



NOVEMBER 2011

# CAREER CLUSTERS

FORECASTING DEMAND FOR  
HIGH SCHOOL THROUGH  
COLLEGE JOBS

2008-  
2018

## EXECUTIVE SUMMARY



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# Executive Summary

There is no question that the best path to middle class employment and wages in America today runs through the nation's college campuses. Since 1970, opportunity has been steadily expanding for workers with postsecondary credentials and shrinking for those without. Does that mean every worker with a high school education or less is doomed to scrabbling for minimum wage paychecks in low-skill, no-future jobs? Not necessarily.

Going directly from high school to college is not possible for everyone. Many who go to college will not do so straight out of high school, and many more need to work to pay for college. Good jobs for people without college degrees certainly still exist, although they are on a steady decline as computers and related technology take over routine functions historically handled by low-skill employees. Still, opportunities will present themselves for workers across the full range of educational preparation in the next decade as the Baby Boom generation retires.

The key for students, workers, job counselors and educators will be knowing where to find these opportunities and then matching the right job with the right applicant.

That is where this report can help. In the full version of the report, we present forecasts on job opportunities and skill requirements through 2018, broken down by the 16 career and technical education (CTE) clusters by the Carl D. Perkins Act of 2006. The Perkins act is a federal

program aimed at improving technical education in the United States, and its clusters are widely used by vocational programs and counselors to assist students in preparing for and then finding jobs.

Using our forecasts, we identify the most promising clusters for three categories of job seekers. Those are workers with:

1. High School Jobs: For those with a high school diploma or less.
2. Middle skill jobs: For those with some college but no degree (including postsecondary vocational certificates) or an Associate's degree.
3. BA plus jobs: For those with a Bachelor's degree or better.

In the full report, we compare projected employment openings across job clusters, breaking those numbers down by new jobs created and those that come open due to retirement or other reasons. These comparisons allow us to identify the high-demand CTE clusters — those occupation groups that should prove most promising for job seekers, depending on their educational credentials. Then, we present wage data by education distribution for the clusters to help identify occupations that pay the Minimum Earnings Threshold (MET) of \$35,000<sup>1</sup> or better.

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<sup>1</sup> We define a Minimum Earning Threshold (MET) as an absolute poverty-based definition of the earnings level that equals 150 percent of the Federal Poverty Limit (FPL) for a family of four. It can also be considered as the wage level necessary to enter into the middle class.

It is our hope that program planners across the country will be able to use the information in this report, along with their knowledge of regional labor-market conditions and employer advice to improve outcomes for new graduates.

The report offers a detailed portrait of the job landscape that applicants will be facing between now and 2018. For those with high school educations or less, the picture is one of restricted opportunity — there will be jobs for them, but in diminishing quantity and only in certain clusters.

Consider:

- Thirty-seven percent of all jobs in 2018 will be for workers who have either a high school diploma or incomplete high school education with some on-the-job training. This number is down from 72 percent in 1973, 44 percent in 1992, and 41 percent in 2007.
- Of the thirty-seven percent of jobs for workers with high school or less by 2018, only one-third of these will pay the lower limit of the MET defined as \$35,000 per year or better, on average.
- These better paying opportunities for workers with a high school diploma or less are in male-dominated fields. More than 80 percent of the workforce in Manufacturing; Architecture and Construction; and Transportation, Distribution, and Logistics is male.

**Going directly from high school to college is not possible for everyone. Many who go to college will not do so straight out of high school, and many more need to work to pay for college.**

**Deep budget cuts to CTE programs too often leave job seekers with minimal education credentials scrambling with minimal guidance to find living-wage jobs.**

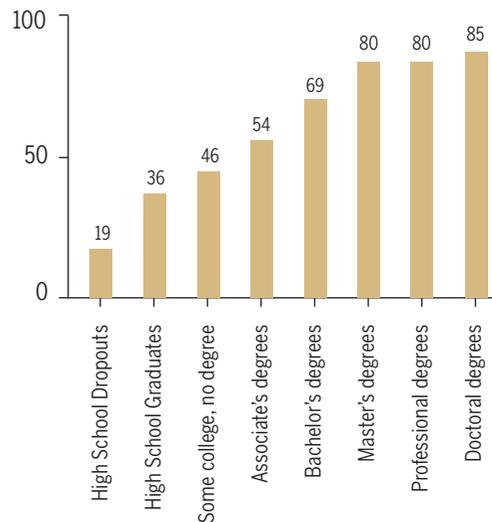
**Table 1. The best opportunities to earn a living wage with less than high school or high school diplomas are concentrated in career clusters where men dominate.**

CAREER CLUSTER	NEW AND REPLACEMENT JOB VACANCIES 2008-2018 (THOUSANDS)					
	Less than high school	High school diploma	High school diploma or less (%)	Males per cluster (%)	Rate of growth (% change in employment)	Fastest rate of growth (rank)
Manufacturing	420	1,250	9	71	-1	16
Architecture and Construction	760	1,200	11	98	7	11
Transportation, Distribution, and Logistics	560	1,800	13	85	4	14
Hospitality and Tourism	1,670	3,190	27	50	12	6
All other clusters	1,230	5,670	40			
<b>TOTALS</b>	<b>4,640</b>	<b>13,110</b>	<b>100</b>			

SOURCE: The Georgetown University Center on Education and the Workforce forecast of educational demand through 2018.

- Jobs for workers with a high school diploma or less are concentrated in four career clusters. About 60 percent of all new and replacement jobs in the U.S. economy for high school workers between 2008 and 2018 will be in Hospitality and Tourism (27 percent); Transportation, Distribution, and Logistics (13 percent); Architecture and Construction (11 percent); and Manufacturing (9 percent).
- The overall share of employment opportunities requiring a high school diploma or less gets smaller for all career clusters by 2018, except for Architecture and Construction, where there is a slight increase. This reflects an increase in construction jobs as building projects put on hold during the recession come back online.

**Figure 1. Percent earning more than \$35k (2010\$)**



Workers with an Associate’s degree or better will generally earn above the MET threshold. 54 percent of workers with

an Associate's degree and 69 percent of workers with a Bachelor's degree earn above the MET. A graduate education guarantees above MET earnings to over 80 percent of recipients.

Our research has identified several occupations in each of those job clusters where workers with high school diplomas and no college can earn at or better than the MET of \$35,000. Workers without their diplomas generally earn significantly less, however. Employees with their diplomas earn a wage premium of up to \$10,000 more per year than colleagues who dropped out.

Across the board, the highest paying jobs for workers with high school diplomas can be found in Manufacturing, although individual exceptions can be found here and there in the other clusters. The top Manufacturing positions are often supervisors and managers within a technical field, which suggests workers need a certain amount of experience and training to secure them. Workers in these supervisory jobs averaged \$53,700 per year from 2007-2009. Other examples in Manufacturing included machinists, who averaged \$42,600; industrial machinery mechanics, who averaged \$45,500; and welders, cutters, solderers and brazers, who averaged \$36,900.

In the Architecture and Construction cluster, the best-paying positions for high school graduates are cost estimators, who earned \$56,800. Other positions included electricians, who earned \$42,500; plumbers, pipe fitters and steam fitters, who earned \$41,000; and highway construction workers, who earned \$36,000. Jobs that

pay more than the MET to workers with no college education also can be found in the Transportation, Distribution and Logistics cluster. Examples of such jobs include: aircraft mechanics, \$50,800; bus and truck mechanics and diesel engine specialists, \$41,300; and auto mechanics, \$35,200.

Jobs for high school graduates in the Hospitality and Tourism cluster typically do not meet the MET standard for pay, although food service managers come close, earning an average of \$33,900.

These numbers show that it is still possible to achieve middle class status without a college degree, but it's becoming harder and harder to find and secure such jobs. For the most part, openings in these positions tend to be replacements for workers who retire or leave for some other reason. In fact, virtually all of the

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Manufacturing positions fit this category through 2018 since this extremely productive sector is no longer growing new jobs because technology is replacing workers, or positions are being shipped overseas to take advantage of cheaper labor.

Clearly, securing nothing more than a high school diploma will take workers on an increasingly difficult road to middle class status. There are alternative paths, however, short of four-year college degrees that can make for an easier journey. Earning a two-year Associate's degree, a vocational certificate, or even attending college without graduating can open the door to so-called "middle skill" jobs that typically pay better than the MET level of \$35,000 a year. Jobs in this category tend to fall in six occupational clusters, compared to the four open primarily to workers with high school diplomas or less.

The highest paying jobs for workers with some college/no degree or an Associate's degree are in Business, Management, and Administration; and Manufacturing. Examples of specific jobs and salaries in the business cluster include general and operations managers, who earned \$71,000 with an Associate's degree; accountants and auditors, who earned \$42,200 with some college but no degree; and office and administrative support staff, who earned \$36,100 with an Associate's degree. In Manufacturing, examples include computer, automated teller and office machine repair technicians, who earned \$43,200 with an Associate's degree; and first-line supervisors of mechanics, installers and repairers, who earned \$61,000 with an AA degree.

Health science is another significant category of jobs for workers with middle level skills — an occupation cluster not generally open to applicants with no better than a high school diploma. Examples of careers in this area include licensed practical and vocational nurses, who earned \$36,500 with some college and no degree; radiologic technicians, who earned \$50,500 with an Associate's degree; and occupational therapists, who averaged \$37,100 with an AA degree.<sup>2</sup>

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<sup>2</sup> Including postsecondary vocational certificates.

**Securing nothing more than a high school diploma will take workers on an increasingly difficult road to middle class status.**

**The highest paying jobs for workers with some college/no degree or an Associate's degree are in Business, Management, and Administration; Manufacturing and Health Science.**

**Table 2. The best paying opportunities for women in middle skill jobs pay less than the best paying opportunities for men with less than high school or a high school diploma.**

NEW AND REPLACEMENT JOB VACANCIES 2008-2018 (THOUSANDS)						
CAREER CLUSTER	Some college/ no degree <sup>a</sup>	Associate's degree	Some college/no degree/Associate's degree (%)	Males per cluster (%)	Rate of growth (% change in employment)	Fastest rate of growth (rank)
Manufacturing	600	400	8	79	-1	16
Marketing, Sales, and Service	800	400	9	49	11	7
Transportation, Distribution, and Logistics	900	400	9	81	4	14
Health Science	500	800	10	13	21	2
Business, Management, and Administration	1,100	700	13	31	6	12
Hospitality and Tourism	1,500	800	16	54	12	6
All others	2,900	2,100	36			
<b>TOTALS</b>	<b>8,300</b>	<b>5,600</b>	<b>100</b>			

SOURCE: The Georgetown University Center on Education and the Workforce forecast of educational demand through 2018.

<sup>a</sup> Some college includes postsecondary vocational certificates.

Columns may not add up to 100% due to rounding.

Finally, though, our research shows that the easiest path to the American middle class takes students through four-year colleges on their way to earning Bachelor's degrees or better. Where high school graduates find themselves limited to a handful of careers in job clusters that either are not growing or do not pay middle class wages, college graduates can find opportunity just about anywhere. Although 72 percent of jobs available for workers with a Bachelor's degree or better are concentrated in nine occupational clusters, essentially every job category is accessible.

In addition, the occupational clusters with the highest demand for workers with postsecondary education also tend to be those that are growing — actually adding new jobs in addition to replacement positions. Health Science, for example, is projected to rank first in the number of jobs added and second in overall growth rate through 2018.

Jobs for workers with Bachelor's degrees tend to pay better, too. Very few occupations for workers with those credentials do not meet or surpass the MET level of \$35,000. Although postsecondary education and training of

**Table 3. Seventy-two percent of all jobs for college degree holders will be in nine career clusters.**

NEW AND REPLACEMENT JOB VACANCIES 2008-2018 (THOUSANDS)						
CAREER CLUSTER	Bachelor's degree	Master's degree or better	Bachelor's degree or better (%)	Males per cluster (%)	Rate of growth (% change in employment)	Fastest rate of growth (rank)
Science, Technology, Engineering, and Mathematics (STEM)	336	271	4	80	9	9
Finance	540	123	4	65	10	8
Government and Public Administration	159	43	1	59	8	10
Information Technology	725	325	7	72	23	1
Marketing, Sales, and Service	1,013	175	7	62	11	7
Hospitality and Tourism	1,120	193	8	61	12	6
Health Science	953	798	11	37	21	2
Business, Management, and Administration	1,722	571	14	55	6	12
Education and Training	1,204	1,196	15	30	14	5
All others	3,332	1,094	28			
<b>TOTALS</b>	<b>11,104</b>	<b>4,789</b>	<b>100</b>			

SOURCE: The Georgetown University Center on Education and the Workforce forecast of educational demand through 2018. Columns may not add up to 100% due to rounding.

any kind is highly correlated with middle-class wages, a Bachelor's degree largely guarantees it. As you would expect, hot occupations in fast-growing clusters pay extremely well: engineering managers in the Science, Technical, Engineering and Mathematics cluster, for example, averaged \$117,100 annually from 2007–2009; actuaries in the Finance cluster earned \$121,500; and pharmacists in the Health Sciences cluster earned \$90,700. Adding advanced degrees on top of a Bachelor's opens up even further occupations and earnings potential —

physicians and surgeons, for example, who earned an average of \$165,200.

The bottom line of the data uncovered by this study should be both hopeful and sobering for anyone entering the workforce in the near future.

On the hopeful side of the ledger: once the economy has recovered from the recession, towards the end of the decade, there will be good employment opportunities for the entire range of educational attainment. Middle class

aspirations need not die if, for some reason, college is out of reach for particular job seekers. As we have seen, good paying jobs can still be found, even if the range of occupational clusters is relatively narrow.

On the sobering side of the ledger: the window is closing on such opportunity. Economic trends show that more and more jobs are requiring postsecondary credentials — especially those that pay a living wage. The days of workers graduating from high school, nabbing a job in the mail room of a big company and then working themselves into a corner office are pretty much gone. In their place is a demanding economy that puts a premium on education, training, and flexibility.

So, while high school graduates should not despair if they cannot go onto college, neither should they be satisfied with their diploma alone if they can further their education. If the numbers in this report show anything, they show that going to college pays off — not just in higher wages, but in better jobs, wider opportunity and a shot at achieving the American dream.

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## **CAREER CLUSTERS**

is comprised of a full report, a state report and an executive summary.  
All can be accessed at [cew.georgetown.edu/clusters](http://cew.georgetown.edu/clusters).

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