colorado community colleges are provided a step-by-step guide for creating career pathways. Pathways are heavily dependent on sector partnerships and industry clusters. (Collaborative Economics and the Woolsey Group, 2014). An illustration of the model is below.



Recommendation 8.8

Adapting current PCC career and technical education programs to career pathways to meet the needs of the 21st century learners will be a complex process. Many institutions start small by piloting one program and make refinements before achieving scale. Pathways also need to be considered within the framework of stackable credentials and industry-based credentials, which are described in the next chapter of this plan.

TRANSFER PROGRAMS AND PATHWAYS

The national focus on the post-recession economic growth over the last several years has placed an overemphasis on jobs and skills training through the completion of career and technical programs. Successful completion of technical program certificates and degrees can provide graduates with social mobility, while supplying the demand for an increasing number of middle skill jobs.

For Pima Community College and the majority of two-year community colleges, the largest number of students attending these institutions have the goal of transferring to a four-year institution to complete a bachelor's degree. During the 2014-15 academic year, PCC awarded 877 Associate of Arts and 612 Associate of General Studies, 194 Associate of Science, and 145 Associate of Business degrees. At the certificate level, 1,466 awards were granted for students completing the Arizona General Education Curriculum (AGEC) in Liberal Arts, Science, or Business. All of these certificates and degrees provide opportunities for students to transfer to four-year programs of study.

There has been extensive research completed on both community college transfer students and best practices for developing effective articulation agreements between two-year and four-year colleges. Despite a greater level of cooperation among colleges and enhanced state policies related to transfer, most students who transfer do so without completing an associate degree. In many cases, students fail to finish their lower level coursework, forcing them to spend additional time and incur additional costs at their four-year college.

Arizona Statewide Transfer Initiative

AZTransfer is a statewide collaboration to help postsecondary students navigate their higher education options for Arizona's public and tribal community colleges and universities. The website is the most effective means of providing students with information on course and exam equivalency, as well as AGEC requirements. The site also has a baccalaureate degree search engine that identifies transfer pathways based on two-year credentials.

AZTransfer provides common course numbering through a system called SUN, or shared unique number system. This system ensures general education articulation of courses between community colleges and universities. The AZTransfer website notes 94 SUN courses offered a PCC.

Like many state systems, AZTransfer uses the more the recent "transfer pathway" terminology when describing articulation course sequences for transfer. There are six different pathways, depending upon the degree or field of interest. Each pathway requires 60-64 credits in courses numbered 100 or above to be completed with a grade of "C" or better.

The AGEC has three broadly focused pathways that include general education course options from six subject areas. Selecting courses for English Composition lists 10 courses offered by Pima Community College that will satisfy this six credit requirement.

The six transfer pathways are based on a ***student's intended major and university of choice***. The more undecided the student in terms of major and institution, the more generic the curriculum.

AZTransfer provides annual reports regarding transfer statistics and outcomes, as well as longitudinal metrics regarding transfer outcomes and reverse transfer for each public Arizona community college.

TRANSFER BEST PRACTICES

The Aspen Institute's College Excellence Program, in association with the Community College Research Center, recently released a document titled T*he Transfer Playbook: Essential Practices for Two-and Four-Year Colleges* (Wyner, Jenkins, 2016). The playbook notes three essential strategies for transfer. These include:

- Make Transfer Student Success a Priority
- Create Clear Programmatic Pathways with Aligned High-Quality Instruction
- Provide Tailored Transfer Student Advising

Similar to the CTE career pathways described in the previous section, transfer pathways are becoming more focused. The *Transfer Playbook* describes this trend.

"Successful partners have developed major-specific pathways or "transfer program maps," that clearly map the course sequences, prerequisites, and extracurricular activities that transfer students need to successfully transfer to the four-year partner and earn a bachelor's degree." (page 12)

In reviewing PCC's list of program offerings, 15 transfer programs were identifed that are similar to the structure developed for the CTE programs. These programs were integrated into the pathway model.

Transfer Cluster	Campus Designation	Transfer Program
Humanities and Fine Arts	West Campus	American Indian Studies, Fine Arts, History, Archaeology, Anthropology
Communications	Downtown	Sign Language
Education	Desert Vista	Early Childhood Education, Education
Culinary, Hospitality & Tourism	Desert Vista	Hotel and Restaurant Management
Science/Mathematics	Northwest	Engineering, AGEC-S, AGS – Engineering, Science
Business	East Campus	Business, AGEC-B
Social Sciences	East Campus	Social Services, Psychology, Sociology, Political Science
Public Safety	29th St. & Community Campus	Administration of Justice Studies,

In addition to the Arizona Statewide Transfer System, Pima Community College has transfer agreements with multiple four-year colleges and universities.

PCC is one of many two-year Arizona community colleges participating in the Arizona State University Transfer Admission Guarantee, or TAG program. TAG is major-specific meaning that each specific TAG leads to a specific degree at ASU. TAG is a tool that outlines a prescribed sequence of classes or program maps starting at the community college level. Each TAG has an AGEC and an associate degree built into it and indicates the necessary grade point average (GPA) for the program.

Pima Community College and the University of Arizona have several agreements in place:

- ***Pima – UA Pathways Program*** – Program specific pathways have been developed, including program maps for approximately 110 UA majors.

- ***UA Bridge Program*** – This merit scholarship program is a partnership between Arizona community colleges and the University of Arizona that provides guaranteed admissions into most UA undergraduate degree programs.

With Northern Arizona University, there are 3 plus 1 agreements in multiple NAU Interdisciplinary Studies programs and a 2NAU joint-admission program; these agreements provide a seamless transition from Arizona community colleges to NAU. This program allows admission to NAU while students continue to earn an associate's degree.

PCC also has articulation agreements with approximately 15 other public and private colleges and universities across the country.

Recommendation 8.9

There are four best practices regarding transfer pathways:

1. **Create major-specific transfer pathways with clear concise program maps.**
   A review of transfer agreements with the major Arizona four-year colleges and universities indicated that hundreds of major-specific transfer pathways have been developed between Arizona two–year colleges and the major universities as part of the Arizona Statewide Transfer System.
2. **Provide high-quality academic experiences to prepare students for four-year programs:**
   PCC has a robust Honors College and provides some opportunities through capstone courses for students to work on research projects with a faculty member in their discipline or major. PCC needs to investigate other opportunities to engage transfer students, especially in areas that focus on the application of knowledge from an interdisciplinary or global perspective. In many cases, the development of capstone or portfolio projects will require new or re-purposed spaces at the campuses. These spaces are discussed under the Active Learning Spaces and Other Engagement Strategies section in this chapter.
3. **Establish regular processes for updating and improving program maps.**
   Many of the updates are handled as part of the Arizona Statewide Transfer System process. This should not prevent PCC faculty and advisors from reaching out to specific four-year programs to better-align transfer program sequences. Of greater importance is monitoring student progress across the entire transfer pathway to better understand each student's ability to perform academically at the four-year level.
4. **Design unconventional pathways, as necessary.**
   This strategy includes offering four-year degrees on two-year campuses, Three-Plus-One Bachelor's degrees, and reverse transfer degrees. Some of these strategies are currently in place at PCC. Transfer pathways are becoming common and extending into high schools for students in dual or concurrent enrollment programs. This is a growing market for PCC, and there should be alignment between high school, two-year, and four-year postsecondary institutions.

9 | Recommendations – Postsecondary Partnerships andCommunity Engagement

Partnerships and community engagement are a critical component of the community college mission. Community colleges develop partnerships with four-year universities, school districts, business, and community organizations to serve the needs students and residents in their service area. Traditionally, community engagement activities are divided into two areas: workforce development and service learning and civic engagement. First, research will be presented on postsecondary partnerships.

POSTSECONDARY PARTNERSHIPS

Postsecondary partnership research is best illustrated using a collective impact model. Historically, collective impact is a collaborative, place-based model for addressing common social problems (Karp & Lundy-Wagner, 2015, 2016). A recent Community College Research Center Research Brief (Klempin, 2016), notes that the "collective impact model is based on the premise that meaningful collaboration requires the development of a comprehensive multi-sector partnership that brings together organizations from key sectors within a community, such as government agencies, foundations, community-based organizations, K-12 school systems, postsecondary institutions, and employers."

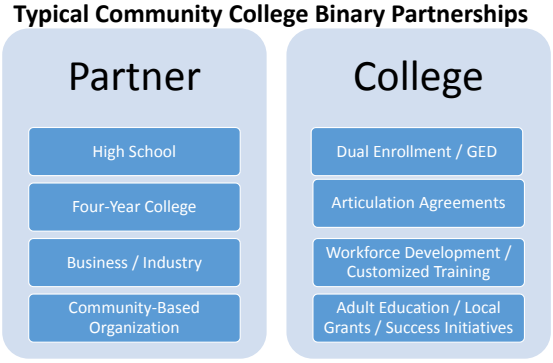
This approach contrasts sharply with the traditional binary partnership model, which involves organizations from only two different sectors that come together for a specific purpose. The collective impact model has been used by community colleges to increase the attainment of credentials that lead to high-quality

careers among students from underserved populations by creating more student-supported and seamlessly connected education-to-career pathways.

As described in the research brief, community colleges have a long history of engaging in direct efforts in partnering with other educational institutions and with regional employers. Salient examples are concurrent or dual enrollment programs that connect high schools with two-year colleges and transfer and articulation agreements that connect two- and four-year colleges.

Research indicated that "because these efforts typically utilize binary partnerships, they often unfold unsystematically and fail to boost collaboration and efficiency across various partners." While many of the binary partnerships were quite robust, these straightforward relationships often faced significant challenges. The researcher notes that "While colleges were extremely active in developing and supporting partnerships to strengthen education-to-career pathways, my colleagues and I found that the binary partnership model resulted in a highly fragmented approach to student success." The most population binary partnerships are noted in the figure.

Typical Community College Binary Partnerships



The study identified the need for more collaborative approaches through use of collective impact driven multi-sector partnerships as a potentially powerful strategy for doing so (Karp & Lundy-Wagner, 2016). For example, an education-to-career pathway strategy would be to expand dual enrollment programs into a true multi-sector partnership in close collaboration with high schools, four-year colleges, and employers, based on occupational demand in the marketplace. Another includes increasing college and labor market access for students who drop out of high school by offering dual enrollment courses and technical training in conjunction with GED preparation.

Multisector Community College Partnership

Other colleges have forged close ties with business and industry by through partnerships structured as a non-profit housed within a city chamber of commerce, regional employment center or economic development agency.

Multiple research studies suggest that robust multi-sector partnerships strengthen connections with individual sectors that ultimately lead to higher services levels and greater student success.

Recommendation 9.1

Pima Community College has a robust strategic plan for internationalization that unites the college with multiple local, national, and global partners. The college has multiple planning documents (i.e., high school dual enrollment, student services review, strategic enrollment management). These plans should be reviewed from a collaborative impact perspective with the goal of reducing partnership silos by creating a plan to build coherence among PCC units to create multi-sector partnerships designed to strengthen pathways both into and through college to employment or further education.

WORKFORCE DEVELOPMENT

Providing workforce skills for companies and organizations to develop a reliable source of talent that contributes to the economic well-being of the community is critical for community colleges. At Pima Community College, the Office of Workforce and Business Development serves to coordinate the College's response to the workforce needs of the greater Tucson community by assisting individuals in preparing for first-time jobs, better jobs, high-skilled jobs, and lifelong professional development. By working with employers, the intent is to enhance economic development goals.

SERVICE LEARNING AND CIVIC ENGAGEMENT

A second form of community engagement involves providing faculty and students with opportunities to engage with the world and the local community in sustained, collaborative, reflective and meaningful ways. Service learning is a form of education that integrates community service into selected courses with the goal of educating students about service and democracy, preparing them for civic engagement, and encouraging their development as ethical and responsible global citizens.

EMERGING AREAS OF COMMUNITY ENGAGEMENT

A third area of community engagement is emerging, especially in communities with a significant underserved or under-represented population. This collaborative impact model extends the community college into high poverty areas or communities where a large number of adult residents have less than a high school degree or little college attainment. The best way to understand this approach is to look at specific examples at other community colleges. The current Adult Education Centers function much like an outreach center.

Montgomery College (Troy, North Carolina)

Community engagement at Montgomery College includes extending beyond the campus and into the community through community engagement centers, partnerships with non-profits, community events, regular communication, and grassroots community outreach. The primary goal is to help underserved and underrepresented communities connect with Montgomery College. Specialists in the centers speak multiple languages, providing access for people who speak English, Spanish, Amharic, French, or Swahili.

In February 2015, as a part of a College strategic goal to be more present in the community, Montgomery College opened a community engagement center in one of the poorest areas of the city. The Center includes classrooms and a computer lab for GED, ESL, and offices for College staff to answer questions about job training, career exploration, College enrollment, adult education services, and more.

Following the success of the first center, Montgomery College, in partnership with the East (Montgomery) County Regional Service Center, opened another Community Engagement Center in July 2015. The Center helps underserved residents connect with college resources, classes, and information to start their education or assist residents with skills for career development, as well as a robust adult education program.

Tulsa Community College (Tulsa, OK)

At Tulsa Community College, Outreach Centers are places for anyone to learn more about the College. Based on information from the College's website,

> *"Our mission is to assist, inform and empower those populations traditionally underserved in Higher Education and to provide a gateway to college by providing effective, accessible services to ultimately ensure student success and excellence."*

Outreach Centers provide a plethora of services, including applying for financial aid, placement testing, choosing a career, providing undocumented student resources, and obtaining scholarship information. The Centers also provide English as a Second Language (ESL) classes and General Education Diploma (GED) preparation classes in Spanish.

Based on 2014 U.S. Census data, Tulsa's population is 11% African American and 12% Hispanic/Latino, with American Indian and Asians representing another 9% of the population. An estimated 15% of Tulsa residents are at or below the current poverty level. In comparison, approximately 42% of the Tucson population is of Hispanic or Latino origin with an estimated 25% of residents living at or below poverty.

Why are these colleges reaching out into these communities? Research studies conclude that underrepresented and potential first-generation college students, out of fear for of unknown, are often uncomfortable just showing up on a large community college campus. In some cases, transportation is also seen as a barrier. The goal of the outreach center is to reduce these barriers and provide transition strategies to acclimate students to a larger campus setting.

COMMUNITY AND INDUSTRY ENGAGEMENT / PARTNERSHIPS

Recommendation 9.2

PCC should investigate development of an Office of Partnerships and Community Engagement as a face for the College in the community. This office would be managed by a "New Ventures Officer" and would provide assistance in the strategic development of entrepreneurial, scalable, sustainable programs, and possible revenue-generating partnerships for the Pima Community College District. Responsibilities could include:

- Working with employers to better understand program demand.
- Management of key school district, business, community, and non-profit partnerships.
- Development and implementation of a proactive partnerships and Community Engagement plans that includes managing institutional representation for various boards, committees, and community associations.
- Providing and coordinating intensive outreach to underserved and underrepresented communities.
- Studying the potential for developing Community Engagement Centers or expanding the mission of existing Adult Education Learning Centers.
- Working with the Provost's office and Student Affairs to provide opportunities for students to engage in service learning programs and other co-curricular opportunities.

Excerpts from the PCC 2014-15 Operational Master Plan

Community Campus

4.2 Implement plan for engagement with current business partners and conduct analysis to identify needs and/or employment opportunities.

4.2 Implement an internal campus-wide economic development committee (completion June 30, 2016)

Desert Vista Campus

3.2 Conduct an exhaustive inventory of partnerships, identify and fill gaps (completion May 2015)

East Campus

3.4 "The East Campus will develop and administer a survey to business, industries, and agencies in the service delivery areas to identify skills, training, and educational needs". (Completion by June 30, 2016)

Northwest Campus

3.4 "Target and explore agencies and businesses that would inform the educational programming for the future." (Completion date of June 30, 2015)

Recommendation 9.3:

The Program Gap Analysis is one of numerous recurring reports and publications that need to be periodically reviewed, placed into context, and interpreted with regard to the College's current mix of career and technical programs. This activity is part of the internal processes that enable the College to respond to current and emerging workforce/industry needs, as identified in the Strategic Plan.

Operational planning goals (2014-2015) for each campus describe various methodologies to survey, document, or engage businesses, industries, and agencies in order to identify skill, training, and education needs. In reviewing operational plans for each campus, data collection methodologies, planning processes, and the use of this data to inform programmatic decisions varies by campus. There seems to be a duplication of effort on many fronts.

- There should be a central repository for the collection of all state and regional economic and occupational data reports and publications. This is typically housed in Workforce Development.
- An online database, accessible to all campuses, should include the contact information for all business, industry, agency, and community partners. This would include a list of faculty and administrators that are currently serving on various economic development, industry, community, and agency boards.
- At least once per year, a district-wide group of internal academic and workforce representatives should meet to review current workforce and occupational data, changes in regional economic development initiatives, and key partnerships. The goal of this "workforce summit" would be to proactively identify potential changes to existing programs and emerging new programs.
- The expansion of Workforce and Business Development, combined with enhanced business outreach, and industry credentialing within career pathways will require constant focus. A position entitled New Ventures Officer under a proposed Office of Partnerships and Community Engagement could also be effective in this area.

EXPANSION OF WORKFORCE AND CAREER DEVELOPMENT

Technology and globalization are driving changes in our national economy, and the need for an educated workforce has never been greater. Economists note that the majority of new jobs being created require some type of postsecondary education. At the same time, local and regional economic development reports cite the need for an educated workforce to entice new businesses to the Tucson area. Coupled with the fact that the number of high school graduates is somewhat stagnant, these initiatives are increasingly forcing employers to rely on the very students who are currently least likely to complete their education.

In the coming years, jobs requiring at least an associate degree are projected to grow twice as fast as jobs requiring no college experience. We will not fill those jobs – or keep those jobs on our shores – without the training offered by community colleges.

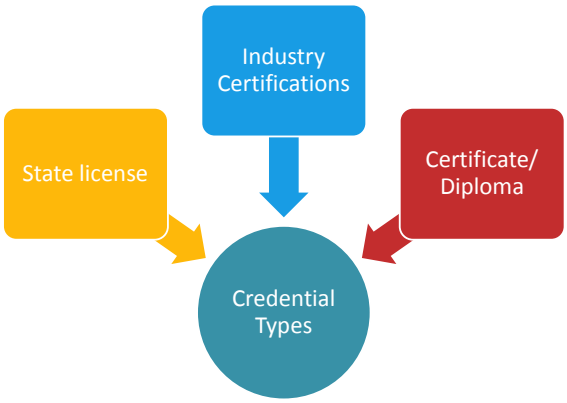
- President Barack Obama

CERTIFICATES, CREDENTIALS, AND CREDIT FOR PRIOR LEARNING

The current credentialing system in the United States is a vestige of the European model and dates back to the founding of the first American university in 1636. A single credential was all that was needed for a career that spanned an employee's lifetime. Today's economy depends on ever-higher levels of knowledge and an employee's ability to rapidly assimilate and adapt to new workplace skills. As a result, credentials have proliferated to meet the needs of a diverse 21st century knowledge economy. However, the diversity and sheer number of credentials is not always meeting the needs of students, educational institutions, and employers. According to a recent report by the American Council on Education (2016), "There is a lack of shared understanding about what makes credentials valuable, how that value varies across different types of credentials for different stakeholders, what constitutes quality, and how credentials are connected to each other, and to opportunities for the people who have earned them."

This confusion poses challenges for two-year colleges preparing the next generation of workers. Many creative credentialing approaches are emerging, but they are not being systematically applied or scaled to any extent to help increasing numbers of students gain the competencies they need for successful careers.

First, there needs to be clarity regarding definitions. Credentials can be acquired through a variety of means: employer-based training, industry-based certifications, apprenticeships, post-secondary certificates, and associate's degrees. The inset on the next page notes precise definitions for the most common credentialing terms.



Recommendations for Pima Community College focus on two credentialing terms. There is significant confusion about the difference between industry-based ***certifications*** and ***certificates.***

"The essential difference," explains Anthony Carnevale, "is that certificates are earned through seat time in a classroom, and industry-based certifications are awarded based on performance on a test, irrespective of where the learning occurs." (Carnevale, Rose, and Hanson, 2012).

CREDENTIAL:

"A documented award by a responsible and authorized body that has determined that an individual has achieved specific learning outcomes relative to a given standard. Credential in this context is an umbrella term that includes degrees, diplomas, licenses, certificates, badges, and professional/industry certifications." (Lumina Foundation 2015).

LICENSE:

"Documentation granted by a governmental agency, typically at the state level, that confirms the license holder has met the state standards for practicing a particular profession." (Carnevale & Desrochers, 2001).

INDUSTRY CERTIFICATION:

Refers to documentation by exam or a record of work-related skill, verified by an external organization (e.g., an industry association) that the holder of the certification has demonstrated a level of skill attainment that a potential or current employer would value. Many certifications need to be renewed after a prescribed time period. (Carnevale & Desrochers, 2001)

CERTIFICATE:

"A credential awarded by a training provider or educational institution based on completion of all requirements for a program of study, including coursework and tests or other performance evaluations. Certificates are typically awarded for life." (Bielick, et al, 2013). Certificates granted by post-secondary institutions tend to require fewer hours of coursework and a narrower curriculum than a two-year associate's degree.

One more term needs to be defined. A ***stackable credential*** is "A credential that is part of a sequence of credentials that can be accumulated over time to build up an individual's qualifications and help that individual move along a career pathway to further education, different responsibilities, and potentially higher-paying jobs" (Lumina Foundation 2015, Ganzglass 2014).

Importance for Pima Community College

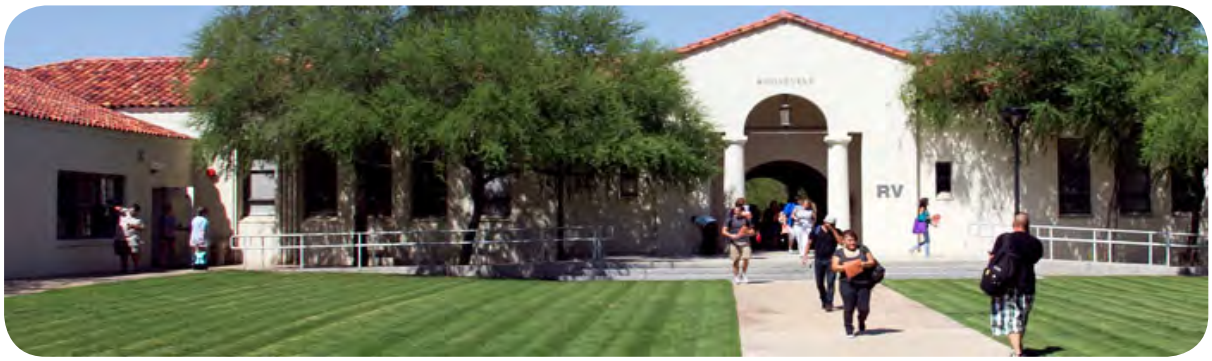
The development of short-term stackable credentials is critical for Pima Community College in several ways. First, business and industry leaders want to see more acquisition of training credentials that are stackable and portable. In guidance issued to state workforce agencies, the Department of Labor's (DOL) Employment and Training Administration recommends that state and local workforce agencies "encourage training providers to modularize curricula into chunked curriculum" and "smaller units, each of which is stackable and linked to other modules that culminate in an industry-recognized credential." (DOL, TEGL 15-10).

Second, Latino students are more likely than students from other racial or ethnic groups to begin their postsecondary education at a community college (Adelman 2005). A study of Latino student success (Gooden & Martin, 2014), discussed the relationship between gender and culture. Latino culture often transmits a definition of gender-related roles and behaviors. It is incumbent that college administrators are sensitive to these issues in order to identify and understand the ways in which Latino men and women derive meaning from their experiences in college (Hernandez and Lopez 2004).

For male Latino students, work and money are important drivers in their decision to attend and stay in college. Male students expressed a direct relationship between college and money, with a particular emphasis on current versus future earning potential. Additionally, Latino students expressed gender differences in terms of economic motivators. Whereas male Latino students were strongly motivated by short-term economic factors, Latina students expressed the importance of self-determination in realizing longer term goals.

One particularly valuable benefit of earning a stackable certificate over a degree is the perceived time and cost invested. Short-term credentials that lead to entry-level jobs provide motivation for Latino men to earn an income while continuing their education.

For adult learners, earning a stackable certificate is an effective way to get reacquainted with the educational process. Another benefit of stackable credentials is the flexibility to make the right choice. Many students are ill-prepared and lack understanding of their career options. Earning a short-term stackable certificate is a good way to determine whether a specific career is the right fit for undecided students without having to invest a large amount of time and resources in earning a degree. Extra credentials can also be beneficial for workers interested in career advancement.



Recommendation 9.4

For the aforementioned reasons, PCC should evaluate modularizing existing associate degree programs and longer-term certificate programs. In many cases, these could be chunked into short-term certificates designed to provide completers with competencies to qualify for an entry-level jobs. For example, Oregon created Career Pathways Certificates of Completion (CPCC), which can range from 12-44 credits and must be wholly contained in either a 1- or 2-year Associate of Applied Science (AAS) degree. Courses are tied to competencies identified by employers for jobs in the local labor market. A good example is PCC's Digital Arts AAS degree and Certificate, which currently require 79 and 45 credit hours, respectively, for completion. Digital Arts can be modularized into shorter-term stackable certificates averaging 20 to 24 credits each.

Industry-Based Credentials

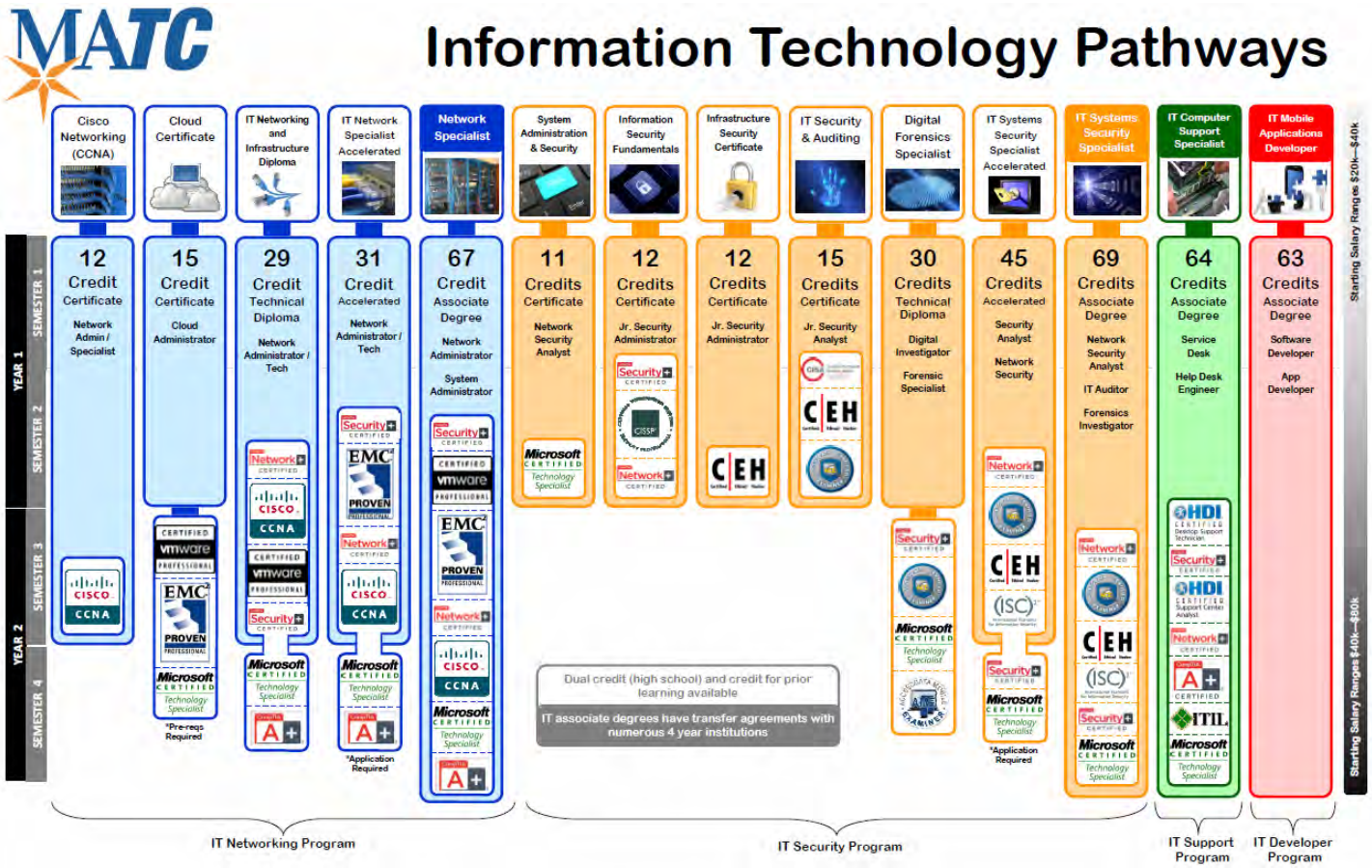
Many jobs require some form of industry certification as a prerequisite to hiring. Credentialing provides employers with the candidate's technical qualifications. Community college workforce development offers programs that lead to industry credentials or state licensure in areas such welding, basic contractor licensing, computer certifications, food service sanitation, cyber security, basic life support, health career programs, customer service, and more. There are more than 350 industry credentials being taught through community college workforce development programs across the country.

For example, the A.W.S. Welding Certificate is an 80-hour program that prepares students to take the American Welding Society D1.1 certification test for structural welding. Upon successful completion of the course and the passing of the test, students are A.W.S D1.1 certified for structural welding.

Pima Community College is a member of the National Coalition of Certification Centers (NC3). This organization addresses the need for strong industry partnerships with educational institutions in order to develop, implement, and sustain industry-recognized portable certifications. NC3 members are provided with expert consultation – from the tools and equipment, to facility planning, faculty training, and the support necessary for developing professional certification programs. There are two compelling features of the NC3 model. First, credentials are developed at the national level before designing and implementing training programs at local colleges. Second, these credentials are designed to be stackable.

Recommendation 9.5

At Pima Community College, workforce programs are offered in Building, Construction and Utilities, Business and Industry, and Public Safety and Corrections. In 2012, the five most common fields in which short-term stackable certificates were awarded nationally were emergency medical technician, automotive mechanic, welding technologist, commercial vehicle operations, and law enforcement. PCC should continue to expand offerings in industry certifications offered by NC3 or others, especially in transportation (automotive), manufacturing, and digital literacy, in accordance with the economic and employment needs of the regional Arizona labor market.



In addition to NC3, PCC needs to seek out other credentialing organizations. For example, Right Skills Now is an acceleration of the National Association of Manufacturers –Endorsed Manufacturing Skills Certification System, which includes nationally portable, industry-recognized certifications that are combined with for-credit education programs. These education pathways are directly aligned to career pathways in manufacturing, so students progressing through the programs earn college credit towards a degree, a national certification with labor market value, and the hands-on technical experience to be successful on the job.

It is a known fact that the U.S. lacks a coherent, transparent system for earning and awarding post-secondary credentials. There is widespread agreement that clarification of the U.S. credentialing ecosystem is necessary and timely.

In March, 2016, the American Association of Community Colleges announced the Right Signals initiative. Supported by a grant from Lumina Foundation, Right Signals will identify and develop a model for recognizable credentialing that may be utilized by students, colleges, and employers nationally.

Recommendation 9.6

Industry credentials have the potential to be offered at all PCC campuses based on the designated CTE programs offered at each site. Current classroom and laboratory utilization rates suggest that physical resources used for credit instruction could also be used for workforce industry credentialing programs. College policies should allow qualified full-time and part-time faculty to teach industry credentialing courses. In many cases, there are viable ways to embed industry-based credentials into credit-bearing career and technical programs, such as those being offered at Milwaukee Area Technical College.

Credit for Prior Learning

Recent studies have demonstrated that providing credit for prior learning options increases postsecondary participation, persistence, and completion (CAEL, 2011; College Board, 2010). However, many educational institutions do not have systematic processes for evaluating outside credentials and awarding credit for them, nor is it perceived to be part of their mission. As demand from credential earners increases, more educational institutions will develop strategies for assigning credits for industry-based credentials.

Both Florida and Indiana have developed statewide articulation agreements. For example, Gold Standard Industry Certification Articulation Agreements are maintained by the Florida Department of Education (FDOE) as a means for students to receive college credit for successfully earning a nationally recognized industry certification that is aligned with an associate in applied science (AAS) or associate in science (AS) degree. The intent is to guarantee the award of a minimum number of college credits for students entering the AAS or AS for which the Gold Standard Agreement is approved.

Examples can also be found at the institutional level. The Information Technology department at Macomb Community College grants credit for 37 technology industry certifications, if they were earned over the last three years. The College's website illustrates which industry credentials can be accepted for course credit.

Another excellent example is PCC's Automotive Technology AAS program, which is accredited by the National Automotive Technicians Education Foundation (NATEF). ASE, short for the National Institute for Automotive Service Excellence, is an independent non-profit organization working to improve the quality of vehicle repair and service by testing and certifying automotive professionals. Numerous community colleges offer prior credit towards a certificate or degree for students holding current ASE certifications.

Example of ASE certifications include:

ASE A1- Engine Repair Certification
ASE A2- Automatic Transmissions Certification
ASE A3- Manual Drive Trains and Axles Certification
ASE A4- Steering and Suspension Certification
ASE A5- Brakes Certification
ASE A6- Electrical/Electronic Systems Certification
ASE A7- Heating and Air Conditioning Certification
ASE A8- Engine Performance Certification

PCC Board Policy 3101 addresses assessment of credit for prior learning. The Standard Practice Guide (SPG-3101/AA) provides language on the implementation on assessment of prior learning, as demonstrated through national standardized tests (College-Level Examination Program (CLEP), Advanced Placement (AP), and International Baccalaureate (IB)); challenge exams; military service; professional certifications; and portfolio evaluation. The SPG is vague regarding the assessment of credit for industry-based credentials in terms of number of credentials, relevancy, and time specificity. Neither the PCC website nor the college catalog provide any indication that students can receive college credit for completing nationally recognized industry certifications, or which national certifications articulate with current PCC courses.

Recommendation 9.7

Board policies and SPG language should be revised after current PCC credit courses are aligned with national industry certifications. The American Council on Education (ACE) is the national leader in the evaluation process for education and training obtained outside the classroom, including courses, exams, apprenticeships, and other nontraditional forms of training.

Middle College and High School Partnerships

The Middle College High School

The initial Middle College High School was conceived and developed at LaGuardia Community College in New York City in 1974 and was designed to proactively address the large number of students that were dropping out of the city's high schools. The model of a high school located on, and integrated into, the community college environment was developed to lower high school dropout rates among what were termed high-ability, at-risk youth. Overall, the program has had many years of successful results.

"Middle College is a national treasure; it should be replicated nationwide"

Ernest L. Boyer
Former President, Carnegie Foundation for the Advancement of Teaching

Noting the positive impact of the LaGuardia model, educators across the country have persuaded state legislators or state departments of education to provide planning and startup funding for these programs. The Middle College National Consortium has successfully pioneered innovation in programs that serve districts, community colleges, universities, public and charter, for more than three decades. Today, middle colleges are alternative high school environments for juniors and seniors who face challenges in a traditional school setting or are seeking a different educational atmosphere.

Middle College is one of many academic pathway transition programs for students who are struggling within the limitations of traditional high school. Many underperforming students have greater academic abilities and could achieve their potential if given an opportunity in a different environment. Middle College is designed for the students who have historically lacked access to higher education, such as first generation college students, low income students, ethnically diverse students, or those who have unique life circumstances.

Typically, students accepted into Middle College finish their junior and senior years of high school on a community college campus. Students usually have the option of focusing on multiple career and technical education programs. The most popular include early childhood, computer programming, diesel/automotive technology, medical services, culinary, and selected health professions. In many established programs students develop leadership, employability and social skills, as well as participate in local internships to facilitate a seamless transition to the workforce or continue in a post-secondary career pathway.

Recommendation 9.8

Given the success of these types of transition programs and the solid relationship PCC has with local high schools, PCC should investigate the development of a middle college for campuses and current Adult Education Centers located within areas of low income and higher dropout rates.

10 | Recommendations – Access and Diversity

Christopher Mullen, in his brief *Why Access Matters: The Community College Student Body* (2012), argues that despite the national attention community colleges are receiving, it is important not to forget whom community colleges serve. Published reports note that community colleges, compared to all higher education, have a greater proportion of students with various risk factors. Community colleges also provide access to nearly half of all minority undergraduate students and more than 40% of undergraduate students living in poverty. Consequently, community colleges enroll a higher share of under-prepared students than do four-year colleges and universities.

As enrollments stabilize, there is a concern that a focus on completion has the potential to threaten open door policies. To ensure the focus on completion does not result in a more restricted student body, there needs to be a concerted effort to keep access at the forefront by creating community awareness of college programs and ensuring that policies and practices generate an expectation of student success. Access to college, for everyone, matters.

Diversity is closely associated with access. A typical community college diversity plan presents a vision and foundation for diversity and notes best practices for successful diversity initiatives. A diversity plan is central to a college's mission, values, and strategic directions. PCC has a Diversity Committee and a draft plan for 2015-2020 is under review.

A Focus on Community Engagement

A new form of community engagement is emerging, especially in communities with significantly under-served or under-represented populations.

This model extends the community college into high poverty areas or communities where a large number of adult residents have less than a high school degree or little college attainment. The best way to understand this approach is to look at specific examples at other community colleges.

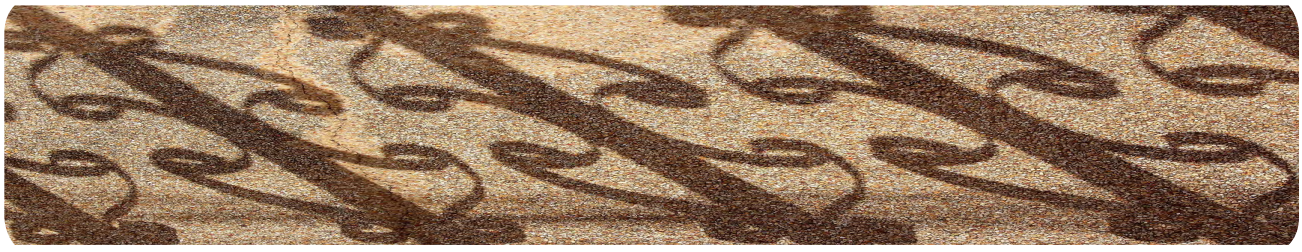
Tucson is a diverse ethnic community, and the PCC student population reflects this diversity. College enrollment has grown among all races and ethnicities since 1993, but gains have been biggest among Hispanics. In October 2014, 2.3 million Hispanics ages 18 to 24 were enrolled in either a two- or four-year college, a substantial increase from the 728,000 in 1993. Among Blacks in the same age group, 1.5 million were enrolled in college in 2014 – up from 897,000 in 1993.

According to a recent Pew Research Center survey (Stepler, 2015), Hispanic and Black parents are significantly more likely than White parents to say it's essential that their children earn a college degree. Today, 86% of Hispanic parents and 79% of black parents with children under 18 say it is either extremely or very important that their children earn a college degree. By comparison, about two-thirds (67%) of white parents say the same.

Over the past two decades, educational attainment and college enrollment have increased substantially among Hispanics, the nation's largest minority group, and Blacks. For example, the high school dropout rates among Hispanics and Blacks ages 18 to 24 reached record lows in 2014 – just 12% for Hispanics and 7% for Blacks, down from 33% and 16%, respectively, in 1993.

While the share of Hispanics who have finished college hit a new high in 2014, they still lag behind other groups on this measure. Among adults ages 25 to 29, 63% of Asians, 41% of Whites, 22% of Blacks, and 15% of Hispanics had earned at least a bachelor's degree in 2014. This gap is partly due to the fact that Hispanics are less likely than other groups to complete an associate's degree or study full-time.

The recommendations in this chapter provide opportunities to enhance access and opportunity, especially among Hispanics/Latinos and other underrepresented groups.



DIVERSITY PLANNING AT PIMA COMMUNITY COLLEGE

A preliminary draft of the 2015-2020 Pima Community College Diversity Plan was reviewed for goal congruence with the college strategic plan and with best practices of other community colleges with established diversity plans. The PCC plan uses a social justice framework with a focus on inclusivity. The draft plan has three major goals with twelve strategies or action items. The plan is heavily dependent on operational or procedural goals of branding, student and staff recruitment, information capturing and tracking. More formable goals include professional development activities, student programming, and study abroad, all focused around diversity, multiculturalism, and inclusion.

Many of the community college diversity plans that adopt best practices include international students as part of the overall plan. In reviewing the PCC's Diversity Plan and the Strategic Plan for Internationalization, there is overlap of goals, especially in the areas of global education and engagement, study abroad, cultural development for faculty, staff and administrators, and recruitment.

Recommendation 10.1

Components of the 2015-2020 Strategic Plan for Internationalization and 2015-2020 Diversity Plan should be solidified into a congruent goal framework, especially in the areas of professional development, study abroad and recruitment, Goal 3 of the Diversity Plan notes the need to develop processes and mechanisms for increased study abroad opportunities while the Strategic Plan for Internationalization (page 21) notes early development and draft documentation for a study abroad program.

Diversity plan recommendations include the need for a chief diversity officer to establish an Office for Diversity and Inclusion, with a diversity council or advisory committee to oversee institutional diversity planning and policy efforts. Again, this position and the office should be considered within the broader definition of diversity, with possible integration with International Development and an academic center for diversity studies.

A solid diversity plan, such as one developed by Lane Community College, also includes integrating themes of inclusion, diversity, and globalism into each students academic experience. In addition to the Language Institute, PCC should investigate the creation of a center of excellence or interdisciplinary department on ethnic, gender, and global studies.

ADULT BASIC EDUCATION AND DEVELOPMENTAL EDUCATION

Introduction

Addressing the needs of students unprepared for college-level studies is one of the most difficult and most critical issues facing community colleges today. These students, representing all age groups and ethnicities, face tremendous barriers. The numbers vary, but recent reports indicated that more than one million or 42% of all college students begin college in remediation (CCA, 2012). At Pima Community College, more than 80% of students require developmental education courses.

Studies note that less than one quarter of community college students who enroll in developmental education complete a degree or certificate within eight years (Bailey & Cho, 2010). Success data suggests that the sequence of courses takes too long to complete and is too complicated. Over the last ten years, a plethora of published strategies and models have provided information regarding the progression of students through the developmental sequence. More importantly, these strategies have been implemented in numerous community colleges across the country and evidence about their effectiveness is starting to surface.

There are surprisingly few rigorous studies regarding developmental education strategies and improved student outcomes. In reviewing the literature, strategy effectiveness is correlated with where students score on their assessment test. Assessment testing and cutoff scores are also identified as problematic, as there is no consensus about what constitutes preparation for college. There are a number of assessment tests and tremendous discontinuity in the distribution of cutoff scores between colleges.

Reform Initiatives and Their Effectiveness

The Bill & Melinda Gates Foundation, the Lumina Foundation, and the Institute of Education Sciences have all funded developmental education studies. The most promising programs that have shown evidence of success are noted in the following pages.

Intensive Summer Bridge Programs

Developmental summer bridge programs are designed to reduce or eliminate the need for developmental education courses in college. Students with weak academic skills in math or English are offered the opportunity to participate in an intensive, accelerated program during the summer before they begin college. These programs are also designed to build students' skills and to increase their knowledge of, and comfort with, the college environment.

Accelerated Learning Program (ALP), Mainstreaming or Corequisite Remediation

Students that test into the middle or upper end of the developmental range are "mainstreamed" into college-level courses in the same subject while concurrently enrolled in an ALP course or customized support lab that meets independently of the college level class to provide just-in-time academic support. As part of the Complete College America initiative, several states, including Georgia, West Virginia, Tennessee, Indiana, and Colorado have fully scaled corequisite remediation with significant results.

Based on a recent student by Complete College America, corequisite remediation is **doubling or tripling gateway college course success** in half the time or better (CCA 2012). Other studies have found that

students who enrolled directly into a college-level course and concurrent ALP course were significantly more likely to take and pass the college-level course and the course immediately after it (Bailey & Cho, 2010).

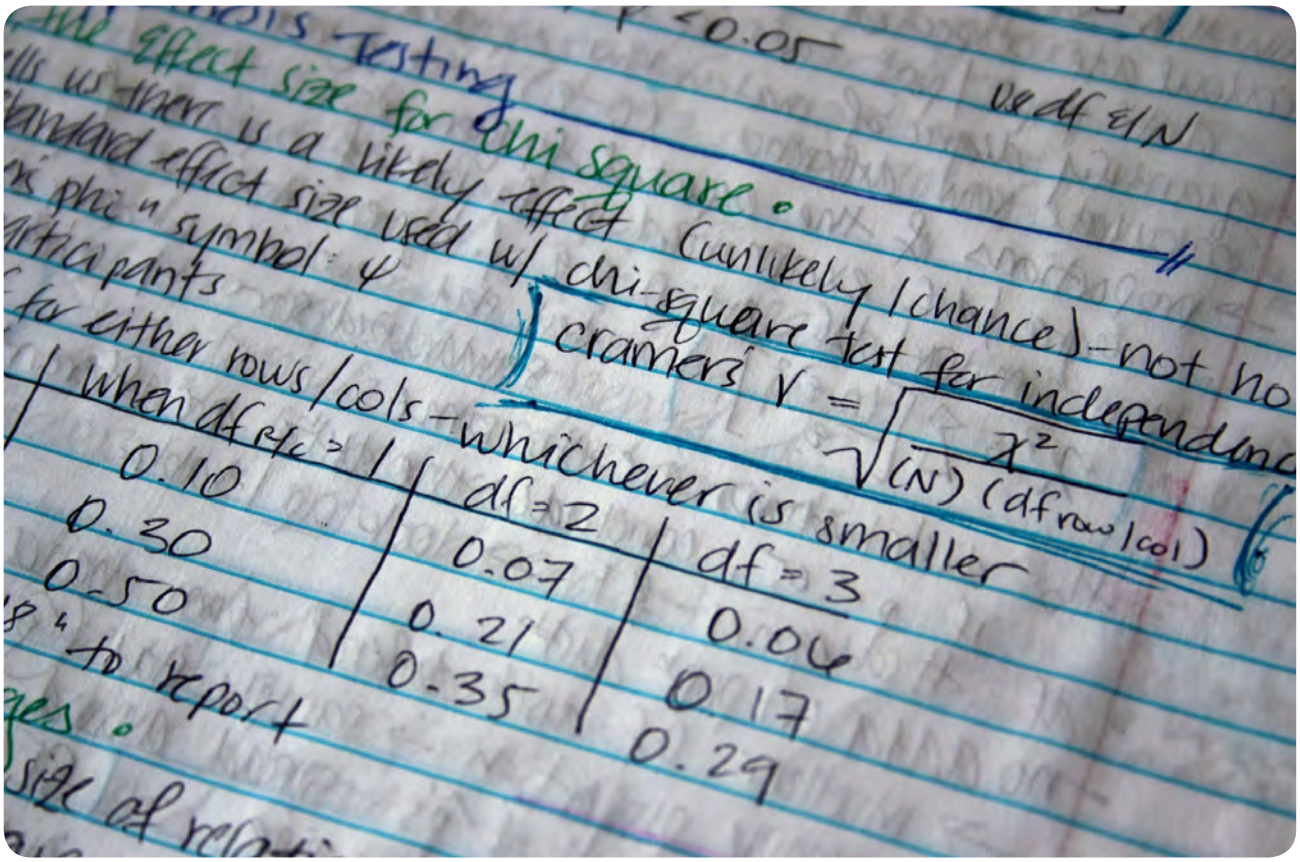
Learning Communities

There are many models, but the essential feature of learning communities is that they co-enroll a cohort of students into several classes together. More robust models include enhanced advising and tutoring that is embedded into the courses. Learning communities have been found to be most effective for academically low-performing students. Research has provided evidence of positive impacts on student engagement, persistence, and earned credits. (Bailey & Cho, 2010).

Emporium Model

The Emporium Model, which is typically used for a developmental math sequence, eliminates all lectures and replaces them with a learning resource center model featuring interactive software and on-demand personalized assistance. The model can also include interactive tutorials, practice exercises, solutions to frequently asked questions, and online quizzes and tests. This approach allows students to choose what types of learning materials to use depending on their needs and how quickly to work through the materials. This model is current being used at Pima Community College.

The National Center for Academic Transformation (NCAT) and its partner institutions have found that the Emporium Model has consistently produced spectacular gains in student learning and impressive reductions in instructional costs (NCAT 2016).



Integrated Basic Education and Skills Training (I-BEST)

In an effort to move students further and faster into their education and occupational field of study, Integrated Basic Education and Skills Training (I-BEST) pairs English as a second language (ESL), adult basic education (ABE), and High School Equivalency (HSE) instructors with professional technical instructors in the classroom to provide students with literacy education and workforce skills at the same time.

An I-BEST program is an integrated set of courses in a career technical educational (CTE) field that is jointly taught by a CTE instructor and a basic skills instructor. These courses often include support classes or labs where students can receive supplemental instruction.

This innovative program was developed by the Washington State Board for Community and Technical Colleges. All 34 community and technical colleges in the state of Washington collectively have more than 150 approved I-BEST programs.

The effectiveness of the model was studied by examining the impact of basic skills students enrolled in the 2005-06 through 2007-08 academic years. Researchers found that "enrollment in the program has positive impacts on earning college credit, the number of college credits earned, the number of occupational college credits earned, earning a certificate or degree, and achieving point gains on basic skills exams" (Wachen, et al., 2012).

Adult Basic Education and Developmental Education at Pima Community College

Many of the strategies outlined in the Pima Community College's Developmental Education Program Redesign include various student and academic support interventions at the pre-college and college entrance level. From a developmental education framework, the College has established a Math Emporium model with laboratory facilities on each campus. **"It is important that varying levels of Developmental Education be offered at each location."**

In addition, the College began offering the I-BEST model with the Hotel and Restaurant Management/I-BEST certificate program for adult education students in Fall 2014. This program was a one-time pilot program. In January 2015, Pima Community College adult education students pursuing a High School Equivalency diploma were able to study for a Behavioral Health Sciences certificate at the same time. In 2017, a program in Machine Tool Technology will be implemented using the I-BEST Model. PCC Adult Education, the PCC Center for Training and Development, and Pima County One-Stop are working together to offer the I-BEST certificate program at the Desert Vista campus. While effective with the adult education population, the I-BEST program model is only reaching a fraction of the student population it is intended to serve.

Recommendation 10.2

There is a need to increase participation and success of underrepresented populations. This could be accomplished by continuing to strengthen the connection between adult education, developmental education, and workforce development. Continued expansion of the number of contextualized integrated and accelerated instructional models and student support services and other best practices is needed in order to increase access and success of underrepresented populations in pathways. This includes expanding a variety of I-BEST programs. Current research suggests that the I-BEST model works best for hands-on programs such as Automotive General Service Technician, Welding, Carpentry, and Architectural CAD Drafting, to name a few. These options should be explored at PCC through district-wide discussions, using insight from business and industry, about the overlap/alignment with developmental education and basic skills transitions and build career pathways from high school bridge programs through completion.

Recommendation 10.3

Research on labor market outcomes of adult basic education and ESL students in Washington state found that short-term training does not help individuals advance beyond low-paying jobs, whereas a year or more of college-level credits provides a substantial increase in earnings (Price and Jenkins, 2005; Wachen, et. al., 2012). As a result, current I-BEST programs must be structured to provide a clear pathway to credentials and career advancement.

At PCC, I-BEST programs are at the certificate level, meaning that intervention is relatively short. The high level of support to students usually continues at the conclusion of the I-BEST course sequence, students are then ready to negotiate college-level programs with some additional wraparound student services or academic support. It will be necessary to consider the next steps towards completion for students who finish initial I-Best courses.

Current and future I-BEST programs at PCC need to be linked to educational pathways leading to longer-term stackable credentials, certificates or degrees. In a strong pathway, a student who completes an I-BEST program will either have the necessary skills to continue in a certificate or degree program or will have an opportunity to enroll in a type of bridge program that will provide next steps towards entering longer-term college-level programs.

In summary, programs using the I-BEST model need to consider all of the possible transition points and identify barriers to a successful transition for further education. In many cases, additional assessment testing may be needed to determine if students are academically prepared to continue into a degree program and what supports they may need to succeed in college level courses.

STATEWIDE DEVELOPMENTAL EDUCATION PATHWAY MODELS

In 2009, Virginia's community colleges embraced a six-year strategic plan. At the heart of the plan was student success. An important component of student success was improving completion rates in developmental education. Similar to the process used at Pima Community College, a Developmental Mathematics Redesign Team was charged with developing strategies to improve success rates for students in developmental mathematics.

The team examined developmental mathematics processes and outcomes and presented its recommendations in a report entitled *The Turning Point: Developmental Education in Virginia's Community Colleges*. The report affirmed three goals:

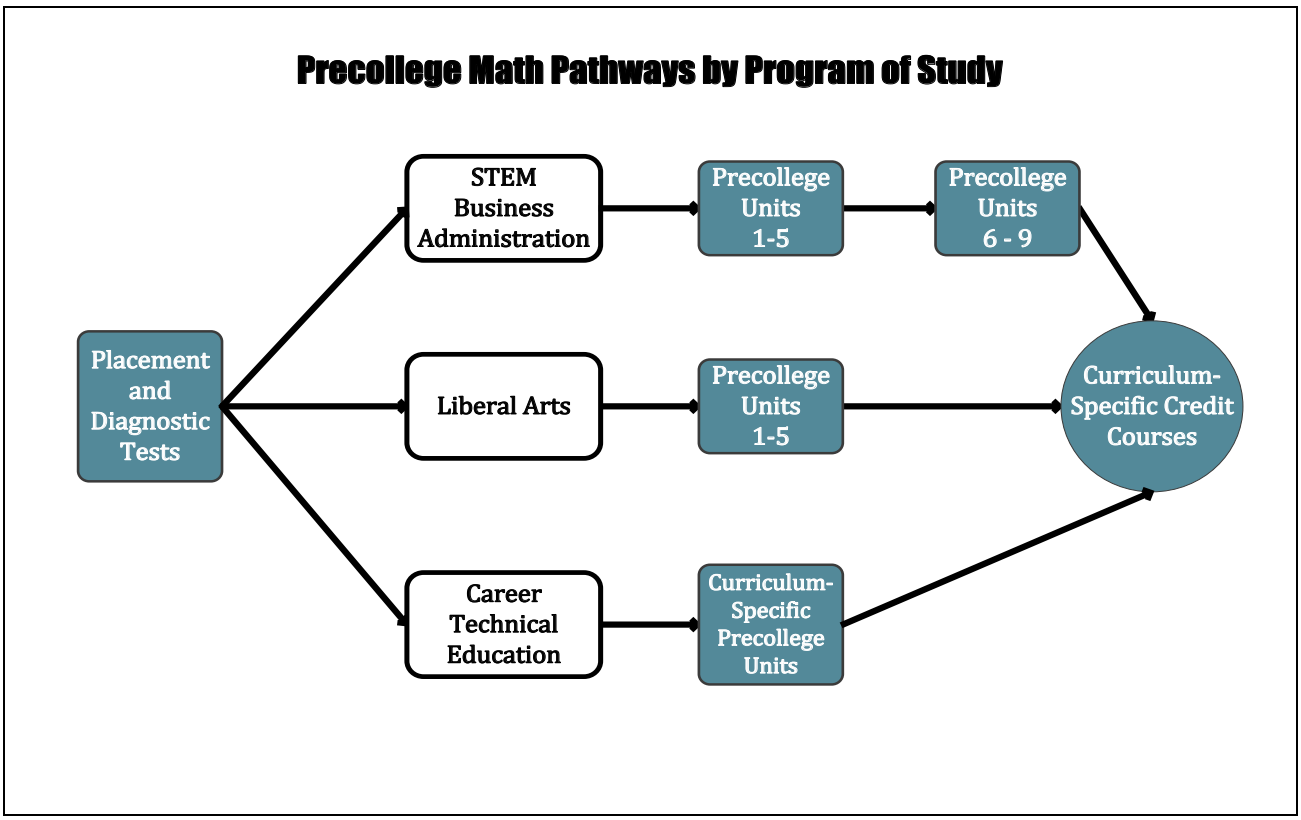
1. To reduce the overall need for developmental education;
2. To design developmental education in a way that reduces the time to complete developmental reading, writing, and mathematics requirements to one academic year, and;
3. To increase the number of developmental education students graduating or transferring in four years from one in four students (25%) to at least one in three students (33%).

It is important to note that initial work of the task force focused on the mathematical skills needed to be successful in various curricula (liberal arts; career/technical education; science, technology, engineering, and mathematics; and business administration). In order to redesign developmental mathematics to improve student success, recommendations were presented and are highlighted in the box at right.

Recommendations for Developmental Education in Virginia's Community Colleges

- The content of the developmental mathematics curriculum will be revised to reflect what is needed to be successful in college mathematics and college curricula.
- The content will be organized into pre-college units that are equivalent to one credit hour (16 contact hours) of study. A faculty group will be charged to write student learning outcomes for each unit and determine the level of mastery needed to be successful.
- Investigate the use of a system-level, enterprise system for early alert and tracking to strengthen student services.
- Develop and implement new web-based, adaptive placement and diagnostic instruments for use throughout the system in order to identify better the units that students need to complete. In addition, practice tests with review materials will be made available to prospective students to enable them to be better prepared for placement and diagnostic testing.
- Within the overall system-wide framework of redesign, each college will be able to select a delivery mode that best supports and enhances the pre-college mathematics program at its institution. Colleges will incorporate interactive technology and mathematics software to support student learning.

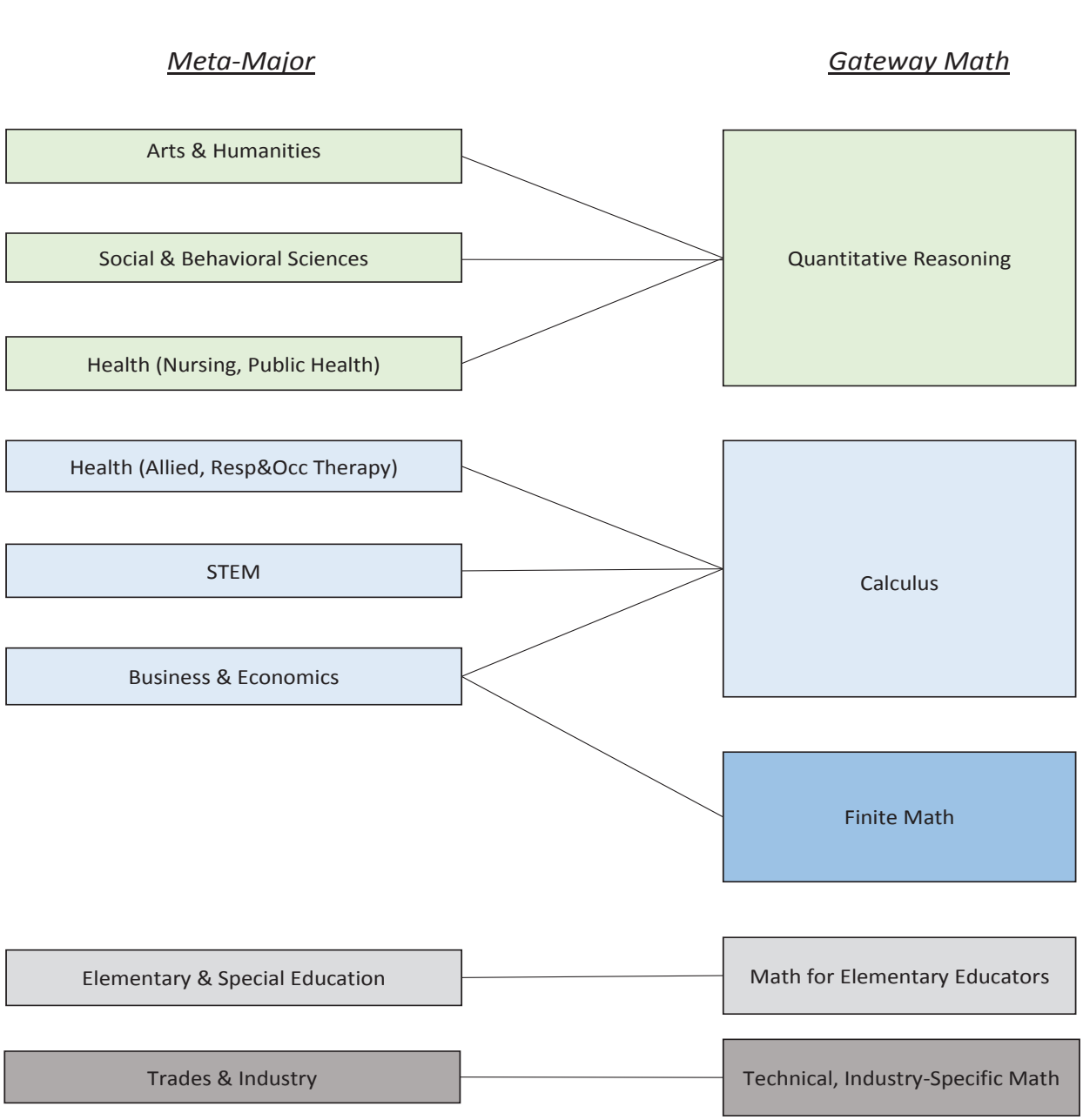
Source: The Critical Point: Redesigning Developmental Mathematics Education in Virginia's Community Colleges, Report of the Developmental Mathematics Redesign Team. August, 2010.



Source: *The Critical Point: Redesigning Developmental Mathematics Education in VIrginia's Community Colleges, Report of the Developmental Mathematics Redesign Team,* August 2010

The diagram above shows the three different pathways available to students depending on their chosen program of study. One path follows the traditional sequence for science, technology, engineering, and mathematics (STEM) and business administration programs; the liberal arts studies pathway reflects less algebra and more critical thinking problems; and the career technical education pathway can be customized based on individual program demands. Although the selection of units differs among the pathways, the curricular content of the units will remain consistent and allow for smooth transitions to other pathways should a student change their program of study.

The Indiana Math Innovation Council, in collaboration with Complete College America and the Charles Dana Center at the University of Texas-Austin, developed recommendations for Gateway Math pathways. This model is based on six meta-majors with the goal of increasing success rates in gateway courses without compromising the integrity of mathematics. The outcomes are noted in the figure on the next page.



Indiana Math Innovation Council Recommended Gateway Math

The Dana Center received national attention when it announced a partnership with the Texas Association of Community Colleges to develop and implement New Math Pathways statewide in all 50 of Texas' independent community colleges.

Recommendation 10.4:

An important component of student success is improving program completion rates of students who begin developmental education coursework. While math bridge classes are offered at most PCC campuses during the year, current PCC developmental education recommendations reflect pre-career pathway and/or meta-major strategies. As Pima Community College begins to investigate career and guided pathways, the aforementioned developmental education pathway models may be viable strategy for future success.

PCC ONLINE – EXPANSION OF ALTERNATIVE DELIVERY

One of the benefits of online learning is accessibility; providing a learning option for those students who may not be able to attend a traditional classroom. Approximately 97% of two-year colleges have developed web-based courses, certificates, and degrees to provide access and convenience to their students and to reach distant markets. At the same time, community colleges continue to face internal and external pressures to provide new programs and expand existing distance-learning options while maintaining academic integrity and quality of instruction.

Despite the proliferation of online courses and programs, there are few research studies on what constitutes acceptable metrics, standards, or best practices for online learning. The Global Learning Council, led by Carnegie Mellon University, has convened a high-powered consortium of educators, researchers, and technology-company executives that will spearhead efforts to develop standards and promote best practices in online education while at the same time accelerating research on technology-aided learning (O'Neil, 2013).

Pima Community College, like many of its peers, understands the long-term value of having a strong online component and continues to improve online course content and processes. Recently, all online programs were moved to the Community Campus and placed under a single unit with oversight by a Vice President for Distance Learning.

Current degrees and certificates offered entirely online at Pima Community College are an Associate of Applied Sciences (AAS) in general studies; an Associate of Arts degree for transfer to a four-year institution; a certificate in Human Resources, and a two-year post-degree certificate in Elementary or Secondary Education. More online degree programs are planned for the near future.

A review of PCC course grades for students taking online courses during the Fall 2013 semester notes that 57.5% successfully completed classes. A total 17.2% received a failing grade, while 20.4% withdrew from the class before completion. As a point of reference, only 14.7% of students receiving instruction in a classroom withdrew from the class (Planning and Institutional Research, January, 2014). As PCC strategic goals focus on student success in terms of retention, persistence and completion, these metrics should also apply to online courses.

Recommendation 10.5:

As some PCC students are not college-ready, a large number of them are ill-equipped to engage in online learning. Beyond

mastering basic study skills, students need to have time-management skills, self-motivation, communication skills, and awareness that the requirements for success are similar to those in traditional classes. They should also have the ability to use the technology required for the class. Numerous tests can be used to assess student readiness, and such a test should be provided as a mandatory online readiness component, with the possibility of unprepared students being asked to reconsider their decision to enroll in online or hybrid classes until mastering basic content within a classroom setting. Currently, ABECC and Pima Online are working on transition services designed specifically for students who earn their GED's in our distance and hybrid formats within ABE. Since we know they are already successful online learners, we want to encourage them to continue online at PCC to completion.

What is SmarterMeasure?

SmarterMeasure is an assessment that measures learner readiness. SmarterMeasure is an indicator of the degree to which distance learning and/or learning in a technology rich environment is a good fit for students. An online questionnaire asks questions on topics in the areas of computer use; motivation, organization, and self-direction; preference for learning new information; and on-screen reading rate and recall.

Recommendation 10.6:

After registering for an online or hybrid class, students should be provided with an orientation (online presentation or video) with clear information on how to access the online class, where to obtain technical help, and how to navigate the frequently used components of the Desire2Learn course management system they will be using for the online or hybrid class. This orientation should be required for all students taking their first online or hybrid class using Desire2Learn.

Recommendation 10.7:

Several areas of institutional support are obligatory for online students as well as those enrolled in blended classes:

- Technical Support: A help desk should be convenient and generally available to support students with technical issues.
- Single Contact Person or Office: In addition to technical support, an institution should have a single office or person to serve as the students' contact regarding questions concerning online or hybrid classes and programs.

Recommendation 10.8:

As with traditional on-campus students, early alert systems need to track inactive online students to identify problems and encourage their participation in the course or retention in the program. Faculty need to work closely with online advisors and implement strategies to assist students in course completion. Links to academic resources such as tutoring, library, and student support services that are specific to online learners should be provided.

Recommendation 10.9:

As PCC continues to develop program offerings and full online degrees, there should be an attempt to establish cohorts or online learning communities, not just offer courses. One of the limitations of non-cohort programs is that, even though vibrant learning communities are established in individual courses, they nearly always have to be rebuilt with each new course. Cohorts allow learning communities to be carried from one course to another and built throughout the program. Like face-to-face environments, community is built through frequent interaction, as well as occasional synchronous activities including chat sessions, video conferences, and webinars.

Many community colleges are creating online campuses. These virtual campuses have all of the student services and support systems found on a physical campus, including tutoring and other academic support services.

Terms Commonly Used in Discussing Online Learning

Distance Education occurs when the instructor and the students are in physically separate locations. Distance education includes some form of technology and may be synchronous or asynchronous.

Synchronous learning occurs when both the student and instructor are present in the course at the same time.

Asynchronous learning occurs when the student and instructor are not necessarily present in the course at the same time.

Blended or hybrid learning uses a combination of online and traditional classroom instruction.

A ***course management system*** or a ***learning management system*** is software that facilitates online learning by providing tools for course support such as content management, collaboration, assessment, tracking, and grading.

Adult Education – I-BEST and Learning Centers

PCC's Adult Basic Education for College and Career (ABECC) program assists Tucson residents with multiple free programs:

- Adult Basic Education in reading, writing and math;
- High School Equivalency (HSE) Preparation and HSE Testing for Arizona High School Equivalency diploma;
- English Language Acquisition for Adults (ELAA);
- Rights and Responsibilities of Citizenship.

ABECC courses are managed from the Community Campus and offered at three Adult Learning Centers, as well as other locations around the Tucson area.

Adult education pathways begin with basic skills enhancement through tiered Adult Basic Education programs focused on English Language Acquisition for Adults. One of the most important pathway components are the transition programs. For PCC, these include the High School Equivalency Program, College Bridge Programs, and combined credit and HSE programs using the national Integrated Basic Education and skills Training (I-BEST) model.

PCC offers two certificates (Behavioral Health Sciences and Machine Tool Technology) where the basic reading, writing, and math skills are contextualized into the program course content. In this model technical program faculty and adult education instructors jointly teach course content.

Title II of the 2014 Workforce Innovation and Opportunity Act (WIOA) is also known as the Adult Education and Family Literacy Act (AEFLA). The concept of career pathway(s) is mentioned six times in the text of the new Act.

WIOA Title II Citation (SEC. 202, PURPOSE) states that "it is the purpose of this title to create a partnership among the Federal Government, States, and localities to provide, on a voluntary basis, adult education and literacy activities, in order to – (3) assist adults in attaining a secondary school diploma and in the transition to postsecondary education and training, including through **career pathways.**" Career pathways is mentioned as both a required activity and a permissive activity for state adult education agencies to address as they provide services using WIOA state leadership funds to WIOA grantees. As a required activity, states must use their leadership funds (15% of their total state award) for a number of activities including the development of career pathways.

Recommendation 10.10:

Adult Education will need to work closely with academic units to ensure that future transition programs align with future career and technical education career pathways. These pathways need to extend from high school through the baccalaureate level.

Recommendation 10.11:

I-BEST provides an on-ramp to a career technical education program, customized for basic skills students. PCC I-BEST programs are structured to provide a clear pathway to a college credential and entry-level careers. Past research studies suggest that these programs are highly effective in terms of student success and completion.

In national I-BEST models, a basic skills instructor is present in the classroom at least 50 percent of the time. The additional cost of providing two instructors raises concerns about the scalability of the model for a large number of program areas. National studies on the cost-benefit on I-BEST indicate that "the benefits of the I-BEST program approximately equal the additional costs incurred by the program." (Wachen, et al., 2012).

Unfortunately, I-BEST is only reaching a small fraction of the basic skills students in adult education programs at PCC. While it is not feasible to offer the I-BEST model for every field of study in career-technical programs, PCC needs to expand contextualized programs in this area. This is especially true for high demand occupations that require a greater level of hands-on training. Costs may need to be mitigated through better internal cooperation and through statewide, regional or local grants and funding initiatives. In some cases, program redesign could decrease the amount of co-teaching and contextualization.

Adult Education and Centers of Community Engagement

The last recommendation in this chapter is also related to community engagement. At PCC, adult education programming is offered a numerous sites, including three established Adult Education Centers. The next recommendation needs to be placed into context based on relevant literature.

National reports (Liu, 2012) indicate that Latino students have fallen behind other populations in college enrollment and completion rates. Of high-school graduates, 59% of Latino students immediately enroll in college, compared with 71% of white students. In addition, only 36% of first-time, full-time Latino students earn a degree within six years, compared with 49% of whites. Research also notes the need for additional strategies to improve Latino access to college.

While Latino college completion is on the rise, there are still significant gaps. Latinos still have the lowest educational attainment of any U.S. population group (Fry, 2011). Nationally, 21% of Latino adults hold a two-year degree or higher. Compared with 44% of Whites and 30% of African Americans. This gap between the educational attainment of Latinos and Whites is consistent across all states, and it is particularly noticeable in states with large Latino populations. With the rate of Hispanic / Latino population growth in Pima County, closing this gap is key to greater college completion and economic vitality.

Gooden and Martin (2014) in their monograph, *Facilitating College Success among Emerging Hispanic Serving Institutions: Multiple Perspectives Yield Commonly Shared Diversity Goals,* provide findings to suggest that "engaging Latino families and the broader Latino community is critical in promoting Latino student success. Community colleges need to reach out to Latino students' families directly and include a family-based perspective in their recruitment and retention efforts." The article provides guidance for community colleges as they align their educational systems to better meet the needs of Latino students.

Effective outreach that provides relevant, targeted information about applying to college along with federal, state and institutional financial aid options can help families better understand how they can afford college. In addition, when college support services such as mentoring, cohort programs, tutoring, and advisement are explained to low-income and first-generation students and their families, perceived barriers to college are reduced (NCSL, 2009).

A large portion of Latinos are enrolled in Hispanic-serving institutions. These institutions award a significant proportion of all Latino degrees and provide excellent examples of successful programs, particularly in involving families in their children's academic success. Excelencia in Education (2015) describes best practices, including connecting with Latino families by targeting parents in the recruitment process and having parent-specific orientations to provide information about the family's role in supporting their student through graduation.

Recommendation 10.12:

Community colleges provide an attractive option for students who want easily accessible, low-cost, flexible education options close to home. Because community colleges generally have open admission policies, they offer a viable option not only for Hispanic and Latino students who want to attend college, but all students from diverse backgrounds.

Based on a review of recruitment strategies at other HSIs, community colleges are providing outreach by extending the campus into the community. There are examples of placing community engagement centers into areas with diverse, under-represented populations. The College should investigate enhancing existing Adult Education Centers into Community Engagement Centers and providing other services to support community-based social programming efforts.

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11 | Ensuring Future Capacities – Physical and Human Resources

OVERVIEW

To determine future capacities for Pima Community College, a base measure (reference point) was established. This chapter looks at numerous components and establishes a current reference point using Fall 2014 facilities and course data. A physical capacity model for each of the campus and center locations will be completed as part of the Campus Master Plan. The components of this model include the following:

- Participation rates and future enrollment assumptions;
- New programs and changes in current program mix, including the migration of programs from one campus to another;
- Development of utilization guidelines and space standards for multiple space categories;
- A space needs analysis by space category based on projected weekly student contact hours for each campus;
- Faculty and staffing levels based on future enrollment assumptions.

Together, these components will be used to understand future capacities for each campus and site. Much of this work is tied directly to the acceptance of recommendations and outcomes contained in the Educational Master Plan.

Alignment with Campus Master Plan

The Pima Community College Campus Master Plan was started in August 2015 and is being developed concurrently with the Educational Master Plan. After formal decisions are made by Pima Community College with regard to new and existing programs, program locations, and other student success strategies, the Campus Master Plan will be completed. The components noted in the Overview section will be analyzed and documented as part of the master planning process, as noted in the College's Request for Proposal, issued October 2015.

Current Capacity – Classroom and Laboratory Utilization

Institutional Summary - Classroom Utilization

Classroom utilization findings for Fall 2014 semester and from 1997 through 2001 are noted in Table 1. The Fall 2014 analysis included the following campuses:

- Desert Vista Campus
- Downtown Campus
- East Campus
- Northwest Campus
- West Campus

The Community Campus does not offer courses for credit instruction and is not included in the analysis. The findings from 1997 to 2001 do not include the Northwest Campus, as it was not established during those years.

In reviewing Table 1, Pima Community College had 176 classrooms that were designated for scheduled instruction in Fall 2014. Two rooms did not show utilization. The 27 **Average Weekly Room Hours** figure is the number of hours (averaged over the semester) that the 176 classrooms were scheduled for credit instruction on the five campuses. The **Hours in Use Student Station Occupancy** of 67% is the average number of seats or stations filled during scheduled use.

Since 2001, PCC has increased the number of classrooms by 15. Overall, average weekly room hours have decreased by 13 hours or 33%, while the student station occupancy increased by three percentage points.

Table 1 – Classroom Utilization Summary

Fall Term	Total Rooms	Without Scheduled Utilization	Average Weekly Room Hours	Hours in Use Student Station Occupancy
2014	176	2	27	67%
2001	161	n/a	40	64%
2000	177	14	35	68%
1999	150	15	38	70%
1998	142	n/a	44	60%
1997	142	n/a	42	58%

In a national survey conducted by the consultants, a total of 38 states have some type of classroom utilization guidelines. One of the highest utilization guidelines can be found in the Colorado Community College System where expected classroom guidelines are 42 weekly room hours and 67% student station occupancy. In a national utilization benchmarking study completed by Paulien & Associates in March 2013, a total of 34 urban/ suburban public community colleges were surveyed, including 11 large community college districts. These institutions averaged 38 weekly room hours, with 65% student station occupancy at 21 assignable square feet (ASF) per station for classrooms generating credit instruction.

Institutional Summary - Teaching Laboratory Utilization

Teaching laboratory utilization is noted in Table 2. Overall, PCC has increased the number of teaching laboratories by 53 over the last 13 years. It is interesting to note that the total number of laboratories declined between 1997 and 2001. A total of 30 **Average Weekly Room Hours** at 73% **Hours in Use Student Station Occupancy** were noted for Fall 2014.

Overall, Fall 2014 laboratory hours are slightly less than 2001 findings with a two percentage point difference in student station occupancy.

For teaching laboratory utilization guidelines, Colorado once again has some of the highest laboratory utilization expectations with 28 weekly room hours and 80% student station occupancy. The most common laboratory utilization guideline is 20 weekly room hours with a range of 65% to 80% student station occupancy. In a national utilization benchmarking study completed by Paulien & Associates in March 2013, a total of 31 urban/

Table 2 – Teaching Laboratory Utilization Summary

Fall Term	Total Rooms	Without Scheduled Utilization	Average Weekly Room Hours	Hours in Use Student Station Occupancy
2014	107	2	30	73%
2001	54	1	33	71%
2000	68	9	29	80%
1999	71	15	27	82%
1998	72	n/a	35	74%
1997	74	n/a	34	72%

suburban public community colleges were surveyed, including 11 large community college districts. These institutions averaged 26 weekly room hours, with 77% student station occupancy with laboratories used for credit instruction. More recent guidelines focus on space efficiencies, with a range of 28 to 32 average weekly room hours.

Campus-wide Summary: Classroom Utilization

Table 3 summarizes the classrooms utilization finding by campus. The table notes both Fall 2014 and Fall 2001 results. Over the 13-year period, the average ASF per station has increased by two ASF while the average section size (the average number of students in each course section) is unchanged at 22 students per section.

Table 3 – Classroom Utilization Summary by Campus

	2014 Analysis	
Campus	Average Weekly Room Hours	Hours in Use Student Station Occupancy
Desert Vista Campus	25	71%
Downtown Campus	30	69%
East Campus	29	67%
Northwest Campus	25	65%
West Campus	24	63%
Average	27	67%
Total		

*** Northwest Campus was not established in 2001**

Between 2001 and 2014, average weekly room hours have decreased at all campus locations. Overall, the number weekly room hours has decreased from an average of 40 in Fall 2001 to 27 in Fall 2014. At the same time, student station occupancy increased at three of the four campus locations with a three percentage point increase among all campus locations.

Campus-wide Summary: Teaching Laboratory Utilization

The teaching laboratory utilization findings by campus are noted in Table 4. The table notes both Fall 2001 and Fall 2014 results. All campus locations have increased the number of teaching laboratories. Between 2001 and 2014, average weekly room hours have decreased on three of the four campuses. At the same time, student station occupancy increased at three of the four campus locations with a two percentage point average increase among all sites.

Table 4 – Teaching Laboratory Utilization Summary by Campus

	2014 Analysis	
Campus'	Average Weekly Room Hours	Hours in Use Student Station Occupancy
Desert Vista Campus	29	84%
Downtown Campus	39	57%
East Campus	32	78%
Northwest Campus*	25	72%
West Campus	23	74%
Average	30	73%
Total		

** Northwest Campus was not established in 2001*

Current Capacity Metrics

A profile of fall 2014 capacity metrics for Pima Community College are noted below:

- Weekly Student Contact hours (WSCH):
  - Downtown Campus 27,070
  - Desert Vista Campus 8,991
  - East Campus 19,085
  - Northwest Campus 16,694
  - West Campus 37,038
  - **Total** **108,878**
- Fall Term 2014 Full-time Student Equivalent (FTSE): 14,158
- Fall 2014 headcount: 24,937
- Fall 2014 FTE / Headcount Ratio: 0.57
- Participation Rate: 2.48%

Weekly Student Contact Hours

Community college capacity changes over time as students take greater or reduced course loads. Where colleges once used enrollment data to measure facility needs, current metrics utilize the number of hours a student spends on campus in credit coursework while pursuing his/her education. This measurement is calculated on a weekly basis and is referred to as weekly student contact hours(WSCH) – the number of hours per week a student is engaged in credit instruction at the college. This is the only accurate basis by which the demand on facilities can be determined. It is the key in determining the future space needs and ultimately the future capacities of each campus.

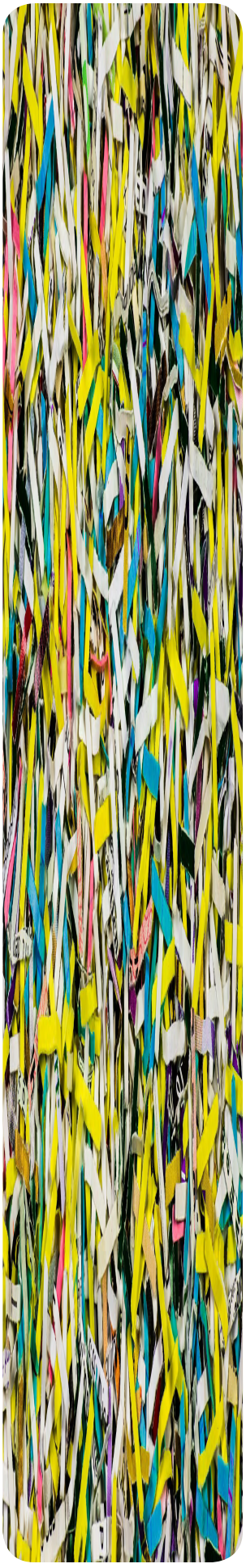
Participation Rate Analysis

The participation rate for the College is defined as the number of students attending the College for the Fall 2014 semester, divided by the number of residents living in the service area, based on U.S. Census population estimates. For Fall 2014, the College's participation rate for Pima County residents attending at least one credit class was 2.48%. The Arizona statewide average two-year public college student participation rate is 3.11%.

To forecast future capacity, a planning model will be created using participation rates and WSCH as the primary drivers for determining growth. Future planning assumptions will be made after reviewing and analyzing population, demographic, and occupational data, as reviewed in the Educational Master Plan. It is not critical to determine the exact year PCC will hit a certain level of WSCH. Rather, the Campus Master Plan will provide a forecast for future space needs when the College reaches that level of WSCH.

Recommendation 11.1:

Instructional facilities are defined as seminar, classrooms, lecture rooms, auditoria and teaching labs as designated in the district's space inventory system. Utilization guidelines for instructional facilities at PCC should be developed to measure efficiency of use. Metrics should include weekly room hours, station occupancy, and assignable square feet per station. Classroom and class laboratory criteria and size standards should be used regarding capacity for growth or facility expansion.



12 | Closing Comments and Next Steps

The Future of the Community College

"The future of higher education is a constantly moving target."

The future of higher education is a constantly moving target. Recent initiatives such as guided pathways, stackable credentials, intrusive advising, and contextualized remediation are testimony to this change.

The perception of community colleges is also being reshaped through national policies and public evidence of student success. The image of the older student returning to community college to take a few vocational classes is changing. Across the U.S., 37% of community college students are younger than 21, according to the *2016 Fast Facts* from the American Association of Community Colleges, up from 32.5% in 2010.

These younger students expect a rich on-campus community, complete with meaningful learning activities, contemporary campus facilities, and the ability to connect their devices to resource networks to enhance learning.

To remain relevant in the future, there are five areas in which Pima Community College must excel:

1. **Great classroom teaching:** Teaching is the bread and butter of a community college. It's what Pima Community College should care about most and what it should take pride in doing well.
2. **Adult and developmental education:** For those underprepared for higher education in the greater Tucson area, the pathway for achieving the American dream will begin with adult and/or developmental education. Every opportunity should be provided to ensure student success for all students.
3. **Workforce development and training:** The future must include building a powerful engine for workforce development by delivering technical training to drive economic growth and regional needs for skilled workers. An economically vibrant community benefits everyone.
4. **Online education:** The future includes not only enhancing current online educational opportunities, but making them stronger through more personalized online experiences and enhanced student support systems.
5. **Economic value:** A viable future depends on providing an affordable education with greater emphasis on the acquisition of important work-related skills or knowledge base for transfer that allows students to earn a livable wage upon graduation, without significant college debt.

"Community colleges and/or vocational schools are better than elite universities."

Adrian McIntyre, Ph.D. Cultural Anthropologist - University of California, Berkeley

Pima Community College – A Strategic Inflection Point

Chancellor Lee Lambert, in his late spring 2015 *Report to the Community*, succinctly summarizes Pima Community College's strategic position:

> "We are at a Strategic Inflection Point, a term coined by Andy Grove, then-CEO of Intel Corp. A Strategic Inflection Point is that which causes a fundamental change in business strategy. "Nothing less is sufficient," Grove said. Many of the assumptions Pima makes about its markets, its competition and its customers need to be re-examined and retooled comprehensively in order for us to succeed.

A recurring theme heard thus far in the 2016 U.S. Presidential campaign is the need for change, which has become synonymous with a better future and continued prosperity. Nowhere does the change narrative have more meaning than within the two-year higher education sector.

The research and recommendations contained within the Educational Master Plan echo Chancellor Lambert's statement that Pima Community College must undergo significant change in order to stay viable in the

future. As an organization centered on the highest quality service to its students and its communities, Pima Community College must hold itself accountable for ensuring student success by following best practices, unified around a common vision, mission, and strategic goals.

Creating formal processes and plans is crucial to address rapidly changing workforce demands, barriers to college completion, and college and career readiness. Every Pima Community College team member must clearly understand the significance of their role in supporting student success and be empowered to perform that role. Every employee has a responsibility to be a leader of change. Cooperation and consensus building at all levels cannot be voluntary or optional; it is a necessity for continued survival.

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