

ARIZONA DIRECTIONS 2013

FOSTERING DATA-DRIVEN DIALOGUE IN PUBLIC POLICY



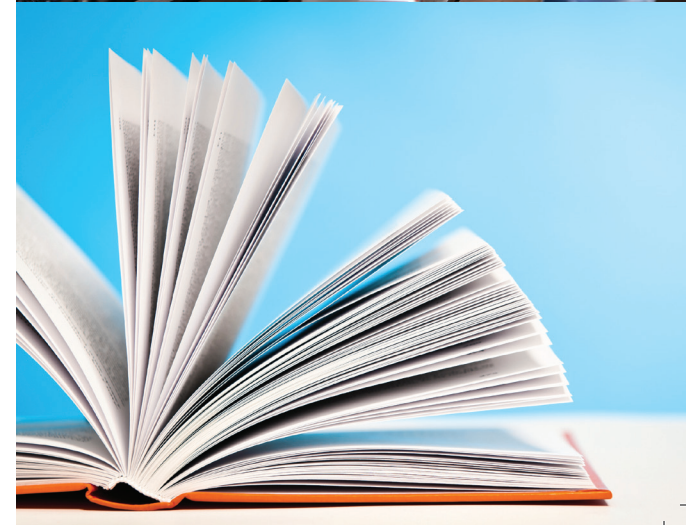
A photograph of a desert landscape at sunset. The sky is a mix of purple, pink, and orange, with wispy clouds. In the foreground, several saguaro cacti are silhouetted against the bright sky. The cacti vary in size and shape, with some having arms. In the background, a range of mountains is visible under the colorful sky.

THE VISION FOR ARIZONA DIRECTIONS IS TO IMPROVE THE QUALITY OF LIFE FOR ALL ARIZONANS THROUGH THE USE OF DATA TO AFFECT INDIVIDUAL AND COLLECTIVE DECISION MAKING AND PUBLIC POLICY.

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ARIZONA INDICATORS

A Project Managed by Morrison Institute for Public Policy

Arizona Indicators centralizes data showing Arizona's competitive position and trajectory. By providing interactive data visualizations with expert analysis and policy options, Arizona Indicators helps community leaders, business leaders, elected officials and the public identify areas where progress is needed and promotes evidence-based decision making.

ArizonaIndicators.org

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A NOTE FROM OUR ARIZONA INDICATORS PARTNERS



Dr. Michael M. Crow
President
Arizona State University

As Arizona leaders strive to improve social and economic conditions, they realize they must go beyond simply treating persistent symptoms. Instead, they understand that reliable data are essential to identifying root causes and measuring progress at the system level to ensure high impact, sustainable change.

In recent years, the Internet and other advances have spurred a rapid democratization of data, which gives decision-makers access to far more knowledge-based power than ever before. Power, however, inevitably brings responsibility. In order to employ data wisely, users must vet sources, understand cultural and legislative contexts, and consult on-the-ground practitioners. This process is arduous, but essential. Too often, however, organizations lack the capacity to do this on their own.

To address this need, Arizona State University and the Arizona Community Foundation created ArizonaIndicators.org, a centralized data resource and analysis tool that promotes civil discourse and informed decision-making.

Managed by Morrison Institute for Public Policy at ASU, ArizonaIndicators.org provides quality, non-partisan data along with the applied research and expert interpretation that make them useful. The project also disseminates public opinion data, publishes timely policy briefs, and facilitates dialogue among diverse stakeholders – all with the goal of inspiring and empowering change agents across the state.



Dr. Steven G. Seleznow
President and CEO
Arizona Community Foundation

In 2012, Arizona Indicators launched the *Arizona Directions* series, an annual statewide report card that examines critical issues facing Arizonans. Its vision is to improve the quality of life for all Arizonans through the use of data to affect individual and collective decision-making and public policy. Last year's inaugural report presented actionable indicators for job creation, education, health, and infrastructure.

This year, the report strives to move the needle in two fundamental ways – improving education and strengthening Arizona's economy. These goals are inextricably linked regardless of one's political vantage point. Within these essential areas, the report examines the economic implications of the Latino educational achievement gap, career and technical education, the status of statewide economic development efforts, and strategic opportunities in the Sun Corridor.

Arizona Directions strikes the right balance of high-level analysis and concrete illustrations of the consequences – intended and unintended – of our public policies. The report's critical edge is sharpened by our common desire to help Arizona meet its full potential – the potential of our human capital and of our remarkable geographic “place.” We hope you'll join us in heeding this call to action.

Sincerely,





ARIZONA DIRECTIONS: A WAKE-UP CALL

Rarely a day goes by that the health of Arizona's economy or the quality of our education system doesn't make headlines. While no one doubts the critical nature of these issues, sometimes fatigue sets in. We start to tune out messages that are over-politicized or lack specificity. We become apathetic. This issue of *Arizona Directions* is our alarm clock, telling us the time and issuing a wake-up call.

The report prompts us to ask ourselves:

- Is a four-year college degree the best path to a good job for everyone?
- If the Latino educational achievement gap persists, how will it impact Arizona's future, specifically its tax revenues and the potential ripple-down effect?
- What is Arizona's economic identity and how can the state advance a unified economic development vision?
- How can the Sun Corridor megapolitan, with an economy larger than that of the United Arab Emirates, maximize its trade potential with Mexico, Los Angeles, Las Vegas and the Southwest?

Arizona Directions is about making complex systems understandable and making data actionable. In last year's inaugural report card, we provided a snapshot of Arizona's competitive position and trajectory in four broad areas: job creation, education, health, and infrastructure.

This year, diversification is the central theme. Arizona's role in the Southwest, in what could be a vibrant megapolitan cluster, and the state's stake in the global economy will require economic diversification. Equally important, the new economy will require a diversification of our educational pathways and workforce skills. As Arizona defines its post-recession economic identity and prepares to implement the new Common Core State Standards, the time is right to make real strides in both economic development and educational achievement. Any policies aimed at improving one, must address the other in order to be successful.

We hope the metrics and key findings of this report become part of our collective knowledge and begin to drive us toward more action-oriented dialogue. You can help. Share the report at your next board of directors meeting. Ask your elected officials how they are addressing Arizona's performance on the key metrics. Make data central to your next strategic plan or grant proposal. Arizona must face the future alert and ready to lead through evidence-based decision making.



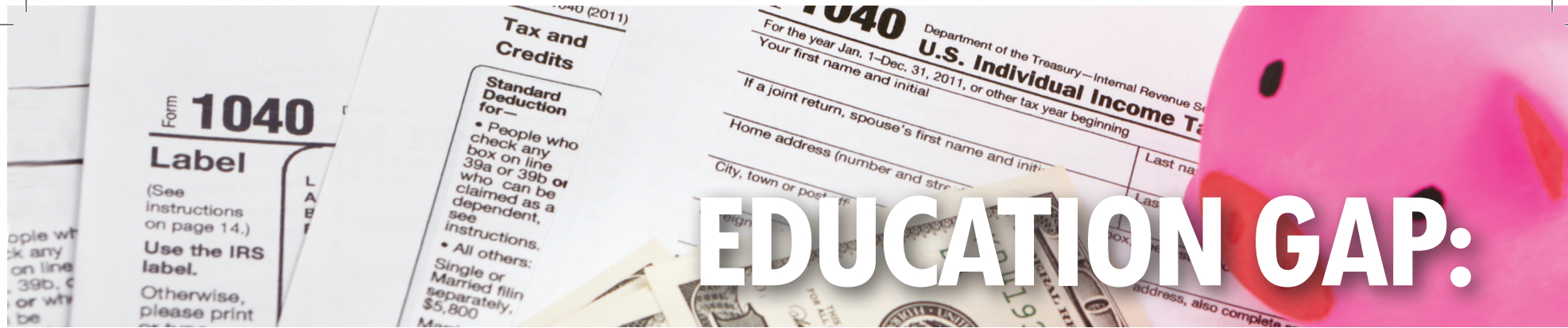
KEEPING PACE AND MAKING STRIDES

- **HANDS-ON LEARNING SUPPORTS ACADEMIC SUCCESS.** Arizona high school seniors taking two or more career and technical education (CTE) courses score higher on AIMS reading and math tests and have higher graduation rates than those students taking fewer than two CTE courses, according to the Arizona Department of Education.
- **HOME TO MANY ENTREPRENEURS.** In 2011, Arizona led the nation in business formation with 520 out of 100,000 adults creating a business – well ahead of Texas and California – according to a recent Kauffman Foundation report.
- **HIGH DENSITY AND MAJOR ECONOMY.** With an economy larger than that of the United Arab Emirates and population density comparable to The Netherlands, the Sun Corridor is well-positioned to assert its role in the Southwest Megapolitan Cluster and the global marketplace.



WAKE-UP CALL

- **FLAT-LINING STATE INCOME TAX REVENUE.** It seems inevitable that a continuing lag in Latino educational achievement will drive up Arizona's percentage of under-educated workers. This could hinder the growth of average household income for all Arizonans and, in turn, reduce per capita state tax revenues.
- **LACK OF ECONOMIC DEVELOPMENT STAFF IN RURAL ARIZONA.** Nearly 40 percent of the economic development organizations responding to a recent Morrison Institute survey were either so small or spread so thin that they have less than one full-time person working on economic development.
- **DAUNTING INFRASTRUCTURE COSTS FOR ENERGY.** Depending on the future mix of electricity generation technologies, total capital costs for energy in Arizona are projected to be \$74-\$86.5 billion through 2032.
- **NEED FOR ADDITIONAL FEDERAL RESEARCH FUNDING.** While the Sun Corridor received nearly \$145 million in research funding from the National Institutes of Health in 2010, it still trails the Denver area (\$251 million) by a substantial margin and is not far ahead of much smaller metro areas like Salt Lake City (\$132 million) and Albuquerque (\$89 million).



Arizona is justly proud of its abundant land, brilliant sunshine and diverse natural beauty. All are essential elements of its economic dynamism and overall quality of life. But our state's most critical resource remains, as always, its people. Dedicated workers, skilled artisans, employers, scholars, entrepreneurs and professionals – their energy and ideas are the true drivers of our collective prosperity in an increasingly competitive global marketplace.

This is not news. Yet Arizona today is pursuing public policies that risk undermining its economic future by neglecting the education and achievement of its fastest-growing population group. In the coming years, Latinos¹ will form an increasingly larger share of the state's leaders and workers, and should eventually comprise a majority of Arizonans. But many still struggle against barriers to educational achievement that keep them lagging well behind the state's White population in grades and graduation rates.

The problem is far graver than a few disappointing report cards. Education and skills training are expected to become even more important drivers of workforce quality, earning potential and economic growth than they are today. Arizona now increasingly competes with a global array of economic rivals. If it is to develop, attract and retain well-paying, high-skill industries that will enhance the quality of life for all Arizonans, the state must have a critical mass of trained workers and the promise of more to come.

Further, lower educational achievement is typically linked to lower earning power. A substantial average income gap already exists today between Arizona's Latinos and Whites. As the former make up an increasing share of the state's total population, the average income levels for all Arizonans could stagnate or even drop. Less income means less purchasing power and less consumer demand, which drags down overall economic growth and, consequently, tax revenues. Lower tax revenues mean fewer state services and investments across all economic sectors.

Such grim futures are not inevitable, but nor can they be ignored or wished away. That's because Arizona's dilemma is driven by the slow but unceasing momentum of demographics. All of Arizona's racial groups – including Whites, African Americans, Asian Americans and Native Americans – are growing in numbers. But their growth is dwarfed by the rise in our Latino population. Between 2001 and 2010, for example, Arizona's non-Hispanic population grew by 17.3%. Our Latino growth rate was 46.3%.

¹ The terms "Latino" and "Hispanic" are used interchangeably in this report. The term "White" refers to non-Hispanic Whites.



A TIME BOMB

In addition, Arizona's Latino population is young. Our state is now home to more Latinos under age 18 than Whites. The median age of our White population is 44; for Latinos, it's 25. Nor is this a matter of controlling immigration – illegal or otherwise. Nearly all Hispanic children under 5 years of age in Arizona – children of both documented and undocumented parents – are U.S. citizens.² It's likely that Arizona will reach "majority-minority" status by 2030.

It's vital for Arizona to arm members of its largest ethnic group with the education and skills demanded by today's – and tomorrow's – economy. But too many Latinos are failing to acquire the education, training and mentoring needed to succeed in a skills-based economy. About 69% of Hispanic schoolchildren graduated from high school in 2009; the figure for Whites was 83%. State and national testing consistently finds Arizona's Hispanic fourth-, eighth- and 10-grade students trailing Whites by large margins in reading, science and math. Latino high-schoolers remain underrepresented in Advanced Placement courses and lag far behind Whites in college graduation rates.

As a result, a much higher percentage of Arizona Latinos – compared to Whites – remain stuck in low-paying, low-skill jobs, while relatively few work in professional or managerial positions. This in turn has contributed to keeping Latino income levels low. As Arizona's Hispanic population share continues to rise, there's a very real danger that these problems will cast a pall over the economy of the entire state. These are not future problems: the Latino education gap has already existed for far too long, as noted in *Dropped?*, a 2012 Morrison Institute report funded by the Virginia G. Piper Charitable Trust and Helios Education Foundation. If Arizona is going to address these urgent and fundamental issues, now would be a good time to start.

² U.S. Census Bureau, decennial censuses (1990 and 2000) and American Community Survey (2005-09)

MORRISON INSTITUTE POLL

The vast majority of Arizonans, 71%, favor funding a statewide effort to improve academic achievement among Latino students. When asked whether they "strongly support," "support," or "do not support" such an effort, slightly less than one-third strongly support such an effort and an additional 40% support it. Only 22% of Arizonans say they do not support this effort.

On this poll question, the biggest difference of opinion is by political party preference. While 47% of Democrats strongly support such an effort and 33% support it, among Republicans only 14% strongly support and 41% support it. Young adults are more supportive of the program than older adults.

Eight in 10 Arizonans believe that most undocumented immigrants currently living in Arizona will still be living here ten years from now, underlining the need to improve the educational attainment of all Latinos.



WHY IS THERE AN EDUCATION GAP?

There are a myriad of reasons at the root of any lagging educational attainment, but the major factor is poverty, not ethnicity.

- Nearly one in four children in Arizona live in poverty, including 32% of Latino children (compared to 11% of White children).
- Latinos, African Americans and Native Americans overall tend to have less schooling and academic achievement than Whites. But when income is factored in, poor White children perform below higher-income White peers.
- Latinos are the predominate population in K-12, but many who enter kindergarten already are behind because they did not have books, computers or educational toys in the home, nor did they attend preschool.
- Children whose parents went to college are more likely to go to college after experiencing quality K-12 schools.

WHAT PUBLIC POLICY MEASURES CAN BE TAKEN?

- Recognize that improving Latino educational outcomes is essential for the future prosperity of all Arizonans. Create a bi-partisan consensus on a long-term approach to reform, one that Arizonans will support beyond the election cycle.
- Address the socio-economic barriers to educational achievement that many Hispanic – and non-Hispanic – families face, notably including poverty and limited English language skills.
- Increase public education funding to levels that raise Arizona up from near the bottom of all 50 states. Money is no panacea, but it is impossible to expect a return on investment without investment.
- Create high-quality early childhood education programs for all students.
- Ensure that high schools reach out to non-college-bound students through career and technical education programs (CTE) that serve as a vital source of skilled workers and professionals.
- Provide pay and benefits to qualified preschool teachers that are equal to those of public school teachers.
- Promote data-driven educational programs and ongoing assessments by helping schools obtain the necessary systems and skills.

ARE THERE TARGET AREAS THAT CAN BE ADDRESSED?

- Poverty represents a critical disadvantage in any student's efforts to learn and advance. Census Bureau figures show that the poverty rate among Arizona Hispanics has been more than twice that of non-Hispanics over the past two decades. Targeting such "root causes" could bring rewards in and outside of the classroom.
- Research confirms that parental education is a key influence in predicting success in school. But most Latino adults in Arizona have no educational experience beyond high school.
- Scholars generally agree that the primary language spoken at home influences a child's academic performance. Early deficits in reading English among many Latino children limit their academic success. Arizona can redouble its efforts to help these future workers, leaders and voters learn English well.

SPOTLIGHT ON FUTURE INCOME TAX REVENUES

WHAT IS THE KEY MEASURE?

It seems inevitable that a continuing lag in Latino educational achievement will drive up Arizona's percentage of under-educated workers. This could retard the growth of average household income for all Arizonans and, in turn, slow the rise of income tax revenues. Statistical projections in several demographic and economic categories illustrate such possible outcomes. The results, presented only as general guidelines of what might happen, portray the rate of revenue growth lagging well behind the state's burgeoning population.¹

WHY IS THIS IMPORTANT?

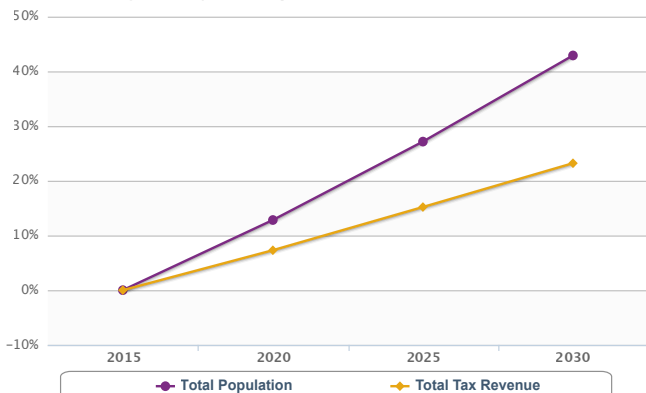
These projections, however limited,² portray a troubling future for all Arizonans. The state's population will undoubtedly grow in the coming years, with most of the growth coming in the Latino population. A persistent Latino educational achievement gap is likely to drive up the state's percentage of lower-income workers and slow the growth in tax revenues. Further, this slowdown in public resource growth would occur at the same time that the demand for public services and the need for public investment both increase.

HOW ARE WE DOING?

Opinion polls indicate a strong sentiment among most Arizonans that quality public education is important and should receive more attention and resources.

This view was echoed in the strong statewide voter support for a temporary education-oriented tax increase in 2010. In addition, there have been clear improvements in high school attendance and graduation rates among Latino children. However, state General Fund appropriations per student per \$1,000 of per capita personal income have declined in recent years, and the overall educational performance gaps between Hispanics and Whites that were measured 11 years ago³ remain largely the same today.

Percent Change in Projected Population and Income Tax Revenue in Arizona



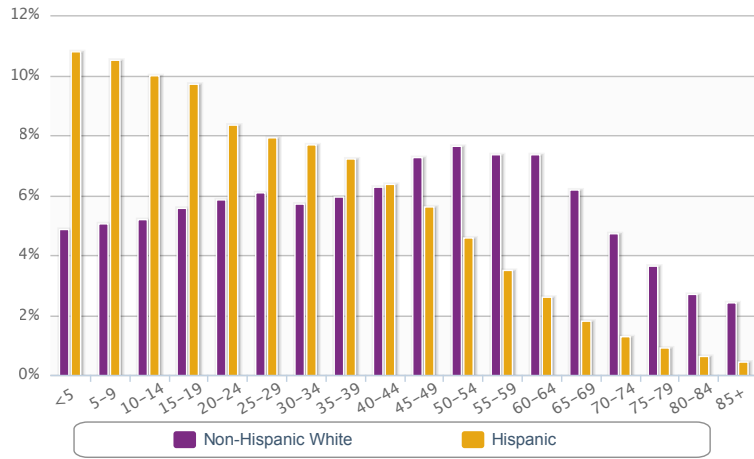
Source: U.S. Department of Commerce, Census Bureau; Data projections from Geolytics

¹ Population projections were created for Morrison Institute by Geolytics, a social research and marketing firm.

² These data include only personal income tax revenues; however, decreased household incomes would reduce purchasing power and thus sales tax receipts as well.

³ Morrison Institute, *Five Shoes Waiting to Drop* on Arizona's Future, 2001

Age Distribution of Arizona Residents by Ethnicity, 2010

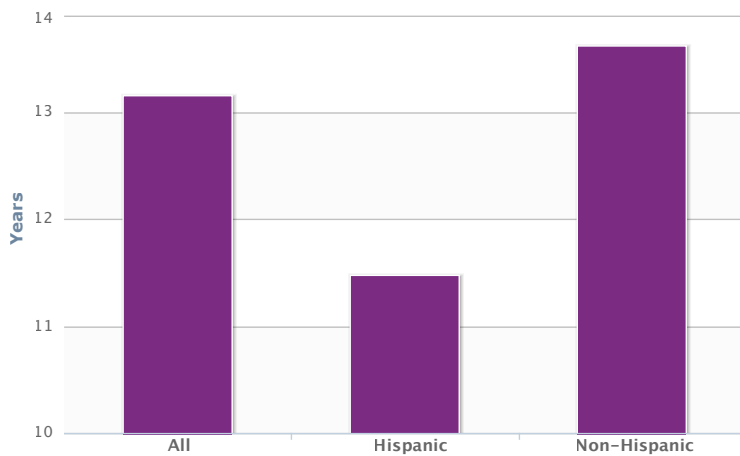


Source: U.S. Census Bureau

ARIZONA: HOME TO OLDER WHITES AND YOUNGER LATINOS

In Arizona as elsewhere, the oldest Baby Boomers are nearing the end of their productive work years. Arizona’s demographic mix means that many or most of them will be replaced by Latinos. Some 42% of White Arizonans are over 50 years old, while only 11% of Latinos fall into that category; for every Latino over 55, there are six White Arizonans. It is clear Latinos will increasingly fill the ranks of Arizona’s leaders, employers and employed. It is equally clear that their level of educational achievement will have a substantial impact on the future for all Arizonans.

Average Years of Education for Heads of Households in Arizona, 2010

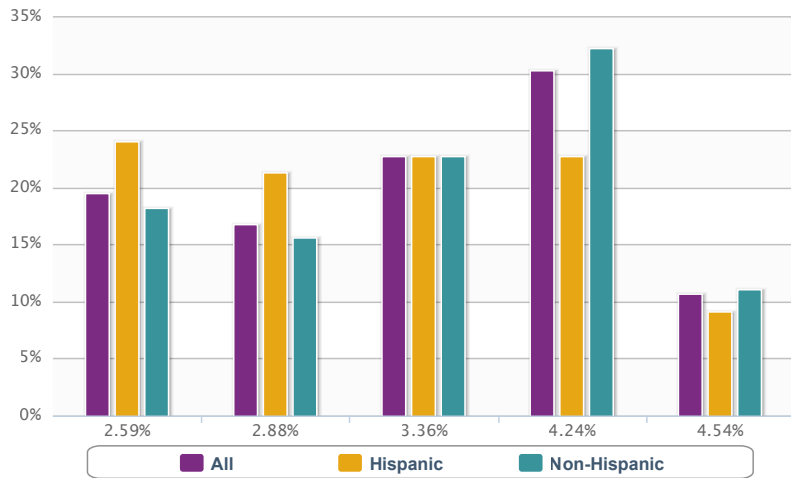


Source: U.S. Department of Commerce, Census Bureau

OUR LATINO POPULATION LAGS IN EDUCATION

It’s one thing to agree that raising educational achievement is the key to Arizona’s economic prosperity and quality of life. It’s another thing to actually raise it. The reality is that this goal presents substantial challenges that will not be overcome overnight. For example, the typical head of household in Arizona currently has little more than a high school diploma (12 years of education). The average Latino household head has only 11.5 years in school, less than that required for a diploma. True, most Arizonans, including Latinos, do have a high school degree. But these figures illustrate that, at the same time, our disturbingly high number of residents with very little education drags down the statewide average.

Percent of Arizona Households in Tax Bracket by Ethnicity, 2010



Source: U.S. Department of Commerce, Census Bureau

LESS EDUCATION OFTEN MEANS LESS INCOME

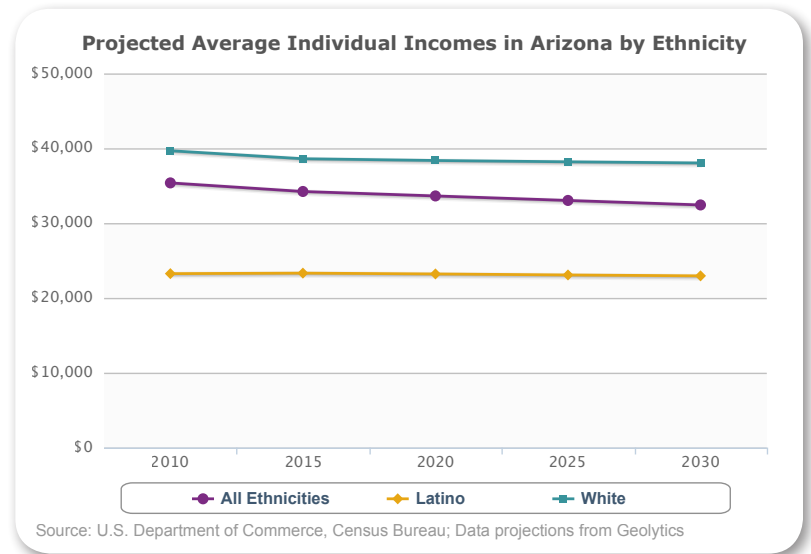
Everybody enjoys the prospect of making more money. But higher personal incomes also tend to benefit the broader community, as greater disposable income typically drives greater aggregate purchasing power, consumer demand and job growth. The distribution of Arizona taxpayers per bracket shows that – similarly to education – our state’s Latinos tend to lag behind non-Hispanics in taxable earnings. Arizona has a relatively low individual income tax (41st among states with the tax), with a top rate of 4.54% kicking in at an income level of \$150,000. Most Hispanics, however, populate the lower brackets.

“GIVEN ARIZONA’S DEMOGRAPHICS, WE ARE GOING TO NEED COLLABORATION ON AN EPIC SCALE TO IMPACT OUR MINORITY POPULATION IN A WAY THAT KEEPS ARIZONA COMPETITIVE WHILE IMPROVING THE QUALITY OF LIFE FOR ALL. NO ONE GROUP CAN DO IT ALONE.” – STATE SEN. RICHARD CRANDALL



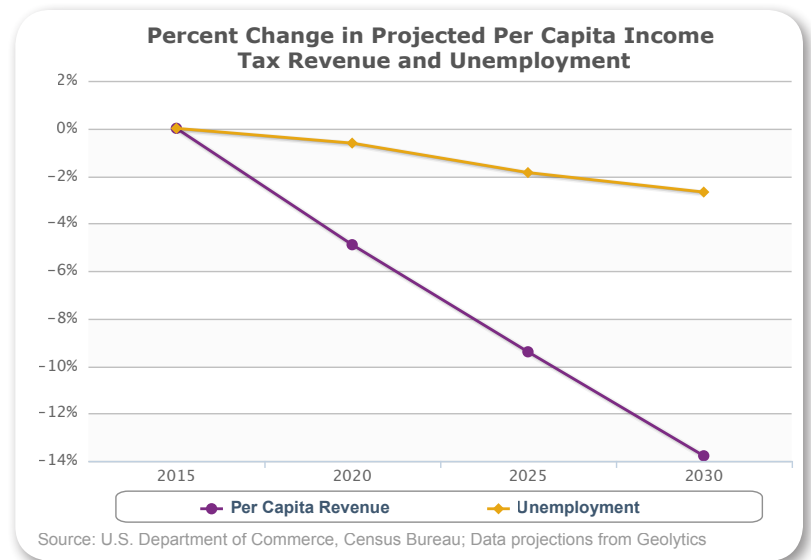
AVERAGE INCOMES MAY FLAT-LINE OR DROP

The substantial income gap between Arizona Latinos and Whites reflects the former's larger proportion of undereducated and unskilled residents. As Arizona's Latino population share grows, however, the gap will likely exert downward pressure on average incomes for all Arizonans. In 2010, among adults 25 and older, the average income for Hispanics was \$23,242; among Whites, it was \$39,667. Averaging the two ethnic groups together yields a combined income level of \$35,339. A straight statistical projection suggests that, measuring in 2010 dollars, by 2030 the combined average income for Hispanics and Whites may actually drop to \$32,423, a decrease in disposable income that would reverberate throughout the state's economy and render Arizona a less attractive destination for entrepreneurs and prospective residents.



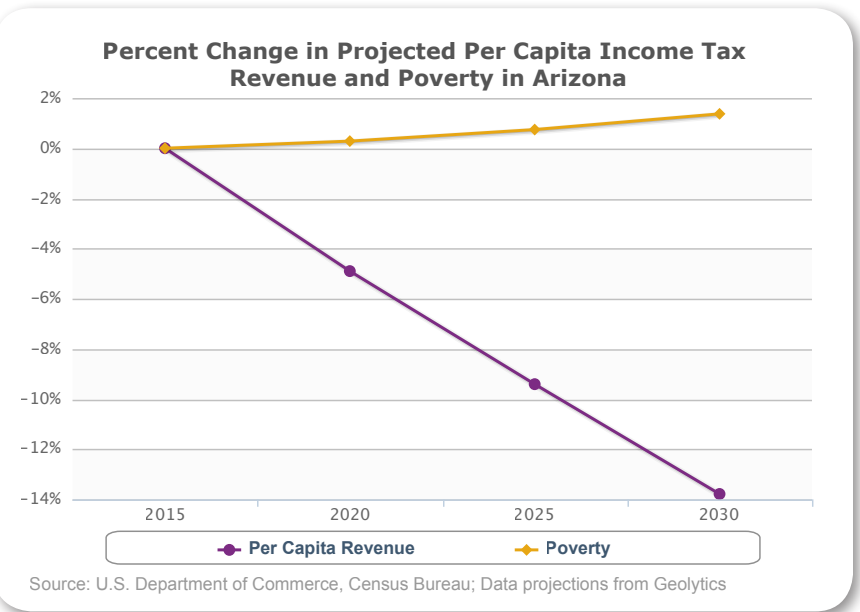
UNEMPLOYMENT DROPS, BUT REVENUE DROPS FASTER

Despite the lingering shadow of the Great Recession, Arizona should gradually regain its economic health – and thousands of state residents regain employment. But is “gradually” fast enough? And will the decline in unemployment outpace a decline in tax revenues driven by our growing population of undereducated workers? The trends – again, projected on a straight-line basis – are not encouraging. The good news is that unemployment is expected to drop at an increasingly faster rate. The bad news: Per capita income tax revenues may well drop at a considerably faster pace, leaving the state less able to finance programs to combat unemployment, such as job-training and business recruiting.



POVERTY MAY RISE AS REVENUES DECLINE

The need for government programs such as healthcare and food stamps that help the poor tends to grow faster in tough economic times – precisely when governments have less money to spend. Unfortunately, statistical projections suggest that these trends could be aggravated in Arizona's future by a brisk decline in per capita income tax revenues. This decline, spurred by a growing population share of lower-income, undereducated residents, could well make a bad situation – a rise in the state's poverty rate – worse.



“IT IS CLEAR THAT ARIZONA’S LATINO POPULATION WILL GROW DISPROPORTIONATELY, MAKING THEM EVEN MORE IMPORTANT IN THE STATE’S LEADERSHIP AND WORKFORCE. EDUCATION WILL ALSO BECOME MORE IMPORTANT, AS EVEN BLUE-COLLAR JOBS WILL REQUIRE A HIGHER LEVEL OF THE 3 R’S.” – ELLIOTT POLLACK, CEO, ELLIOT D. POLLACK & COMPANY



WANTED: TECHNICAL

Career and technical education (CTE) programs prepare students for a range of careers and post-secondary education options through a combination of hands-on training and classroom instruction. The goal is to provide students with applied knowledge and skills in high-demand fields. In Arizona, CTE programs in high schools and community colleges offer a sequence of state-approved courses centered around dozens of programs, taught by certified CTE teachers.

Formerly referred to as vocational education, CTE used to be considered a less desirable alternative for non-college bound students. However, despite its historical second-class reputation CTE has a long tradition of preparing students for meaningful employment. Today, it is gaining renewed prominence for graduates and supports Arizona's economic development objectives by producing skilled workers. CTE programs in high schools and community colleges now teach 21st-century skills while adhering to a rigorous curriculum that integrates math, science and more. While traditional CTE focused on preparing students to enter an apprenticeship or full-time employment, 21st -century CTE programs strive to keep multiple pathways open. They encourage post-secondary education options ranging from community college or trade school to enrollment in a four-year university.

A recent national study predicted that, by 2018, 61% of all jobs in Arizona will require some training beyond high school. With the shrinking of America's manufacturing base, a high school diploma alone is no longer sufficient for ensuring a middle-class income. The good news is that a significant proportion of 21st-century middle-income jobs will require knowledge and skills that can be obtained through one- and two-year CTE certification programs.

As employers increasingly demand specialized skills, CTE programs provide an important pathway to credentials that can open the door to high-skill jobs and good salaries. A national study found that 39% of males with a post-secondary certificate earn more than the median male with an Associate's degree and 24% out earn the median male Bachelor's degree holder. For women, 34% out earn those with an Associate's degree and 23% have a higher average salary than women with a Bachelor's degree.¹

¹ Carnevale, Anthony P., Stephen J. Rose, and Andrew R. Hanson, *Certificates: Gateways to Gainful Employment and College Degrees*. Georgetown University Center on Education and the Workforce. Washington D.C. (2012), p. 6.



EDUCATION SKILLS

Studies indicate that CTE concentrators are not only more likely to stay in high school, they are also more likely to pursue post-secondary training and credentials. When individuals prosper, the state benefits as well. The Alliance for Excellent Education estimates that if half of Arizona's 24,700 high school dropouts from the class of 2010 had instead graduated from high school, the economic impact on Arizona would include \$91 million in increased earnings and \$7 million in increased state tax revenue. Furthermore, if 34% of these 12,350 graduates had gone on to earn a CTE certification, 20% a 2-year degree, and 6% a bachelor's degree, the economic impact would be even greater: it would translate into \$156 million in increased earnings and \$12 million in increased state tax revenue.²

Arizona's CTE programs are an important provider of workforce training and a vital component of Arizona's economic development strategy. They also provide an avenue at the community college level for adults seeking additional job skills or retraining. But Arizona's CTE programs face barriers that prevent them from delivering a uniformly high quality of instruction, including funding cuts, high teacher turnover and uneven course content. Given CTE's prominent role in preparing Arizona's workforce for a 21st Century economy, we must address and overcome these challenges. Arizona's competitiveness in the global economy depends on it.

² The Alliance for Excellence in Education, *Education and the Economy: Boosting State and National Economies by Improving High School Graduation Rates*.

MORRISON INSTITUTE POLL

Seven in 10 Arizona adults feel Arizona high schools should provide both a college preparatory curriculum for those students planning to attend college and a separate set of classes for students planning to go directly into the workforce or attend a work training program after graduation. Adults 35 years of age and younger (79%) are the group most favorable toward a two-track curriculum.

Nearly three-quarters of Arizona adults believe that mastering a technical skill, such as welding, computer maintenance or medical imaging can provide a good path to a middle class lifestyle.

A four-year college degree is still highly valued in Arizona society. More than two thirds of Arizona adults (68%) believe a four-year college degree is worth the investment even in these times of increasing tuition costs.



WHAT ABOUT CTE AND COMMON CORE STATE STANDARDS?

Arizona is among the 46 states that are implementing Common Core State Standards with the goal of graduating students who are prepared for college and careers. English instruction standards focus on reading comprehension and mastering complexity in texts used in social sciences, science and technical courses. Mathematics standards ask students to apply mathematical approaches to real-world, practical problems. This presents an unprecedented opportunity to integrate English language arts and mathematics instruction within CTE programs, where a practical, applied method of teaching has been used for decades.

HOW IS CTE TAUGHT IN ARIZONA?

CTE courses are offered in high schools, community colleges and at for-profit educational entities. At the community college level, CTE courses are taught by 10 community college districts throughout the state. At the high school level, with the exception of Phoenix Union High School District, high schools in Yuma County, and a few high school districts in the state, CTE courses are taught and administered via 13 Joint Technical Education Districts (JTEDs). Legislation allowing the creation of JTEDs was passed in 1990. JTEDs are made up of multiple high school districts and deliver CTE classes two ways: through half-day classes on a central JTED campus and through classes in the individual member high schools. Students can take CTE classes at their local high school and can also enroll in half-day classes at central JTED campuses at no additional cost.

To date, the 13 JTEDs deliver approximately 88% of all high school CTE classes. JTEDs are governed by an elected board and operate under the oversight of the Career and Technical Education Division of the Arizona Department of Education. The CTE Division oversees and approves CTE programs and courses and requires that all courses meet or exceed established state performance measures.

Arizona has a statewide dual enrollment policy that allows high school students to take certain CTE courses at a community college and earn credits that count toward high school graduation requirements. If they decide to enroll in a community college after graduating from high school, the credits earned while in high school give them a leg up.

HOW IS CTE FUNDED IN ARIZONA?

CTE is funded from a combination of Federal, state and local funds. Federal funding in the form of Perkins grants is disbursed to the Arizona Department of Education. The department allocates 15% of the grant for oversight, program administration, assessment and professional development, distributing approximately 72% to high school districts and 13% to the 10 community college districts in Arizona. Perkins grants have stringent reporting requirements and require CTE programs to focus on career preparation while imparting academic instruction. The goal is to prepare students for viable careers and college. State CTE funds are distributed in the form of annual block grant awards to the school districts.

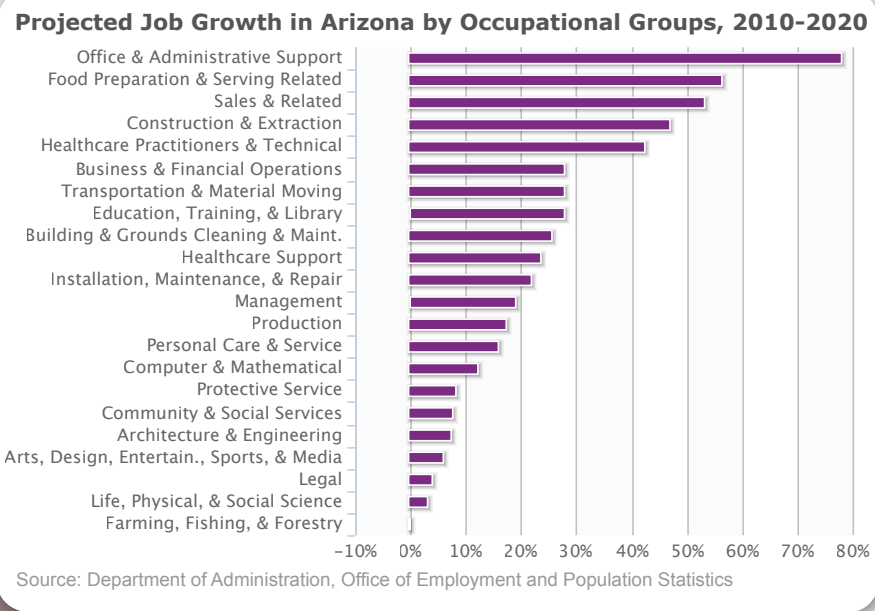
The funding for Joint Technical Education Districts (JTEDs) is generated from a combination of local, county, state and Federal funds. The primary source is a property tax levy of \$0.05 per \$100 of secondary assessed property valuation within the JTED boundary. The state legislature has the authority to cap this source of funds: beginning with the 2011-12 school year, it eliminated funding for 9th grade CTE education in the JTEDs, reducing funding by \$29.7 million.



SPOTLIGHT ON GROWING OCCUPATIONS

WHERE WILL PROJECTED OCCUPATIONAL GROWTH OCCUR?

According to projections from the Arizona Department of Administration's Office of Employment and Population Statistics, the highest job growth between 2010 and 2020 will occur in the following occupations: office and administrative support, food preparation, sales, construction and extraction, and healthcare practitioners and technical occupations. The vast majority of the jobs in these fields will require a high school degree and some sort of post-secondary credential. For example, careers in food preparation, healthcare and construction can all be advanced through the attainment of industry-recognized certificates.



WHAT DOES THIS MEAN FOR CTE?

Many of the occupational sectors that are projected to grow the most by 2020 require less than a Bachelor's degree. However, the vast majority of these occupations will require at least a high school degree and some type of post-secondary credential, whether it is an Associate's degree or a certificate. National studies have found that on average, workers with certificates earn 20% more than high school graduates and in some cases, out earn workers with a Bachelor's degree. In order to attract new employers and grow its economic base, Arizona must produce workers with the skills required to fill future jobs. CTE can play an important role by educating students about high-growth fields and providing a pathway to skills and credentials.

HOW CAN EMPLOYERS HELP CTE ALIGN WITH JOB GROWTH?

Employers can get involved with CTE education by offering career exposure and advice to students through internships, career days and by providing feedback to administrators and teachers about course content. Employers can also form long-term partnerships with CTE programs by donating the latest equipment on which students can train. For instance, Freightliner provides space in its engine maintenance facility where West-MEC students can receive hands-on training.

Fastest Growing Occupations Requiring an Associate's Degree or CTE Credential – Arizona 2010-2020

	Change	
	Number	Percent
1. Travel Agents	1,367	51%
2. Physical Therapist Assistants	409	45%
3. Massage Therapists	2,516	40%
4. Skin Care Specialists	776	36%
5. Real Estate Sales Agents	29,337	36%
6. Appraisers and Assessors of Real Estate	3,545	35%
7. Health Technologists and Technicians, All Other	331	35%
8. Manicurists and Pedicurists	872	35%
9. Surgical Technologists	512	32%
10. Dental Hygienists	863	31%

Source: EMSI and Morrison Institute analysis

JOB PROJECTIONS SHOW DEMAND FOR CTE WILL SURGE

Employment in occupations that require an Associate's Degree or a vocational credential is expected to grow significantly. In Arizona in 2010, 11.5% of occupational employment could be defined as "middle skill", or occupations that required either an Associate's Degree or postsecondary vocational credential. Employment in these "middle skill" occupations is projected to increase 19.8% between 2010 and 2020, compared to a 20.4% increase for "high skill" occupations (B.A. or higher), and 11.7% for "low skill" occupations.

High growth rates for "middle skill" occupations in Arizona are consistent with federal projections for the nation. According to the U.S. Bureau of Labor Statistics, occupations requiring an Associate's Degree are expected to increase 18% between 2010 and 2020, and occupations requiring a postsecondary non-degree award are expected to increase 16.9%. By comparison, occupations requiring a Bachelor's degree are expected to increase 16.5%.

Projected Job Growth for Occupations Requiring an Associate's or CTE Credential – Maricopa County 2010-2020

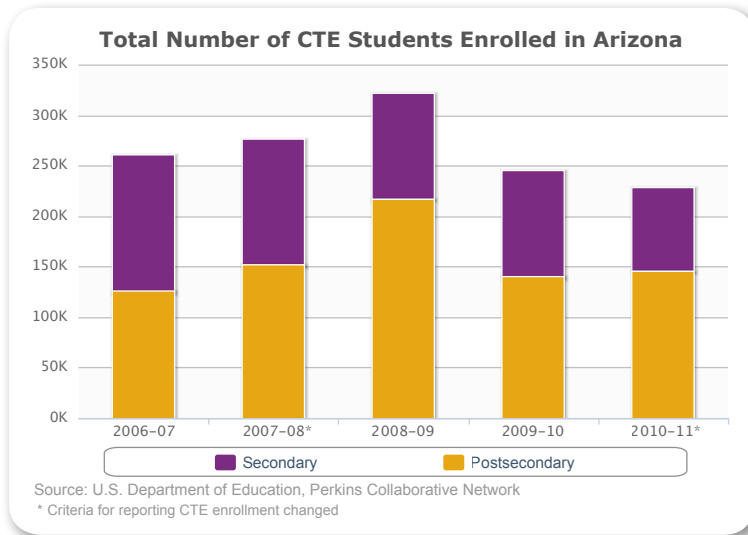
	Change	
	Number	Percent
1. Real Estate Sales Agents	21,092	36%
2. Registered Nurses	6,525	27%
3. Appraisers and Assessors of Real Estate	2,470	35%
4. Hairdressers, Hairstylists, and Cosmetologists	2,370	26%
5. Nursing Aides, Orderlies, and Attendants	1,901	16%
6. Massage Therapists	1,790	40%
7. Licensed Practical and Licensed Vocational Nurses	1,486	22%
8. Travel Agents	1,344	61%
9. Heating, Air Conditioning, and Refrigeration Mechanics and Installers.	1,258	33%
10. Fitness Trainers and Aerobics Instructors	1,239	28%

Source: EMSI and Morrison Institute analysis



COMMUNITY COLLEGES ARE AN IMPORTANT PROVIDER OF CTE IN ARIZONA

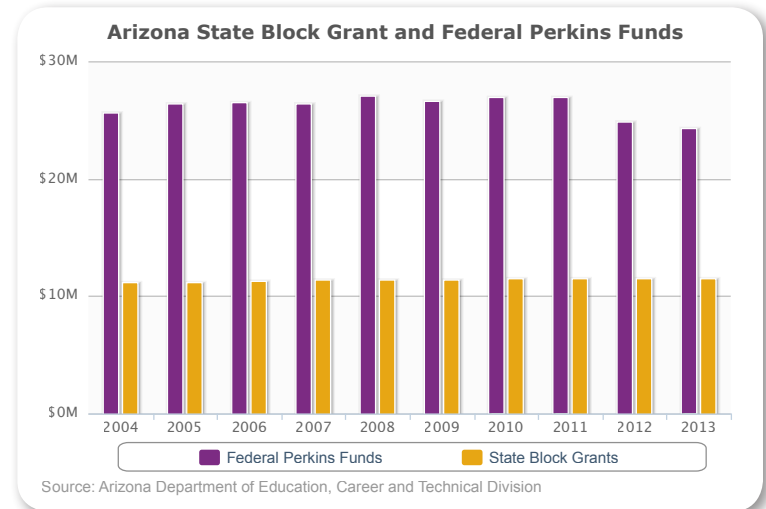
High school CTE courses are offered primarily to juniors and seniors. In 2010-2011, 82,650 (36%) out of 229,000 CTE enrollees in Arizona were in high school and 146,000 (64%) were in post-secondary institutions. It is important to note that both high schools and community colleges allow students who complete the required sequence of courses the opportunity to take a test for an industry-recognized credential or satisfy the requirements for a state license (when available). For example, the East Valley Institute of Technology offers a Precision Manufacturing Technology sequence of courses that prepare high school students for taking an exam to earn a NIMS certification from the National Institute for Metalworking Skills.



STATE BLOCK GRANT FUNDING FOR CTE HAS REMAINED FLAT WHILE FEDERAL FUNDING HAS DECREASED

State funding for CTE has remained flat over the years while Federal funding in the form of Perkins grants has decreased slightly. Federal funding for CTE is authorized under the Carl Perkins Vocational and Technical Education Act of 2006. The Perkins Act mandated funding until 2012 and its funding provisions have been extended until Congress takes up its reauthorization. The Perkins program, as reauthorized in 2006, increased focus on the academic achievement of career and technical education students as well as strengthened the connections between secondary and postsecondary education by encouraging dual enrollment in community colleges for high school students. It also increased state and local accountability and reporting requirements.

Note: The table to the right does not count local and county funds for the 13 JTEDs in the state. The total funding for JTEDs is derived from a combination of local, county and state funds.



DESPITE LABOR FORCE DEMANDS, CTE ENROLLMENT IS DECREASING

The downward trend in CTE enrollment at the high school level may be partially due to the perception of CTE as an inferior pathway. However, as the AIMS pass rates indicate, CTE concentrators have a uniformly high AIMS pass rate. Another factor that contributes to decreasing enrollment is recent increases in the number of math and science credits required for graduation. Since CTE courses are electives, they are often cut from course schedules to make room for other requirements. Furthermore, federal and state CTE funding has remained flat while the cost of equipment for CTE courses has increased significantly. JTED funding has also been cut, with the state Legislature eliminating funding for the 9th grade CTE classes for the 2011-12 school year. Given CTE's important role in creating career- and college-ready graduates, the state's allocation of resources warrants reconsideration.

Arizona CTE State Data Snapshot					
	2006-07	2007-08*	2008-09	2009-10	2010-11*
Total High School Enrollment	305,461	273,380	282,969	305,582	317,026
CTE Enrollment	135,181	125,328	98,438	105,333	82,650
Percent that participated in CTE	44%	46%	35%	34%	26%
CTE Concentrators**	18,760	20,598	17,671	17,612	17,392
	6%	8%	6%	6%	5%
Percent of concentrators who passed AIMS Reading	93%	94%	94%	95%	95%
Percent of concentrators who passed AIMS Math	91%	91%	92%	92%	89%

Source: Arizona Department of Education, Career and Technical Division

* Criteria for reporting CTE enrollment changed.

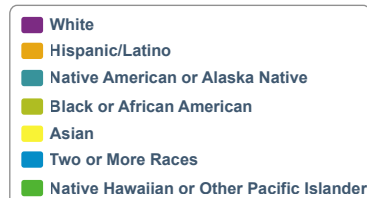
** A concentrator is a secondary student who has taken 2 or more units in a state-designated sequence in an approved CTE program and has graduated.

FEWER LATINOS PARTICIPATE IN CTE AT THE POST-SECONDARY LEVEL

At the high school level, 49% of CTE students are White and 36% are Latino. Interestingly, at the post-secondary level only 26% of those enrolled in CTE are Latino versus 59% White. This change in CTE participation reflects the fact that fewer Latinos continue on to post-secondary education in general, and it raises the question of why more Latinos are not pursuing post-secondary CTE education.

Latinos also lag Whites in college graduation rates. This, in turn, limits their earning potential. There is no doubt we need to increase post-secondary participation rates across the board. Arizona needs to address the specific obstacles that prevent more Latinos from pursuing post-secondary opportunities and realizing their full potential.

Post-Secondary CTE Participants in Arizona by Race, 2010-2011



Source: U.S. Department of Education, Perkins Collaborative Network

ARIZONA CTE STUDENTS FLOCK TO HEALTH SCIENCE

The popularity of certain industry sectors, such as health sciences, information technology and business management and administration, reflect the labor market demand and the prominence of certain industry clusters in the state. It is noteworthy that the number of concentrators in health science, information technology and law, public safety and security increases significantly at the post-secondary level. This is likely due to the fact that high school graduation now requires more math and science credits and CTE courses are electives. Even though some CTE courses provide a strong mathematics and science education, the fact that they are not recognized as fulfilling the math and/or science requirement may reduce their attractiveness to high school students.



CTE Concentrators in Arizona by Industry Cluster 2010-2011

	High School	Post-Secondary	TOTAL
Agri. Food & Nat. Resources	842	510	1,352
Architecture & Const.	1,326	2,998	4,324
Arts, A/V Tech. & Comm.	2,413	3,011	5,424
Bus., Mgt. & Admin.	1,766	5,901	7,667
Education & Training	1,068	3,337	4,405
Finance	66	1	67
Gov't. & Pub. Admin.	--	91	91
Health Science	2,123	11,492	13,615
Hospitality & Tourism	2,383	937	3,320
Human Services	424	1,614	2,038
Information Technology	775	5,838	6,613
Law, Public Safety & Security	610	7,272	7,882
Manufacturing	632	1,568	2,200
Mkt Sales, & Serv.	1,351	135	1,486
Sci., Tech., Engin. & Math.	425	659	1,084
Transp., Distrib., & Logistics	1,188	1,904	3,092
Total	17,392	47,268	64,660

Source: U.S. Department of Education, Perkins Collaborative Network

A man and a woman are looking at a smartphone together in a field of green plants. The man is pointing at the screen, and the woman is holding the phone. The background shows rows of green plants in a field.

ECONOMIC DEVELOPMENT:

For years, Arizona was a job-producing machine, its economy consistently outperforming the national economy. Strong population growth helped to fuel that economic expansion and soften the negative impact of recessions. All that changed during the Great Recession when Arizona's population growth stalled, revealing the risks associated with over-dependence on growth as a major economic driver. Arizona lost 300,000 jobs from 2008 to 2010, about half of them in construction. These jobs represented roughly 10 percent of Arizona's workforce, among the worst job loss experienced by any state.

As Arizona's economy begins to recover, many business, economic development, academic and political leaders are determined to further diversify the economy. Championing innovation, they are targeting economic sectors with sustainable, long-term potential to avoid the peaks and valleys of an economy overly dependent on construction and real estate. Modern infrastructure, a highly-skilled workforce that includes more STEM (science, technology, engineering and math) graduates, and strengthened trade relations with Mexico and other parts of the world will all be central to achieving this economic development vision. These are long-term strategies whose impact on an economy is often not seen for years. They also require a vast range of stakeholders working in relatively close alignment to achieve results.

Eleven years ago, Morrison Institute's seminal report, *Five Shoes Waiting to Drop on Arizona's Future*, posited the lack of an economic identity as one of this state's most critical issues. Many economic development conferences before and since then opined the same sentiment. And, in 2010, the lack of a fully cohesive economic identity was cited in the "Governor's Commerce Advisory Council Report" in making the case for creating the Arizona Commerce Authority.

However, a new assessment of the many economic development efforts that are occurring statewide, funded by Freeport-McMoRan Copper & Gold Foundation, indicates that Arizona may indeed have an emerging economic identity – even if efforts are currently fragmented and lacking in the necessary collaborative effort and breadth to truly make Arizona stand out as a competitor in the global marketplace, differentiated from others seeking strong toeholds in the same space.

The state's three biggest economic development organizations – Arizona Commerce Authority, Greater Phoenix Economic Council and Tucson Regional Economic Opportunities – in concert with some of their smaller counterparts, are targeting cutting-edge sectors aimed at reshaping Arizona's economy. These include biomedical, renewable energy and next-generation electronics, as well as building on such traditional industries as aerospace and aviation. Cutting-edge sectors are important because they generate wealth through exports and help create more jobs. For example, it's estimated that every job in aerospace manufacturing in Arizona creates two more jobs in other industries.



CHARTING A UNIFIED COURSE

These are good nascent efforts, but we need to be mindful that many other states are betting their futures on many of the same sectors.

So what are Arizona's distinctive economic traits? Entrepreneurialism and innovation are terms that immediately come to mind. They reflect not only the independent bent of Arizona, Inc., befitting its ranking as the No. 1 state for entrepreneurial activity, but also point to our potential for asserting the Sun Corridor as a key player in the Southwest Megapolitan Cluster and establishing Arizona as the commercial and business hub of the Southwest.

With the creation of the Arizona Commerce Authority and new jobs packages, Arizona is positioned to be more competitive in targeting key economic sectors. But economic development also depends on the many efforts of cities and towns, counties, chambers of commerce, and regional economic development organizations.

When communities work together on economic development, the results tend to be positive. A 2012 Morrison Institute survey of Arizona towns and cities showed an overwhelming majority saw areas of potential collaboration with a neighboring community. Although goodwill between neighboring communities often exists, the fact is that economic development is a highly competitive activity. It is important that all economic development organizations in the state begin to practice what they proselytize – there is tremendous strength in a group of many working together as one.

MORRISON INSTITUTE POLL

Slightly more than one-half of Arizona adults believe that the state's economic development efforts have been either "very effective" (8%) or "somewhat effective" (48%). One-quarter of Arizonans (25%) feel these efforts have "not been very effective" and 11% believe they have "not been at all effective."

When asked which would be the most effective way to improve Arizona's economy – reduce taxes or increase spending on state programs – the majority, 51%, opt for reducing taxes while 29% favor increasing spending on state programs. Predictably, Republicans favor tax reductions over increased spending on state programs, by a 68% to 18% margin, while Democrats favor increased spending over reducing taxes by a 48% to 35% margin.

When asked what businesses or industries Arizona should pursue to attract the largest number of good jobs, 43% cited medical and health services as one of their top two picks from a selected list of industries. Manufacturing (32%) and construction and real estate (25%) are the second and third most popular choices.



WHAT CHALLENGES FACE ARIZONA CITIES AND TOWNS?

A Morrison Institute Economic Development Survey of Arizona's 91 incorporated towns and cities shows:

- Nearly half – 46% – of survey respondents do not have an economic development plan. Communities without a plan often are challenged to maintain a focus and to appreciate and leverage their competitive strengths.
- Despite a commitment to economic development, 35% of respondents had less than one full-time person assigned to attracting more jobs to the community and helping to retain or expand existing jobs.
- The smaller the community, the tighter the funding for economic development efforts. Several entities had annual budgets ranging from just \$6,000 to \$12,000

WHY TARGET KEY SECTORS IN ECONOMIC DEVELOPMENT?

Across Arizona, communities are identifying targeted economic sectors or clusters as they seek to capitalize on their strengths and competitive advantages in recruiting companies and assisting existing ones. For some, like Pinetop-Lakeside, this means targeting such sectors as retail, tourism and forest products. For others, like Bullhead City, it's light manufacturing, warehouse/distribution and health care. And for larger cities, like Chandler, it's advanced manufacturing, financial services and biomedical, among other sectors.

Many new initiatives to grow economic sectors over the past five years already are bearing fruit. Gila Bend has become a solar energy powerhouse. Phoenix is a major center of advanced business services. Flagstaff has carved out a huge niche in medical device manufacturing as part of its bioscience focus.

The state's biggest economic development organizations – Arizona Commerce Authority, Greater Phoenix Economic Council and Tucson Regional Economic Opportunities – each target cutting-edge sectors, some of them overlapping, and work together. By having specific strategies to attract, retain and grow both established and new firms in these sectors, Arizona's communities will be better-positioned to achieve successful results.

WHAT IS THE OUTLOOK FOR RURAL ARIZONA?

Rural Arizona accounts for just over 10 percent of the state's 6.5 million residents. The overall unemployment rate in rural Arizona is several points higher than the metropolitan areas. Per capita income is 20 percent lower than the state's average of \$35,292, according to the USDA Economic Research Service.

Rural communities face challenges in economic development that include infrastructure (roads, sewer capacity, railroads, airports), the skills of their workforce, availability of buildings and their own often limited resources to pursue economic development.

On the upside, rural communities can pitch prospective employers on their quality of life, lower operating costs, a veteran labor force willing to travel long distances to work, and the care and attention that smaller communities often pay to new, highly-prized businesses.

Arizona's rural communities are finding it often makes more sense to work together, rather than go it alone. From the Copper Corridor in eastern Pinal County to the Real AZ Corridor in northeastern Arizona to the Verde Valley Regional Economic Development Council in Yavapai County, communities and counties have formed partnerships to go after business and tourism. The Arizona Commerce Authority is rolling out several new programs aimed at helping rural Arizona attract new jobs.



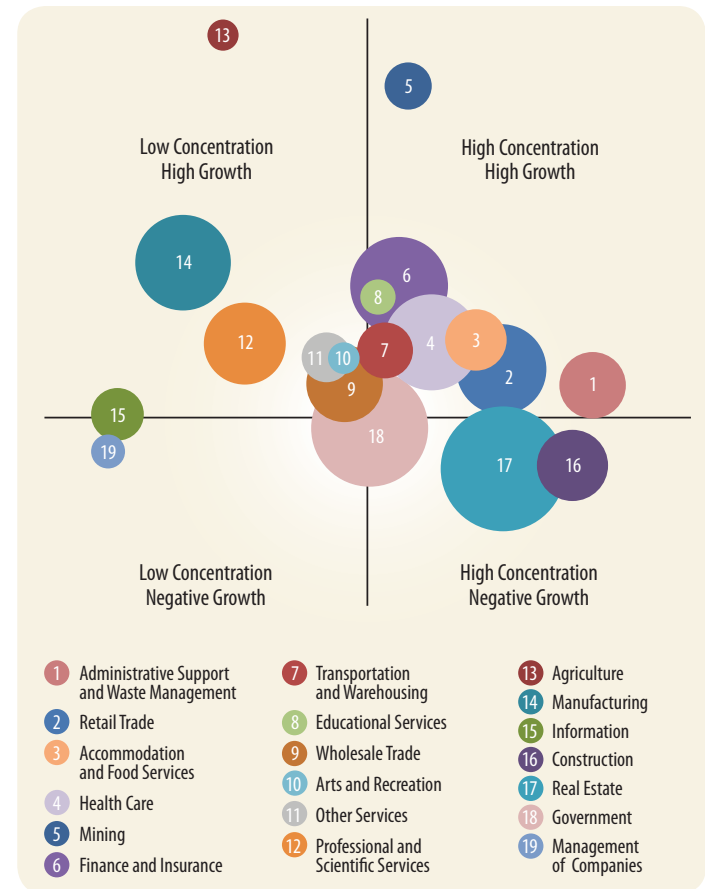
SPOTLIGHT ON THE PERFORMANCE OF KEY ECONOMIC SECTORS

WHY IS THIS IMPORTANT?

Many states and local communities across the U.S. focus on targeted economic sectors or clusters as the foundation of their economic development strategies. By focusing on their comparative advantages for specific types of business and industries, communities are able to build a concentration of these firms within their borders. Arizona's challenge is to attract more high value, cutting-edge sectors and build on existing ones because they have the most potential for creating wealth. Each bubble in the chart at the right represents a sector of the Arizona economy. The size of the bubble represents the absolute size of the sector in terms of contribution to total state gross domestic product. As outlined by ASU President Dr. Michael Crow in a recent presentation, the highest performing sectors in Arizona's economy are low-impact sectors such as administrative and waste management services, retail trade, accommodation and food services. Arizona's two largest sectors - real estate and government - have continued to contract even during the economic recovery. Mining and agriculture have grown dramatically, but they are relatively small sectors.

WHAT OPPORTUNITIES EXIST?

For states and communities, having a large concentration of like business activity enables them to create a well-developed base of jobs, technologies, products and services. For companies, concentrated sectors or clusters create an economy of scale as they have a greater pool of skilled workers to tap, suppliers, infrastructure, and shared interests and networking opportunities with similar firms. Arizona wants to have high-concentration, high-growth industries, with high value, to improve its competitiveness and also spin off other jobs. The state's leading economic development organizations are targeting such high-growth (but currently low-concentration) areas as professional and scientific services (biomedical/personalized medicine research) and manufacturing (electronics, renewable energy, and aerospace). Health care, finance and insurance and educational services also offer potential for higher growth and concentration.



Source: Office of the President, Arizona State University.

THE BOTTOM LINE

Arizona's key economic development organizations are targeting several similar cutting-edge sectors, but there is still a need for more collaboration and cooperation. There is a renewed sense of urgency about moving forward to diversify Arizona's economy, to build those foundations that can ensure Arizona's future. In a global marketplace that is increasingly more competitive – and uncertain – Arizona needs to establish that collaborative environment with its differentiating economic strengths. Now is the time.

ARIZONA LED THE NATION IN CREATING BUSINESSES IN 2011

In 2011, Arizona led the nation in business formation, with 520 out of 100,000 adults creating a business – well ahead of Texas and California – in a Ewing Marion Kauffman Foundation report. High unemployment rates were cited as a contributing factor in individuals creating businesses, which tend to begin as solo operations. Business formation is important; it indicates optimism, entrepreneurship and an innovative spirit. Nationally, entrepreneurship growth was highest among 45- to 54-year-olds.

Economic Development Survey Responses

“What metrics are used to measure the effectiveness and progress of your economic development plan, or does the plan not include metrics to track progress (please check four or five most important)”

Number of jobs created	62%
Private capital investment generated by expanding/newly locating firms	50%
Number of companies assisted	46%
Number of high-wage jobs created	46%
Number of companies retained and/or expanded	42%
Number of prospects identified	19%
An increase in sales taxes	19%
Improved quality of life for citizens	12%
Media impressions generated	12%
Company satisfaction	4%
Plan does not include metrics	27%

Source: Morrison Institute Economic Development Survey. Visit MorrisonInstitute.asu.edu for more detail.

Kauffman Index of Entrepreneurial Activity by State

State	Entrepreneurs per 100k
Arizona	520
California	440
Texas	440
Colorado	420
Alaska	410
Missouri	400
Nevada	390
Vermont	390
Florida	380
Idaho	380
Kentucky	370
New York	370
Maine	360
Georgia	350
Arkansas	340
Connecticut	340
Louisiana	340
Montana	330
South Dakota	320
U.S. Total	320

Source: Kauffman Foundation

METRICS ARE KEY TO TRACKING PROGRESS ON ECONOMIC PLANS

Just over half of the towns and cities surveyed by the Morrison Institute have an economic development plan. Such a plan has multiple benefits. These plans help to clearly identify specific goals in terms of the direction for an organization, but 27 percent of those responding to the survey said their economic development plans do not include metrics. Without metrics, it is difficult to set and measure goals and provide the feedback that is so essential to knowing whether or not a plan is progressing properly or needs adjustment. Encouraging economic development organizations to become more businesslike in plan execution, by assigning tasks, setting deadlines and measuring outcomes, is gaining support among practitioners.

ARIZONA RANKS 15TH IN TECHNOLOGY AND SCIENCE

Arizona rose from 17th to 15th in the 2010 Milken Institute State Technology and Science Index, which provides a national benchmark for states to assess their science and technology capabilities, and their environment for converting those capabilities into companies and high-paying jobs. Ranking well ahead of Arizona, in spots 3 through 6, are Colorado, California, Utah and Washington, suggesting that Arizona faces stiff regional competition in landing high-tech and other knowledge-based companies. Of the five components used to compute the index, Arizona's best finishes are 9th in risk capital and entrepreneurial infrastructure and 10th in technology concentration and dynamism.



Milken State Technology and Science Index, 2010 Overall Ranking

State	Rank	Average Score
Massachusetts	1	82.61
Maryland	2	77.05
Colorado	3	75.73
California	4	73.85
Utah	5	71.26
Washington	6	70.23
New Hampshire	7	68.69
Virginia	8	68.05
Connecticut	9	66.56
Delaware	10	63.26
New Jersey	11	62.97
Minnesota	12	62.65
North Carolina	13	61.42
Pennsylvania	14	60.78
Arizona	15	60.21

Source: Milken Institute State Technology and Science Index, 2010

ARIZONA ECONOMIC DEVELOPMENT PROJECTS AT A GLANCE

Arizona's economy is still recovering, but a number of big-ticket projects projected to create thousands of jobs are under construction or on the drawing boards. Some of the projects may never be realized because of a combination of political, financial, regulatory or environmental hurdles, but many others are on track. This partial list of projects suggests that Arizona's targeting of such key sectors as aerospace, biomedical and renewable energy is paying dividends. The "Potential impact" accompanying each item is based on interviews, published reports, and proponent's websites, typically attributed to the entity proposing the project.

Fab 42

Intel Corp is building a \$5.2 billion fabrication plant in Chandler to produce advanced semiconductor chips. Potential Impact: When it opens in 2013, the facility will be the most advanced, high-volume, semiconductor-manufacturing plant in the world and employ 1,000 people. Construction is expected to create or spin off 14,000 temporary jobs.

Interstate 11

The proposed route would link Phoenix and Las Vegas, cutting through Pinal County and swinging around the west side of greater Phoenix, and taking traffic across the Mike O'Callaghan Pat Tillman Memorial Bridge. Potential Impact: Speed the passage of commercial trucks, tourists and others between Las Vegas and Phoenix. Catalyst for jobs, trade and growth along the route.

Innovation Mesa Accelerator

Flagstaff's business incubator – owned by the city of Flagstaff and operated by Northern Arizona Center for Entrepreneurship and Technology on the McMillan Mesa – has done so well that the city is planning a second facility as a business accelerator for Tier 2 companies and graduates of NACET. Potential Impact: Creation of 300 jobs, will provide more space for expanding firms and feature wet and dry laboratories.

Quartzsite Solar Energy Project

SolarReserve's proposed \$600 million project would be about 10 miles north of Quartzsite. Potential Impact: Renewable energy, generating 100 megawatts of electricity by 2014. About 450 construction jobs and up to 50 permanent operating jobs.

Yuma Rail

The Yuma Metropolitan Planning Organization is studying various rail options to serve local users, as well as a deep port in Guaymas, and, if built, the Punta Colonet port on the Pacific Coast. Potential Impact: Regional jobs with improved trade with Mexico, and warehousing with possible rail spurs serving Wellton and San Luis, extensions to Mexico.

Resolution Copper

A \$2 billion mine proposed near Superior targets one of the largest copper ore bodies ever found – more than a mile below the surface. Congressional approval of a land exchange is needed for the project by Rio Tinto and BHP to move ahead. Potential Impact: 1,400 jobs, plus 3,000 workers on average over nine-year construction period.

Holbrook Potash

Several companies are hoping to mine potash hundreds of feet below the surface in the Holbrook Basin. Potash is used primarily as a raw material for fertilizer. Potential Impact: Each project could generate hundreds of jobs and establish this as the leading potash-producing region in the U.S.

Unmanned Aircraft Systems

Arizona is aggressively pursuing designation by the Federal Aviation Administration as one of six test ranges for development of unmanned aircraft. Arizona is pitching Benson/Safford, Yuma and Prescott as test areas. Potential Impact: Arizona as UAS center with relocation of aerospace companies, research and development, and suppliers to the state, employing thousands.





Mariposa Land Port of Entry

The five-year, \$213 million expansion of the Nogales complex is to be completed in 2014. Potential Impact: Improved trade between the U.S. and Mexico, and business savings with faster inspections at the nation's third busiest border crossing. Among the additions: eight commercial inspection lanes.



Phoenix Mart

The proposed 1.5-million-square-foot "sourcing center" in Casa Grande will serve as a display place for a half-million products. Potential Impact: Major business center with 2,000 vendors, thousands of jobs. Estimated payroll of more than \$300 million.



The Chan Soon-Shiong Institute for Advanced Health

Billionaire physician Patrick Soon-Shiong plans to build a headquarters in Phoenix and develop a \$200 million data center with a supercomputer to process health information. Potential Impact: Jobs and positions Phoenix to be a major player in personalized medicine and revamping of U.S. health care system.



Mayo Medical School – Arizona Campus

The Mayo Clinic plans a \$266 million medical-school campus in Scottsdale, with Arizona State University, that will offer an innovative approach to training physicians. The campus could open in 2014 with a class of 48 physicians-in-waiting. Potential Impact: More doctors for Arizona and heightening of Valley's profile in health care and medical education.



Mayo Clinic Cancer Center

Mayo is consolidating its Arizona cancer operations with construction of a \$130 million structure on its Phoenix campus. The 217,200-square-foot facility will be built atop Mayo's \$182 million proton-beam therapy center now under construction. Potential Impact: Strengthens the Valley as a destination for innovative cancer treatment in the Southwest. Expected to add nearly 1,000 employees over the next decade.



Odyssea in the Desert

The \$170-million entertainment complex is taking shape east of Scottsdale on the Salt River Pima-Maricopa Indian Community. It will start with a rainforest butterfly pavilion and later add an aquarium, Ripley's Believe It or Not museum, IMAX theater and retail stores. Potential Impact: Major tourism attraction to unfold over five years, spinning off other developments and employing thousands.



Mohave County Wind Farm

BP's proposed \$1 billion project would include up to 258 wind turbines on 49,000 acres of public land, about 40 miles northwest of Kingman. Potential Impact: Renewable energy, generating up to 500 megawatts of electricity. Some 200 to 300 construction workers could begin work in 2013. Permanent Employment: 10 to 20 jobs for operations and maintenance.



Boyer Co. Laboratory

A \$50 million research laboratory, including wet labs, is planned by the Boyer Co. on the Phoenix Biomedical Campus. Construction of the six-story, 150,000-square-foot building could start this year. Potential Impact: As many as 400 biomedical jobs, and 500 construction jobs.



AZ Sun Program

The Gila Bend-area is adding its fourth solar facility with the 32-megawatt Arizona Public Service solar photovoltaic facility. Potential Impact: An estimated 400 to 600 construction jobs with completion scheduled for 2014. Will provide electricity to 8,000 homes and strengthens Gila Bend's image as the "Solar Heart of Arizona."



Rosemont Copper

The Tucson subsidiary of Augusta Resources is seeking to mine copper in the Santa Rita Mountains southeast of Tucson. Potential Impact: 500 permanent jobs, with 1,000 employed during construction and in support roles while the mine is in operation. Company projects total economic benefit at \$9.2 billion over two decades.



Accel8 Technology Corp.

The Denver biotech company, which develops technology to detect pathogenic organisms, is moving to Tucson, drawn by such firms as Ventana Medical Systems. Potential Impact: Add to biotech hub, create as many as 300 jobs, manufacturing facility.



University of Arizona / St. Joseph's Hospital

Construction of the \$135 million University of Arizona Cancer Center is expected to start this year on the downtown Phoenix Biomedical Campus. UA and St. Joseph's Hospital and Medical Center are partnering on the center. Potential Impact: Staffing of nearly 100 physicians and hundreds more health-care and administrative workers. Within 10 years, expected to treat about 60,000 patients a year.



Florence Copper Project

Curis Resources wants to build an underground copper mine near Florence. Potential Impact: Create and support an average of 681 jobs per year over nearly three decades.



Intel Corp. Research Facility

The world's leading chip maker is building a \$300 million research-and-development facility in Chandler. Potential Impact: Will employ 300 highly-skilled workers, about half with advanced engineering degrees. Construction will require nearly 1,000 workers.



Southwest Direct

Business and political leaders are working to establish Arizona as the international commercial and business hub of the Southwest. Key to the Southwest Direct project is developing a major cargo hub (with increased air service, warehousing and freight forwarders) in greater Phoenix. Potential Impact: Billions in economic activity with greater Phoenix vaulting past Denver, Salt Lake City and other cities as the hub of the Southwest, not only for commercial cargo, but in such areas as manufacturing, health care/medical research, and renewable energy.



Morenci Mine

Freeport-McMoRan is undertaking a \$1.4 billion project to expand mining and milling capacity at its mine in Morenci by 2014. Potential Impact: Add about 600 jobs to the more than 2,500 now at the mine. Boost total direct and indirect economic impact of the mine which, combined with the Safford mine, was estimated at \$379 million on Graham and Greenlee counties in 2011.



Douglas Port of Entry

The second largest commercial port in Arizona is undergoing a \$60 million expansion in Douglas. Potential Impact: A savings in time and cost and improved trade between the United States and Mexico with expedited inspection of commercial trucks and movement of private vehicles and pedestrians.



Red Rock Project

Union Pacific envisions creating one of the largest logistics centers in the western U.S. with construction of a 250-acre classification center near Picacho Peak in Pinal County. Potential Impact: Hundreds of jobs with the sorting of cargo containers and rail cars for their next destination. Expected to spur industrial development along the nearby I-10 corridor.



Luke Air Force Base

The Glendale base will undergo a \$100 million renovation to carry out its new F-35 pilot-training mission. Potential Impact: 1,000 direct and indirect jobs around the base with mission, and 2,290 construction jobs.



Tucson Logistics Center

With the Port of Guaymas in Sonora, about 260 miles south of the Arizona border, now handling container cargo, Tucson is positioning itself to handle increased rail traffic from the deep-water port destined for other parts of the U.S. Potential Impact: Strengthens Tucson's position as a logistics center; speeds movement of products.

ARIZONA RANKS NEAR MIDDLE OF PACK FOR SHARE OF STEM JOBS

Arizona has made it a priority to graduate high school and college students with skills to work in STEM industries – science, technology, engineering and math. Arizona ranks 21st in the nation for its proportion of STEM jobs, which constitute 5 percent of Arizona’s workforce according to Economic Modeling Specialists International. The top-ranked states, Washington and Virginia, have 8 percent of their jobs in STEM. Federal funding is a major factor in STEM employment.

According to EMSI, the United States had about 6.8 million STEM jobs in 2011, 5.2 percent of the workforce. The median wage of \$34 per hour for these STEM jobs is more than twice the national median wage. Arizona STEM workers earn a median hourly wage of \$31.93.

The Number and Proportion of STEM Jobs by State

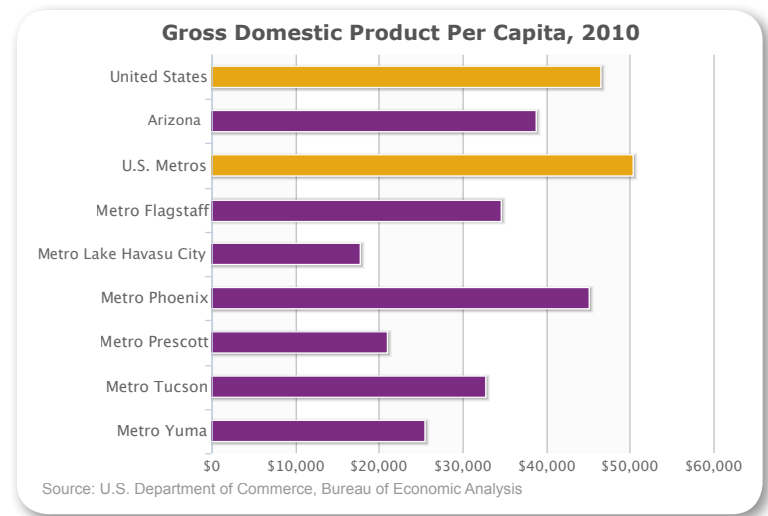
Rank (by Proportion)	State	2011 STEM Jobs	Proportion of All Jobs
1	District of Columbia	72,143	10.1%
2 (tie)	Washington	238,417	8.0%
2 (tie)	Virginia	302,219	8.0%
4	Maryland	202,100	7.9%
5	Massachusetts	249,900	7.7%
6	Colorado	167,347	7.3%
7	Delaware	24,847	6.1%
8 (tie)	Michigan	231,148	6.0%
8 (tie)	California	895,461	6.0%
8 (tie)	Minnesota	157,681	6.0%
11	New Jersey	225,629	5.9%
12 (tie)	New Hampshire	35,069	5.7%
12 (tie)	Alaska	19,902	5.7%
14	New Mexico	45,908	5.6%
15 (tie)	Utah	66,055	5.5%
15 (tie)	Connecticut	88,996	5.5%
15 (tie)	Idaho	34,725	5.5%
18	Texas	579,264	5.4%
19	Oregon	87,500	5.3%
20	Vermont	15,991	5.2%
21	Arizona	123,994	5.0%
22	Pennsylvania	273,038	4.9%
23	Ohio	242,913	4.8%

Source: EMSI, 2012

ARIZONA'S GDP PER CAPITA LAGS NATIONAL AVERAGE

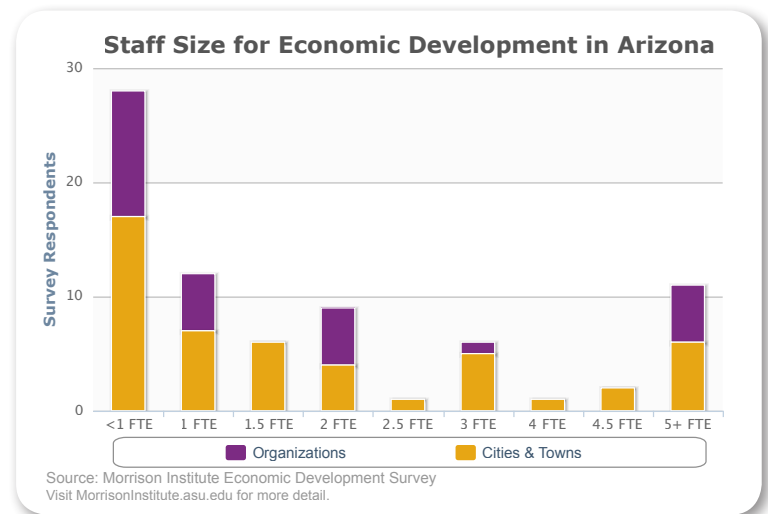
Relative to gross domestic product (GDP) per capita, a measure of economic well-being within five percent of the national and U.S. metro averages is a reasonable target for Arizona. Data indicate that GDP per capita in each of Arizona's six metro areas was at least 10 percent below the U.S. metro average. The state itself also trails the U.S. average.

If Arizona matched Colorado's per capita GDP in 2011, its economy would have been \$76.4 billion larger than it actually was, according to ASU President Dr. Michael Crow. Adding knowledge- and skilled-workers and increasing exports and innovation-driven growth are strategies to boost GDP.



MANY ECONOMIC DEVELOPMENT EFFORTS ARE UNDERSTAFFED

Nearly 40 percent of the 76 economic development organizations responding to the Morrison Institute survey were either so small or spread so thin that they have less than one full-time person working on economic development. Sixteen percent reported having one person assigned to that area. That means more than one half of the economic development organizations employ one or fewer people. In rural Arizona, in particular, the economic development hat is one of many worn by the city manager or county administrator. That's why it's so important that economic development practitioners have access to professional development resources.





SUN CORRIDOR:

How we define our “place” matters, and over time the default of letting historic lines and governance structures dictate the boundaries of economic dynamism has become less useful. It has created a culture of competition between neighboring metropolitan areas that undermines their regional economic potential and ignores the outside perception of their economic interconnectedness. Most significantly, this is taking place as the global marketplace is becoming increasingly smaller, more competitive, and more accessible to the realization of opportunity.

A shift is occurring. Instead of thinking in terms of discrete cities and counties, we’ve witnessed the birth of the megaregion and mega-thinking. At the core of this shift is a belief that redefining our economic “places,” repositions them on the global map and capitalizes on their collective resources for the benefit of residents and businesses alike.

While the definition of a megapolitan area continues to evolve, a widely accepted definition is an area that includes two or more metropolitan areas (with anchor cities that are less than 200 miles apart) that exhibit a high degree of employment interchange and other measures of economic interconnectedness.

On average, megapolitan areas – including the Sun Corridor – are less dependent on basic economic sectors, like farming, mining, and manufacturing, instead relying heavily on service-based employment such as retail trade, finance, insurance, and real estate.¹ Additionally, megapolitans are remarkable for their high population density. About 65% of the U.S. population now lives in megapolitan clusters on roughly 17% of the accessible land base.² With densification comes new opportunities for smart growth and sustainable urbanism, especially in younger cities like Phoenix.

Arizona’s Sun Corridor, one of 23 U.S. megapolitan areas, stretches from Nogales to Prescott with the greatest connectivity from Tucson to Phoenix.

That kind of megapolitan geographic definition may be good enough for the tight maps that frame the Northeast, the Southeast, and the Midwest, but it isn’t an adequate descriptor for conditions in the West. The Sun Corridor as we know it is really, if only conceptually at this point, part of the Southwest Megapolitan Cluster, which forms a triangle with Los Angeles and Las Vegas. In the West, clusters are especially important because of the expansive geography that requires deliberate connection and cooperation across vast open land.

¹ Arthur C. Nelson and Robert E. Lang, *Megapolitan America*, (2011).

² Arthur C. Nelson and Robert E. Lang, *Megapolitan America*, (2011).



MEGA-THINKING

While many Arizonans think of Phoenix and Tucson as competitors, their interconnected economies do not benefit from a sports-rivalry type approach to urban planning and economic development. It is strong evidence that thinking is evolving when Dr. Michael Crow, president of Arizona State University, stands before peers in Tucson and calls for these cities to join forces and position themselves as an economy larger than that of the United Arab Emirates. In 2009 the combined economic output of Phoenix, Tucson, and Prescott was \$231.9 billion.³

The exciting growth opportunities in megapolitan areas come with challenges as well. Namely, areas like the Sun Corridor are comprised of multiple governance structures that must work in concert at a time when city and county budgets are strained. Charting progress in the Sun Corridor and Southwest Cluster also requires a new way of thinking about economic opportunity and how we measure success. We run the very real risk of reverting to old thinking:

“Cities and metros in the pre-recession era were measuring the wrong things: Speculation rather than innovation, parochial demand rather than global trade, real estate appreciation rather than productive returns. They were, in many cases, also measuring the same things: Housing starts, new commercial square footage and big-box store openings.”⁴

As Arizona begins its slow slog out of the depths of the recession we already are measuring by old metrics. This chapter of *Arizona Directions* calls for forward-thinking – mega-thinking – about what could be possible if we create a new yardstick and make the Sun Corridor an integral part of all planning efforts.

³ ASU President Dr. Michael Crow's PowerPoint presentation to TREO, (September 2011).

⁴ Bruce Katz and Jennifer Bradley, “Mastering the Metro,” published online at New American City.

MORRISON INSTITUTE POLL

While many Arizona decision-makers refer to the Sun Corridor regularly, the vast majority of Arizonans – 81% in fact – are unfamiliar with the term. There is marketing work to be done if the term is expected to become a part of daily awareness and conversation.

Those from the state's highest income households are the group most likely to support Sun Corridor development.

When asked whether Phoenix and Tucson should market themselves as a single economic entity or continue to market themselves separately, 47% prefer they stay separate while 38% believe the two cities should market themselves as a single entity.

There have been on-going discussions about putting in a high-speed train between Phoenix and Tucson. Slightly more than one-half of Arizonans say they, or someone in their household, would be “very likely” (29%) or “somewhat likely” (25%) to use this high-speed train at least two or three times per year. Among Pima County residents, 77% would be very likely or somewhat likely to use it.



WHAT DEFINES THE SOUTHWEST CLUSTER?

- The Southwest Cluster includes the Sun Corridor, Southern California, and Las Vegas.
- With roughly 1,200 inhabitants per square mile in 2010, its density is comparable to The Netherlands.
- Among the mega clusters, it is most affected by federal and tribal land with less than a third of its total square miles accessible to development.
- Between 2010 and 2040 the Southwest cluster is expected to add 12.7 million residents with a declining non-Hispanic White population and minorities accounting for nearly all of the population growth.⁵

HOW CAN WE IMPROVE OUR ECONOMIC COMPETITIVENESS?

Understanding that economic growth must be achieved in a manner that enhances rather than diminishes quality of life, in 2011, ASU President Dr. Michael Crow proposed the following strategies to simultaneously improve the competitiveness and sustainability of the Sun Corridor.

- Leverage our proximity to the U.S.-Mexico border and also to the Southern California Megapolitan, which is the nation's most densely settled urban region.
- Create a sustainable production and consumption system.
- Enable a collaborative culture across governance structures, universities, and economic development organizations, to name a few.
- Create a competitive, rewarding environment for risk and achievement where failure is an acceptable outcome that spurs new thinking.
- Build a qualified and flexible labor force that has access to a strong P-20 system as well as adult retraining and workforce development.
- Embrace technological, organizational and social innovation.⁶

WHAT ABOUT INFRASTRUCTURE?

At the end of the day, it is all about the flow of people, resources, goods, and information – not just within our megapolitan, but between megapolitans. How do we improve transit for commuters? How do we better support the transfer of water and energy? How do we accelerate the movement of goods from Mexico across our megapolitan cluster and up to Canada? How do we strengthen telecommunications so that innovation can thrive? And, as the intensity of the flow increases we must build redundant connections in each of these areas to avoid gaps in service. The following are among the ideas presently being discussed or implemented:

- Invest in high-speed passenger rail running from Tucson to Phoenix and Phoenix to Los Angeles.
- Create a super-highway between Phoenix and Las Vegas.
- Increase Phoenix-Mesa Gateway Airport's capacity and increase non-stop international flights out of Sky Harbor International Airport.
- Build new transmission lines to facilitate distribution of solar power from rural solar power farms to population centers.

⁵ Arthur C. Nelson and Robert E. Lang, *Megapolitan America*, (2011).

⁶ ASU President Dr. Michael Crow's PowerPoint presentation to TREC, September 2011.

SPOTLIGHT ON THE SOUTHWEST MEGAPOLITAN CLUSTER

WHY IS THIS IMPORTANT?

Defining the Sun Corridor's strategic position within the Southwest Cluster is critical to unlocking the region's shared economic potential. The stretch of the Sun Corridor that runs from Nogales to Phoenix is like the trunk of a grand tree, anchoring trade relations with Mexico and branching out to hubs in the Southwest Cluster. To successfully grow this ecosystem, we must first recognize our common interests. For instance, the Sun Corridor, Southern California, and Las Vegas are all responding to demographic shifts, immigration issues, and the challenge of ensuring equitable access to quality education among all ethnicities. Clearly, we should increase communication with one another about our strategies and lessons learned. When the Phoenix, Tucson and Las Vegas housing markets crashed severely, Southern California investors felt the pain. Now, as those markets begin to recover, Southern California investors are once more along for the ride. Water resource planning – another shared concern – is yet another example. Inarguably, our fates are intertwined. The goal is to make those connections deliberate and mutually beneficial.

WHAT OPPORTUNITIES EXIST?

There are many growth opportunities to explore. As a region, the Southwest Cluster is poised to strengthen the CANAMEX Corridor and increase trade with Asia through Southern California ports. In fact, as the north polar cap melts and more shipping becomes feasible, the CANAMEX Corridor will have even greater utility. Long term investments in transportation infrastructure will be essential.

Research universities here and in Southern California already generate billions of federal grant dollars. By increasing collaboration among these institutions, they could be even more successful. This could bring additional dollars to the region and potentially spawn start-ups that would feel supported and encouraged to stay in the Southwest.

In order to assert its economic force, the cluster must identify these low-hanging fruit and facilitate cooperation in a manner that bridges existing governance structures. Many disparate groups are already looking at these issues, but they must align their efforts so the many moving parts link together in a unified plan and marketing effort.



SUN CORRIDOR MAY HAVE THE 5TH HIGHEST POPULATION DENSITY OF ALL U.S. MEGAPOLITANS BY 2040

Despite a negative reputation for “sprawl,” the Sun Corridor’s population density is already on par with The Netherlands. By 2040, the Sun Corridor is projected to increase its population density by more than 60%, reaching 1,120 people per square mile.⁷ This will propel us to the 5th most densely populated megapolitan in the U.S. Density brings challenges, but it also brings opportunities to build energy efficient, cost effective systems, like commuter rail. And, densely populated areas tend to support more urban amenities, like arts and cultural institutions, which attract knowledge workers and improve quality of life for all residents.

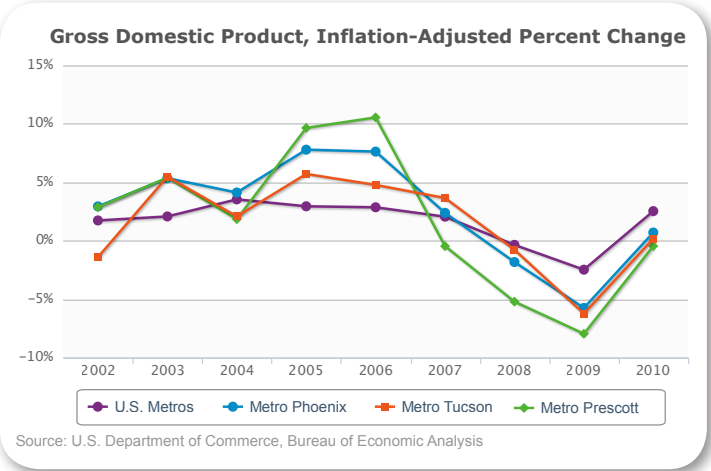
Note: Public land and marginal land are accounted for in this table to ensure better comparability across the country.



Persons Per Square Mile for Megapolitan Areas			
Megapolitan Area	Density 2010	Density 2025	Density 2040
Puget Sound	576	690	809
Willamette	364	438	541
Sierra Pacific	394	456	521
Southern California	887	1,035	1,188
Las Vegas	344	464	588
Sun Corridor	700	907	1,120
Wasatch Range	211	274	338
Front Range	359	447	536
Dallas-Forth Worth	346	431	517
Central Texas	412	543	676
Houston	398	494	593
Twin Cities	245	289	335
Chicago	720	802	888
Michigan Corridor	515	540	568
Ohio Valley	386	427	471
Steel Corridor	502	507	514
Florida Corridor	782	969	1,162
Florida Atlantic	1,218	1,498	1,786
Atlanta	388	478	571
Carolina	334	400	469
Chesapeake	643	781	924
New York-Philadelphia	1,294	1,406	1,526
New England	798	874	956

Source: Arthur C. Nelson and Robert E. Lang, *Megapolitan America*, (2011).

⁷ Arthur C. Nelson and Robert E. Lang, *Megapolitan America*, (2011).



THE SUN CORRIDOR'S GDP CYCLES TO EXTREMES

During expansions, inflation-adjusted GDP growth in Arizona's metropolitan areas generally is much higher than the U.S. metro average due to our above-average population growth. Between the end of the prior recession in 2001 and the peak of the economic cycle in 2007, the annual average inflation-adjusted growth rate ranged between 4.7 and 5.3 percent across five of the state's metropolitan areas. The U.S. metro average was 2.5 percent. The percent change in inflation-adjusted GDP was negative in 2008 and 2009 in the Sun Corridor. The U.S. metro average fell 2.8 percent over the two years, with nearly all this decline recovered in 2010. In contrast, the recessionary drop was much deeper in each of Arizona's metro areas and hardly any of the losses had begun to be offset in 2010.

MARICOPA COUNTY RANKS 3RD HIGHEST FOR SUPER-COMMUTING

In a recent study by the Rudin Center at New York University, Maricopa County ranked 3rd for the largest share of "super-commuters," who are defined as those who live beyond the census-defined Combined Statistical Area of their workplace. These workers tend to be young and are more likely to come from middle-class backgrounds. They often combine telecommuting with a traditional commute in order to take advantage of a rural cost of living and a metropolitan salary. The super-commuter phenomenon is just one of the less-visible interconnections that make the Sun Corridor an economically interdependent "place." Surprisingly, Los Angeles has the 9th most super-commuters coming into Maricopa County for work.

Top 5 U.S. Counties Among 10 Largest Metropolitan Workforces in U.S. for Super-commuting, 2009

	Number of workers	Percent of workforce
1. Harris Co. (Houston), TX	251,000	13.2%
2. Dallas, TX	176,000	13.2%
3. Maricopa Co. (Phoenix), AZ	131,000	8.6%
4. Fulton Co. (Atlanta), GA	47,700	7.5%
5. Philadelphia, PA	42,100	7.3%

Source: Mitchell L. Moss and Carson Qing, *The Emergence of the "Super-Commuter,"* Rudin Center for Transportation, (2012).

Top 5 MSAs of Residence for Maricopa County's Super-Commuting Workforce in 2009

	Number of super-commuters
1. Tucson	54,400
2. Prescott	18,500
3. Yuma	8,700
4. Lake Havasu City-Kingman	8,100
5. Flagstaff	8,000

Source: Mitchell L. Moss and Carson Qing, *The Emergence of the "Super-Commuter,"* Rudin Center for Transportation, (2012).



TRUCK BOTTLENECKS AND DELAYS CAN IMPEDE TRADE

According to research by Michael Gallis and Associates, the Sun Corridor has more truck bottlenecks and delays than any other Western locale outside California. This impedes the flow of goods through our state and has the potential to deter new business at a time when we strive to capitalize on our proximity to Mexico and Los Angeles. There are also negative environmental impacts when “annual truck hours of delay” approach a million hours. With population growth and increased trade, our future needs will require significant infrastructure investments today. We must develop a vibrant transport system capable of serving supply chains, moving freight, people and goods, and providing services that take advantage of our powerful trade partner to the south – Mexico.

CAPITAL COSTS FOR ENERGY MAY REACH \$86 BILLION

In a 2008 report, *Preparing for an Arizona of 10 Million People*, researchers at ASU's W.P. Carey School of Business projected Arizona's daunting infrastructure needs through 2032. While these projections were calculated for the state as a whole, the majority of Arizona residents live in the Sun Corridor and the megapolitan region is likely to absorb the vast share of future population growth. Thus, these conservative projections, which assume relatively low inflation in construction costs and exclude expenses for operations, are still relevant and useful today. Depending on the future mix of generation technologies, total capital costs for energy are projected to be \$74-\$86.5 billion through 2032.

Projected energy infrastructure costs in Arizona through 2032 (billions)					
	Electricity by Source of Power Generation*			Natural Gas, Petroleum, and Other Fuels	Total
	Coal	Natural Gas	Nuclear		
Total Capital Costs	\$73.8	\$65.0	\$77.4	\$9.0-9.1	\$74.0-86.5
Generation	44.9	36.1	48.5	NA	36.1-48.5
Refineries	NA	NA	NA	3.6	3.6
Transmission	9.6	9.6	9.6	2.8	12.4
Distribution	19.3	19.3	19.3	2.4	21.7
Storage	NA	NA	NA	0.2-0.3	0.2-0.3

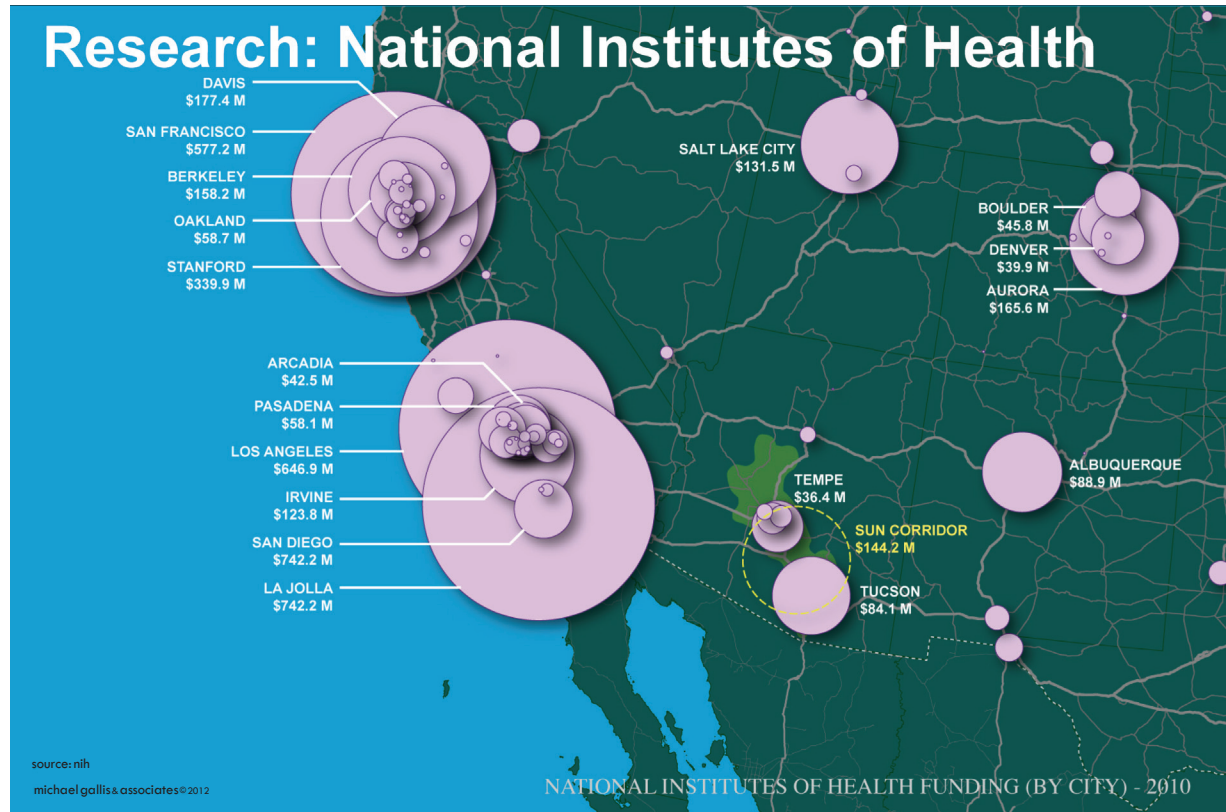
NA: Not Applicable

*In each of the three options, the cost projection assumes that 15% of the electricity is solar generated.

Source: Arizona Investment Council, *Infrastructure Needs and Funding Alternatives for Arizona: 2008-2032*, May 2008.

“CITIES AND METROS IN THE PRE-RECESSION ERA WERE MEASURING THE WRONG THINGS: SPECULATION RATHER THAN INNOVATION, PAROCHIAL DEMAND RATHER THAN GLOBAL TRADE, REAL ESTATE APPRECIATION RATHER THAN PRODUCTIVE RETURNS. THEY WERE, IN MANY CASES, ALSO MEASURING THE SAME THINGS: HOUSING STARTS, NEW COMMERCIAL SQUARE FOOTAGE AND BIG-BOX STORE OPENINGS.”

- BRUCE KATZ AND JENNIFER BRADLEY, “MASTERING THE METRO,” PUBLISHED ONLINE AT NEW AMERICAN CITY



RESEARCH FUNDING BRINGS BIG DOLLARS TO THE STATE

While the Sun Corridor received nearly \$145 million in research funding from the National Institutes of Health in 2010, it still trails the Denver area (\$251 million) by a substantial margin and is not far ahead of much smaller metro areas Salt Lake City (\$132 million) and Albuquerque (\$89 million). Clearly, there is potential for growth. While we're not competitive with Southern California in terms of the number of research universities or our ability to command federal dollars, the Sun Corridor benefits greatly from its research funding. These dollars add to the state economy while creating knowledge class jobs and spurring innovation. Such funding can also lead to patents, spin-off ventures, and medical advances that bring national and international attention to the Sun Corridor and attract venture capitalists.

ARIZONA DIRECTIONS

Surviving in the desert has always required a cooperative spirit – an acknowledgement that we need each other to prosper in this arid land. Today is no different. The economy won't thrive without skilled workers and tradesmen. The state general fund and the many services it provides will be at risk if we fail to close the Latino educational achievement gap. Arizona will miss out on economic development opportunities if we don't embrace regionalism and capitalize on our remarkable place in the Southwest megapolitan cluster.

This report alerts each of us to the challenges and opportunities ahead. It provides the data to help us learn from the past, ask smart questions, assess our competitiveness, and chart Arizona's way forward. We are resourceful and innovative – we just need a shared sense of urgency and the will to act. We hope you'll join us in advancing the dialogue and promoting evidence-based decision making to raise the quality of life for all Arizonans.

POLL METHODOLOGY

The Morrison Institute Poll, conducted between October 4 and 10, 2012, is based on 709 interviews with registered voters statewide. Interviewing was conducted in both English and Spanish by professional interviewers of the Behavior Research Center on either a voter's landline or cell phone. Where necessary, figures for age, sex, race and political party were weighted to bring them into line with their actual proportion in the population. In a sample of this size, one can say with a 95 percent certainty that the results have a statistical precision of plus or minus 3.7 percentage points of what they would have been had the entire voter population been surveyed.

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