



Does Your College Major Matter in the Workforce?

By Amy Watson, Senior Economist

Each student entering college is faced with a daunting question – what field should I study? This decision carries a lot of weight because it can potentially impact a student’s future career trajectory and earnings. While a student’s college major should ultimately reflect their personal interests and aptitudes, it’s also important to consider how much value employers place on different types of degrees. This article examines the relative economic value of different college majors in Montana, using workforce outcomes data produced by the Montana Department of Labor & Industry for the report [Meeting State Worker Demand](#).

Field of Study Impacts Workforce Outcomes More than Major

Montana’s four-year colleges offer a wide variety of programs to serve students pursuing many different career paths. So many choices can be overwhelming. However, students can rest assured that their specific major selection probably won’t have a large impact on their workforce outcomes.

A student’s broader decision about what field to study – such as the liberal arts, business, communications, healthcare, or engineering – has a larger influence on workforce outcomes than the specific major chosen. **Figure 1** shows the workforce outcomes for bachelor’s degree graduates from Montana colleges by major.¹ The figure includes the percentage of graduates in each major who earned income in Montana one and five years after graduation and the median income for each.

The workforce outcomes of bachelor’s degree graduates vary the most between different program categories. For example, engineering and health professions graduates reported a median income about twice as high as those reported by liberal arts, social science, and communication graduates a year after graduation. The differences in workforce outcomes by program category persist over time, suggesting a student’s career decision helps determine their initial employability post-graduation as well as their future earnings potential.

Health professions and engineering fields reported the highest median wage among bachelor’s degree programs in Montana. All majors within these fields report over \$40,000 in median income a

¹ Includes bachelor’s graduates from the 2001-02 academic year to the 2014-15 academic year from Montana State University-Bozeman, MSU-Northern, MSU-Billings, Montana Tech, University of Montana - Missoula, UM-Western, Rocky Mountain College, and Carroll College.

FIGURE 1
Workforce Outcomes After Graduation for Bachelor's Degree Earners by Major

Program Category	Major	One Year After		Five Years After	
		% Filing	Median Income	% Filing	Median Income
All Bachelor's Degree Programs		67%	\$22,586	54%	\$33,077
Ag, Natural Resource & Conservation	Animal Science	78%	\$18,630	71%	\$26,420
	Forestry & Wildlife Mgmt	64%	\$26,417	47%	\$38,132
Architecture	Architecture	62%	\$14,540	41%	\$38,361
Business	Business	69%	\$26,029	57%	\$38,156
	Accounting & Finance	77%	\$28,541	67%	\$41,969
Communication	Communication	58%	\$21,451	42%	\$29,154
	Journalism and PR	58%	\$22,179	45%	\$28,757
Computer and Info Science	Computer Science	69%	\$35,788	55%	\$52,158
	Computer/Info Science, Other	80%	\$30,447	70%	\$38,157
Culinary Arts & Recreation	Kinesiology & Exercise Science	70%	\$19,419	59%	\$28,611
	Health and PE/Fitness	69%	\$18,114	54%	\$29,404
Construction, Mechanic & Transportation	Construction Technology	55%	\$39,199	52%	\$45,911
Education	Elementary Education	79%	\$21,482	68%	\$29,196
	Special Education	78%	\$24,678	67%	\$29,280
Engineering	Engineering, Other	32%	\$41,348	25%	\$56,058
	Engineering Tech	62%	\$40,708	57%	\$52,000
	Civil Engineering	66%	\$41,140	57%	\$51,236
	Engineering, General	56%	\$45,143	45%	\$61,818
	Electrical/Electronics Engineering	59%	\$42,095	44%	\$57,954
Health Professions	Registered Nursing	80%	\$46,004	72%	\$48,709
	Health Science	62%	\$40,164	48%	\$60,503
Human Services	Human Services	76%	\$23,025	61%	\$28,721
Liberal Arts	General Studies	67%	\$23,148	57%	\$30,005
	English and Writing	64%	\$16,632	46%	\$24,593
	History	63%	\$18,664	46%	\$27,674
	Visual and Performing Arts	60%	\$16,336	40%	\$23,496
	Language and Linguistics	59%	\$17,022	41%	\$24,460
Physical Science	Biology	66%	\$18,187	49%	\$29,176
	Environmental Science	64%	\$19,401	54%	\$30,477
	Physical Science, Other	58%	\$19,586	43%	\$28,715
	Geology	65%	\$22,132	50%	\$36,069
	Microbiology	71%	\$22,153	43%	\$38,600
Social Science	Social Science, Other	67%	\$18,519	52%	\$29,433
	Sociology	68%	\$21,704	54%	\$29,388
	Political Science	61%	\$19,541	47%	\$33,032
	Anthropology	61%	\$17,835	48%	\$21,958

Source: DOR, OCHE, RMC, and CC income data match summarized by MTDLI. Income is defined as lines 7,12,17, and 18 on the Montana income tax return, not including farm income. Real average income reported in 2015 dollars using the CPI-U. Only programs with at least ten graduates since 2001 are included. Green font indicates program has above average outcomes for bachelor's degree earners.

Bachelor's degree majors with income of at least \$30,000 a year after graduation:

- Engineering
- Registered Nursing
- Health Science
- Computer & Info Science
- Construction Technology

year after graduation. Graduates in construction technology and computer and information science follow closely behind, reporting over \$30,000 in median income. Graduates in these fields remained some of the highest income earners five years after graduation, suggesting their degree helped improve their earning potential compared to graduates from other programs.

Bachelor's graduates in liberal arts, social science, communication, and physical science have below average workforce outcomes. Graduates in most of these programs reported an income of less than \$20,000 after a year, and their income levels remained below average five years after graduation. Students interested in these programs should consider starting out at a two-year college to lower the cost of a bachelor's degree. On average,

students who transferred from a two-year to four-year college saved about \$1,300 in tuition and recovered their costs faster than those who enrolled directly in a four-year college. Students in more generalized fields, such as liberal arts, tend to save more money from transferring than students in more specialized bachelor's degree programs.²

The decision between a career in health professions or a career in communication has a much bigger impact on a graduate's workforce outcomes than the decision between studying business or finance. Graduate workforce outcomes do not vary as significantly within a program category. For example, history majors report only about \$3,000 more in median income than English majors five years after graduation. Similarly, engineering graduates' income levels only vary by about \$5,000 a year after graduation depending on the graduate's specific engineering degree. The difference in income levels between engineering degrees does rise over time. However, some of that difference can be attributed to individual job performance. Students torn between studying environmental science or biology may be relieved to know their decision probably won't have a large impact on their future earning potential.

Workforce Outcomes Also Impacted by Degree Selection

Many students view a bachelor's degree in any field as a ticket to a successful career. As a result, some students choose to enroll in a four-year college directly after high school without much thought about what they will study once they arrive. However, a bachelor's degree may not be the most efficient path for a student to achieve their desired career. Some careers pay more to graduates who hold a bachelor's degree, while others do not. Before students decide to pursue a bachelor's degree, they should consider the education level required by employers in their field of interest.

Figure 2 shows the difference in wages attained by associate and bachelor's degree earners by program for programs with the largest and smallest wage increases for bachelor's degree attainment.³ In general, programs that train graduates to work in occupations that require a bachelor's degree have larger wage premiums – the difference between wages of bachelor's and associate degree earners – than those that do not.

Graduates in education, health information technology, construction engineering, and information technology received the largest wage premium for bachelor's degree attainment.

² A complete list of transfer cost savings by program is available in Figure 2.12 on page 49 of the statewide college workforce report. <http://lmi.mt.gov/Publications/PublicationsContainer/meeting-state-worker-demand>.

³ A complete list of wage premiums for bachelor's degree attainment by program can be found in Figure 2.6 on page 38 of the statewide college report. <http://lmi.mt.gov/Publications/PublicationsContainer/meeting-state-worker-demand>

FIGURE 2
Programs with the Largest and Smallest Wage Premiums for Bachelor's Degree Attainment

	Program	Associate Degree		Bachelor's Degree		Wage Premium	
		1 Year	5 Year	1 Year	5 Year	1 Year	5 Year
Largest Premiums	Information Technology	\$21,480	\$33,559	\$51,136	\$69,928	\$29,656	\$36,370
	Construction Engineering	\$21,199	\$31,752	\$30,738	\$55,719	\$9,539	\$23,968
	HIT and Medical Coding*	\$21,533	\$25,559	\$27,543	\$44,773	\$6,010	\$19,215
	Secondary Education	\$13,820	\$19,411	\$21,430	\$32,772	\$7,609	\$13,361
	Early Childhood Education	\$18,584	\$21,350	\$25,731	\$34,098	\$7,147	\$12,749
Smallest Premiums	Transport/Material Moving	\$20,455	\$32,332	\$16,661	\$34,867	(\$3,793)	\$2,535
	Health Tech/ Assistant	\$34,173	\$43,452	\$22,089	\$46,087	(\$12,084)	\$2,636
	Visual and Performing Arts	\$15,664	\$21,991	\$13,994	\$22,855	(\$1,670)	\$864
	Registered Nursing	\$41,526	\$49,556	\$41,110	\$51,016	(\$442)	\$1,460
	Engineering Tech, Other	\$29,196	\$50,629	\$32,497	\$49,221	\$3,300	(\$1,408)
	Public Safety	\$23,553	\$42,193	\$23,288	\$35,871	(\$265)	(\$6,323)
	Allied Health Diagnostic, Intervention, Treatment	\$32,984	\$45,678	\$16,418	\$30,467	(\$16,567)	(\$15,210)

Source: MTDLI, OCHE, RMC, and CC graduate data wage match. Average wages reported in 2015 dollars using the CPI-U.

* = Associate Degree column represents wage outcomes for Certificate of Applied Science because it is more common.

Graduates are categorized by program based on the highest degree they earned from MT colleges.

Bachelor's degree graduates from these programs, along with business, accounting, and automotive technology graduates, report over \$10,000 more in wages five years after graduation than those holding an associate degree in these fields. The workforce outcomes for graduates from these programs suggest Montana employers see value in obtaining a bachelor's degree.

On the other hand, graduates in allied health, public safety, engineering technology, health technicians and assistants, and transportation and material moving programs have the smallest wage premium for bachelor's degree attainment. Many of the jobs graduates from these programs pursue don't require a bachelor's degree.⁴

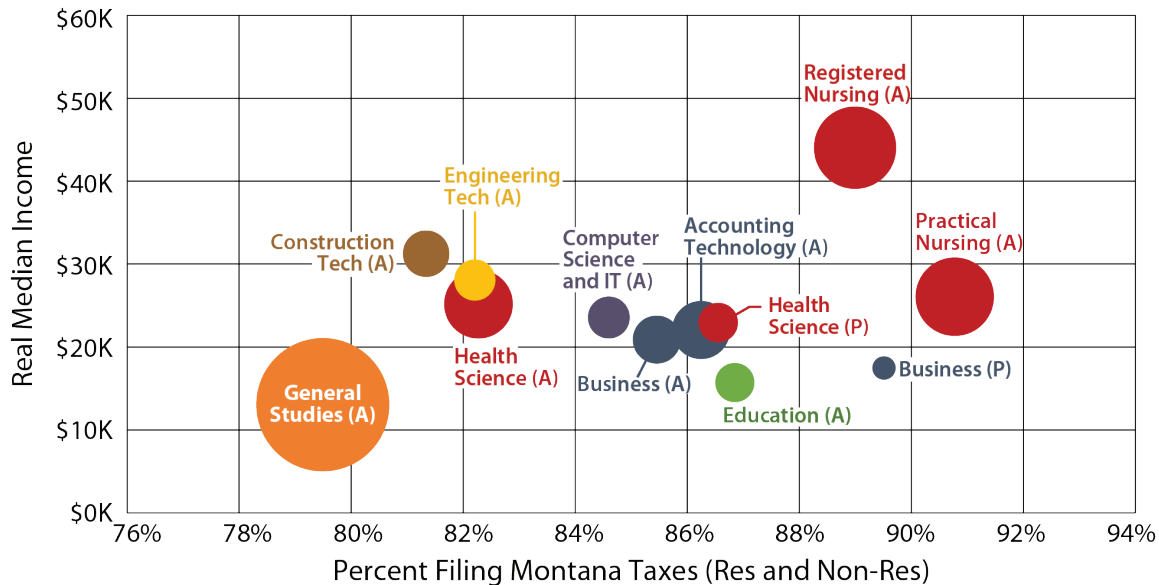
Students interested in these programs may be able to achieve their desired careers and achieve lower education costs by obtaining an associate degree instead of a bachelor's.

Despite the growing popularity of bachelor's degree attainment among registered nurses, registered nursing graduates experience minimal wage increases for a bachelor's degree.⁵ Employers appear to hire both associate and bachelor's degree RNs at a similar pay. However, bachelor's trained RNs do experience slightly faster wage growth over time than associate trained RNs, suggesting a bachelor's degree results in greater earning potential than an associate degree.

⁴ Educational requirements for occupations determined by the U.S. Department of Labor based on the most common degree earned by individuals beginning their career.

⁵ Watson, Amy. 2016. "The Nursing Workforce in Montana" Montana Economy at a Glance, published by MTDLI, December 2016. Available at Imi.mt.gov.

FIGURE 3
Workforce Outcomes One-Year After Graduation for Degrees less than Four-Years



Source: DOR, OCHE, RMC, and CC income data match summarized by MTDLI. Income is defined as lines 7,12,17, and 18 on the Montana income tax return, not including farm income. Real average income reported in 2015 dollars using the CPI-U. Only programs with at least ten graduates since 2001 are included. (A)=Associate degree (P)=Postsecondary non-degree award

Graduates from several associate degree programs have better workforce outcomes than the average bachelor's degree earner. **Figure 3** shows the workforce outcomes for associate degree and postsecondary award programs. The horizontal axis represents the percent of graduates filing income taxes one year after graduation, and the vertical axis shows the reported median income for each degree. The size of the bubble corresponds to the number of graduates in each program since 2001. The programs in the upper-right hand corner have better workforce outcomes in Montana a year after graduation than those in the lower-left.

Of the associates degree and post-secondary award programs, health professions degrees (colored red) have some of the best workforce outcomes in Montana. Registered nurses with an associate degree earn a median income of roughly \$44,000 one year after graduation. Construction technology graduates have the next highest income, reporting \$31,000 a year after graduation. These are followed by graduates in engineering technology, and computer and IT graduates, reporting median wages of \$28,000 and \$23,000, respectively.

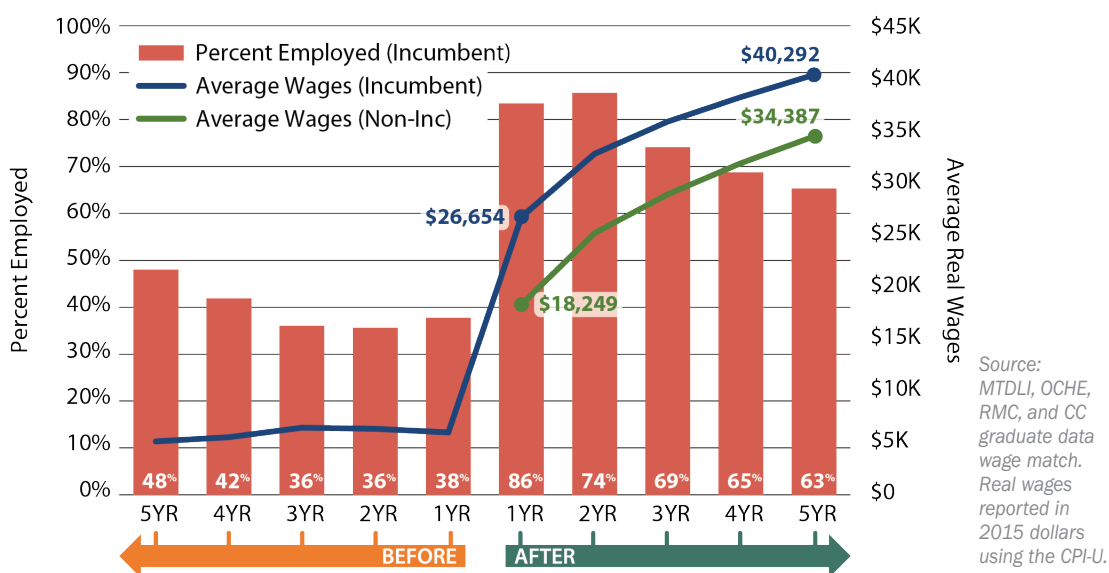
While earning a bachelor's degree can set graduates up for success in the Montana labor market, there are also lucrative career opportunities for students who pursue an associate degree.

Your Degree Only Goes So Far – Work Experience Matters

Perhaps the single best thing a student can do to improve their career prospects after graduation is to work while they are still in school. Graduates with work experience prior to graduation were more likely to be employed in Montana after graduation, and they had higher wages than those without prior connections to the Montana labor market. **Figure 4** shows the wage and employment outcomes for incumbent workers before and after graduation, compared to non-incumbent workers.

Establishing a connection to the Montana labor market prior to graduation greatly improves the likelihood a student will find employment in Montana after graduation. Eighty-six percent of incumbent workers were employed in Montana a year after graduation, compared to only about

FIGURE 4
Workforce Outcomes for Incumbent Workers Before and After Graduation



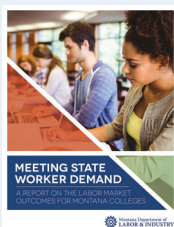
50% of non-incumbent workers. Incumbent workers also had a more consistent work history after graduation. Sixty-three percent of incumbent workers were still employed in Montana five years after graduation, compared to only 33% of non-incumbent workers.

Incumbent workers also benefited from their work experience by earning about \$8,000 more than non-incumbent workers a year after graduation. The wage premium decreases over time as non-incumbent workers also gain experience. Five years after graduation, incumbent workers made about \$6,000 more than non-incumbent workers did. While major and degree selection has an impact on student's workforce outcomes, all students can improve their career prospects by gaining work experience prior to graduation.

Conclusion

All students must decide which career path to pursue, and their choices will certainly impact their future career trajectory and success. As such, reliable information on student workforce outcomes is critical to making an informed decision. However, a student's major is only one determinate of future career success. Students can also improve their workforce outcomes by selecting the degree from within their field of interest that is most valuable to employers. Gaining work experience before graduation also improves outcomes, giving students a better understanding of their career options, and building the skills they'll need to excel in the Montana workforce.

Want More Information on Workforce Outcomes?



The information in this article comes from the report, "Meeting State Worker Demand: A Report on the Labor Market Outcomes for Montana Colleges." This report addresses the ability of Montana colleges to meet the state's future workforce needs. The report provides information on the expected job demand, and analyzes whether students in Montana colleges are graduating within in-demand fields, obtaining jobs quickly after graduation, and experiencing wage progression in their post-graduation careers. Download the full report at <http://lmi.mt.gov/Publications/PublicationsContainer/meeting-state-worker-demand>.