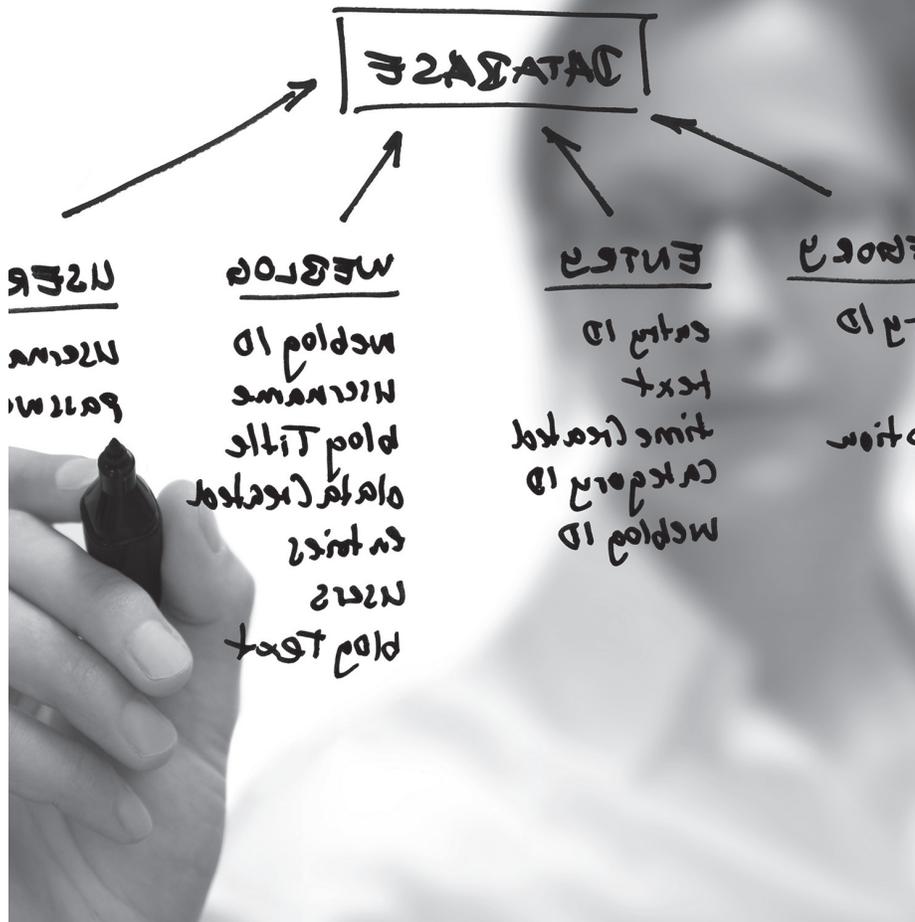




Fueling the talent that drives our economy.

THE CHALLENGE AHEAD: DEVELOPING TALENT FOR 51,500 NEW TECHNICAL JOBS BY 2025

Central Indiana's ongoing challenges of filling jobs with skilled talent are projected to increase substantially in the next decade, calling for a dramatic shift in how the community works together to prepare its workforce for a growing Central Indiana economy.



HIRE UP: PROJECTING AND RESPONDING TO CENTRAL INDIANA'S GROWING ECONOMY

Central Indiana's ongoing challenges of filling jobs with skilled talent are projected to increase substantially in the next decade, calling for a dramatic shift in how the community works together to prepare its workforce for a growing Central Indiana economy.

We must increase our efforts to address the need for more technically skilled Hoosiers. By 2025, the Central Indiana economy will produce a projected 51,500 net new jobs in technical fields across the economy in about 275 technically oriented occupations. Our economy will produce these jobs at a faster rate than all other jobs. While net new job creation is good news for the regional economy, at today's rate of post-secondary degree production for technical talent, Central Indiana will fall short in developing the skilled talent needed to meet industry requirements for credentials and skills.

In this study commissioned by Hire Up, we shift our focus from the region's seven wealth-driving sectors of advanced manufacturing, logistics, health care, manufacturing, life sciences, renewable energy and IT to a review of talent needs and supply of talent across all occupations. This view allows us to fully understand the challenge ahead as the economy grows not only in our wealth-producing sectors but also in occupations that will demand skilled talent to fuel success.

This study punctuates the region's challenge clearly: Failure to increase post-secondary educational attainment in key technical fields above today's production will result in a shortfall where more than 45 percent of the net new technical jobs will go without the right workers to fill them. The extent of the gap between demand and supply varies by industry and specific occupations. In some fields, such as precision production and especially information systems and computer-based technologies, demand appears to be far outpacing supply.

To meet the predicted demand for technical jobs in the economy, Central Indiana will need to increase the number of net new students each year with a two-year technical degree by 30 percent and technical bachelor's and graduate degrees by a net 10 percent.

What Central Indiana does about this overall gap – the shortfall of enough technical skilled workers to fill the 51,500 net new technical jobs with appropriately skilled workers – will greatly influence the region's ability to sustain economic growth for business and expand opportunities for residents.

Hire Up is working in three strategic areas to increase the quantity of talent available to Central Indiana employers and to better align the skills and qualifications those employers need with the capacity of education and training organizations. Hire Up will organize investments, catalyze developments, and grow talent solutions through:

- **Smart Choices:** More students will choose to enter key technical fields;
- **Skills that Matter:** Students and adults will obtain skills employers value; and
- **Talent Highways:** Hoosiers will access the technical education and training they need to enter employment in Central Indiana's growing technical jobs.

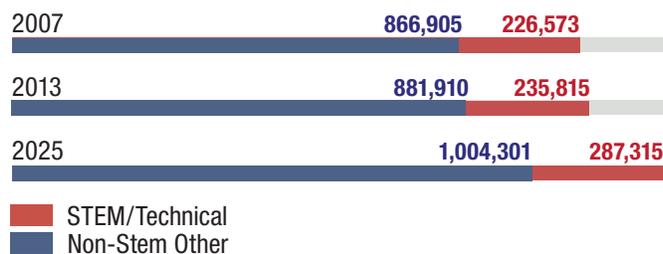
PROJECTED GROWTH FUELS 51,500 NEW TECHNICAL JOBS

Chart 1: Growth of Technical Jobs in Central Indiana



Central Indiana will create a significant number of new jobs across all industries over the next decade with the predominant growth occurring in technical positions.¹ By 2025, the Central Indiana economy will produce a projected 51,500 net new jobs in technical fields, which will need to be filled with employees who hold technical competencies. As shown in Chart 1, the total number of technical jobs in the region is projected to increase from nearly 236,000 to just over 287,000 jobs by 2025. This projection takes into account the widely accepted shift in the economy toward more technically, higher-order knowledge-based products and processes, and is calculated using recent growth as a predictor of future growth.²

Chart 2: Proportional Growth in Jobs in Central Indiana



Our analysis reviewed 275 distinct technical occupations and their projected demand for the next 12 years. Job growth in technically oriented jobs is projected to occur not only in Central Indiana's wealth-driving sectors, but will span other industries as well. These are jobs where a majority of daily work activity relies on the use of some type of technical know-how, such as the use of technology, science, engineering, math or other skilled competency. Occupations that will require technical talent include production maintenance workers, life science technicians, computer support specialists, logisticians, pharmacy technicians, health coders, computer systems analysts, and software engineers.

While the entire job market will increase by 2025, the increase in technically oriented positions is more rapid as a proportion of total jobs. Technically oriented positions are expected to increase by 27 percent compared to about 15 percent for all other occupations. Chart 2 shows the growth of technical jobs in the economy to 2025. These jobs are a growing proportion of all jobs and are increasing more rapidly than the rest of 'non-technical' jobs in Central Indiana.

FUTURE DEMAND FOR TECHNICAL TALENT: ACCELERATING CURRENT TRENDS

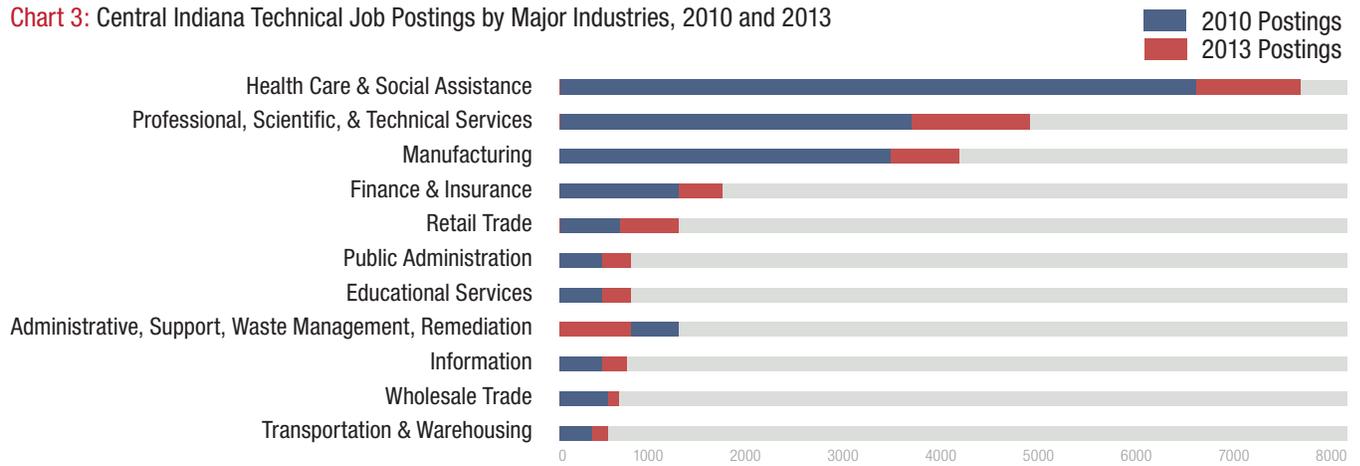
Demand for technically oriented positions is already apparent across the Central Indiana economy. While the concentrations of technical jobs in different industries vary considerably, virtually all the industries in the regional economy are seeking additional employees with technical skills. The breadth of this demand deepens our call to examine how Central Indiana produces enough or attracts the appropriately skilled talent for the economy. Chart 3 shows major industry groups in which employers are seeking talent with skill sets among technical occupations. Between 2010 and 2013, the level of demand for technically skilled talent has substantially increased. Among the five industry groups with over 1,000 technical job postings, the average percentage increase in openings between 2010 and 2013 was 37 percent. These industries, over the next 12 years, will seek to fill those 51,500 projected new technical positions. The average increase in technical job postings for all industries, including those not shown in the chart, in Central Indiana between 2010 and 2013 was 54 percent.

Today's demand for technical talent represents both the long-term recovery from the severe downturn of 2007 and 2008 as well as the shift to workplace structures and operations that require more complex know-how in technology, science, math and engineering processes and applications. Demand reflects Central Indiana's need for a technically skilled workforce to accommodate the transformation of industries away from unskilled work and processes that do not require complex skill sets toward those that do.

¹ It is difficult to precisely define technical positions and the definition used here relies on a variety of sources and definitions of positions and occupations that are generally recognized as integrally involving equipment, specific processes, and specialized knowledge.

² Data sources for Charts 1 and 2, authors' analysis: FutureWorks identified a universe of 275 different technical jobs in Central Indiana using 6 digit occupational codes (see appendix for definition) to show that there are currently 235,815 technical jobs in the Central Indiana economy. Using Bureau of Labor Statistics projections from EMSI, plus a growth factor from Burning Glass Labor Insight, our analysis showed that technical jobs will grow by roughly 21 percent between 2013 and 2025, for a total of 287,315 technical jobs – or an average year-to-year increase of 4,000 new jobs in these fields.

Chart 3: Central Indiana Technical Job Postings by Major Industries, 2010 and 2013



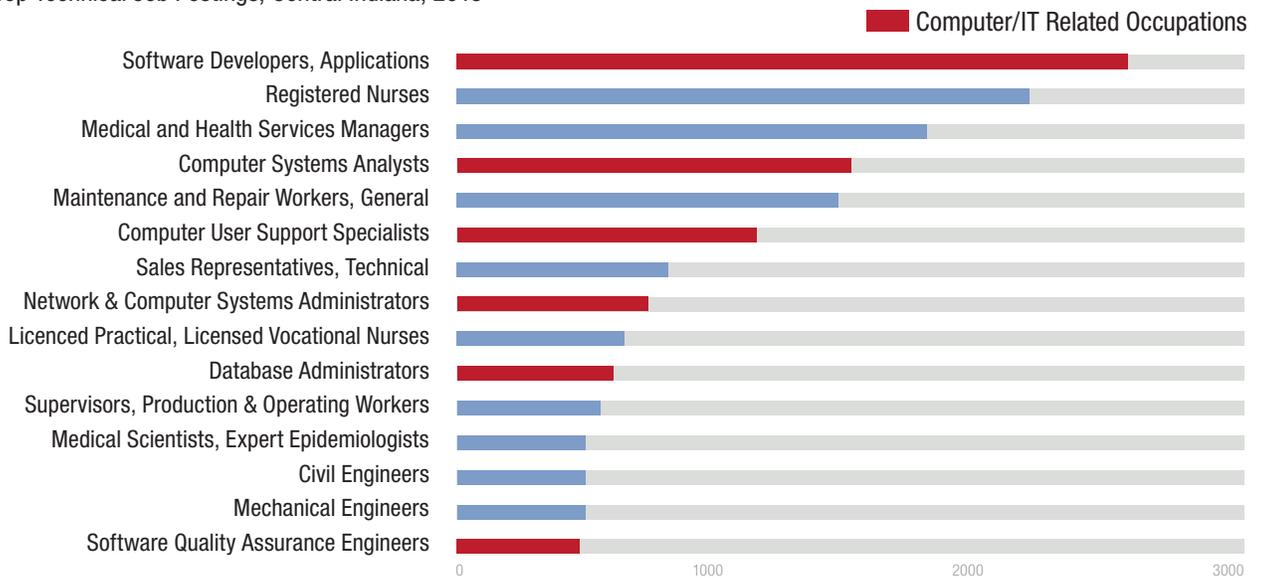
Source: Burning Glass, Labor Insight, 2014. Total Postings: 2013, 44,024; 2010, 30,498. Industries shown are those with more than 400 job postings in 2013.

Demand for these skills is increasing across many different industry sectors, however, the growth of demand for technical talent is pronounced in information systems and information technology. As Chart 4 illustrates, of the top 15 occupations in demand in Central Indiana using real-time job postings, six occupations—or almost half of those top 15 – are related to information technology. Together they account for 8,950 of the 16,000 job postings for all of the top occupations shown in Chart 4. This represents a dramatic shift in demand for technical skills in information technology occupations. While health care-related occupations are still strong components of total employment demand, those occupations are now overshadowed by demand for skills in information technology.

TODAY'S GREAT DIVIDE: SUPPLY AND DEMAND FOR TECHNICAL TALENT

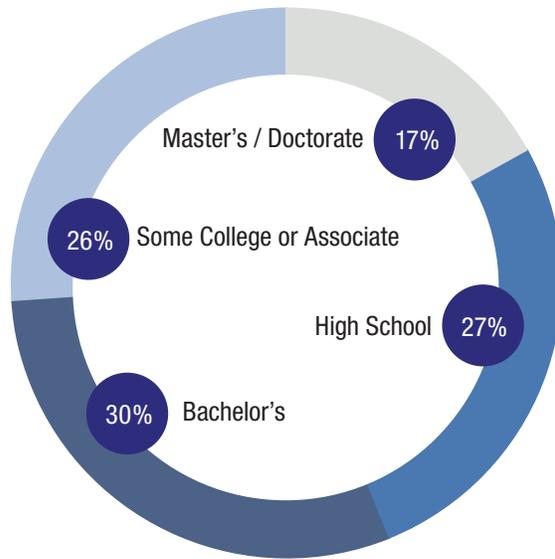
Today's demand for technically skilled employees translates directly to increased demand for a more highly educated workforce. Chart 5 shows educational requirements needed for technical job postings in Central Indiana across all industries. In 2013, about 47 percent of Central Indiana's technical jobs required a bachelor's degree or a professional/graduate degree and about 26 percent required some college or an associate degree. In total, about 73 percent of all technical jobs postings in Central Indiana require postsecondary education for employment.

Chart 4: Top Technical Job Postings, Central Indiana, 2013



Source: Burning Glass, Labor Insight, 2014.

Chart 5: Educational Requirements of Technical Jobs in Demand through 2025



Source: Burning Glass, Labor Insight, 2014. U.S. Bureau of Labor Statistics, 2013. Author's calculation. N=51,521

Using a similar approach to projecting demand in technical occupations over the next 12 years we can project the educational outputs – certificates and degrees – needed to meet the demand for talent over the same time period.

Chart 6 below shows the projected net new high school diplomas and postsecondary degrees needed by 2025 (DEMAND) and the projected number of degrees high schools and postsecondary institutions are expected to produce (SUPPLY).³ We include high school diplomas, which are necessary for lower-skill jobs, in our DEMAND calculations; we do not include high school diplomas, however, in the SUPPLY calculations because Hire Up's focus is on the technical-oriented jobs that require at least some postsecondary education. Those are the jobs that will be the predominant drivers of the Central Indiana economy.

All told, the projected GAP between supply of degrees and demand is 24,500 net new postsecondary credentials – 17,000 in net new associate and bachelor's degrees and 7,500 net new master's/doctorate degrees.

Chart 6: Postsecondary Technical Degrees Needed to Meet the Demand of 51,500 Net New Technical Jobs in Central Indiana by 2025

	DEMAND	SUPPLY	GAP
	Projected Net New Technical Jobs by 2025	Projected Net New Technical Degrees Produced by 2025	Projected Technical Degree Gap in Central Indiana
High School Diploma	13,716	1,567	12,149
Some College or Associate	13,532	3,229	10,303
Bachelor's	15,493	8,774	6,719
Master's / Doctorate	8,780	1,326	7,454
Region Total	51,521 Total technical jobs by 2025	13,329 Postsecondary degree projection only	24,476 Postsecondary degree gap

³ College and university degrees are calculated assuming the colleges and universities that serve Central Indiana produce graduates at the same rate between now and 2025 as they have in the recent past. In the case of projected net new high school diplomas there are no historical data available that indicate technical pathways. Therefore, our projections use the same rates applied to associate and bachelor's degrees.

FURTHER UNDERSTANDING THE GAP

The scale of this degree gap presents an enormous challenge to Central Indiana. In associate degrees alone, the gap is nearly three times the projected net increase over current rates of associate degree production. To close the gap by 2025, the state's two-year degree producing institutions would need to triple their credential production in technical fields. Baccalaureate degree institutions would need to double their production of bachelor's and graduate degrees in technical areas.

There are two additional observations that raise further concerns about meeting demand for talent.

First, the projected gap between demand and supply is much more pronounced in some specific programs of study, which means that some technical jobs projected to grow could face particularly critical shortages. For example, our projections show very little or flat growth in net new degrees produced by area postsecondary institutions in computer and IT-related fields of study. However, we project a large increase, upwards of 7,000 net new jobs, in net new computer and IT positions in Central Indiana by 2025. That disparity also holds for precision production. The number of related degrees in precision production will stay the same or even decline if current trends continue, while our projections show a net increase of more than 2,500 precision production jobs in the area by 2025.

Conversely, these critical shortages aren't in every field of study. Our projections show that by 2025 a high proportion of all net new degrees (55 percent of all new associate degrees and 33 percent of all new bachelor's degrees) will be in health care fields. In general, that projected growth in net new degrees matches the projections of net growth in health care jobs coming to the region by 2025.

Second, the degree gap for bachelor's degrees is most likely understated because the group of 39 public and private educational institutions from which these degrees are drawn includes Indiana's flagship four-year colleges and universities. These schools attract students nationally and globally. Research on graduating students suggests that up to 50 percent of the graduates from those colleges and universities will leave Indiana within five years to seek employment elsewhere. The stability of associate degree holders is different; about 70 percent of those who gain an associate degree are employed in Indiana five years later.⁴

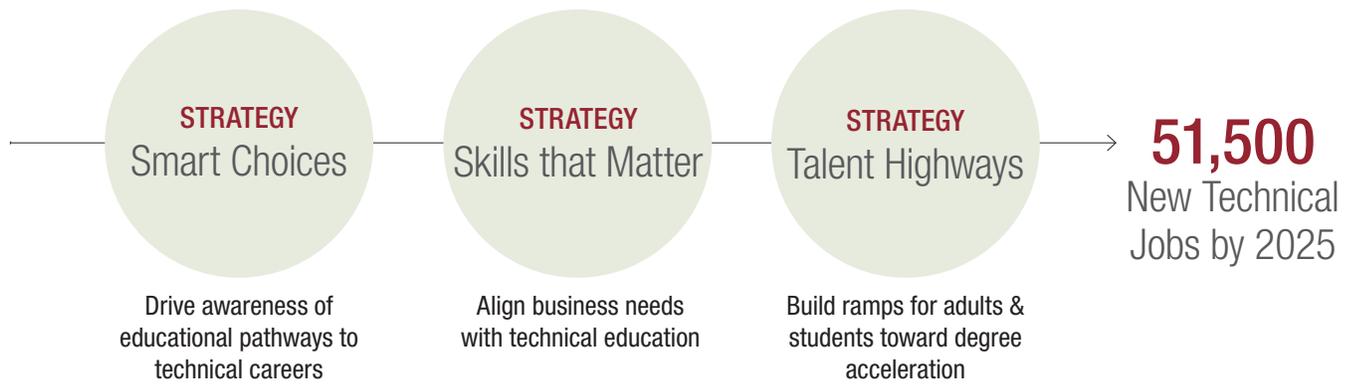
WHAT DOES THIS MEAN FOR CENTRAL INDIANA?

With 51,500 net new technical jobs in Central Indiana by 2025 and a predicted short fall of roughly 24,500 technical associate and bachelor's degrees and graduate degrees to meet the needs of these jobs, there is a clear call to action: Central Indiana needs a cohesive region-wide approach to develop skilled talent that will meet business demands and enable Hoosiers to take advantage of significant employment opportunities.

Central Indiana business leaders, policy makers, and community leaders are clearly poised to address this challenge. In fact, many organizations are focused on various dimensions of the talent supply. Initiatives are evident in nearly every public college in the region while economic and workforce organizations are working to increase credential completion and the capacity to educate more students in STEM-related fields.

The data presented in this study support a renewed urgency to close the gap between the projected demand for 51,500 new technical positions and the projected supply of technical degrees. With these data, education and economic development leaders as well as policy makers can refocus efforts on increasing the number of technically credentialed Hoosiers to meet demand.

⁴ See for example, reports by the Indiana Business Research Center "How Education Pays: The Work Outcomes of Indiana's Postsecondary Graduates," November 2011; <http://www.ibrc.indiana.edu/analysis/reports.asp>, for data on 'remain rates' of Indiana college graduates at the associate and bachelor's levels; and, the recent report issued by CICP (Battelle Institute) "Competitive Economic Advantage: The Opportunity to Win the Global Competition for College Educated Talent," July, 2013, that discusses the out-of-state migration of Indiana Colleges and Universities Bachelor's degree recipients: <http://www.cincorp.com/news/battelle-cicp-study-more-high-skilled-job-opportunities-required-for-indiana-s-college-graduates> .



Mobilizing and organizing our efforts to address this challenge is an important task. Hire Up, in commissioning research and analysis on the talent supply in Central Indiana, has developed an approach to help the region identify and advance existing resources, focus new investments, and identify promising strategies to expand the technical talent pipeline for Central Indiana. Hire Up is building a strategy to elevate, catalyze and grow industry-directed talent initiatives that support the regional economy.

What are we doing now across Central Indiana to address the need for talent and how large an impact do we anticipate from these efforts? While the region embraces some excellent initiatives around technical education focused on producing more individuals with technical credentials, we know relatively little about the projected impact and aggregate scale of these initiatives. Hire Up is working to produce an inventory of technical talent-related initiatives in Central Indiana or among colleges and universities serving Central Indiana to 'add up' the anticipated impact of these initiatives. This will help us define the current landscape and determine what additional efforts are needed.

Hire Up and its council of business, civic and education leaders have identified three strategy areas that shape the educational pipeline for technical talent. These define Hire Up's focus and the critical elements needed to increase the availability of talent in Central Indiana:

SMART CHOICES: We will help students choose educational pathways that lead to technical careers that both fuel the Central Indiana economy and provide excellent career opportunities.

SKILLS THAT MATTER: To increase the number of students who are graduating with skills employers need, we need to work with educators and employers to align the content of technical education to the needs of employers.

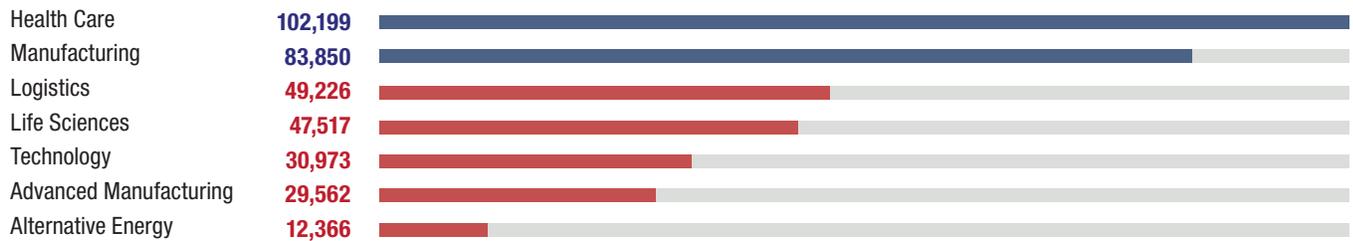
TALENT HIGHWAYS: Because all current and potential members of the labor force should have access to the education and skills training for in-demand skills, we will foster multiple access points for adults and students to accelerate degree and credential completion and career success.

Hire Up has clearly identified the gap, and the data help to define a regional approach that identifies and advances existing resources, focuses new investments, and develops promising strategies to expand the technical talent pipeline for Central Indiana. The goal is to elevate, catalyze and grow industry-directed talent initiatives that support the regional economy. Mobilizing and organizing our efforts to address this challenge is an important task, and one that Hire Up is poised to advance with urgency.

APPENDIX A:

CENTRAL INDIANA'S WEALTH DRIVERS: STRONG GROWTH ACROSS THE REGION

Chart 1: Total Employment 2013



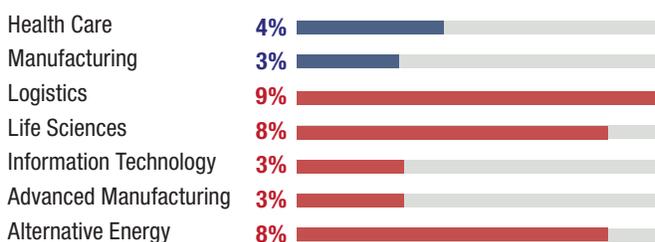
Source: U.S. Bureau of Labor Statistics, EMSI, Quarterly Census of Employment and Wages (QCEW) Employees, Non-QCEW Employees, & Self-Employed, 2013.

Our previous publications focused on the supply and demand for technical talent in Central Indiana. While this report focuses on occupational demand across sectors for technical talent, that demand is still very strong and growing within these key wealth driving sectors. While we need to produce more individuals with technical credentials for the entire Central Indiana economy, these key sectors remain very important areas of focus. Below is a description of that recent growth among key sectors in Central Indiana.

What has happened since 2011 in each of these Central Indiana wealth driving sectors is striking. In just two years, each has grown in total employment. The sharpest rise in employment has occurred in information technology and life sciences. Information technology employment grew by 9 percent between 2011 and 2013, the highest level of growth among the seven sectors and clusters. Life sciences followed with an employment growth rate of 8 percent. Moreover, each of these industries pays above-average wages. The average annual earnings for workers in information technology is \$75,000, about \$30,000 higher than the average earnings for all industries in the region (\$44,000). The average annual earnings in life sciences is an astounding \$95,000.⁵

Among all of these key economic sectors, manufacturing is still by far the predominant overall wealth-producing sector in terms of contributions to the Central Indiana economy. It accounts for \$18.6

Chart 2: Job Growth 2011-2013

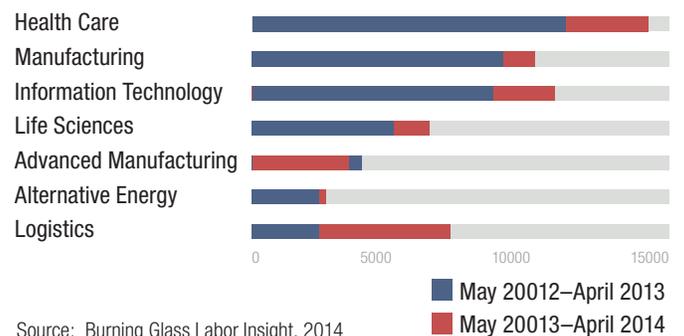


Source: U.S. Bureau of Labor Statistics, EMSI, Quarterly Census of Employment and Wages (QCEW) Employees, Non-QCEW Employees, & Self-Employed, 2013.

billion in Gross Metropolitan Product (GMP), or 20 percent of the region's total output.⁶ Significantly, manufacturing has reversed a long-term trend of employment decline. From 2011 through 2013, manufacturers added a net of 2,100 new jobs to the Central Indiana economy. That hasn't happened in Central Indiana since the 1990s.

Other key sectors also show significant growth in the last two years. Healthcare and logistics are still large job producers and have recorded significant job growth. Healthcare led all seven of the sectors in terms of employment with a total of 102,000 Central Indiana jobs in 2013. Chart 1 shows total employment for each of these key sectors and Chart 2 shows growth.

Chart 3: Job Postings by Sector and Cluster



Source: Burning Glass Labor Insight, 2014

Demand for technical skills is very strong among these sectors and is increasing. Chart 3 shows real-time job postings for these key sectors in 2010 and 2013. Virtually across all sectors, job postings for technically skilled positions increased. Especially strong increases were shown in health care, information technology and logistics.

⁵ These data are for total earnings by industry from the U.S. Bureau of Labor Statistics, EMSI, Quarterly Census of Employment and Wages (QCEW) Employees, Non-QCEW Employees, & Self-Employed, 2013.

⁶ Manufacturing is the highest "wealth-producing" sector in Central Indiana as measured by total GMP, total earnings, and total jobs.

APPENDIX B:

NET NEW DEGREE PRODUCTION NEEDED 2013 TO 2025 (DETAIL ON METHODOLOGY.)

Table 6

Degrees required (using RTLMI) (2013-2025)		Degrees required based on BLS data for technical jobs (2013-2025)		Midpoint Estimate	Midpoint Rounded	Projected Gap Real Time Demand
REQUIRED DEGREES		REQUIRED DEGREES				
High School	16,750	High School	10,681	13,716	13,700	**
Some College or Associate	9,531	Some College or Associate	17,533	13,532	13,500	10,303
Bachelor's	16,366	Bachelor's	14,620	15,493	15,500	6,719
Master's / Doctorate	9,320	Master's / Doctorate	8,240	8,780	8,800	7,454
	51,966		50,359.70	51,520	51,500	24,476

Sources: Authors' calculations of Burning Glass Technologies and BLS data. Education output data from CHE (2006-2011) and IPEDS 2012. NOTE: Degrees will not total 51,500 because high school diplomas and graduate degrees are not included here.

Table 6 shows what level of degrees (e.g. associate, bachelor's, master's/doctorate) will be needed for the 51,500 new technical jobs in Central Indiana by 2025. We show demand for degrees based on real-time job postings that specify an educational requirement and federal data that show the educational attainment of people who are in those jobs. The table also shows the number of projected

net new degrees that will be produced over the next 12 years by 39 public and private educational institutions within a 100-mile radius of Indianapolis. The difference between these two numbers is the shortfall – about 17,000 net new associate and bachelor's degrees to meet the projected growth in demand for technical fields and an additional 7,500 or so net new master's/doctorate degrees.

APPENDIX C:

Our parameters for the sources of talent for the Central Indiana regional economy include those receiving educational credentials from secondary and postsecondary institutions, public and private, that are within the Central Indiana region and within a 50- or 100-mile radius of Indianapolis (for two-year and four-year colleges, respectively). We include some postsecondary schools outside that boundary that serve a statewide, national and international student market such as Purdue University, Vincennes University, Rose-Hulman Institute of Technology, and IU-Bloomington.

ASSOCIATE-AND CERTIFICATE-GRANTING SCHOOLS INCLUDED:

Accredited, associate-only granting postsecondary schools were selected using a 50-mile radius of downtown Indianapolis and those having a 2011 enrollment of over 500 students. Four-year schools that also offer associate and one-year certificates within a 100-mile radius of Indianapolis also were included. Vincennes University was included. These schools are, in order of the total number of associate degrees awarded:

Vincennes University
Ivy Tech Community College-Central Indiana
Indiana Wesleyan University
MedTech College-Indianapolis
ITT Technical Institute-Indianapolis
Ball State University
Indiana University-Purdue University-Indianapolis
Purdue University-Main Campus
Harrison College-Indianapolis
MedTech College-Greenwood Campus
Brown Mackie College-Indianapolis
Harrison College-Indianapolis East
Harrison College-Columbus
Harrison College-Anderson
University of Indianapolis
Indiana University-Bloomington
Indiana University-East
Huntington University
Taylor University
Anderson University
Butler University

BACCALAUREATE DEGREE-GRANTING SCHOOLS INCLUDED:

Accredited baccalaureate degree-granting postsecondary schools were selected using a 100-mile radius of downtown Indianapolis and those having a 2011 enrollment of over 1,000 students. Vincennes University was included. These are, in order of the total number of bachelor's degrees awarded:

Indiana University-Bloomington
Purdue University-Main Campus
Indiana University-Purdue University-Indianapolis
Ball State University
Indiana Wesleyan University
Butler University
University of Indianapolis
DePauw University
Earlham College
Saint Joseph's College
Manchester College
Hanover College
Wabash College
Vincennes University
Harrison College-Indianapolis
Martin University
Rose-Hulman Institute of Technology
Taylor University
Indiana University-Kokomo
Anderson University
ITT Technical Institute-Indianapolis
Indiana University-East
Marian University
Franklin College
Huntington University
Harrison College-Fort Wayne
Brown Mackie College-Indianapolis
Harrison College-Grove City
Harrison College-Indianapolis East
Harrison College-Northwest

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