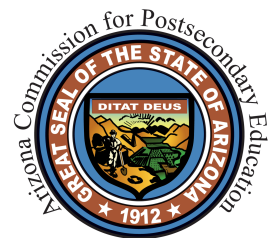


March 2009

TO LEARN AND EARN:

Arizona's Unfinished Business in Human Capital





VISION:

All students succeed in higher education as a result of quality research that shapes policy on critical issues.

MISSION:

To stimulate through studies, statewide discussion, and debate, constructive improvement of Arizona minority students' early awareness, access, and achievement throughout all sectors of the education pipeline.

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Arizona School Boards Association

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TO LEARN AND EARN: ARIZONA'S UNFINISHED BUSINESS IN HUMAN CAPITAL

for

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March 2009

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TO LEARN AND EARN: ARIZONA'S UNFINISHED BUSINESS IN HUMAN CAPITAL

Human capital refers to the knowledge and skills embodied in people. Economists have long recognized the importance of human capital in stimulating innovation, creating wealth, and promoting economic growth.

—Jaison R. Abel and Todd M. Gabe,
Human Capital and Economic
Activity in Urban America

Executive Summary

Raising Arizona was the challenge of the 20th century. Sustaining Arizona is now the challenge of the 21st. A crucial part of that task is not just understanding today's knowledge economy, but mastering it.

If the state makes this fundamental transition, the brief history of Arizona's future will read simply: They succeeded in the second stage. Human capital took its rightful place as a chief component of competitiveness. As a result, the story will go, Arizona moved into the top ranks of economic leadership after years in the second tier. Equity and prosperity resulted too. Most important, the state was ready for the next stage of competition. This happy ending for Arizona, of course, has been envisioned repeatedly over time. And in fact, a variety of human capital policies and programs to achieve it are in place. However, many would say that human capital is an area of unfinished business for Arizona. The Arizona Minority Education Policy Analysis Center (AMEPAC) developed *To Learn and Earn* to highlight the issues and asked Morrison Institute for Public Policy at Arizona State University to support the effort with research and analysis. In turn, AMEPAC will present the issues to Arizona stakeholders for their feedback. This process will kick off a multi-partner series of policy action projects. The first results will be presented in November 2009 at the next human capital conference presented by the Arizona Commission for Postsecondary Education.

Ray and Charles Eames debuted their film *Powers of 10* in 1977. In nine minutes, the viewer zooms from a picnic in a park to a view of the universe from outer space back to being inside the smallest cells in the human body. For decision makers, the lesson is clear: each level offers crucial input for wise choices. *To Learn and Earn: Arizona's Unfinished Business in Human Capital* applies this idea and considers education, the economy, and employment from 30,000 feet, 10,000 feet, and on the ground. As a result, AMEPAC poses questions that it expects to answer in concert with its partners.

With the input from these perspectives, we know that science and technology are driving global economic changes and that competition is white hot. We know that economic growth is now based on ideas and innovation, which are often based on scientific and technological advances. We see Arizona's disconnects. But we need to know much more about the experiences among Arizona's workers, particularly the low skill and minority students and employees who are increasingly important to the labor force. We should know more about how students, workers, employers, and policy leaders make decisions and how to align those choices with the state's quest for an equitable, high wage knowledge economy.

To Learn and Earn raises the following questions for on the ground studies:

PLANNING AND GOOD JOBS: PK-12 EDUCATION

- What should career planning be and do in Arizona's PK-12 system?
- How do students and parents view "good" jobs and the preparation needed to obtain them? Are those perceptions accurate?
- If, where, when, and how are students who have dropped out coming back?

EXPERIENCES FROM SCHOOL TO WORK: SECONDARY AND POSTSECONDARY EDUCATION

- What would young adults who are employed and unemployed say about their secondary and postsecondary time and its relationship to their work experiences?
- Where are yesterday's students now?
- What do their experiences say about successful school to work transitions in Arizona? How can more Arizonans make these transitions?

LEARNING AND EARNING: WORKFORCE SYSTEMS

- What will bring low-skill adults back to learning in companies and educational institutions?
- What will improve the chances of those already participating in learning to complete courses, transition to quality career paths, and stay on them?
- What models are working best for Arizona employers in learning, training, and upgrading?
- What lessons should educators and policy makers take from employers' experiences?
- What do past studies say about workers' decision making processes?

COMPLETING ARIZONA'S UNFINISHED BUSINESS: STATE POLICIES

- Given new information and insights, what policies will help complete Arizona's unfinished business?
- What specific tools will help Arizona continue to align education with workforce needs and truly integrate education, economic development, and employment?

These questions would be answered through in-depth interviews and surveys with students, policy leaders, and workers, as well as case studies of employers. Follow up surveys with a sample of recent graduates and workers would provide information about Arizona's schools and employers. The surveys and interviews could show rural

and urban differences in addition to the experiences among immigrant, minority, and older workers for example. The research for this project would present broad, rich information on a scale that has rarely been available in Arizona. At this critical time for public budgets, economic possibilities, and individuals' careers, there is an opportunity to understand how Arizonans think and feel about work, education, and the future. The outcome would be greater capacity to:

- revamp resources
- develop priorities
- target policies
- involve employers
- change mindsets

Every state and nation is scrambling to master the demands of an innovation economy. Yet, understanding the big picture by itself is not enough. If Arizona is successful in learning more about experiences on the ground, adjusting to the demands of the 21st century economy will be easier. Indeed then, the brief history of the future for Arizona will be one to celebrate.

TO LEARN AND EARN: ARIZONA'S UNFINISHED BUSINESS IN HUMAN CAPITAL

- ◆ New economy
- ◆ Knowledge economy
- ◆ Innovation economy

Different ways of saying the same thing: Ideas, often from scientific and technological advances and creativity in any field now drive economic growth, wealth creation, and high wage employment.

Raising Arizona, according to an astute state observer, was the challenge of the 20th century. Sustaining Arizona is now the challenge of the 21st.¹ A crucial part of that task is not just understanding today's knowledge economy, but mastering it.

If the state makes this fundamental transition, the brief history of Arizona's future will read simply: They succeeded in the second stage. Arizonans committed the energy and resources needed to create a top-notch homegrown workforce, while also attracting the best and brightest from around the world. Human capital took its place as a chief component of competitiveness. As a result, the story will go, Arizona moved into the top ranks of economic leadership after years in the second tier. Equity and prosperity resulted too. Most important, the state was ready for the next stage of competition.

This happy ending for Arizona has been envisioned repeatedly over time. And in fact, a variety of human capital policies and programs to achieve it are in place. However, many would say that human capital is an area of unfinished business for Arizona. The Arizona Minority Education Policy Analysis Center (AMEPAC) developed *To Learn and Earn* to highlight the area and asked Morrison Institute for Public Policy at Arizona State University to support the effort with research and analysis. In turn, AMEPAC will present the issues to Arizona stakeholders for their feedback. This process will kick off a multi-partner series of policy action projects. The first results will be presented in November 2009 at the next human capital conference presented by the Arizona Commission for Postsecondary Education.

To Learn and Earn is nothing if not timely. This latest recession has hit Arizona's economy harder than most, touching every industry. Job losses in the past year have been steep. Months of unemployment increases have put the state's jobless rate at above 7%, a level lower than the national figure, but one not seen here for more than a decade. Declines in personal income and housing values have been sharp. State and local tax revenues have declined. The litany of recent bad economic news joins long-standing disparities between majority and minority Arizonans and the financial stresses of budget deficits to refocus attention on Arizona's competitiveness. The spectre of an uncompetitive economy over the long term and the reality of strains on education and workforce development at all levels have swelled the ranks of those who wonder how Arizona will ever prevail in the high-wage knowledge jobs that are the 21st century's greatest economic prize. This uneasy sense makes this the right time to look again at the intersection of education, the economy, and employment. As *New York Times* columnist Thomas Friedman noted recently: "You can't be too honest in describing big problems, too bold in offering big solutions, too humble in dealing with big missteps, too forward in re-telling your story or too gutsy in speaking the previously unspeakable."²

Friedman's advice is timely because human capital issues are complex. There is a multitude of players, and many forward-looking policies are costly to implement at a workforce scale. Still, Arizona as an economic leader is a vision powerful enough to keep AMEPAC and many other organizations working to achieve it.

Ray and Charles Eames, the creative geniuses behind many iconic 20th century designs, debuted their film *Powers of 10* in 1977. In nine minutes, the viewer zooms from a picnic in a park to a view of the universe from outer space back to being inside the cells of the human body. The journey is a powerful lesson in perspective. For decision makers, the lesson is clear: each level offers crucial input for wise choices. *To Learn and Earn: Arizona's Unfinished Business in Human Capital* applies the *Powers of 10* idea. As a result, this paper looks at issues and demands from three perspectives: 30,000 feet, 10,000 feet, and on the ground. Each level provides insights vital to Arizona finding new ways to develop a quality workforce suited to “stimulating innovation, creating wealth, and promoting economic growth.” *To Learn and Earn* concludes with questions that AMEPAC sees as a starting point for working with partners throughout Arizona.

To Learn and Earn: Three Vantage Points Go Together

- **30,000 feet**—Global and national trends
- **10,000 feet**—Statewide statistics
- **On the ground**—Individuals' and employers' knowledge, attitudes, values, and experiences

Americans have long viewed the attainment of knowledge and skills as a primary mechanism for economic mobility.

—Robert Lerman, “Are Skills the Problem?”

INNOVATION, TALENT, AND URGENCY:

The View from

30,000 FEET

From this bird's-eye view—the one from which the knowledge economy is perhaps most often discussed—Arizonans see the trends shaping the economy and the workforce issues related to them. The results from many recent reports, six of which AMEPAC chose for profiles here, can only be described as sobering. The news about internal and external threats to U.S. competitiveness, the effects of aging and slow labor force growth, lingering disparities, inadequate skills, and the need to reinvent lifelong learning indicate how extensive adjustments will have to be. Few will miss the dramatic implications for Arizona.

Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Future³

TAKEAWAYS:

- Science and technology produce innovation, which begets economic growth and quality jobs.
- U.S. science and technology leadership is threatened by many situations, including shortcomings in developing and maintaining human capital. Leadership can be regained only with big, bold actions, such as the 1960s effort to put Americans on the moon.
- STEM (science, technology, engineering, and math) education is at the heart of progress.
- All things considered, today's underutilized minority groups are key to meeting the scale and scope of workforce demands.

One of the nation's most prestigious groups of intellectual leaders produced *Rising Above the Gathering Storm* in

It is easy to be complacent about U.S. competitiveness and preeminence in science and technology. But the world is changing rapidly, and our advantages are no longer unique.

—*Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future*

2005 and updated it in July 2008. The Committee on Science, Engineering, and Public Policy of the National Academy of Sciences and National Academy of Engineering combined its concerns and resources with those of congressional committees. University presidents, corporate leaders, Nobel laureates, and other experts were appointed to the Committee on Prospering in the Global Economy of the 21st Century: An Agenda for American Science and Technology. The members oversaw research on the status of science and technology, education, employment, and other issues, along with the nation's global economic status. After the results were in, the authors expressed deep concern about the erosion of American scientific and technological prowess and potential, when other countries were increasing theirs. They noted how declining competitiveness would reduce the U.S. standard of living and decried the “brain waste” that has resulted from immigration policies that push some of the best and brightest minds out of the U.S. These shortcomings stood in contrast to descriptions of the critical roles science and technology are expected to play in solving problems in such areas as public health, environmental quality, and sustainability. Members recommended:

- **10,000 Teachers, 10 Million Minds, and K-12 Science and Mathematics Education:** Increase America's talent pool by vastly improving K–12 science and mathematics education.
- **Sowing the Seeds Through Science and Engineering Research:** Sustain and strengthen the nation's traditional commitment to long-term basic research that has the potential to be transformational to maintain the flow of new ideas that fuel the economy, provide security, and enhance the quality of life.

- **Best and Brightest in Science and Engineering Higher Education:** Make the United States the most attractive setting in which to study and perform research so that we can develop, recruit, and retain the best and brightest students, scientists, and engineers from within the United States and throughout the world.
- **Incentives for Innovation:** Ensure that the United States is the premier place in the world to innovate; invest in downstream activities such as manufacturing and marketing; and create high paying jobs based on innovation by such actions as modernizing the patent system, realigning tax policies to encourage innovation, and ensuring affordable broadband access.

Rising Above the Gathering Storm sounded a familiar alarm with such force that the authors hoped it would prompt renewed commitment and greater investments in people as well as in science and technology.

America’s Perfect Storm: Three Forces Changing Our Nation’s Future⁴

TAKEAWAYS:

- Economic demands are likely to be unmet because of declines in knowledge and learning.
- Many Americans, native born and foreign born, lack the reading and math skills to do what employers need done.
- Many workers will be left behind just when they will be needed most, given slow labor force growth and aging.

Prominent labor economists and educators analyzed the convergence of three overarching trends that are evident throughout the U.S.

1. **Substantial disparities in skill levels:** Large segments of students and adults in the U.S. have inadequate reading and math skills.
2. **Significant, undeniable economic changes:** Widening wage gaps are a result of the continuing evolution of the nation’s economy and job structure, requiring higher levels of skills from an increasing proportion of workers—many of whom are unprepared.
3. **Sweeping demographic shifts:** An ongoing shift in the U.S. demographic profile, which is powered by aging and immigration, is shining an intense spotlight on the reality of less education and skills among more people.

If anyone questioned that new demographics, skill disparities, and increasing demands are affecting every state, this report from ETS would put that doubt to rest. Each of the three forces is powerful, the authors say, but their combination is triply important and a cause for concerted, sustained action in education, training, and immigration reform. The scholars conclude that by 2030 the average levels of literacy and numeracy in the working-age population will have decreased and inequality will have increased. As more highly educated people leave the workforce, their replacements will have lower levels of education and fewer skills. At the same time, nearly half of anticipated job growth will be concentrated in occupations with greater skill demands. This will leave millions of residents unable to obtain quality jobs. The authors conclude that the United States is at a crossroads and must determine “whether we will continue to grow apart or, as a nation, we will invest in policies that will help us to grow together.” They speak with urgency also. “There is little chance that economic opportunities will improve among key segments of our population if we follow our current path. To date, educational reform has not been sufficient to solve the problem. National test results show no evidence of improvement over the last 20 years. Scores are flat and achievement gaps persist. Hope for a better life—with decent jobs and livable wages—will vanish unless we act now.”

A Future of Good Jobs? America’s Challenge in the Global Economy⁵

TAKEAWAYS:

- Health insurance and health costs affect employment.
- Education is vital, but training deserves renewed commitment too because skills are developed in a variety of ways.
- Learning and working should go hand in hand for youth and adults, instead of education being separate from work.
- Low skill workers warrant special policies because of workforce needs and social costs.

Eight prominent economists responded to what the editors call the “fundamental economic policy challenge facing our country in an age of intense global competition...Can the U.S. economy generate healthy growth of ‘good’ jobs—jobs that will ensure a steady improvement in the standard of living for the middle class and that will offer a way out of poverty for low income Americans?” This compilation of articles from employment experts focuses on six workforce imperatives, including:

- Improve the skills of American workers.
- Address the crisis in employer-sponsored health care.
- Minimize the effects of dislocation.
- Remove barriers for older workers.
- Improve job quality for low-wage workers.
- Address the serious situation of the disadvantaged.

These challenges stem from what the authors see as underappreciated signs of trouble for U.S. workers: “Growing inequality, declining coverage and generosity of benefits, less job security, and a sharp drop in employment among low-educated men.”

Reach Higher, America: Overcoming Crisis in the U.S. Workforce⁶

TAKEAWAYS:

- Workforce demands require low-skill workers to become part of the high-skill pool.
- Limited literacy and skills among current adult workers are a crisis that the U.S. can no longer afford.
- To reduce poverty and inequality and serve economic needs, the skills of many Americans will have to be expanded.

This report from the National Commission on Adult Literacy introduces a “20, 20, 2020” plan to renew the nation’s workforce and expand employment possibilities for millions of Americans. This leadership group recommended investing \$20 billion in redesigned adult education and workforce services to help 20 million people annually by

2020. Those who are “unemployed; low skilled incumbent workers; immigrants with limited or no English; parents or caregivers with low basic skills; incarcerated adults; high school dropouts; and high school graduates not ready for college” deserve far more attention considering they comprise so much of the current and future workforce. Their work also notes how K-12 and higher education topics have overshadowed adult education, private postsecondary programs, and “second chance” workforce programs. Despite the importance of K-12 and higher education, *Reach Higher* highlights that two-thirds of the workforce are beyond the reach of traditional systems. Adults have been left largely to the public workforce investment system and adult education organizations, which they see as relics of a different time, even with the notable changes of recent years. Since a high school diploma is just barely a workforce calling card these days, those with limited skills or without credentials are at a significant disadvantage. At the same time, the quality workforce called for by employers and experts in other reports—in terms of numbers, “hard” and “soft” skills, and learning capacity—is impossible to attain and maintain if adults are ignored.

The report notes that “middle skill” jobs—those that require some postsecondary education or training but not a bachelor’s degree—comprise about 40% of new openings and approximately 50% of all jobs. These jobs can provide realistic routes to the middle class for thousands of low wage workers. In addition, middle skill jobs often support high skill work (think of the technician needed to help the scientist). *Reach Higher* also discusses the positive connections between parents’ achievements and children’s learning. It spotlights how employment success and educational attainment relate to greater civic engagement, health, and public revenue.

The National Commission on Adult Literacy recommends a federal *Adult Education and Economic Growth Act* to overhaul adult education and workforce skills training. The act would also prompt states to integrate adult education and workforce and economic development better. Substantial roles are envisioned for nonprofit organizations, community colleges, and technology. *Reach Higher* renews consideration of that portion of the nation’s labor force which many have forgotten or given up on and shines a light on their importance as an underutilized economic resource.

Nearly 1 in 5 of Arizona's Working-age Population (16 years+) Is Foreign Born, Selected Characteristics, Working-age Population, 2006		
	Arizona	U.S.
Characteristics		
Total working-age population	4,710,000	233,142,000
% Hispanic	25.4	13.2
% Foreign born	18.0	15.0
% Total with less than H.S. diploma	46.6	48.8
% Hispanic with less than H.S. diploma	70.2	69.6
% Foreign born with less than H.S. diploma	68.4	57.4

Source: Arizona: Population and Labor Force Characteristics, 2000-2006, Pew Hispanic Center, January 2008.

Beyond Social Justice: The Threat of Inequality to Workforce Development in the Western United States⁷

TAKEAWAYS:

- Majority/minority disparities are now an economic drain, not just an ethical issue.
- State treasuries would benefit from erasing disparities because of revenue growth from higher earnings.
- Arizona's majority/minority disparities rank in the middle of Western states.

Beyond Social Justice starkly describes the economic and educational disparities among majority and minority residents in the U.S. and particularly in Western states. Prepared by the National Center for Higher Education Management Systems for the Western Interstate Commission for Higher Education (WICHE), this report compares educational, workforce, and earnings status among minority groups and Whites and paints a dire picture of the future if solutions are not found. "In the West, Hispanics will soon be the majority population. Yet at nearly every stage in the education process, the systems of education in the West serve Hispanics at the lowest rate of any racial/ethnic population. As a result, they continue to represent the majority of workers employed in low-skill, low-wage jobs. Though Black non-Hispanics and American Indians/Alaska Natives represent smaller proportions of the population in the West, their low rates of participation and success also contribute to their disadvantaged economic positions. Racial/ethnic gaps remain a fundamental reality in our society." For example:

- Gaps in high school attainment between Whites and Blacks, Hispanics, and American Indians ages 25-64 averaged 21.4% for WICHE states and 25.4% in Arizona. Arizona has less than half as many residents involved in GED and English as a second language studies compared to other WICHE states.
- White B.A. holders in Arizona earned an average of \$8,772 more than minorities, compared to \$6,569 in other WICHE states.
- Personal income in the U.S. would increase dramatically if disparities were eliminated. Arizona's total personal income would expand by an estimated \$14.6 billion if gaps between minorities and the majority were closed.

Beyond Social Justice takes its name from the notion that eliminating disparities is critical to mastering today's economic demands.

"Since education has become the principal avenue to a middle class lifestyle, those gaps have long been a target for reform minded education policymakers.... Overall, the gaps show little sign of shrinking, defying the best intentions and the combined efforts of countless researchers, policymakers, and educators. Two emerging realities are combining to make the need to close educational attainment gaps more urgent than ever.... The fastest-growing groups within our population are racial/ethnic minorities...that our educational infrastructure has poorly served historically, while the number of White non-Hispanics in our public schools is declining. This is happening when the globalized knowledge economy is increasingly demanding better-educated, higher-skilled workers from developed economies like that of the U.S.... Now, it has become clear that closing educational attainment gaps is a matter of economic necessity, if we are concerned about the future prosperity and security of our nation."

Knocking at the College Door 2008: Projections of High School Graduates⁸ by State and Race/Ethnicity, 1992-2022

TAKEAWAYS:

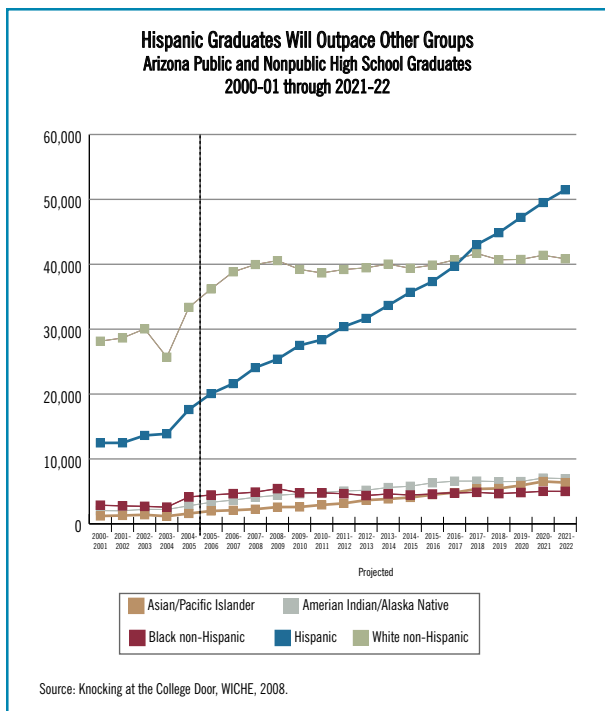
- The number of high school graduates nationally will stabilize after a period of increases.
- Minority-group students will soon comprise the majority of graduates.
- A few states, including Arizona, will experience "explosive" growth in high school graduates if projections are accurate.

The nation's 2007-2008 high school graduating class—more than 3.3 million strong—was the largest in U.S. history. The Western Interstate Commission on Higher Education (WICHE) reports that last year's class is the final one in a growth period, which began in 1994. Between 1994 and the late 2000s, the number of high school graduates increased by more than a third. In 2008-2009, WICHE's demographers explain that the U.S. will begin a stable era, assuming current patterns remain. Growth is expected to resume at a slower pace around 2015.

Arizona is similar to other states in seeing greater diversity among its graduates. In 1994-95, White non-Hispanic graduates accounted for 65% of public high school graduates. The 2009-2010 graduating class is expected to be “majority minority.” Diversity will continue to increase, even though the number of White graduates will also expand. In contrast to other states, if current patterns remain, Arizona could experience substantial graduate growth. In 1991-1992, Arizona’s high schools graduated fewer than 35,000 students. WICHE forecasts that by 2021-2022, the state will have nearly 115,000 graduates. Arizona was among the largest growth states in graduates between 1991-1992 and 2004-2005, the most recent year of actual data from public schools, when approximately 60,000 students completed high school in the state. As WICHE’s statisticians note: “These rapid increases will likely strain the state’s capacity to provide equal opportunity to education, especially at the postsecondary level.”

A Troubling Big Picture

Can Arizona possibly weather the storms and reach high enough to offer good jobs to everyone knocking on the doors? Humor aside, these studies illustrate that competitiveness cannot be discussed without looking at education, skills, health, training, and disparities. We know from these reports and many like them that skill demands are higher than ever just when the years of increasing numbers of workers with more education and more capacity to learn are essentially over. STEM education is critical, while reforms in health insurance, pensions, and immigration are immediate workforce issues too. We know that it is time to redouble efforts to level the economic playing field and ensure that each young potential worker is ready for postsecondary education or training and that adults have options for learning that are tailored to their situations. From 30,000 feet, there is a long “to do” list to achieve and sustain economic leadership.



The notion that skills matter, that the wealth of a nation is embodied in its people and that only an educated people can adopt new technologies (and adapt them and innovate them), was voiced in America at the dawn of the 20th century. The modern concept of the wealth of nations had emerged. What mattered was capital possessed by people—human capital.

—Claudia Goldin, “The Human Capital Century”

ASSETS AND DISCONNECTS: THE VIEW FROM 10,000 FEET

To expand standards of living over time, Arizona must be competitive in global export industries characterized by innovation and entrepreneurship. Arizona is working hard to expand innovation and entrepreneurship, but it still has far to go to match leading states.

—Dan O’Neill, *Sustainability for Arizona: The Issue of Our Age*

Given its entrepreneurial tradition and emphasis on being business friendly, one would think that Arizona long ago would have become a leader in linking education and employment with its economy. But at 10,000 feet, Arizona’s particular circumstances come into sharper focus. Often preoccupied with growth and newcomers’ assets, Arizona is still coming to grips with how to match its grand visions with the investments and policies needed to achieve it.

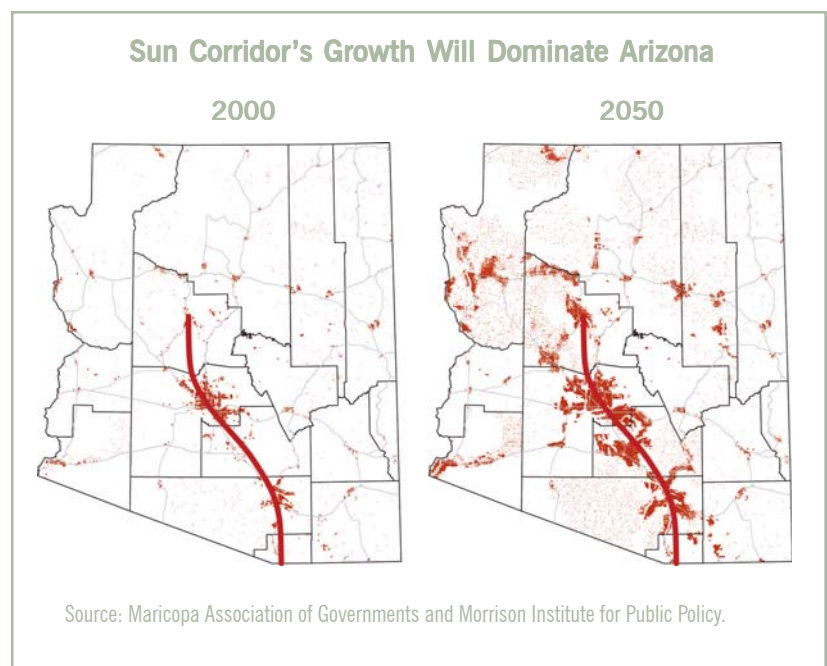
Arizona’s “Mega” Opportunity and Its “Storm”

ARIZONA TODAY:

- Arizona may have more than 10 million people by about 2040, mostly in Pima, Pinal, and Maricopa counties, the heart of the Sun Corridor.
- Minority groups comprise 40% of Arizona’s population and are growing more quickly than the majority population.

Rapid population growth has defined Arizona since the 1950s, when the state had about 750,000 residents. Arizona now counts approximately 6.5 million residents with just about 3 million in the labor force. Even with fewer incoming residents due to the housing and economic crises, recent projections show that by about 2040, as many as 10.3 million people may call the state home. The vast majority of Arizonans likely will live and work in the Sun Corridor, Arizona’s “megapolitan” region. This vast super-region may stretch from Nogales into Yavapai

County in an urban mosaic held together by economic ties. The Sun Corridor will be one of 20 megas in the U.S. and one of five in the Intermountain West. About 90% of Arizona’s economic activity is already in the Sun Corridor, making its success critical for all of Arizona. From globally competitive workers to water to infrastructure, the scale and scope of the Sun Corridor will be too big economically to ignore, but will also demand new ways to ensure that bigger is better. Or as the Brookings Institution noted in its recent publication, *Mountain Megas*, which included the Sun Corridor, “true prosperity is based on achieving sustainable, productive, and inclusive growth all at once. Such balanced growth depends on the region assembling the crucial assets that contribute to such prosperity: top-



notch infrastructure, world-class innovation, vital human capital, strong quality of place, and effective regional governance.”

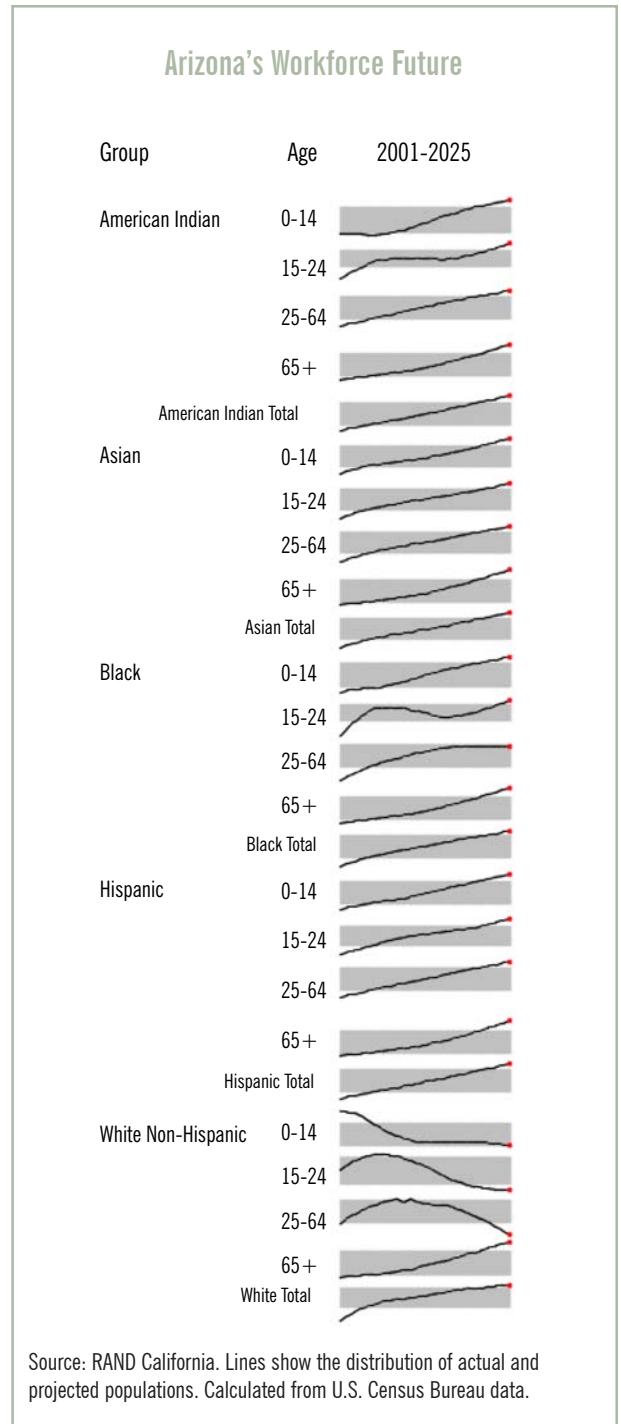
Many in Arizona have been considering infrastructure carefully. In *Preparing for an Arizona of 10 Million People: Meeting the Infrastructure Challenges of Growth*, ASU’s L. William Seidman Research Institute described historical trends in infrastructure spending and needs in transportation, education, healthcare, energy, public safety, telecommunications, and water over the next 25 years. In recent decades, spending on infrastructure has been less than would be expected for a rapidly growing state. “Arizona’s capital outlays, whether measured on a per capita basis, per \$1,000 of personal income, or as a percentage of revenues, have been greater than the national average in most years, as would be expected in a state with a population growth rate consistently much higher than the U.S. average. However on each of these measures, Arizona’s expenditures as a ratio to the national average have been substantially less since the early 1990s than during the late 1970s and 1980s. Even during the last 15 years of rapid growth, Arizona’s capital outlays have declined on each of these measures.”⁹

Arizona’s lagging investment takes on even more importance when future gaps are considered. While a precise total of the cost of infrastructure needs in Arizona cannot be calculated, projections—based on what is known about operations and physical infrastructure costs—show the gap between needs and existing revenue streams to be billions of dollars per year beyond existing spending. Currently, infrastructure expenses account for approximately 25% of the state’s gross domestic product. According to the Seidman Institute calculations, this proportion may need to rise to around 30% over the next 25 years. Taken together, capital and ongoing costs for K-12 and higher education, plus libraries and related items, could be as much as \$873 billion over the next 25 years.¹⁰

Infrastructure is one of the foundations of a strong economy, but Arizona is still struggling to determine how to provide it. And recent budget deficits in combination with spending restrictions have made the future possibilities all the dicier.

Among states, Arizona is now 17th largest on total population, 10th for minority residents, and 42nd for White non-Hispanic population, according to the U.S. Census Bureau. From 2000-2006, natural increase accounted for 29% of the state’s expansion, with domestic migration providing 52% and international migration producing 19% of the growth.¹¹

Thus, it is no surprise that the state’s majority/minority split is essentially 60% to 40%. The census bureau projects that the nation’s population will change from roughly a third minority today to more than half by 2042. This national shift is occurring more quickly than had been expected. In Arizona’s case, a minority majority is even closer at hand, in part because of age.



Arizona Hispanics have a median age of 25 years, while that among White non-Hispanic Arizonans is 42. Nearly half of babies born in Arizona are to Hispanic mothers. Other minority groups, particularly American Indians, are also younger than Whites overall.¹² In contrast by 2010, one in five Arizonans is expected to be 60 years old or older. In 20 years, the proportion will be just over one in four.¹³ Even as the recession and declines in investment values are forcing many baby boomers to remain in or return to the workforce, Arizona's youthful growth as well as aging will put significant demands on those in their working years. The state's "dependency ratio" shows that working adults will need to be as prosperous as possible to support others. Clearly, Arizona will increasingly look to minority residents for its workforce. First and second generation immigrants, most often Hispanic, will also play a part since approximately one out of three Arizona children is either foreign born or the son or daughter of immigrants.¹⁴

A concern commonly voiced about Arizona's future economy is that minority and immigrant population growth—coupled with the history of lagging skills among these groups—will soon collide with aging and baby boomer retirement. The worry is that the new workers will be less prepared than they should be for success in a high wage knowledge economy.

Of course, race and ethnicity and place of birth are not the issues—disparities are. Minority population figures are used as shorthand for the effects of deeply rooted differences in educational and occupational access and the legacies of discrimination and underutilization.

Arizona's work to make the most of old and young, majority and minority, and immigrant and native born will be challenging, particularly considering that the minuses seem to outweigh the pluses today. For example:

- Older workers and retirees have more education than younger Arizonans. Arizona is in the nation's bottom quartile for the number of individuals 25-44 years old who are high school graduates or higher. In addition, Arizonans ages 25-34 lag the nation in high school attainment and in the percentage who have an associate's degree or higher.¹⁵
- A report for the Governor's P-20 Council showed that in 2000 a 27 percentage point difference separated Whites and Hispanics on the number of adults age 25-34 with an associate's degree or higher. Whites in Arizona are more than twice as likely as adults from other ethnic groups to have a bachelor's degree.¹⁶
- Of the more than 600,000 Arizonans who did not finish high school, more than 70% reported that they do not speak English well.¹⁷
- Arizona enrolls just about 32,000 students in formal adult education programs and awards approximately 11,000 GEDs annually.¹⁸
- American Indian, Hispanic, and African American high school graduation rates are on the upswing, but are still lagging those of White and Asian American students by approximately 10 to 20 percentage points.¹⁹
- In contrast, adult Arizonans return to school at higher rates than across the country. Of those adults with only a high school diploma, more than twice as many ages

Race/ Ethnicity	Total	Officials & Managers	Professionals	Technicians	Sales	Office/ Workers	Craft Workers	Operatives	Laborers	Service Workers
All	819,844	83,329	138,106	51,501	123,445	135,498	51,053	71,896	53,762	111,254
White	64.1%	81.6%	79.0%	70.6%	67.4%	65.6%	56.5%	46.2%	34.1%	53.6%
Hispanic	24.8%	11.4%	9.0%	17.6%	22.6%	21.6%	34.5%	40.2%	55.8%	34.7%
Asian	3.9%	2.9%	7.5%	4.7%	2.7%	3.0%	2.4%	4.8%	2.3%	2.9%
American Indian	1.9%	0.8%	0.8%	2.0%	2.3%	1.9%	3.3%	2.5%	2.6%	2.3%
Black	5.3%	3.3%	3.7%	5.1%	5.0%	7.8%	3.3%	6.3%	5.2%	6.5%

Federal EEOC requires federal contractors and firms with more than 100 employees to report occupations by race and ethnicity. Source: U.S. Equal Employment Opportunity Commission.

25-39 were enrolled in college compared to the nation. For those from 25-49, Arizona places at the top.²⁰

Thanks to housing and economic changes, Arizona's future population may be less likely to be able to look to domestic migrants for skills than in the past. The question in Arizona is how finally to fix the disconnect between a high wage economy and the disparities among minority workers compared to Whites and the differences between elders and youth. These are not new questions, but it seems time for different answers and new ideas.

Arizona's Economy and Workforce Start at Fair to Middling

ARIZONA TODAY:

- Arizona ranks 39th on per capita income. The state places 38th on the net worth of households.²¹
- Arizona places 17th on the 2008 Milken State Technology and Science Index, but 33rd on the human capital portion.²²

Over time, the combination of ready jobs, affordable housing, warm climate, and the chance to start over attracted millions of residents to the state. But despite many years as a leader in job creation (in the past, unfortunately) Arizona's economy is generally in the middle to lower end of states on income, job quality, tech jobs, and various other measures. The state's economy over time has been defined by cycles of boom and bust, despite a high tech sector that dates back to Motorola's investments in the 1950s. Aerospace and semiconductors remain strong, while the most recent knowledge economy growth has been in the biosciences. "Clean tech" and sustainability-related jobs are beginning to be considered in depth.

In indices measuring innovation, Arizona has traditionally done better in areas other than human capital. Many attribute this in part to Arizona having "imported" its skilled workforce for decades via immigration. As long as skilled people were moving to the state, workforce needs could be met. Many individuals do bring degrees and skills, but the level now is not as high as is often thought and retirees are the source of many of them. As one recent human resources report noted: "Importation of talent is helping the state meet many of its workforce needs, but it is not making Arizona a more highly educated state. In the other states this pattern is reversed; more new residents are coming with college degrees and the overall educational capital

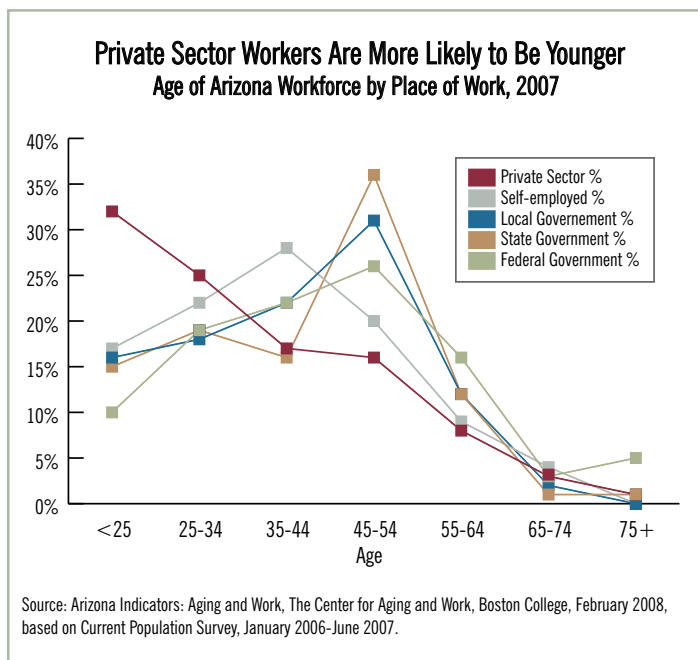
of these states is thereby increased."²³ From 1995-2000, those newcomers 22-29 years of age with some college or less outnumbered those with an associate's degree or more by more than two to one. For ages 30-64, the number of migrants with some college or less totaled about 40% more than those with more education.²⁴

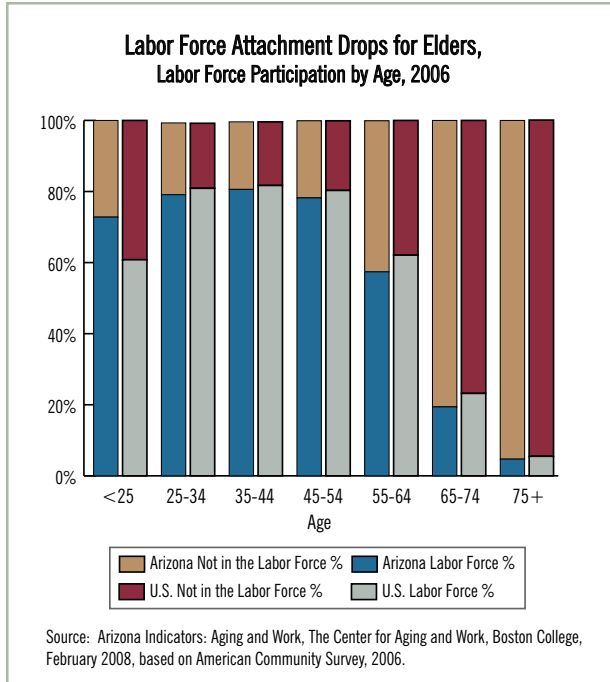
Arizona's Employers and Workers Are Both Looking for the Best

ARIZONA TODAY:

- Job quality in Arizona is in the middle of states, slightly lower than the national average.²⁵
- Arizona's economy is also changing. For example, the Biotechnology Industry Organization noted in its 2008 nationwide study that bioscience jobs increased by 22% from 2001-2006. Workers earned more than 35% more than private sector workers overall.²⁶
- Still, Arizona has the 10th highest number of adults ages 25-64 with less than a high school diploma.²⁷

Like most places, Arizona's labor force participation drops with age, although 50+ workers now are likely to say they want to remain in the labor force. Younger Arizonans work more in the private sector than in the public sector, in contrast to their elders, so that employers' workforce outlooks may be more directly tied to recent educational achievement. Those with less education are less likely to





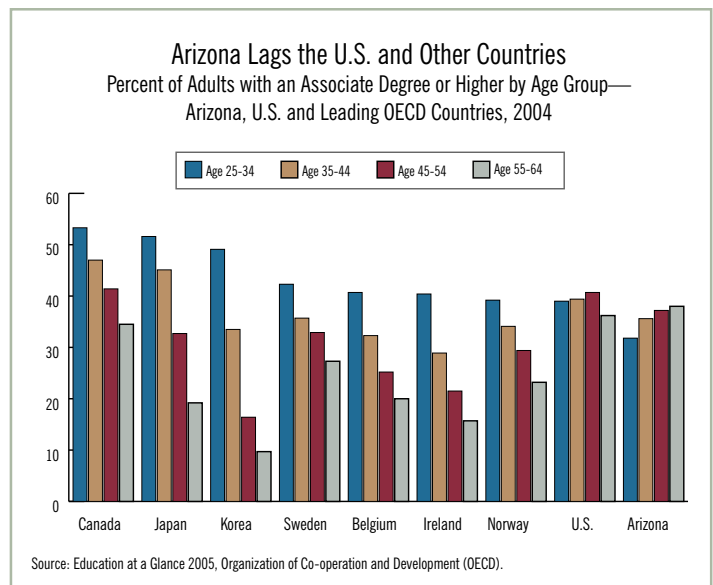
be in the labor force. The most educated workers tend to have the greatest access personally and through their employers to further education and training to gain more skills. The patterns are familiar, considering the diversity in the economy, but they also highlight some of the disconnects noted in *Rising Above the Gathering Storm* and other reports. According to the 2008 edition of *Measuring Up*, the percentage of Arizona 18-24 year olds with a high school credential has lagged the national average for more than 15 years. The National Center for Higher Education Management Systems noted that on international benchmarks Arizona trails the U.S. and other nations in the educational quality of its workforce. The findings underscored the importance not just of K-12 excellence, but attention to adult workers also. "In order to reach international competitiveness by 2025, the U.S. and 32 states (including Arizona) cannot close the gap with even the current best performance with traditional college students. They must rely on the re-entry pipeline—getting older adults back into the education system and on track to attaining college degrees."²⁸

Researchers for the Governor's P-20 Council identified a mismatch between Arizona workers and jobs by looking at 139 occupations requiring postsecondary education in which Arizona has not met "parity," or employment at the U.S. average. Realistically not every occupation will

be on par considering economic differences, but the statistics show that Arizona has fallen behind in some important areas. Bringing all of the non-parity occupations up to national levels would demand 109,172 more people with postsecondary education. This figure is particularly important considering Arizona's oft-stated desire to rebalance the mix of low, middle, and high skill jobs to the top end of the scale.²⁹

Workforce concerns have prompted a body of initiatives and policies that could pay substantial dividends. Whether these selected initiatives and others inspire confidence or seem like too little too late likely depends on the extent to which Arizona can stay the course. That was the conclusion at a recent roundtable with Arizona business, workforce, and education professionals. These insiders worried that the state's past efforts have rarely been big or long-lasting enough to achieve substantial goals. In addition, they noted:

- State and local economies are "black boxes" for many, making it hard to get actionable information to people on the ground. Residents' perceptions about and expectations for "good" jobs are often at odds with reality. Quality careers easily go begging as a result, while science, technology, engineering, and math are not studied enough. In addition, Arizona has had an inconsistent approach to career planning for students, which has left many without a clear understanding of either the opportunities or the requirements to be successful. Information needs to be better too on what happens to graduates. Arizona has few follow up mechanisms.



- The state's decision makers also know too little about specific groups of students and workers. Insufficient knowledge of different types of individuals' experiences and their special characteristics can lead to a mismatch of resources. Even though not every worker will need an advanced degree, everyone is affected by employers' higher skill expectations and the connections among education, opportunities, and earnings. Much of Arizona's workforce is in danger of being left behind. Low-skill workers often cannot move ahead without additional skills even in many traditional service sectors.
- Adult education and workforce programs have been undervalued and isolated.
- Outlooks on education, economic development, and employment are still disjointed, and consensus on knowledge economy adjustments continues to be elusive across education, workforce development, and economic development.
- Arizona has not invested sufficiently in learning at all levels, including training, retraining, literacy, creativity, and innovation.
- While the short term may be all right for many, the future looks like too few Arizonans will have the education needed for where today's economy is headed. Investments in human capital are more important than ever and could be one of the keys to the state's workforce coming out of the recession better equipped to compete.

Arizona's disconnects cannot go unnoticed, particularly in this downtime for the public and private sectors. A growing state is investing less than is optimum in infrastructure, while minority communities are still laboring in an environment of disparity. When the desire is to rebalance the scales in favor of high wage jobs and the capacity to compete globally, the number of low-skill adults stands out. Some signs are good, but at 10,000 feet the gaps are clear.

Selected Arizona Human Capital Initiatives

AREA	INITIATIVE
Early Childhood Education	<ul style="list-style-type: none"> • First Things First
Alignment from Pre-School Through Graduate School	<ul style="list-style-type: none"> • Governor's P-20 Council • All-day kindergarten
Older Workers	<ul style="list-style-type: none"> • Arizona Mature Worker Job Bank • Mature Worker-Friendly Employer Certification
Career Planning	<ul style="list-style-type: none"> • Education and Career Action Plan, Arizona Department of Education
Science, Technology, Engineering, and Math Education	<ul style="list-style-type: none"> • Arizona STEM Education Center, Science Foundation Arizona
Workforce Investment System	<ul style="list-style-type: none"> • Adult Education and Healthcare Project, U.S. Department of Labor Incentive Dollars • Innovation Frontier Project, U.S. Department of Labor WIRED Project
Research Internships	<ul style="list-style-type: none"> • Helios Scholars at Translational Genomics Research Institute • Sun Health Research Institute
Industry Partnership	<ul style="list-style-type: none"> • Dream It Do It, National Association of Manufacturers and Maricopa Community College District
Economic Development	<ul style="list-style-type: none"> • Science Foundation Arizona
University Research	<ul style="list-style-type: none"> • Technology and Research Initiative Fund
Emerging Jobs	<ul style="list-style-type: none"> • Community Colleges and Green Jobs

POLICY BECOMES PERSONAL: THE VIEW ON THE GROUND

The line for admittance to a recent metro Phoenix job fair snaked outside the convention center and across a parking lot. Inside, hundreds of unemployed Arizonans looked for help and hope from employers with little to offer. On the ground, the policies and stats about employment, education, and the economy get personal. Numbers become people, and global trends become local opportunities (or lack thereof). The need for more STEM achievement, for example, depends on how young women view science and math. Reducing educational disparities relies on the quality of a classroom teacher. The state's competitiveness is determined not just by policy choices, but also by countless personal decisions based on local culture and experiences.

At 10,000 feet, data about students, workers, and employers show what these groups do and what their status is. But it takes seeing things on a smaller scale to see why people and employers behave as they do, how they make choices, and what would help them to make different decisions. The same goes for identifying where new human capital policies are needed but have not yet been considered.

In Arizona and throughout the U.S., on the ground knowledge has long informed and influenced policy making and program development, although it is the level that gets the least mainstream attention. For example:

- Business advisory committees are a traditional component of career and technical education, just as private sector representatives have been involved in federally funded workforce programs to try to insure that public programs are serving the private sector's needs.

Human capital refers to the knowledge and skills embodied in people. Like physical capital, it has the potential to create value as a source of output and income. Economists have long recognized the importance of human capital in stimulating innovation, creating wealth, and promoting economic growth.

—*Jaison R. Abel and Todd M. Gabe,*
Human Capital and Economic Activity
in Urban America

- A multi-year follow up study with hundreds of secondary drop outs allowed a large urban school district in California to retool efforts to match resources with specific student characteristics. More students came back to school as a result.³⁰
- Perception studies have illustrated that metro Phoenix will have to increase its “cool quotient” to compete with such places as Seattle or Denver for the best and the brightest young workers.³¹
- National research with high-skill immigrant workers has revealed how a modicum of assistance with language and faster recognition of international credentials could fill advanced jobs more quickly.³²
- Arizona studies of firms and workers in advanced manufacturing and biosciences uncovered outdated attitudes about science and engineering and pointed the way to new curricula to better serve employers.³³
- A survey noting that Arizonans see science and technology as producing quality jobs and science education as very important is a first step to devising better ways of increasing enrollment and achievement.³⁴
- Evaluations of programs that combine learning and working in nearly any industry have shown the value of linking the two to help low wage workers move up.³⁵

On the ground knowledge could come too from tapping the years of experience among business people, educators, and workforce developers. Consider what could be learned from the Arizonans who are:

Straight-line successes—Those who are moving logically from school to higher ed or training to a solid career. This group’s experiences could improve career planning for young people and “second chance” adults.

Running in place—These workers and students are simply surviving. Perhaps they are working in low wage jobs or trying to figure out what they want to do. Their experiences could show how to help people move on to something better in the economy or recruit them to fill gaps among high wage employers.

Samplers—Arizonans and migrants who give the state’s economy a try but don’t stay could point the way to bold initiatives to keep talent in the state.

Understudies—Workers and students who have been discounted in the past are key to the future. Like the understudy to the star on stage, a big component of Arizona’s labor force is simply “waiting in the wings” for the opportunities to show what it can do. Understanding these workers’ experiences could lead to significant changes to reduce disparities.

Any look at employment on the ground underscores how values, experience, and attitudes affect what happens. But how outlooks are formed and how they affect choices and decision making by individuals and policy makers are often considered less than they should be in discussions of employment, education, and economic development. Without more detailed intelligence on Arizonans’ outlooks and employers’ situations—in relation to global trends and the state’s standing—human capital policies and programs may be out of sync.

Of course, it would be difficult to talk to each of Arizona’s 3 million workers and thousands of employers. Gaining on the ground information can be costly and time consuming;

Arizonans Talk About Their Idea of a Good Job

- ✓ Good benefits and the ability to be promoted.
- ✓ An employer who treats you like a human being and not a dispensable product.
- ✓ I get a lot of enjoyment knowing I can help others.
- ✓ Lets me be independent and use my own judgment on how best to get the job done.
- ✓ Stable work hours with hardworking, honest coworkers.
- ✓ Satisfaction of a job well done, benefits, security, making a difference in the world.
- ✓ Comfortable workplace with good, decent, honest, and positive co-workers. Challenging work with personal satisfaction.

Source: *AZ Views*, Arizona Indicators.

resources are not available to evaluate every program. Fortunately, in recent years, the emphases on “what works,” performance measures, and logic models—plus the spotlight on “public value” and customer service—have spawned progress in planning the right programs for specific groups of real people to carry out important policies. But even many notable efforts leave a lot to know about topics as complex as the economy and as dependent on and colored by individuals’ choices and shifting public outlooks as education and employment. Add in the resources needed to sustain change and expert on the ground knowledge obviously proves to be a never-ending challenge to addressing the issues noted at the beginning of *To Learn and Earn*.

For some time, many Arizona employers have said that qualified workers are hard to find. At the same time, many Arizonans have complained that good jobs with quality benefits are scarce. The strong feelings among employers and workers and the hundreds of graduates who vote with their feet every year highlight just how much remains to be done to provide employers, educators, students, decision makers, workforce developers, workers, and parents with a common understanding of Arizona’s economy and the requirements to create, fill, and maintain quality jobs. On the ground is the place to find many of the ideas to better address today’s issues and develop consensus for competing on the global stage.

Minority Participation in Postsecondary Education Is on the Upswing Fall Enrollment Trend and Percentage “Minority Enrollment” by Education Sector						
Educational Sector	Fall 1995		Fall 2000		Fall 2005	
	Number of students	% minority	Number of students	% minority	Number of Students	% minority
Less than 2-year private, for-profit	2,621	19.1	3,563	23.6	6,661	27.4
Less than 2-year public	71	52.5	1,538	47.5	1,976	53.4
2-year private, for-profit	6,615	38.8	5,825	42.5	13,192	45.2
2-year public	157,705	28.5	178,680	32.6	201,115	36.0
4-year private, for profit	15,226	22.2	29,783	28.0	39,455	33.3
4-year private, not-for-profit	4,933	20.0	7,441	23.8	9,414	26.3
4-year public	101,718	19.3	105,842	21.6	120,020	24.7
All Arizona postsecondary	289,889	24.7	332,672	28.5	391,833	32.2

Source: AMEPAC Minority Student Report, 2007

LOOK ON THE GROUND FOR THE NEXT STEPS IN POLICY

Our actions today will determine whether we realize our hope for a competent and prosperous workforce tomorrow.

Workforce 2020

We know that science and technology are driving global economic changes and that competition is white hot. We know where much of Arizona's unfinished business is. We also know that many initiatives are underway to address educational achievement, alignment from pre-school to graduate school, career planning, STEM education, and school readiness if efforts can survive the current crises. However, we need to know much more about outlooks and experiences among Arizona "understudy" workers, particularly the low skill and minority students and workers who are increasingly important to the labor force. We must know more about how students, workers, employers, and policy leaders make decisions and how to align those choices with the state's quest for an equitable, high-wage knowledge economy.

Tackling so many big issues at one time is unrealistic, however, no matter how much one might want to. Answering the following questions would help Arizona identify its next steps.

Planning and Good Jobs: PK-12 Education

- What should career planning be and do in Arizona's PK-12 system?
- How do students and parents view "good" jobs and the preparation needed to obtain them? Are those perceptions accurate?
- If, where, when, and how are students who have dropped out coming back?

Experiences From School to Work: Secondary and Postsecondary Education

- What would young adults who are employed and unemployed say about their secondary and postsecondary time and its relationship to their work experiences?
- Where are yesterday's students now?
- What do their experiences say about successful school to work transitions in Arizona? How can more Arizonans make successful transitions from school to work?

Learning and Earning: Workforce Systems

- What will bring low-skill adults back to learning in companies and educational institutions?
- What will improve the chances of those already participating in learning to complete courses, transition to quality career paths, and stay on them?
- What models are working best for Arizona employers in learning, training, and upgrading?
- What lessons should educators and policy makers take from employers' experiences?
- What do past studies say about workers' decision making processes?

Completing Arizona’s Unfinished Business: State Policies

- Given new information and insights, what policies will help complete Arizona’s unfinished business?
- What specific tools will help Arizona continue to align education with workforce needs and truly integrate education, economic development, and employment?

These questions would be answered through in-depth interviews with students, policy leaders, and workers, as well as case studies of employers. Follow up surveys with a sample of recent graduates and workers would provide information about Arizona’s schools and employers. The surveys and interviews could show rural and urban differences in addition to the experiences among immigrant, minority, and older workers for example. Questions for the Arizona Indicators Panel (a quarterly online public opinion survey managed by Morrison Institute for Public Policy) could be used to learn about how Arizonans make choices about education and work. The research for this project would present broad, rich information on a scale that has been rarely available in Arizona. At this critical time for public budgets, economic possibilities, and individuals’ careers, there is an

opportunity to understand how Arizonans think and feel about work, education, and the future. Their responses may be surprising, alarming, or reassuring. Whatever they are, they should be part of the mix as Arizona determines how to be competitive in the future. The outcome would be greater capacity to:

- revamp resources
- develop priorities
- target policies
- involve employers
- expand or change public awareness or mindsets among employers and educators

Every state and nation is scrambling to master the demands of an innovation economy. Yet, an understanding of the big picture by itself still leaves policy makers uncertain of how policies will work and professionals grasping as they work directly with students or business owners. Finding answers to big picture questions requires a lot of knowledge on the ground.

If Arizona is successful in adding on the ground information to the insights from 30,000 and 10,000 feet, adjusting to the demands of the 21st century economy will be easier. Indeed then, the brief history of the future for Arizona will be one to celebrate.

Issues at Three Levels		
30,000 Feet	10,000 Feet	On the ground
Innovation	Rapid growth	Individuals
STEM	Fair to middling	Employers
Disparities	Disconnects	Choices
Diversity	Infrastructure	Values
Urgency	Disparities	Attitudes
Skills	Skills	Experiences
Experiences		

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Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Future



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