

Educational Needs of the Workforce

Despite some claims that a postsecondary education is required for an increasing number of jobs, a DEED analysis found that nearly two-thirds of the jobs in Minnesota require a high school education or less.

There has been much debate in recent years about the educational needs of Minnesota's workforce. Some claim that educational requirements are increasing and that more people will need to attend college in coming years to meet the increasing demands of modern jobs.

This is the view, for example, of a study by Georgetown University's Center on

Education and the Workforce, which projected in 2013 that 74 percent of jobs in Minnesota would require some level of postsecondary education by 2020.

In contrast, persistent underemployment by many Minnesotans with postsecondary credentials has raised doubts about whether more people will need to earn a college degree.

New Educational Requirement Classification

One critical aspect of this debate is disagreement over what level of education is needed to work in each occupation. Not surprisingly, divergent measures of occupational requirements give rise to widely varying estimates of overall educational attainment demanded of the workforce. Currently, the most widely used classification of occupations by educational requirements is produced by the Bureau of Labor Statistics (BLS).¹ This is a national-level classification that attempts to identify, for each occupation, the "typical education needed for entry."

Do jobs in Minnesota require a different level of education than that suggested by the BLS system? In an attempt to address this question, we developed a new Minnesota-specific classification of educational requirements for each

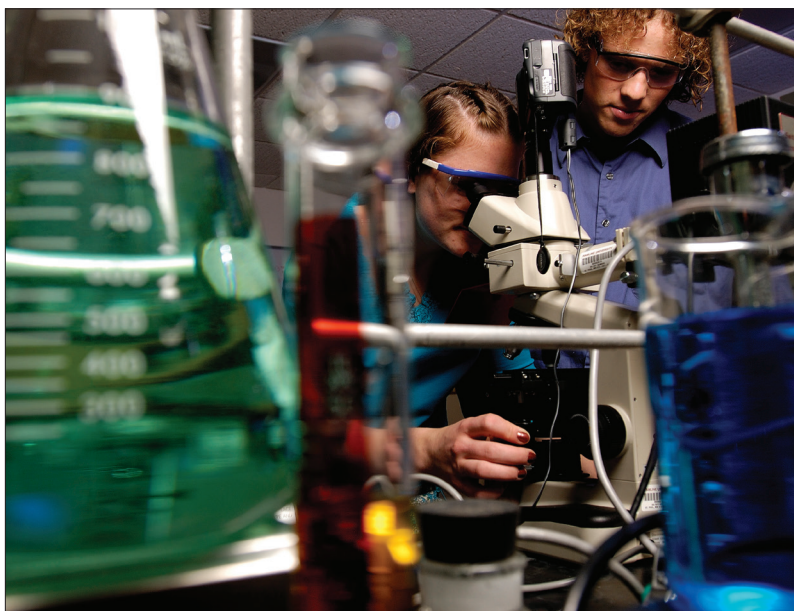


PHOTO: STEVE WOIT

occupation, as reported to us by Minnesota employers responding to DEED's biannual Job Vacancy Survey.

The survey asks, among other things, "what educational level is usually required" for the vacant position? The Minnesota-specific classification relied heavily on 31,701 responses to DEED's survey of employers, who reported 727,860 vacancies in the state across 787 occupations between the second quarter of 2011 and the fourth quarter of 2015.

Other sources of information included survey responses of incumbent workers by O*Net, graduation data by program, Minnesota Statutes and Rules, and current accreditation requirements for many professions.

For the purpose of the present analysis, we took a similar approach to BLS and identified a single educational level that is typically required for employment in an occupation. Unlike BLS, however, we did not explicitly focus on educational requirements for entry-level employment. We also attempted to identify the actual educational level needed to perform the duties of the job, rather than

educational "requirements" that are used mainly as screening mechanisms to reduce the number of applicants or raise their quality.

Because of this, we sometimes chose a lower level of education, even though in some cases a significant number of employers stated a higher level of education as the minimum for hiring.²

While it's most frequently very clear which educational level is "usually required" by employers, in a decent number of cases there is enough variability in the characteristics of individual jobs within an occupation that multiple educational levels are legitimately identified as required by employers. In these cases, we have still identified the single level most frequently being required, but we also identify multiple levels that are reasonable and required frequently enough to be deemed commonly occurring requirements.

We also took licensing and statutory requirements into account, which might in some cases mandate a higher level of education than is technically necessary to perform the job. In these cases we deferred to the experts within each occupation

on the minimum training required and took the current mandated minimum education.

For example, new pharmacists are now required to hold a Pharm.D. in order to be licensed in the state. Prior to 2002, however, pharmacists could be licensed with a bachelor's degree. Although many employers still list bachelor's degree as the minimum educational requirement, we selected doctoral degree as the typical level of education because of the current licensing requirements.

Finally, the "less than high school" classification of occupations was eliminated. Any occupation previously having that as its educational requirement is now classified along with high school occupations in the single category "high school or less."

Summary of Changes in Classification

Overall, a relatively small number of occupations required a change from their BLS entry level classification (see Table 1). Of the 820 occupations considered, 700 (85.4 percent) were found to require an educational level that coincides with their BLS classification.

¹See http://www.bls.gov/emp/ep_education_training_system.htm.

²A good example of this is registered nurses, for whom nearly half of the job openings ask for a bachelor's degree. The minimum skill level for most nursing jobs, however, can be obtained through an associate degree.



Of the 120 occupations that differ from BLS, 55 have classification levels lower than BLS and 24 are higher. The remaining 41 occupations are “all other” categories that contain jobs that are too disparate to assign a single classification. While BLS provides a single educational level for these catch-all categories, we designate them as N/A.³ These 120 occupations make up 13 percent of workers employed in Minnesota. This indicates that the BLS educational classification is accurate for the vast majority of occupations in Minnesota, but significant improvements will come from this new classification.

Table 2 shows the occupations with the most employment that changed with the new classification. Topping the list is registered nurses, which were classified by BLS as typically

requiring a bachelor’s degree for entering the field. Nurses, however, can obtain an associate degree and compete for many of the same jobs as those with a bachelor’s degree.

The other top occupations that changed were bookkeeping, accounting and auditing clerks, heavy and tractor-trailer truck drivers, and teacher assistants. These had all been classified by BLS as requiring vocational

education, but other sources of evidence strongly indicated that only a high school diploma or less is typically required for these jobs.

Another notable occupation is police and sheriff’s patrol officers, which typically requires only high school education nationally. In Minnesota, however, those jobs, by law, require an associate degree.

Educational Requirements of Minnesota’s Workforce

With this new classification of educational requirements for occupations, we can compare the number of jobs in the state that fall into each educational category, using both the new and original BLS classifications (see Table 3).

Overall 64.4 percent of jobs in Minnesota are in occupations requiring high school or less.

TABLE 1

Number of Occupations with Educational Requirements that Changed				
Change in Requirement	Number of Occupations	Percent of Occupations	Total Employment in MN	Percent of Employment in MN
No Change	700	85.4%	2,303,940	87.3%
Decrease	55	6.7%	243,720	9.2%
Increase	24	2.9%	90,380	3.4%
N/A	41	5.0%	102,360	3.9%
Total	820	95.0%	2,638,040	100.0%

Source: Last two columns from Minnesota Occupational Employment Statistics, Q2 2015

TABLE 2

Top Occupations with Changed Requirements, by Employment Level				
Occupation	Original Requirement	New Requirement	Decrease/Increase	Employment
Registered Nurses	Bachelor's Degree	Associate Degree	Decrease	59,640
Bookkeeping, Accounting and Auditing Clerks	Vocational Training	High School or Less	Decrease	34,770
Heavy and Tractor-Trailer Truck Drivers	Vocational Training	High School or Less	Decrease	34,550
Teacher Assistants	Vocational Training	High School or Less	Decrease	31,880
Business Operations Specialists, All Other	Bachelor's Degree	N/A	N/A	27,790
Sales Representatives, Services, All Other	High School or Less	N/A	N/A	19,440
Computer User Support Specialists	Vocational Training	Associate Degree	Increase	14,140
Machinists	High School or Less	Vocational Training	Increase	11,730
Electricians	High School or Less	Vocational Training	Increase	11,240
Police and Sheriff's Patrol Officers	High School or Less	Associate Degree	Increase	8,790
Medical Assistants	Vocational Training	High School or Less	Decrease	8,730

Source: Last column from Minnesota Occupational Employment Statistics, Q2 2015

TABLE 3

Educational Requirements and Attainment of the Minnesota Workforce				
Educational Requirement of Occupation	Total Employment in MN (new classification)	Percent of Jobs in MN (new classification)	Percent of Jobs in MN (BLS classification)	Percent Attainment ¹
High School or Less	1,763,640	64.4%	61.8%	54.4%
Vocational Training	135,880	5.0%	8.9%	-
Associate Degree	132,140	4.8%	2.5%	11.6%
Bachelor's Degree	511,590	18.7%	22.8%	23.2%
Graduate Degree	94,790	3.5%	4.0%	10.8%
N/A	102,360	3.7%	-	-
Total	2,740,400	100.0%	100%	100%

¹The percent attainment comes from the ACS, which does not ask about vocational education. In this column, anyone who has not completed at least an associate degree is counted as having high school or less.

Source: Minnesota Occupational Employment Statistics, Q2 2015, American Community Survey, average 2011-2014

³Certain "all other" categories were assigned an educational level when it was clear that all occupations within the SOC code shared an educational requirement, e.g., SOC 29-1069 "Physician and Surgeons, all other."

TABLE 4

Educational Attainment of Workers, by Educational Requirement of the Occupation					
Educational Requirement	Educational Attainment				
	Less than Associate Degree	Associate Degree	Bachelor's Degree	Graduate Degree	Total
High School or Less	70.9%	10.4%	15.8%	2.9%	100.0%
Vocational Training	69.6%	22.2%	6.7%	1.4%	100.0%
Associate Degree	16.8%	36.9%	39.3%	7.0%	100.0%
Bachelor's Degree	19.6%	8.6%	47.1%	24.8%	100.0%
Graduate Degree	6.1%	2.8%	19.5%	71.6%	100.0%
N/A	37.7%	12.3%	35.9%	14.1%	100.0%
Total	54.4%	11.6%	23.2%	10.8%	100.0%

Source: American Community Survey, average 2011-2014

This is slightly higher than the 61.8 percent share based on the BLS classification. By differing levels of postsecondary education by occupational employment, the share in occupations requiring vocational education was 5 percent (8.9 percent by the BLS classification), associate degree was 4.8 percent (2.5 percent), bachelor's degree was 18.7 percent (22.8 percent), and the share in graduate degree occupations was 3.5 percent (4 percent).

Thus, generally speaking, our reclassification of occupations shifted employment toward occupations requiring high school and associate degrees and away from the other educational levels. Despite the broader

“usually required” definition used here compared with the “typical entry level” definition used by BLS, our reclassification slightly lowers the overall educational level required of our current occupational employment mix.

Table 3 also gives the percent of workers in the Minnesota labor force with each level of education. It is clear that the education levels of the workforce exceed the levels required in the state, with more than double the workers holding an associate degree than jobs that require that degree. Meanwhile, 34 percent hold a bachelor's degree or higher, while only 22 percent of jobs require this level of education. These trends will only become more pronounced as

the baby boomers retire and are replaced in the workforce with a generation that is on average much more highly educated.

Over-education

As the previous section showed, there is significant misalignment between the educational needs of employers and the educational attainment of the workforce. The direction of the misalignment, however, is primarily toward over-education.

This in itself is not a bad thing, but the problem arises when over-education leads to mal-employment, where graduates from postsecondary programs are unable to find work in their fields and thus take jobs requiring lower levels of skill. This leads to inefficient investments in education from students who are expecting to improve their job prospects and wages upon graduation. In this section we look in more detail at the misalignment of educational requirements and attainment.

Table 4 presents the percentage of jobs in occupations with each educational requirement and compares them with the educational attainment of workers employed in those occupations.⁴

⁴Certain “all other” categories were assigned an educational level when it was clear that all occupations within the SOC code shared an educational requirement, e.g., SOC 29-1069 “Physician and Surgeons, all other.”

⁵Educational attainment of workers comes from the American Community Survey. This survey does not capture vocational training, so all workers who had attained less than an associate degree were grouped together.

Table 5 summarizes this information by presenting the percentage of workers in occupations with each educational requirement that have more or less education than is typically required. Overall, 63 percent of workers are employed in occupations that are matched with their education level, while 8 percent have a lower education than is typically required for their occupation, and 27 percent have a higher level of education than necessary.⁵

Over-education is prevalent in all types of occupations, but particularly in jobs with a minimum requirement of an associate degree (largely due to registered nurses). Many jobs requiring only vocational training were filled by those with associate degrees, which may largely reflect the vocational nature of many associate degree programs.

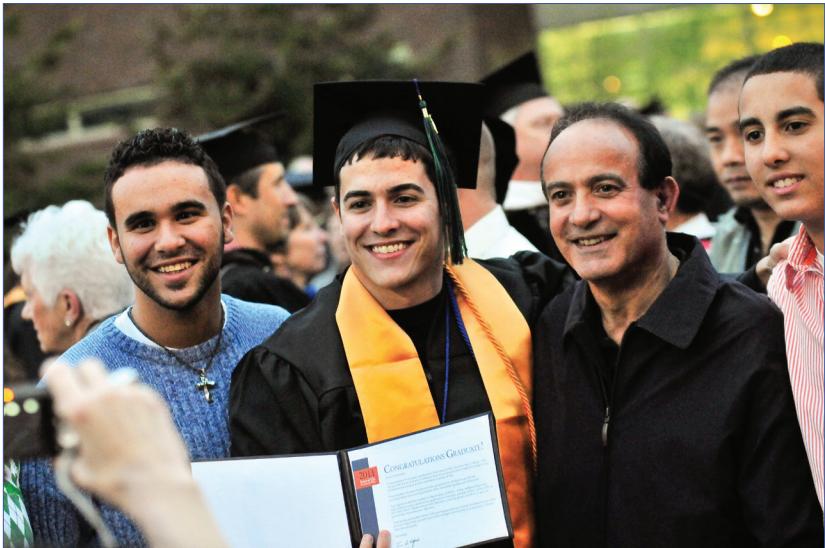
A significant number of jobs requiring high school education or less were filled by people with a bachelor's degree. It is likely that many of these are examples of mal-employment, given the high costs of obtaining a bachelor's degree, although it is impossible to say with certainty how many.

There are also a significant number of people employed in

TABLE 5

Percent of Workers with Educational Attainment Above or Below the Typical Requirement for their Occupation			
Typical Educational Requirement	Percent Equal	Percent Above	Percent Below
High School or Less	71%	29%	0
Vocational Training	70%	30%	0
Associate Degree	37%	46%	17%
Bachelor's Degree	47%	25%	28%
Graduate Degree	72%	0	28%
Total	63%	27%	8%

Source: Source: American Community Survey, average 2011-2014



occupations typically requiring a bachelor's degree who do not have any postsecondary education. These are largely concentrated in management and computer occupations, where experience can often substitute for formal credentials.

Conclusion and Next Steps

Given the significant investment, both publicly and individually, that postsecondary education requires, an accurate calibration of the educational attainment required of our workforce by



our economy's occupational mix is extremely important. But the very large differences in various estimates of this required attainment have confused rather than clarified the issue.

We have shed light on this by using a very large set of responses from Minnesota businesses about their specific educational requirements. What this reveals is that there does not seem to be an overall shortage of properly educated workers in Minnesota. If anything, there are not enough highly skilled jobs to go around for those with postsecondary education.

But it is important that we understand what these findings do and do not tell us. They do not say that postsecondary education, or even achieving a

higher educational attainment than this classification suggests, isn't valuable. Within many occupations, there exist individual jobs that may indeed require higher educational attainment than is "usually required" (and conversely some that may require less education than is typical). Even when the job does not require it, employers will often look more favorably on candidates with more education. And having more education than your particular job requires does not necessarily mean you'll find that job unfulfilling. Perhaps most importantly, while attaining a postsecondary degree may not guarantee a job commensurate with that degree, not pursuing postsecondary education all but ensures lack of access to more lucrative jobs.

These results also do not preclude a shortage of properly educated individuals in certain locations or within certain occupational fields. A major expansion in a smaller city or a rapid shift toward a particular type of occupation may indeed create a genuine lack of qualified candidates, but these are problems more readily solved through enhanced worker mobility or retraining than through an absolute increase in the educational attainment of our workforce.

The findings in this article are one part of our effort to better align labor supply and demand in the state by providing accurate and accessible information about labor market prospects by occupation. One new data tool currently under development will take information on new graduates from postsecondary institutions, by field of major, and link it with projected job openings in the state by education level. This will allow prospective students and career counselors to better identify which occupations have too few workers entering them, and which college majors are graduating people who are unable to find work in their field of study. **T**