

INDIANA'S FORGOTTEN MIDDLE-SKILL JOBS

MEETING THE DEMANDS OF A 21ST-CENTURY ECONOMY



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INDIANA INSTITUTE FOR
WORKING FAMILIES



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We gratefully acknowledge support for this report by

Writing: Michelle Wilczynski

Data analysis: Andrea Mayo

Design: Axie Breen

To learn more about the Skills2Compete-Indiana campaign, go to www.nationalskillscoalition.org/Indiana

Skills2Compete-Indiana Campaign

State Leads

Indiana Institute for Working Families, *a program of Indiana Community Action Association*

Core Advisors

Claudia Cummings
Conexus

Cindy Donnelly
JobSource

Derek Redelman
Indiana Chamber of Commerce

Kathryn Clayton
Labor Institute for Training

Dr. Gina DeSanto
Indiana Department of Workforce Development

Tom Orr
Local Initiatives Support Corporation

Nancy Guyott
Indiana State AFL-CIO

Kris Deckard
Ready Indiana

Dr. Rebecca Nickoli
Ivy Tech Community College

Peggy Frame
Training, Inc.

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EXECUTIVE SUMMARY

Indiana is regarded as a manufacturing, transportation, and logistics powerhouse. Manufacturing alone contributes \$64 billion to the state's economy each year,¹ and with the most pass-through interstates in the country, Indiana is critical to the nation's freight and cargo distribution network.² Growth in the health care, life sciences, and green energy sectors is also offering new opportunities for Hoosier workers, positioning the state to thrive in the 21st-century economy. However, gaps in the skills of the workforce and in the state's training and education policies threaten to undermine these opportunities.

Middle-skill jobs represent the largest share of jobs in Indiana—some 55 percent—and a substantial share of future job openings. Middle-skill jobs are those that require more than a high school diploma but less than a four-year degree. Prior to the recession, Indiana was already experiencing shortages of middle-skill workers in crucial industries. Although the state has lost jobs across all skill levels due to the economic downturn, this has not fundamentally changed the structure of Indiana's labor market—the majority of all jobs still require more than a high school diploma. As the country and Indiana enter into recovery, new jobs will be created, many requiring middle-skill credentials. With high unemployment in the state, now is precisely the time to ensure Indiana is training its residents for these middle-skill job opportunities that will be critical to the state's recovery and long-term economic success.

Addressing the need for middle-skill workers will require attention not only to educational opportunities for young people, but also for those already in the workforce.

Close to two-thirds of the people who will be in Indiana's workforce in the year 2020 were already working adults in 2005—long past the traditional high school-to-college pipeline.

Who are middle-skill workers? They are the construction workers who build and repair Indiana homes, bridges, and roads. The high-tech manufacturing workers keeping the state competitive in an increasingly global industry. The nurses and health care technicians who care for Hoosier residents and their loved ones. Truckers who keep stores and hospitals in the state supplied. Biotech workers that help manufacture critical new medical devices and drugs. Police and firefighters who keep Indiana communities safe.

American Recovery and Reinvestment Act (also referred to as federal recovery act) efforts are investing in current and new industries, saving and creating new jobs. Much of this funding is being targeted at industries dominated by middle-skill jobs, especially green energy, construction, advanced manufacturing, and transportation. Matching the skills of Indiana's workforce to meet immediate demand will help the state's economy recover more quickly and prepare the state for better times ahead. But it does not end there. Retirement of large numbers of baby boomers will keep demand for middle-skill workers high for years to come.

Indiana has made significant investments in education and training for its workforce. However, those investments have not kept up with demand for middle-skill workers. Indiana must take proactive policy actions to align its workforce and education resources to better meet the state's labor market demand. Indiana must also make significant investments in programs that will train many more of its residents who are laid off, or working in low-wage jobs, for better middle-skill jobs and careers.

If Indiana is to realize its full economic potential, educational access must reflect the demands of a 21st-century economy and the realities of the 21st-century workforce. The following vision can shape Indiana’s workforce and education policies and investments to meet these 21st-century realities:

Every Hoosier should have access to the equivalent of at least two years of education or training past high school—leading to a vocational credential, industry certification, associate’s degree, or one’s first two years of college—to be pursued at whatever point and pace makes sense for individual workers and industries. Every person must also have access to the basic skills needed to pursue such education.

Businesses, labor, educators, community-based organizations, and others must work together on this ambitious goal. Policymakers must step in with strong political leadership and commitment to ensure that Indiana has the middle-skill workforce it needs to recover and thrive.



INTRODUCTION

Known as the *Crossroads of America*, Indiana is best recognized as home of the Indianapolis 500, Hoosier basketball, and cornfields. Though much of Indiana's land is rural and agriculture is an essential component of the state's economy, manufacturing has long been the state's economic backbone—three of the nation's top ten metro areas most heavily concentrated with manufacturing jobs are located in Indiana. While manufacturing remains Indiana's leading industry, it has been in steady decline since 2000, with growth in the health care, life sciences, green energy, and advanced manufacturing sectors offering a new future for Hoosier workers and the potential for strong job growth.

Indiana is well positioned to thrive in the 21st-century economy. With a gross state product of nearly \$255 billion in 2008, Indiana has the seventeenth largest state economy in the nation.³ Indiana has five companies ranked in the Fortune 500⁴ and is home to the ninth largest life sciences sector in the country with nearly fifty drug contract development companies and their 8,000 employees.⁵ Indiana ranks first in the nation in the number of interstate highways and has the sixth largest cargo airport, Indianapolis International Airport. Each year, 724 million tons of freight travel over Indiana roads and skies, making Indiana the fifth busiest state for commercial freight traffic.⁶ Furthermore, the state has three ports, moving six million tons of cargo by water each year.⁷

Indiana has made important investments in education and training for its workforce, and as a result, nearly 86 percent of Indiana residents have at least a high school diploma and 23 percent have a bachelor's degree or more.⁸ This workforce played a key role in driving the state's economic expansion and success in recent years. Although job growth has lessened across all skill levels during the economic downturn, demand will increase as the economy improves and federal and state job creation measures are implemented and take hold. Indiana must ensure that its workforce has the skills to drive the state's immediate recovery and long-term economic competitiveness.

This report finds that the largest share of jobs in Indiana today is in fact middle-skill jobs. Middle-skill jobs are those that require more than a high school diploma but less than a four-year degree. This report also finds that middle-skill jobs will make up the largest segment of Indiana's total labor market in the foreseeable future.

HIGHLIGHT 1

What is a middle-skill job?

Half of all job openings in Indiana between now and 2016 will be in middle-skill jobs.

What is a middle-skill job?

One that requires more than a high school diploma but less than a four-year college degree.

Who provides middle-skill training?

Employers, community colleges, apprenticeship programs, nonprofit community-based training organizations, and private career schools.

How can we meet the demand for middle-skill and high-skill jobs?

Every Hoosier should have access to the equivalent of at least two years of education or training past high school and the basic skills needed to enter that training.

Despite the state's strong record of postsecondary education and workforce training, Indiana will experience shortages of the middle-skill workers critical to its economic recovery and long-term success. Prior to the recession, businesses across the state were reporting the negative impact of skilled worker shortages on their productivity and growth. To maintain its edge and ensure the state can take advantage of the job creation generated by the economic recovery, Indiana must invest in both high- and middle-skill education and training to ensure its businesses have the talent they need. At the same time, Indiana must also make investments to improve the basic skills of its low-skill workers.

Indiana has some important policies in place to address the state's shortage of middle-skill workers. For example, in July 2010, Indiana's Adult Basic Education and General Education Degree programs transitioned from Indiana's Department of Education to the Department of Workforce Development. The new adult education system is based on a regional delivery approach designed to create a seamless transition from adult basic education to postsecondary education and technical training.

This is an important piece of a strategy to address the state's need for middle-skill workers, but more can be done.

Indiana needs a bold and broad vision to address the educational and economic challenges facing the state during these tough economic times and beyond. Those challenges demand **a truly transformative vision that allows every worker to be a part of the economic recovery: guaranteed access to two years of postsecondary education or training.** Every Hoosier must have the opportunity to earn the equivalent of at least two years of education or training past high school that leads to a vocational credential, industry certification, associate's degree, or one's first two years of college. It must be available at whatever point and pace makes sense for individual workers and industries. Indiana must further ensure that every resident has access to the basic skills needed to pursue such education.

America has done this successfully before. There are precedents for resetting and raising the bar for educational attainment, and there is strong evidence that such broad human capital investments yield substantial dividends for both workers and businesses.

Indiana's need for qualified middle-skill workers today is greater than ever before. As the economy begins to recover, existing job vacancies will need to be filled. As a result of private and federal recovery investments, industries with predominantly middle-skill jobs, such as green energy, advanced manufacturing and transportation, are expected to see growth. Matching the skills of the state's workforce with this demand will help the Hoosier economy recover more quickly, take advantage of the resulting job creation, and prepare the state for better times ahead.

Investing in Indiana's workers so that they can fill middle-skill jobs makes sense for Indiana, and for the nation as a whole.



INDIANA'S FORGOTTEN MIDDLE-SKILL JOBS

Conventional wisdom holds that the nation has evolved into an “hourglass” or “dumbbell” economy: a divided labor market with a small number of highly skilled, highly paid workers and a much larger number of low-skill, low-paid workers.

Many people believe that high-skill jobs requiring a college education are the only key to economic competitiveness and success. Within such a model, middle-skill occupations—the jobs that fueled the expansion of the world’s largest economy in the 1950s and 1960s and provided the foundation for a robust American middle class—are on the verge of extinction.

It’s a bleak picture, to be sure. It’s also a myth.

The truth is that **middle-skill jobs, which require more than a high school education but less than a four-year degree, currently make up the largest segment of jobs in the U.S. economy, and will continue to do so for years to come.**

While middle-skill jobs have declined slightly as a portion of total employment nationwide, roughly half of all employment today is still in middle-skill occupations. And nearly half (about 45 percent) of all job openings between 2004 and 2014 will be at the middle-skill level. This compares with one-third of job openings in high-skill occupational categories and 22 percent in occupations requiring no more than a high school diploma.⁹

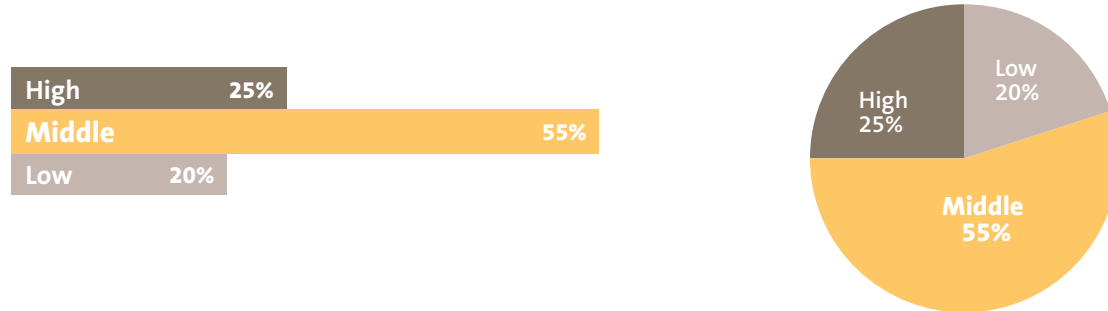
This national picture holds true in Indiana. Over half of all Indiana jobs in 2009—55 percent—were middle-skill jobs, representing more than 1.5 million workers (Fig. 1, Table 1). In the decade between 2006 and 2016, 50 percent of projected job openings will be middle-skill jobs. This far exceeds growth in low- and high-skill jobs, which will account for 24 percent and 26 percent of openings respectively (Fig. 2, Table 2).

Over the long-term, economic recovery investments and the state’s need to make critical infrastructure improvements will likely result in the creation of middle-skill jobs building and repairing roads, bridges, schools and public facilities. These jobs will help put thousands of people back to work, but at the same time, Indiana needs to look toward the future. The state must invest in a pipeline of trained middle-skill workers to meet Indiana’s long-term needs as workers retire, including strategies that help retrain workers to take on new technologies or innovations.

All the same, policymakers at both the federal and state levels have increasingly focused on college and university education, without proportionate attention to middle-skill jobs, and the education and training investments needed to ensure that workers have the skills they need to succeed in these vital occupations. This represents a lost opportunity to invest in Indiana’s economy, both in its immediate recovery and its long-term economic future.

Demand for Middle-Skill Jobs is Strong, Will Remain Strong in Indiana

FIGURE 1. Indiana Jobs by Skill Level, 2009



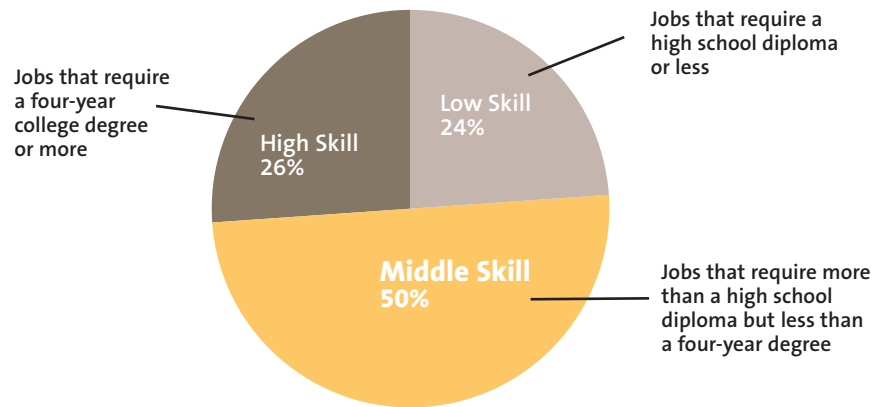
Source: Calculated by National Skills Coalition from the Bureau of Labor Statistics website.

TABLE 1. Indiana Jobs by Skill Level, 2009

	Employment	Percent
Total, All Occupations	2,787,780	100.0%
Management	104,440	3.7%
Business and Financial	88,740	3.2%
Professional and Related	516,400	18.5%
Total, High Skill	709,580	25.5%
Sales and Related	288,560	10.4%
Office and Administrative Support	431,970	15.5%
Construction	120,950	4.3%
Installation and Repair	123,910	4.4%
Production	318,310	11.4%
Transportation and Material Moving	244,790	8.8%
Total, Middle Skill	1,528,490	54.8%
Service Occupations	546,900	19.6%
Farming, Fishing, and Forestry Occupations	2,820	0.1%
Total, Low Skill	549,720	19.7%

Source: Calculated by National Skills Coalition from the Bureau of Labor Statistics website.

FIGURE 2. Indiana’s Total Job Openings by Skill Level, 2006-2016



Source: Calculated by National Skills Coalition from the Indiana Department of Workforce Development. Total number of job openings over the ten year period, including new jobs and replacement jobs created by retirement and turnover.

TABLE 2. Indiana Jobs and Total Job Openings by Skill Level, 2006-2016

	Employment		Job Openings	
	2006	2016	Number	%
Total, All Occupations	3,087,744	3,325,754	972,560	100.0%
Management	134,000	140,692	37,150	3.8%
Business and Financial	98,135	109,634	29,320	3.0%
Professional and Related	514,176	595,040	187,680	19.3%
Total, High Skill	746,311	845,366	254,150	26.1%
Sales and Related	324,933	343,378	122,060	12.6%
Office and Administrative Support	462,868	484,307	131,400	13.5%
Construction	166,872	177,233	40,610	4.2%
Installation and Repair	142,736	150,613	30,530	3.1%
Production	398,317	382,602	85,350	8.8%
Transportation and Material Moving	268,457	280,918	77,940	8.0%
Total, Middle Skill	1,764,183	1,819,051	487,890	50.2%
Service Occupations	566,583	649,768	227,040	23.3%
Farming/Fishing/Forestry Occupations	10,667	11,569	3,530	0.4%
Total, Low Skill	577,250	661,337	230,570	23.7%

Source: Calculated by National Skills Coalition from the Indiana Department of Workforce Development.

HIGHLIGHT 2

Middle-Skill Jobs in Science, Technology, Engineering and Math (STEM)

Policymakers have become increasingly concerned about U.S. global competitiveness in recent years, and a broad consensus has developed about the need for a strong science, technology, engineering, and math (STEM) workforce to support innovation industries and emerging technologies. In particular, business and political leaders have called for increasing the number of students receiving bachelor's or advanced degrees in these fields.

However, these highly skilled professionals are not the only STEM workers in short supply. Employers have indicated there is a significant shortage of the technicians and middle-skill workers needed to implement the new technologies developed by highly skilled innovators.

A 2005 National Association of Manufacturers report found that while 35 percent of manufacturers anticipated a shortage of scientists and engineers, more than twice as many respondents anticipated a shortage of skilled production workers, precisely the kind of middle-skill jobs that require more than high school but less than a four-year degree.¹⁰

In a recent solicitation for grant proposals, the U.S. Department of Labor emphasized the importance of the middle-skill STEM workforce:

“The STEM workforce pipeline challenge is not just about the supply and quality of the baccalaureate and advance degree earners. A large percentage of the workforce in industries and occupations that rely on STEM knowledge and skills are technicians, including others who enter and advance in their field through subbaccalaureate degrees and certificates or through workplace training. Creating interest and preparing more Americans to be productive in STEM-related jobs will require attention to segments of the workforce that are often overlooked in STEM discussions: incumbent workers who need skills upgrading, dislocated workers who are trying to find new jobs in industries with a future, and individuals from groups traditionally underrepresented in STEM fields.”¹¹

In January 2009, the Indianapolis Private Industry Council (IPIC) received \$2 million from the U.S. Department of Labor to create STEMWorks Indiana, a three-year comprehensive pipeline initiative to create educational and occupational opportunities for dislocated workers and disadvantaged students. Through the development of tools that workers can use to identify their occupational interests and hone in on appropriate educational pathways, STEMWorks Indiana is helping connect STEM career candidates with gateway STEM jobs.

IPIC contracted with the Purdue School of Engineering and Technology at Indiana University-Purdue University Indianapolis to provide support for the STEMWorks Indiana Initiative. The awarded funds are being used to expand and align STEM workforce education and training strategies, activities, and resources in Central Indiana's WorkOne center. Through this initiative, the state will directly impact a number of important STEM industries, including biotechnology, with an emphasis on pharmaceutical and agrosience research and development, engineering, advanced manufacturing and information technology.

This is a first step towards a truly comprehensive innovation agenda that addresses the demand for both highly educated innovation professionals and the middle-skill workers needed to implement their innovations. These middle-skill workers are at the roots of a successful STEM strategy, nationally and in Indiana.



THE FACE OF INDIANA'S MIDDLE-SKILL JOBS

Indiana relies on middle-skill workers. They are the EMTs who keep the Hoosier state safe; the medical technicians and therapists who keep Indiana residents healthy; the air traffic controllers, electricians, and mechanics who keep Indiana's infrastructure up and running. Middle-skill jobs are local, hands-on jobs, meaning they are unlikely to be outsourced to other countries.

Many of these are well-paid jobs, offering Indiana workers a chance at economic security and prosperity. As illustrated in Table 3, these are jobs with good earning potential. Many offer median earnings that exceed Indiana's overall median for 2008 of \$30,630.

HIGHLIGHT 3

Do all middle-skill jobs pay high wages?

Skills are only part of the economic success equation. Not all middle-skill occupations pay well or have meaningful advancement opportunities; however, growth in demand for many middle-skill occupations has been fast enough to generate not only strong employment growth, but also rapid growth in wages.

Indiana research supports the connection between many middle-skill jobs and good wages. For example, Hoosier Hot 50 Jobs, a list of high-growth occupations compiled by the Indiana Department of Workforce Development, includes a number of fast growing middle-skill careers. The 2009 Hot 50 Jobs list included dental hygienists, registered nurses, sales representatives, dental assistants, and licensed practical and vocational nurses, careers that require an associate's degree or less, are projected to see long-term growth, and pay wages well above the state's median earnings.¹²

At the national level, the data tell a similar story. Between 1997 and 2005, American workers on the whole saw an overall real wage increase of just 5 percent (adjusting for inflation). At the same time, many middle-skill occupations saw significantly higher wage increases.¹³

Thirty Middle-Skill Jobs Indiana Can't Live Without

TABLE 3. Projected Indiana Demand for 30 Middle-Skill Occupations, 2008-2018

	Employment		Net Change		Job Openings	Median Earnings 2009
	2008	2018	Number	%		
Computers						
Support Specialists	8,625	9,291	666	7.7%	3,053	\$38,239
Specialists, Other	1,764	1,932	168	9.5%	548	\$67,280
Construction						
Carpenters	30,681	34,000	3,319	10.8%	7,140	\$38,124
Electricians	16,741	18,308	1,567	9.4%	5,613	\$51,852
Painters	7,655	8,482	827	10.8%	2,134	\$34,010
Operating Engineers	10,222	11,712	1,490	14.6%	3,245	\$47,523
Plumbers	13,460	15,593	2,133	15.8%	4,846	\$50,139
Healthcare						
Dental Hygienists	3,996	5,451	1,455	36.4%	2,270	\$65,844
Diagnostic Medical Sonographers	1,083	1,270	187	17.3%	344	\$61,007
Licensed Practical and Vocational Nurses	20,118	24,697	4,579	22.8%	10,873	\$37,417
Medical Lab Technicians	3,663	4,245	582	15.9%	1,278	\$36,928
Radiology Technicians	5,178	5,993	815	15.7%	1,564	\$50,296
Respiratory Therapists	2,959	3,554	595	20.1%	1,134	\$50,696
Surgical Technologists	2,412	3,076	664	27.5%	1,272	\$38,946
Installation, Maintenance, and Repair						
Automotive Service Technicians, Mechanics	15,648	16,043	395	2.5%	3,381	\$34,038
Bus/Truck Mechanics	8,015	8,363	348	4.3%	2,187	\$38,140
Heating and AC Installers	5,995	7,975	1,980	33.0%	2,945	\$40,217
Heavy Equipment Mechanics	2,963	3,217	254	8.6%	818	\$40,817
Industrial Machinery Mechanics	9,694	10,439	745	7.7%	2,140	\$44,749
Medical Equipment Repairers	1,151	1,448	297	25.8%	629	\$40,713
Public Safety						
Detectives and Criminal Investigators	1,216	1,375	159	13.1%	408	\$48,527
Fire Fighters	6,243	7,422	1,179	18.9%	3,096	\$43,820
Police Officers	11,264	12,267	1,003	8.9%	3,908	\$45,521
Transportation						
Cargo and Freight Agents	2,193	2,556	363	16.6%	866	\$39,880
Commercial Pilots	602	701	99	16.4%	303	\$63,015
Heavy Truck Drivers	60,987	70,401	9,414	15.4%	20,325	\$37,588
Other						
Civil Engineering Technicians	710	851	141	19.9%	275	\$45,692
Claims Adjusters	3,786	4,043	257	6.8%	1,217	\$58,457
Legal Secretaries	3,958	4,708	750	18.9%	1,283	\$33,407
Paralegals	3,598	4,585	987	27.4%	1,396	\$36,720

* 2008 median annual earnings for all occupations in Indiana = \$30,630

Source: Projections data tabulated using Indiana Department of Workforce Development data. Median Earnings data from the Bureau of Labor Statistics.

HIGHLIGHT 4

The Middle of the Green Revolution

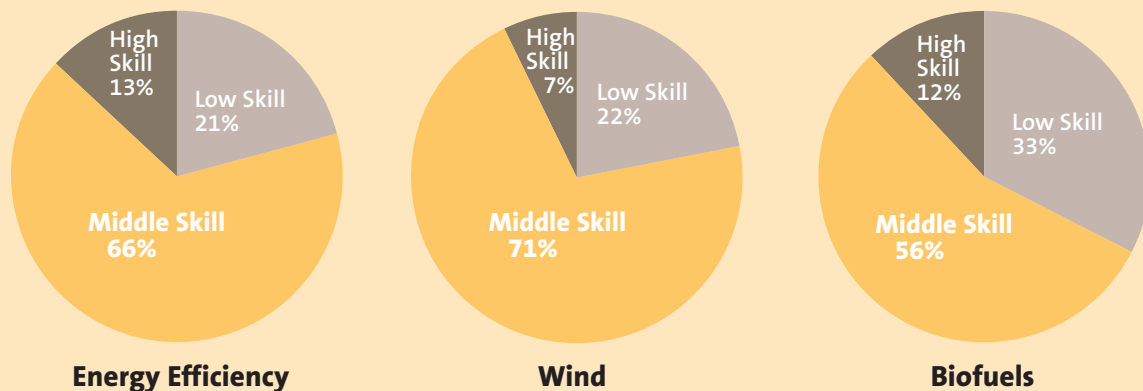
More than ever before, policymakers and business leaders are paying attention to clean energy industries and technologies, which promise profound environmental and economic benefits for all Americans. One of the highest priorities in federal and state economic recovery policies has been strong investment in creation of a “green economy” and “green jobs.”

But what are those jobs?

A recent report by the Center on Wisconsin Strategy, the Apollo Alliance, and National Skills Coalition found that the skills needed in the green economy closely mirror the middle-skill demands of the labor market as a whole. Greener Pathways examines emerging opportunities in the energy efficiency, wind, and biofuels sectors, and urges stakeholders to scale up green job training by leveraging existing state and local workforce development systems.¹⁴

Green Jobs are Middle-Skill Jobs

FIGURE 3. U.S. Employment in Green Industries by Skill Level, 2004



Source: Tabulated by National Skills Coalition from the US Bureau of Labor Statistics website.

The Indiana Green Energy Technology Instruction & Training (I GET IT) Fund is a \$6 million grant from the U.S. Department of Labor to help train Indiana workers for the green jobs of tomorrow. This statewide program is intended to provide skills training and on-the-job experience in the green energy sector to over 2,100 dislocated autoworkers, unemployed and out-of-school Hoosier residents, and adults with barriers to employment.¹⁵ This is the second of two grants awarded to the Indiana Department of Workforce Development by the U.S. Department of Labor; the first was a \$4 million grant awarded in November 2009 to study the new green automobile sector to help Indiana lead the transformation of the green auto industry.

Moreover, beginning June 2010, Ivy Tech Community College introduced a number of new training courses in the green sector, including highly respected and sought after sustainability courses such as LEED Green Associate, BPI Building Analyst, and BPI Envelope-Shell training. The college also received a \$4.7 million grant from the U.S. Department of Energy for smart grid workforce training programs to help prepare the next generation of workers in the utility and electrical manufacturing industries. In addition to training an estimated 1,500 displaced workers, the program will help lead the way toward renewable power and energy by ensuring that Hoosier residents have the necessary skills as identified by Indiana’s energy business sector.¹⁶



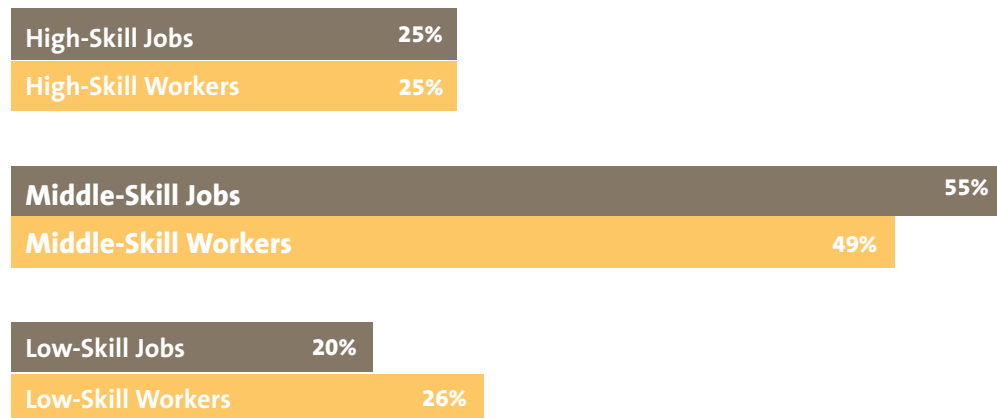
INDIANA'S MIDDLE-SKILL GAP PAST AND FUTURE

Indiana's economic recovery and long-term future depend in part on creating more middle-skill jobs, retaining businesses that employ middle-skill workers, and training low-skill workers and youth to fill middle-skill jobs. Those middle-skill jobs are going to comprise the largest portion of employment and worker-generated economic activity in the state.

Indiana has been experiencing a shortage of middle-skill workers (Fig. 4). **In 2009, about 55 percent of all jobs were classified as middle-skill, but only 49 percent of Indiana workers had the education and training required to fill those positions.** In reality, the gap was likely even greater in certain industries because many workers trained to the middle-skill level—and even those with bachelor's degrees—did not have the specific technical skills needed. This means that thousands of well-paid and rewarding jobs were going unfilled in the state, in industries that are and will be essential to Indiana's economic portfolio.

Indiana's Skills Mismatch: A Middle-Skill Gap

FIGURE 4. Indiana's Jobs and Workers by Skill Level, 2009



Sources: US Department of Labor & US Bureau of the Census.

Indiana, like the nation, is experiencing high levels of unemployment due to the current economic downturn. As Indiana moves into recovery, the state needs to focus not only on re-employing those currently out of work but also helping those who are disconnected from the labor market find work in an economy that increasingly requires some postsecondary education. Indiana needs to use this recessionary time to invest in its human capital or the state will once again have employers who cannot find the qualified middle-skill workers they need to grow and be competitive. Moreover, as American Recovery and Reinvestment Act dollars flow to projects throughout the state, a major portion of the resulting job growth will be at the middle-skill level, making middle-skill training a key piece of the recovery puzzle. Guaranteed access to two years of postsecondary education or training is a crucial investment right now to ensure the Hoosier workforce will be trained and ready to be part of the economic recovery.

Indiana's middle-skill challenge is exacerbated by problems at both the high and low ends of the skills spectrum. At the high end, education policies that focus exclusively on four-year college degrees mean that as baby boomers retire and younger workers get older, the share of middle-skill workers available will fall, even as demand for those workers rises. At the low end, Indiana has a growing number of residents who lack the basic literacy and numeracy skills needed to qualify for middle-skill training programs.

Greater Pain in High Demand Industries

State and regional data underscore the challenges facing Indiana. In addition to an overall mismatch between labor market demand and supply, particular sectors are experiencing greater shortages. Indiana's health care and energy sectors, two important sectors in the state's economy, show robust demand for middle-skill workers.

A 2010 study commissioned by Indiana State University's College of Nursing, Health, and Human Services found shortages in a number of health care fields in the Wabash Valley, with nurses topping the list of shortage areas.¹⁷ The survey found a need for 702 to 827 additional nurses in an eleven-county area of west-central Indiana, which is not surprising given that Indiana's nursing vacancy rate is 4.7 percent compared to 8.5 percent nationally.¹⁸

Several occupations within the health care sector were also included in the most recent Hoosier Hot 50 Jobs list, including registered nurses, licensed practical and vocational nurses, respiratory therapists, surgical technologists, radiologic technologists and technicians, dental hygienists, and dental assistants.¹⁹ These jobs pay wages well above the state's median income and offer opportunities for career advancement with additional education and training.

A 2009 report by the Center for Energy Workforce Development identified a similar demand for skilled workers within the energy sector in a number of Midwest states, including Indiana. Between 2009 and 2014, the report finds that a number of occupations within the energy sector are expected to experience job growth, including nuclear power reactor operators, electricians, industrial machinery mechanics, pipelayers, plumbers and welders.²⁰ State investments in training to prepare workers for these jobs will be critical to ensuring this sector has the steady pipeline of workers needed to continue to grow.

Indiana Educational Projections: A Continuing Middle-Skill Challenge

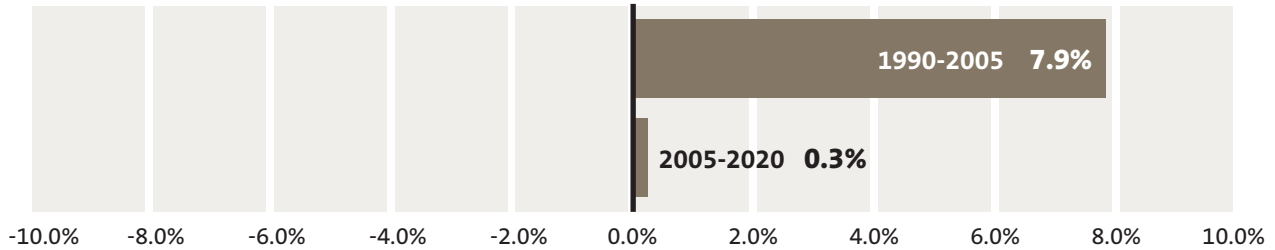
Indiana educational projections (Figs. 5, 6 and 7) suggest that the state is likely to see a shortage of middle-skill workers in the future. During the fifteen years between 1990 and 2005, Indiana saw a modest increase in residents with educational attainment at the high-skill and middle-skill levels. Residents with low-skill education levels fell. **Indiana's projected education trends for the subsequent fifteen years suggest that middle-skill worker shortages will continue.** Though the percentage of middle-skill workers is projected to increase slightly, it will not be enough to keep pace with increased demand for middle-skill credentials in the labor market.

This trend is due in part to retirements and the aging workforce. Middle-skill, blue-collar workers are less likely to delay retirement than high-skill, white-collar workers. While this trend like other retirement trends was slowed during the recession, it is expected to pick up as the economy rebounds. Immigration trends are likely to do little to offset this loss of middle-skill workers, as most workforce growth in Indiana due to immigration will likely occur at the low-end of the skill spectrum or at the high-end of the skill spectrum (for example, engineers brought in from overseas through H-1B visas).

If not addressed, these educational trends will only make it harder for Hoosier businesses to meet their needs from the state's available workforce, stifling economic recovery and growth, while limiting opportunity for thousands of Indiana workers to advance within the state's economy.

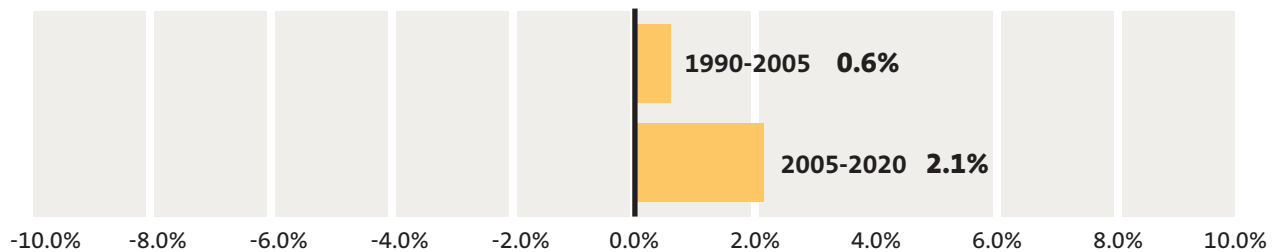
Indiana's Future Middle-Skill Gap: Educational Attainment Past and Future

FIGURE 5. Percentage Change in High-Skill Indiana Workers, 1990-2020



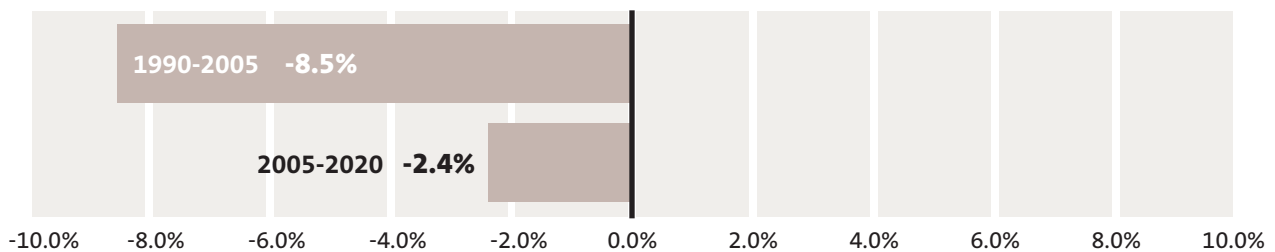
The number of workers prepared for high-skill jobs rose by nearly 8 percent between 1990 and 2005. However, their ranks are expected to rise by only 0.3 percent by the year 2020 (Fig 5, Table 4).

FIGURE 6. Percentage Change in Middle-Skill Indiana Workers, 1990-2020



The number of workers prepared for what is the largest share of jobs in the state—middle-skill jobs—grew by 0.6 percent from 1990 to 2005. Their ranks are projected to grow at a slightly faster pace, but still only slightly more than 2 percent by the year 2020 (Fig 6, Table 4).

FIGURE 7. Percentage Change in Low-Skill Indiana Workers, 1990-2020



After falling by 8.5 percent since 1990, the number of workers educated at the low-skill level is expected to level off somewhat, falling 2.4 percent by the year 2020 (Fig 7, Table 4).

Sources, Figures 5-7: 1990-2005 attainment calculated by National Skills Coalition using December 1990 and 2005 CPS data. Current attainment calculated by National Skills Coalition using December 2005 CPS data. 2020 attainment projected by National Skills Coalition using demographic data from the December 2005 CPS and population projections calculated by RAND California Statistics.

TABLE 4. Actual and Projected Change in Indiana Workers across Skill Levels, 2005 – 2020

	1990	2005	2020	Change 1990-2005	Change 2005-2020
Low-Skill	36.9%	28.4%	26.0%	-8.5%	-2.4%
Middle-Skill	45.4%	46.0%	48.2%	0.6%	2.1%
High-Skill	17.7%	25.6%	25.9%	7.9%	0.3%
Low-Skill	1,041,262	903,306	815,834	-137,956	-87,473
Middle-Skill	1,282,027	1,463,833	1,512,556	181,806	48,724
High-Skill	499,832	813,547	812,343	313,715	-1,204
Total	2,823,120	3,180,686	3,140,733		

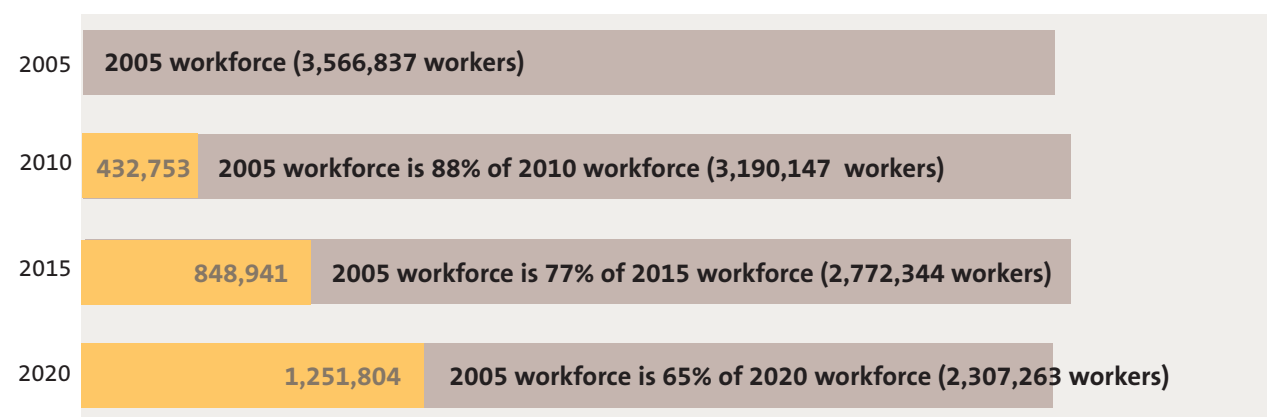
Source: : Current and past attainment calculated by National Skills Coalition using June 1990 and 2005 CPS data. Current and past total labor force estimated by Stats Indiana. 2020 attainment projected by National Skills Coalition using demographic data from the June 2005 CPS and population projections calculated by RAND California Statistics.

The Middle-Skill Gap and Indiana’s Future Workforce

Indiana cannot address its middle-skill challenges by focusing its education and training dollars solely on the next generation of workers who are coming out of high school. The fact is that **nearly two-thirds of the people who will be in Indiana’s workforce in the year 2020 were already working adults in 2005—long past the traditional high school-to-college pipeline** (Fig. 8).

Indiana’s Workforce of Tomorrow is in the Workforce Today

FIGURE 8. Working Indiana Adults Age 20-64 in the Current and Projected Population, 2005-2020



Source: Calculated by National Skills Coalition using population projections from RAND California Statistics.

Indiana should take proactive policy action to realign its workforce and educational resources to better meet the state's future labor market demand. Right now, the majority of public postsecondary education and training resources are devoted to a comparatively small number of young people under the age of 25. These are crucial investments, but they must be accompanied by significant investments in the adult workforce, including training programs that will prepare many more Indiana residents who are now at the low-skill level for the middle-skill jobs and careers that have been and will continue to be the core of the state's economy.

Using federal recovery act funding, the Indiana Department of Workforce Development, working in conjunction with the Indiana Commission for Higher Education, initiated the Workforce Acceleration Grant program to help low-income and unemployed Hoosiers pay the tuition, books and fees at a post-secondary education institution. The program, which began in Fall 2009 and scheduled to run for two academic school years, offers Hoosiers up to \$3,000 per academic year that can be used towards tuition, books and fees for an associate's degree or occupational certificate program.

An Even Greater Basic Skills Crisis?

The national data supporting education demand projections probably underplays the need for more broadly based basic skills education.²¹

Despite the increases in U.S. educational attainment over the last twenty years, the National Assessment of Adult Literacy (NAAL) indicates only a slight increase in quantitative (math) skills between 1992 and 2003, and no improvement at all for prose and document literacy. Nationally, 93 million adults lack the literacy to participate in postsecondary education and training. This means that tens of millions of Americans cannot access middle-skill education and training programs because they lack basic English and math skills, or do not have a high school education.

Even for those who enter postsecondary education, basic skills can be a barrier to success. Nearly two-thirds of two-year college students must take at least one remedial course.²²

Like the nation as a whole, Indiana faces substantial challenges when it comes to basic skills. In 2003, 8 percent of Indiana residents lacked basic prose literacy skills.²³ Over one-half million working age Indiana residents do not have a high school diploma.²⁴ Among those with a high school diploma but no postsecondary education, 63,000 have limited English speaking ability and 652,000 are working but living in families earning less than a living wage.²⁵ All told, this represents 23.6 percent of Indiana's working age population. What is more, only about 8 percent of Indiana adults with less than a high school diploma are enrolled in adult basic education, and less than 12 percent of residents with limited English proficiency are enrolled in English as a Second Language (ESL) classes.²⁶

This evidence suggests that Indiana faces challenges in meeting the basic skill attainment levels needed to grow its middle-skill workforce. By better aligning adult basic education with industry-focused training, many more Indiana residents could prepare to enter and succeed in middle-skill jobs and businesses would have a pipeline of workers to help meet immediate demand.

Recognizing these challenges and opportunities, Indiana recently integrated its Adult Basic Education (ABE), General Education Degree (GED), and college remediation programs under the Indiana Department of Workforce Development. Within the new system, emphasis is placed on basic skills and occupational skills development, as well as placing students in career pathways that fit their skills and interest areas through academic and career counseling. Changes within the new delivery system include a shift in focus from GED attainment to occupational certificates and creating occupational pathways for adult learners. Additionally, remedial courses have been incorporated into the ABE program before and after classes to prepare learners entering an occupational certificate program or pursuing an associate's degree after ABE completion.



CLOSING THE GAP

The Face of Middle-Skill Education and Training

Who provides training and education for middle-skill jobs? The good news is that there are many different options.

While education for high-skill jobs is limited to college or post-graduate degrees, education for middle-skill jobs can come in many different forms (Table 5). Middle-skill education and job training programs include occupational certificates, associate’s degrees, and apprenticeships and can be found in many different settings, such as community and technical colleges (including non-credit workforce courses), community based-training organizations, and workplaces.

Vocational certificates guarantee certification of the knowledge and skills needed to perform the duties of a given occupation, according to regulations or nationally accredited standards. They generally require less classroom time than associate’s degrees, offering a path for individuals to develop and verify specific skills sets. They are also extremely useful for individuals already in the workplace as a means of reinforcing existing skills sets and acquiring new skills. Examples of jobs where a vocational certificate could be valuable include dental and legal assistants, auto service technicians and firefighters.

An associate’s degree allows students to enter the workforce immediately upon completion of the degree. Associate’s degrees are generally required for occupations such as dental hygienist, radiation therapist, and computer specialist.

Apprenticeships are supervised employment programs that combine classroom instruction and on-the-job training. Generally offered directly by employers or through labor/management partnerships, apprenticeships can be found in such high-demand careers as electrician, aircraft mechanic, or plumber. New apprenticeship programs are also being developed for jobs in the green economy.

There are Many Different Pathways to Middle-Skill Jobs

TABLE 5: Types of Training Programs for Middle-Skill Jobs

	Associate’s degree	Vocational certificate	Apprenticeship
Time to complete	Two years, full time	Up to a year	Two to four years
Availability	Community college	Community college, community-based organization, technical school, workplace	Partnership between unions and employers
Examples of types of jobs	Radiation therapist, licensed practical nurse, computer specialist	Dental assistant, legal assistant, auto mechanic, firefighter	Electrician, aircraft mechanic, plumber

For workers whose basic skills are not at a level that allows them to enter these types of education and training programs, there are program options that teach English, basic reading and math skills in the context of occupational skills. These programs often connect to a specific job that is on a defined career ladder or else to further education that results in a middle-skill credential.

Closing the skills gap in Indiana, however, will take more than supporting a list of different training options. The state needs to implement an overall strategy and develop pathways to link basic skills, technical/industry-specific training and public higher education programs to family sustaining jobs. As part of this strategy Indiana needs to target significantly more resources toward a variety of middle-skill and basic skill training programs based on identified industry needs. Indiana must create more flexible, demand-driven systems that provide multiple points of entry for working adults to return to training and education in order to upgrade their skills and earn additional certifications and degrees.

Indiana is making progress toward addressing the state's shortage of middle-skill workers through a number of exemplary education and training programs that serve diverse populations. These are just a few examples:

- ◆ Ready Indiana is the Indiana Chamber of Commerce's workforce education initiative designed to engage, educate and elevate the Hoosier workforce by encouraging employers to take a more active role in employee training and development. As the single point of contact for Indiana businesses, Ready Indiana helps employers identify their workforce training needs, choose quality training providers, and investigate employer training grants. Ready Indiana aspires to increase awareness of basic or functional skills in the workplace while giving employers the resources they need to create a successful business backed by a skilled-workforce.
- ◆ To prepare workers for entry or re-entry into the workforce, JobSource, a Community Action Agency and a WorkOne partner, offers a wide range of services including job search workshops, basic computer classes, resume writing workshops, and basic skills testing. For workers seeking to increase their educational attainment JobSource also offers career counseling services, financial aid assistance, and help accessing workforce training dollars. As of June 2010, JobSource had already enrolled nearly 700 Indiana residents into a training program and had helped many others secure employment with an average wage placement between \$14.80 and \$17.50.²⁷
- ◆ Training, Inc. helps individuals to acquire the marketable hard- and soft-skills they need to gain employment leading to self-sufficiency. Through Training, Inc., learners can enroll in either a Microsoft Office or Logistics (warehouse and distribution) training program, which are both centered upon corporate and life skills training. In addition to the training received, learners also receive job placement services, intensive case management, and a full year of meaningful support after completion.
- ◆ To meet the needs of adult students who balance work, life, and family responsibilities, Ivy Tech designed its College for Working Adults program, which allows working adults to complete an associate's degree in two years on a convenient and predictable schedule. The program is now available at twenty different locations throughout the state offering nine degree programs including accounting, businesses administration, computer information

systems, computer information technology, design technology, early childhood education, psychology, and medical assisting.

- ◆ For those interested in becoming an apprentice, the United Steel Workers of America, Local 104 and ALCOA have established a joint partnership to provide onsite Electrical and Mechanical Apprenticeships. These apprenticeships are three year (6000 hour) programs consisting of on-the-job training and technical instruction. Certificates are given upon completion of the program from ALCOA, the Department of Labor, and Ivy Tech Community College. Additionally, an apprentice can go on to receive an Applied Sciences associate's degree by completing an additional three more mechanical or four electrical classes.
- ◆ For dislocated workers impacted by the closure of Navistar International's Indianapolis campus in January 2009, United Auto Workers and Navistar created a joint labor management committee to oversee their transitioning. Through partnerships with Indianapolis Private Industry Council, JobWorks, Indiana Department of Workforce Development, Ivy Tech Community College, Purdue University (MEP), and Indiana University (Div of Labor Studies) two programs were established—the Advanced Manufacturing Program for Production Workers and the Marketable Mechanical and Electrical Program. The common thread to the success of both programs is the Manufacturing Skills Standards Council certification that workers receive upon completion, a nationally recognized system that offers both entry-level and incumbent workers the opportunity to demonstrate that they have acquired the skills increasingly needed in the high-growth, technology-intensive jobs of the 21st century.

A 21st-Century Skill Guarantee

If Indiana is to realize its full economic potential, educational access must reflect the demands of a 21st-century economy and the realities of the 21st-century workforce. Given that the largest portion of Indiana jobs are at the middle-skill level and the majority of future workers are already in the workforce today, the Skills2Compete-Indiana campaign supports the following vision for the state:

Every Indiana resident should have access to the equivalent of at least two years of education or training past high school—leading to a vocational credential, industry certification, associate's degree, or one's first two years of college—to be pursued at whatever point and pace makes sense for individual workers and industries. Every person must also have access to the basic skills needed to pursue such education.

It's an ambitious goal, but not an unprecedented one. Throughout the nation's history, federal and state policymakers have elevated educational guarantees to meet the changing skill requirements brought on by economic and technological change. Indeed, leaders in Indiana have already taken some steps to address similar challenges in the 21st century but there is more to be done.

Historical Precedents

As the nation transitioned from an agricultural economy to an industrial economy in the mid-nineteenth century, policymakers across the United States realized that a broader skill set was required from a much greater segment of the population. This was one important factor in the development of the high school movement to provide a free public education to all citizens.

Between 1910 and 1930, the proportion of seventeen-year-olds in secondary education increased from less than 9 percent to 30 percent, fueling the expansion of America's great cities and industries. By the late 1990s, nearly 70 percent of U.S. students were graduating with a high school diploma. Universal secondary education is now understood as one of the fundamental guarantees the U.S. makes to its citizens.

By the middle of the 20th century, society realized that postsecondary education and training would allow the United States to flourish. This was the atmosphere in which the GI Bill was passed in 1944. Between 1944 and 1956, nearly 8 million returning servicemen and servicewomen used the GI Bill. People pursuing four-year college degrees accounted for about a quarter (2.2 million) of those benefiting from the program. But **a much larger—and typically forgotten—6 million servicemen and women used the GI Bill to pursue education and training for middle-skill jobs.** As such, a broad-based investment in middle skills was a major part of America's post-war prosperity.

State Skill Guarantees

Unfortunately, more recent federal investments in postsecondary education and job training have been in decline. While the federal recovery act made significant contributions to those education and training programs, it was a one-time, relatively short-term investment. The overall long-term trend has been downward.

However, some forward-thinking states and policymakers have been making vital commitments to the skills and economic security of their citizens, recognizing that a new minimum level of skills and education should be made available to state residents.

For example, in early 2010, Maryland Governor Martin O'Malley launched Skills2Compete-Maryland, a new education and training initiative aimed at better aligning Maryland's workforce system to prepare workers with the skills they need to succeed in the 21st-century economy. Although Maryland has a strong record of investing in postsecondary education, many residents lack the necessary basic education and skills training to succeed in the labor market. By encouraging Maryland residents to gain the skills and credentials necessary to obtain good jobs with family supporting wages, Skills2Compete-Maryland hopes to increase the number of Marylanders who have the skills required for many jobs throughout the state that continue to experience shortages of middle- and high-skill workers.

In 2007, Michigan Governor Jennifer Granholm announced the creation of the No Worker Left Behind program in her State of the State address. The program, officially launched in August 2007, pays tuition of up to \$5,000 per year for two years for 100,000 Michigan workers to pursue a degree or certificate at a community college, university, or other approved training program in a high-demand occupation (determined on a regional basis). The state reprogrammed \$40 million in federal funds—primarily from the Workforce Investment Act and Trade Adjustment Assistance programs—to support the initiative. In October 2009, Governor Granholm made No Worker Left Behind Michigan's permanent workforce policy, and as of January 2010 the program had enrolled close to 117,000 Michiganders in training.²⁸

In Washington, the state legislature in 2007 authorized \$11.5 million per year for the Opportunity Grant program, which covers tuition for up to 45 academic credits at any state technical or community college, and up to \$1,000 per year for books and supplies. Any Washington resident student with a family income at or below 200 percent of the federal poverty level is eligible to participate in the program.

The Opportunity Grant model was constructed to help nontraditional students advance into high-demand, high-wage job opportunities. Opportunity Grants can be used toward completion

of credentials, certificates, and apprenticeship programs in occupations where local and regional employer demand exceeds the supply of qualified applicants. Eligible programs must be linked to educational and career pathways and colleges must demonstrate that there are jobs available for program graduates that pay at least \$13 per hour. In addition, schools must demonstrate that local businesses, labor groups, and other community stakeholders are active in supporting the creation or expansion of the program. For adults who cannot take advantage of the Opportunity Grant program because their basic skills are not at a sufficient level to immediately enter a postsecondary program, Washington State's nationally acclaimed IBEST initiative allows adults to learn basic skills while earning credentials for high-demand jobs with opportunities for educational and career advancement.

The Benefits and Returns of a 21st-Century Skill Guarantee

The potential benefits and returns of a 21st-century skill guarantee are widespread. Guaranteeing up to two years of postsecondary education and training will benefit the individuals who get that training, strengthen the productivity of the state economy, and could increase public resources.

Simply put, more education means greater participation in the workforce and higher lifetime earnings. A recent examination of Indiana's adult learners found that about 86 percent of adults with an associate's degree and 81 percent of adults with some college (but not a degree) participated in the workforce, compared to only 78 percent of adults with a high school education and 62 percent of adults with less than a high school education.²⁹ **In addition to higher work participation rates, adults with some college averaged about \$188,000 more in lifetime earnings than those with only a high school education, and adults with an associate degree averaged about \$404,000 more in lifetime earnings.**³⁰

These findings are consistent with national findings that the median worker with an associate's degree earns about 33 percent more than a worker with only a high school degree, while workers with a bachelor's degree earn about 62 percent more than workers with only a high school degree.³¹ These national findings indicate not just that postsecondary education provides a significant earnings advantage for workers, but also that *on a per-year basis*, benefits for workers receiving a two-year degree are comparable to those receiving a four-year degree.

More education is also associated with lower unemployment. Nationally, in July 2010 unemployment for workers with less than a high school diploma was just over 15 percent. For those with a high school diploma it was 9.4 percent, while for those who had completed high school plus some college—our middle-skill level—the unemployment rate was 8 percent.³²

A guarantee of access to at least two years of postsecondary education for all workers would increase productivity and earnings in Indiana. According to the Organization for Economic Cooperation and Development (OECD), each year of postsecondary education leads to an increased per capita output of between 4 and 7 percent.³³ Increasing the average total schooling of a city's population by two years increases the wages of all workers by about 6 percent, regardless of individual educational attainment.³⁴ And one additional year of schooling leads to an 8.5 percent increase in productivity in the manufacturing sector, and more than a 12 percent productivity increase in other industrial sectors.³⁵

A 21st-century skill guarantee for all Indiana workers would also increase public resources. Increasing the number of U.S. adults with middle-skill credentials by 10 percent would increase federal tax revenue by \$14 billion,³⁶ and would save the federal government up to \$2,500 per person in reduced reliance on public assistance programs.³⁷



CONCLUSION

Middle-skill workers are at the heart of the nation's economic recovery, and they will serve as the backbone of Indiana's economy for years to come. They will repair the state's roads and bridges, care for the sick and elderly, transport goods, keep Hoosier communities safe, and provide a host of other services residents rely on daily.

As state and federal policymakers debate job creation strategies and continue to invest federal recovery act funding, training must be seen as a vital component. Training does not create jobs but it ensures that Indiana's longstanding and emerging industries and workforce have the proper skills for the greatest portion of jobs in its economy. In the short term, Indiana's workforce must be ready to meet demand as the economic recovery begins to take hold and new middle-skill jobs are created. In the long run, Indiana must provide the training and education needed to maintain economic productivity.

Indiana needs greater investments and focus on middle-skill education and training as well as the basic skills education needed to achieve that training so that all residents have the opportunity to improve their skills and advance in their careers. Without these education and training opportunities, businesses and communities will suffer from a lack of qualified workers and economic recovery will be slowed.

It is time for a bold, visionary step that will ensure all Indiana workers can be a part of economic recovery and secure the state's place in a 21st-century economy.

At various times in the nation's history, visionary leaders have adjusted the basic level of education guaranteed to all Americans as a way to adjust to a changing economy and remain competitive. Universal high school and the GI Bill are examples of when we did this with great success in the past.

Indiana can do it again by guaranteeing that all Hoosiers have access to at least two years of postsecondary education or training. This should be the guiding vision for Indiana's economic and education policy. It would provide the state's workers and businesses with the skills they need not only to rebuild and recover, but to compete in an increasingly competitive global marketplace.

How will Indiana do this? Leaders from the business, labor, and training communities are ready to roll up their sleeves and make it happen, if they are supported by strong political leadership and commitment. It is time for Indiana policymakers, educators, unions and businesses to unite with others around the country around this new vision, to champion the policies and strategies necessary to ensure that Indiana recovers and thrives, and that its workforce is at the forefront of the innovation economy.

APPENDIX: METHODOLOGY

The methodology in this report for classifying occupations into skill level is based on that used in Holzer and Lerman, 2007. The following explains that methodology.

Classifying occupations into a few skill categories is awkward, given the many elements of skill required for most jobs. Under an approach that classifies jobs based on education and training levels, ‘middle-skill’ jobs are those that generally require some education and training beyond high school but less than a bachelor’s degree. These postsecondary education or training requirements can include associate degrees, vocational certificates, significant on-the-job training, previous work experience, or some college, but less than a bachelor’s degree. We divide the broad occupational groups into high-skill, middle-skill, and low-skill categories based on BLS estimates of the educational attainment and training of people in those jobs. Using this information, we define:

- ◆ *High-skill occupations as those in the professional/technical and managerial categories.*
- ◆ *Low-skill occupations as those in the service and agricultural categories.*
- ◆ *Middle-skill occupations as all the others, including clerical, sales, construction, installation/repair, production, and transportation/material moving.*

This definition is clearly imperfect, since there are many professional/technical and service jobs that are clearly middle-skill while there are jobs in the clerical, sales and other categories that are not; but, on average, these discrepancies tend to cancel out, and trends in these categories roughly capture the ones we want to measure.

These skill categories reflect only average skill demands within broad occupational categories. Some occupations within the technical and managerial categories actually require less than a bachelor’s degree, while some in the middle categories might require only high school, and some in the service category may require more than high school. Therefore, whenever possible, we supplement our analysis of broad categories with those of detailed occupations.

Table 1 and Figure 1: Data from the Bureau of Labor Statistics (BLS).³⁸ Occupational categories (high, middle, low skill) based on the methodology used in Holzer and Lerman, 2007.³⁹

Table 2 and Figure 2: Based on occupational projections for 2006-2016 by the Indiana Department of Workforce Development.⁴⁰ Occupational categories (high, middle, low skill) based on the methodology used in Holzer and Lerman, 2007.

Figure 3: Data from the Bureau of Labor Statistics (BLS).⁴¹ Occupations divided into skill levels (high, middle, low) based on educational attainment requirements as defined by BLS. Because BLS does not classify occupations as green jobs or not, this section of the report assumes that the skills distribution in green jobs is the same as the skills distribution that occurs across all related occupations.

Table 3: Based on occupational projections for 2006-16 by the Indiana Department of Workforce Development using a recategorization of occupations according to BLS Education and Training Categories.⁴² Jobs requiring at least moderate-term on-the-job training, related work experience, a post-secondary vocational award, or an associate’s degree were classified as middle-skill.

Figure 4: Based on occupational estimates for 2007 by the Bureau of Labor Statistics, and December 2007 Current Population Survey (CPS) data on educational attainment by state.⁴³ Occupational categories (high, middle, low skill) based on the methodology used in Holzer and Lerman, 2007. Only workers in the labor market and at least 25 years of age (i.e., past traditional school age) are counted.

Figures 5, 6 and 7, and Table 4: Based on Current Population Survey (CPS) data for June 1990 and 2005⁴⁴ along with population projection data⁴⁵ by RAND California Statistics and labor force estimates⁴⁶ by the Bureau of Labor Statistics.

1989, 2005 and 2020 Educational Attainment: Past years educational attainment data reported only for workers in labor force and aged 25 and over, using CPS data. 2020 projections calculated using static educational attainment model presented in Hanak and Baldasarre, 2005.⁴⁷ In that model, educational attainment figures are calculated for the state's current workers (workers aged 25-49 in 2005) for each of 8 different race, ethnicity, gender and age cohorts. Educational attainment for these cohorts is assumed to be static over the ensuing 15 years (2020), and educational attainment for new cohorts of workers (i.e., younger than 25 years in 2005) is assumed to mirror that of similar age-race-gender groups today. As such, changing educational attainment throughout the state's population is calculated based on projected demographic changes in the composition of the working population, and does not take into account possible changes in behavior, immigration, et.al.

Creating Skill Categories Using Educational Attainment Data: Skill attainment categories (high, middle, low) for 1990 created using a reclassification of CPS-reported "grades completed" that parallels the educational attainment categories later used by CPS, and reclassified in this table for current and future years using the same method as in Figure 4, p. 15.

Figure 8: Data from long-term population projections (2000 to 2020) by age cohorts, as calculated by RAND California Statistics.⁴⁸ Each cohort was either classified as a "current working age adult" or "not a current working age adult" based solely on age. Current working age was defined as ages 20 to 64.

ENDNOTES

- 1 The Manufacturing Institute. *The Facts about Modern Manufacturing*. 8th ed. Available at <http://www.nam.org/~media/0F91A0FBEA1847D087E719EAAB4D4AD8.ashx>. (Washington, DC, 2009).
- 2 Indiana Logistics. *2009 Indiana Logistics Directory*. Available at www.indianalogistics.com/directory/2009%20Indiana%20Logistics%20Directory.pdf. (Indianapolis, IN, 2009).
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