

How Montana is using data to drive policy



Many states match education and employment data already collected to administer programs, in order to better understand the effectiveness of their education and workforce policies. Montana has set an example for other states by not just *understanding* its workforce programs, but using this data to drive policy change within the government, postsecondary institutions, and the business community.

Montana's statewide college report

Montana, like much of the country, is facing a workforce shortage as an increasingly large portion of the labor force reaches retirement age without enough workers entering the labor force to replace them. In the face of tight labor markets, Montana's Governor, Steve Bullock, published an economic development plan, the Main Street Montana Project, which prioritized workforce development and established a goal of aligning the state's education system with the needs of a changing economy. Every year, over 7,000 students graduate from Montana colleges and enter the workforce. Businesses in Montana need these graduates to be trained in the right fields, with the right skills.

The Montana Department of Labor and Industry (MTDLI) recently published a [statewide college report](#) entitled "Meeting State Worker Demand: A Report on the Labor Market Outcomes for Montana Colleges," in collaboration with the Office of the Commissioner of Higher Education (OCHE). The report seeks to determine if there are enough students graduating in the right fields to meet Montana's workforce needs now and in the future. It compares the workforce supply being developed in Montana's colleges to expected future employment needs and analyzes workforce outcomes for Montana college graduates.

Since the statewide college report was published in May 2017, Montana educators, students, businesses, and policymakers have been using this data to successfully guide workforce development efforts in the state, and to develop new opportunities for cooperation between colleges and businesses.

The statewide college report is being used by:

- **Montana colleges** to help them make strategic planning decisions about their program and course offerings, and their recruitment and retention policies.
- **Students** to help them make career planning decisions. The workforce outcomes by program allow students to better understand the connection between their educational choices and their career prospects in Montana.
- **Montana business** to help them fill their open positions. The report has facilitated collaboration between private businesses and the Montana University System to help fill local and statewide workforce needs.

- **Policymakers** to develop and support existing statewide policy objectives to address the workforce shortage and ensure Montana's economy continues to grow.

Inter-agency collaboration

The statewide college report includes workforce information from various state agencies and private institutions. Montana has a long-standing data sharing agreement in place between MTDLI and OCHE to allow the matching of public post-secondary institution data with wage records from the state's Unemployment Insurance (UI) system. The statewide college report utilized this connection to capture individual-level information on Montana students from the sixteen colleges in the Montana University System (MUS) data warehouse.

MTDLI was also able to establish new relationships with two private colleges in Montana, Rocky Mountain College and Carroll College. Both colleges volunteered to participate in the statewide college report after MTDLI economists offered to provide a supplemental report for both colleges that contained workforce outcomes for their own graduates and quantified the college's contribution to statewide workforce supply. These colleges and MTDLI established data sharing agreements to govern the transfer of data, with the colleges providing individual-level data on their graduates extending back to the 2001-02 academic year. The data included demographic information, as well as information on the credential achieved, the graduate's GPA, and the number of credits completed.

MTDLI merged the data from the private colleges with the data from the MUS data warehouse. The resulting dataset included individual-level information on graduates from eighteen colleges located throughout Montana – including two and four-year institutions.

Workforce outcomes for Montana college graduates were measured using the administrative wage records from the state's UI System, as well as the state's income tax records maintained by the Montana Department of Revenue (DOR). The UI wage data includes total wages paid to an individual in each quarter. However, Montana's UI wage data does not include self-employment income, or wages earned from an employer who does not pay into the UI system. The statewide college report also measured workforce outcomes using Montana income tax records. The report captures the following sources of earned income as reported on a

graduate's income tax return – wages, business income, real estate income, royalties, S corporate income, trusts, and farm income. Passive income sources, like capital gains and social security, were not included. Income tax data provides a more complete picture of graduates' earnings than UI wage data, and better identifies whether a graduate remains in Montana after graduation.

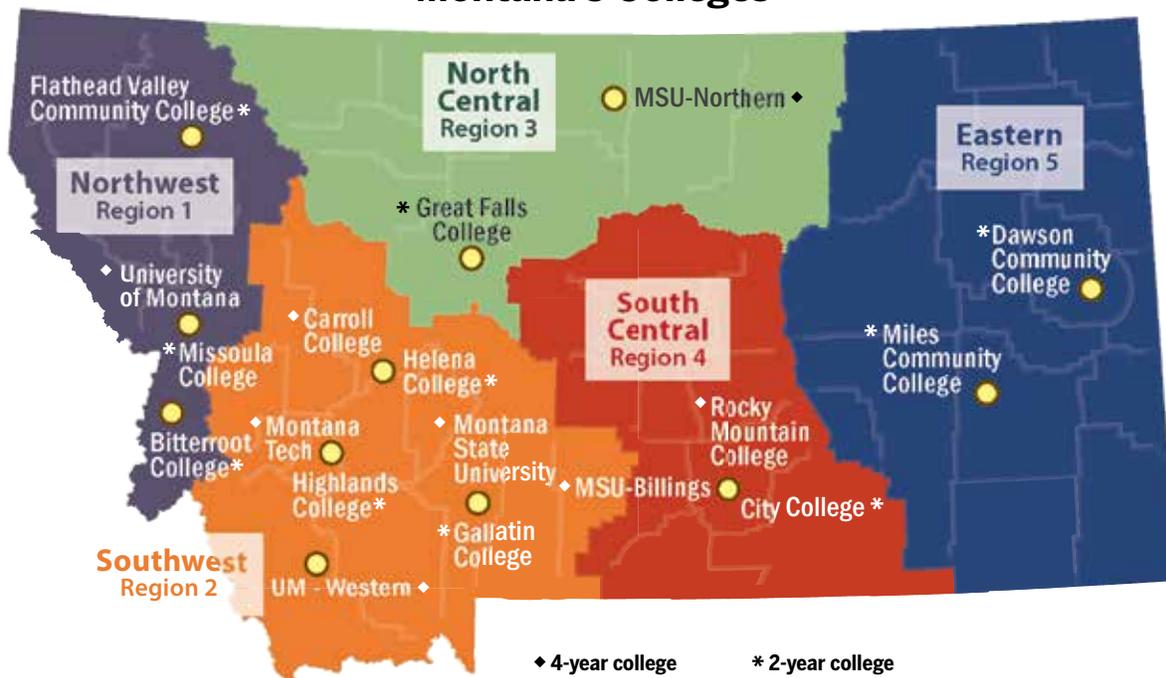
The Director of DOR Tax Policy and Research and MTDLI's Chief Economist oversaw the establishment of a memorandum of understanding (MOU) between the MTDLI and DOR to govern the exchange of income tax information for Montana college graduates. "As a small state, we have an advantage in establishing connections between agencies. Researchers across different agencies are supportive of each other's projects, and are willing to share information," says Chief Economist Barbara Wagner. "We established the MOU with only a few phone calls, and the agreement was in place within weeks, not months. We could not have achieved such a quick turnaround without a pre-existing relationship and good understanding of what data they could provide." DOR linked graduate data to income tax records by social security number, and summary data was released back to MTDLI.

Because Montana does not have a P-20W longitudinal data system (one that includes early childhood, K-12, postsecondary, and workforce information) all data linkages were accomplished through programs written by economists. This approach allowed Montana to conduct the research immediately rather than waiting until resources were available to build a longitudinal data system. While this approach required analysts to have more technical programming expertise and stronger relationships between agencies, it allowed the state to move forward in linking private and public education data, tax data, and wage records. The ad-hoc approach spurred progress in creating the statewide college report, providing an example of the type of work that could be completed more frequently if policymakers increased investment in longitudinal data systems.

Innovative analysis

Montana's statewide college report connects workforce supply and demand to evaluate whether colleges are producing enough graduates in the right fields to meet demand. Workforce demand is measured using the employment projections produced by MTDLI by industry,

Montana's Colleges



occupation, and region. These employment projections are produced over two and ten-year timeframes based on historical employment data, coupled with knowledge that is available at the time of the forecast. Employment projections for a given occupation include new job openings, openings due to retirements, and openings due to career changes. MTDLI estimates that colleges meet demand if they are producing enough graduates to fill new job openings and openings due to retirements.

The supply and demand analyses identify programs and occupations that are over or undersupplied by Montana colleges, as well as areas for new program development. The statewide college report conducts three different supply and demand analyses—by industry, occupation, and program of study. These three analyses are supplemented with workforce outcomes by program to help confirm our prior conclusions. For example, undersupplied programs should have better wage and employment outcomes than oversupplied programs. The lack of available labor means graduates should find employment faster since there are more job openings, and the undersupply puts upward pressure on wages as employers compete for a limited supply of workers.

The statewide college report also includes the supply and demand analyses for each region of the state to help identify any geographical disparities between supply and demand. The statewide analysis may show there are enough graduates to meet the demand for a particular occupation; however, there may still be areas of the state where it is difficult for employers to find qualified workers. Mismatches in the geographical distribution of the supply and demand of workers create labor market frictions, which can cause the unemployment rate to rise and hamper business productivity. The regional analysis can be used by educators in the region to understand local workforce needs, and by students looking to find work in a specific region to decide what field to study.

Influential results

In the first six months since the report has been released, MTDLI has presented the results from the statewide report to a variety of stakeholders — college administrators, department heads, guidance counselors, business leaders, and policymakers. These stakeholders have already begun incor-

porating the results into their efforts to develop a qualified workforce in Montana.

Educators utilize the report to develop and expand program offerings.

Educators are using the results of the statewide report to assess their existing capacity in different programs and explore areas for new program development. For example, Missoula College, a public two-year college, is considering the development of new programs to train preschool teachers, EMTs, paramedics, and dental assistants because the regional supply and demand analysis suggests these programs are undersupplied in their region. The college has also worked with other colleges in the Montana University System to develop a new online pharmacy technology program. These efforts will help strengthen the pharmacy technology workforce, which is undersupplied in most areas of the state according to the statewide college report.

Likewise, the Dean of Great Falls College has used the statewide report to seek the expansion of the schools' dental hygiene program, since dental hygiene has been identified as a very high-demand occupation. Currently, Great Falls College, a public two-year college, offers the only dental hygiene program in the state. Thus, the Dean of Great Falls College, Dr. Wolff, was able to use the information in the report to seek additional space for the dental hygiene program with the support of the college's Development Board, which is comprised of representatives from the local business community.

Rocky Mountain College, a private four-year college, is starting or expanding programs in two areas. The college will be starting a Doctor of Occupational Therapy program beginning next year, because there are no occupational therapy programs at Montana colleges, despite high demand. The school is also working with a community-based technology company to expand their computer science program to help the state meet demand for that occupation.

“This report has helped confirm some of the things that we, at Rocky, are going to make a part of our strategic plan.”

Dr. Robert Wilmouth, President, Rocky Mountain College



Students use workforce outcomes and employer demand to inform career decisions.

Educators at Montana colleges have used the statewide college report to inform their career guidance strategy and improve student’s marketability in the workforce after graduation. For example, educators and career counselors have typically guided students who were unsure of their career interests into a general studies program. The general studies program is designed to be a transfer program for two-year college students who are seeking a bachelor’s degree. However, the statewide college report found that most general studies graduates enter the workforce after graduation instead of pursuing higher education in Montana. Furthermore, the report found these graduates experience below average workforce outcomes, likely due to a lack of employer demand. Thus, the statewide college report suggests that counselors shift away from guiding students who are unsure of their career interests into general studies programs, and

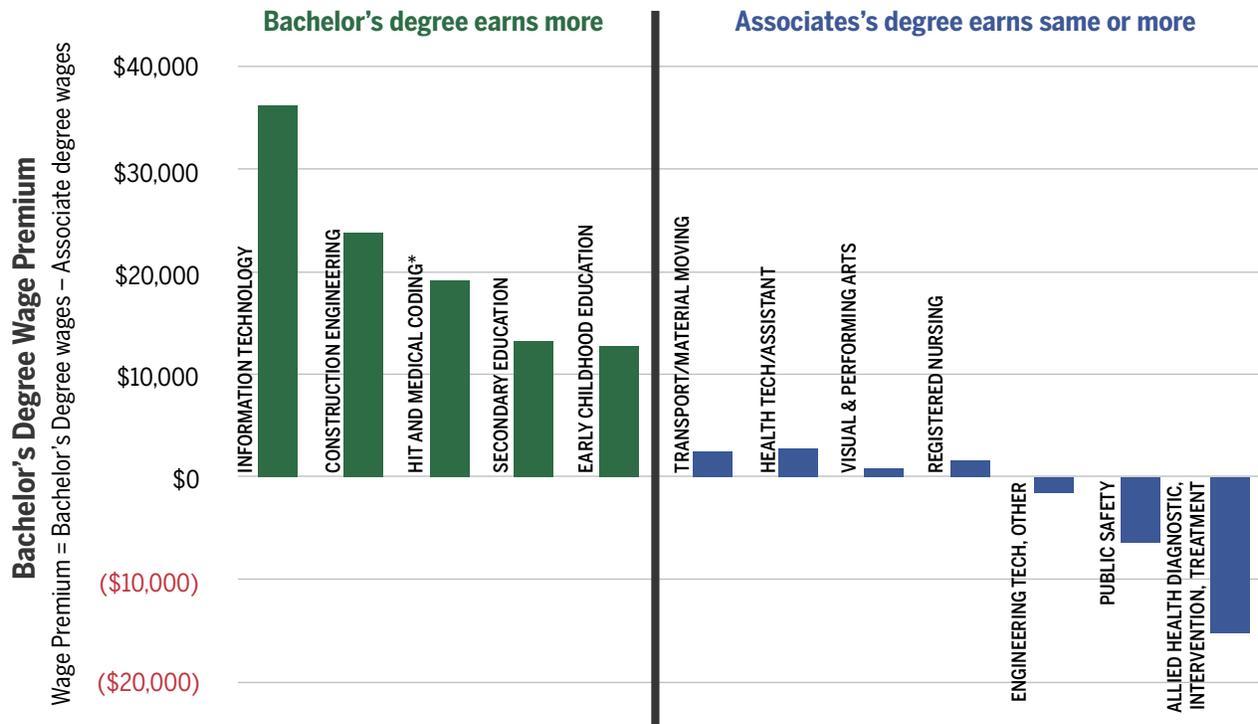
instead focus on helping those students identify a more specific degree program that has the potential to provide a more lucrative career after graduation.

“Career choice and degree selection have always been disjointed in Montana. This report demonstrates the need for a student’s decisions about education and career selection to be made in unison.”

Dr. Stacy Klippenstein, President, Miles Community College

Additionally, admissions counselors at Missoula College incorporated the supply and demand analysis by program and the workforce outcomes by program information from the statewide college report into their career guidance curriculum. Missoula College students now have access to

Associate's degrees with higher wages than Bachelor's Degrees



Source: MTDLI, OCHE, RMC, and CC graduate data wage match five years after graduation. Allied health program excludes surgical technology and respiratory care.* = Certificate of Applied Science is used instead of Associates degree to calculate wage premium because it is more common.

reliable data measuring regional and statewide workforce needs to help them make decisions about whether they should pursue further education, and what programs to consider when applying.

Once a student has identified their career interests, it is also important for them to understand the appropriate level of education needed in that field. The statewide college report provides students with information on the returns to educational attainment by program of study and helps them to understand the optimal level of education needed for a given career. This information can help students maximize the returns on their investment in education. For example, the report shows that graduates with an associate degree in public safety, engineering technologies, and allied health achieved higher wages in Montana five years after graduation than those graduates who pursued bachelor's in the same fields. The report also showed a relatively small wage

premium for bachelor's degree earners in registered nursing, health technician, art, and transportation. Thus, these students may consider pursuing an associate degree to minimize their education expenses and time out of the labor force. The chart on page 6 shows the college majors with the highest and lowest wage premium for bachelor's degree attainment in Montana.

Businesses improve collaboration with post-secondary education system.

The statewide college report demonstrates the important role post-secondary institutions have in workforce development efforts in Montana. Approximately 75 percent of Montana college graduates will work for a Montana employer at some point within the first five years of graduation. These graduates will work in every county in the state, leaving no area of the state untouched by the post-secondary system.

Information on the contribution of Montana colleges to the state's workforce has helped facilitate collaboration between educators and the business community.

Great Falls College, a public two-year college, has used the report to initiate productive conversations with two large employers in the Great Falls area about workforce training, including one of the state's largest construction firms, for customized training in the occupations suggested for expansion by the college report. The result of these conversations will hopefully be the development of customized trainings that incorporate apprenticeships or other work-based learning.

"The information in the college report has strengthened the support the college receives from the local community in terms of scholarships and needed equipment."

Dr. Susan Wolff, Dean, Great Falls College

Policymakers use statewide analysis to inform workforce development efforts in Montana.

The information in the college report supports Governor Bullock's ongoing focus on streamlining workforce preparation. In the face of a worker shortage, streamlining workforce development means minimizing the time students need to spend out of the labor force to receive training, and allowing students to remain connected to the workforce while they are in school. The statewide college report finds that working while in school not only helps address the state's worker shortage, but also helps students improve their employment outcomes after graduation. This result supports Governor Bullock and MTDLI's efforts to advance apprenticeship and work-based learning opportunities in Montana.

"Too many decisions regarding the relationship between workforce needs and higher education are made based on biases and assumptions that are not supported by or tied to any solid research or analysis. The statewide college report provides us with sorely needed information to help us make data driven decisions."

Regent Bill Johnstone, Montana Board of Regents

These workforce training models emphasize the importance of work experience.

The Montana Board of Regents, the governing body of the Montana University System, has been a strong advocate of the statewide college report, and has already used it to provide guidance to the state's postsecondary institutions. Previously, many of Montana's postsecondary institutions strove only to serve their communities and did not think of postsecondary education as a state-wide system. However, the report showed that many students migrate throughout the state. Based upon this information, the Montana Board of Regents called for a unified effort in addressing workforce shortages in undersupplied areas of the state and encouraged colleges to work together to reduce program redundancies.

"We always understood apprenticeship and work-based learning to be important tools in addressing the workforce shortage, and this report further solidifies our understanding of the benefits of hands-on experience."

Commissioner Galen Hollenbaugh, MTDLI

Conclusion

Montana has used its college report to drive policies that will ensure Montana's workforce is well-prepared to meet the needs of a changing economy. The statewide college report demonstrates the need for continued collaboration between businesses and training institutions to address the state's workforce needs. The report was designed to be a starting point for understanding workforce supply and demand in Montana. By providing educators with information on workforce needs, students with information on workforce outcomes, and businesses with information about the available workforce, Montana's labor market can function more efficiently. Utilizing this data will help students progress through educational programs and join the labor market quickly and efficiently, saving money for students, employers, and taxpayers.



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