



Montana Department of **LABOR & INDUSTRY**

Registered Apprenticeship Program Data Report October 21, 2020

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Executive Summary

Apprenticeships are a time-honored tradition of passing on craftsmanship, knowledge, and skills to the next generation. This method of on-the-job training plays an integral part in Montana's worker training systems. While traditional apprenticeable occupations remain a large part of the program, the Montana Registered Apprenticeship program has evolved to include a broader range of professions to meet the needs of Montana's economy. Today's apprentices study in fields such as information technology and healthcare, in addition to the traditional apprenticeships for plumbers, carpenters, electricians, and other trades. Apprenticeships require college-level learning to keep up with the science, computing, and technologies needed for modern-day success.

The Montana Department of Labor & Industry's Registered Apprenticeship program partners with union and non-union sponsors to establish registered apprenticeship programs across the state. A registered apprenticeship program provides the on-the-job and classroom training required to meet the national requirements for an industry-recognized certificate through a curriculum customized to meet the employer's needs. Once an apprentice completes a registered apprenticeship program, they obtain an industry-recognized credential demonstrating to employers in all 50 states that they are qualified and trained.

Since 2000, the Montana Registered Apprenticeship Program has coordinated approximately 9,900 apprenticeships in over 110 different occupations. These apprenticeships involved 8,900 individuals and over 1,300 businesses. While the program has been increasing in participation and expanding into new fields, there is a demand for continued growth. Over the next ten years, approximately 47% of projected worker demand will be in apprenticeable occupations. In addition, the U.S. Department of Labor maintains a list of all occupations trainable through a registered apprenticeship program, which includes over 1,150 jobs listed as apprenticeable under national guidelines.

The apprenticeship option offers a way for workers to earn while they learn, allowing an individual to remain in the labor force and earn a paycheck while obtaining certification in their career field. The training program typically takes three or four years to complete, depending on the occupation. Apprentices are offered a wage while learning hands-on skills alongside an experienced journeyman or mentor.

Apprentices who completed a program earned an average wage of \$58,086 in the first year after graduation, nearly \$11,600 more than the statewide average of \$46,497. Over the last five years, the program has graduated an average of 215 apprentices per year, providing a considerable contribution to Montana's trained workforce.

Registered Apprenticeship program sponsors benefit from a higher employee retention rate and the ability to train employees to create custom skill sets. Apprenticeship serves as a vital component in meeting the sponsor's demand for skilled workers. Sponsors are also helped financially, with lower recruitment costs and starting in 2018, Montana began offering a tax credit for apprenticeship sponsors.

This report describes the Montana Registered Apprenticeship program, including information on past participants' demographics, program participation, and employment outcomes.ⁱ

Highlights include:

- Apprenticeship continues to gain popularity, with the total number of apprenticeships increasing by an average of 13% each year from 2013 to 2019.
- Apprenticeships contribute to the economic success of Montana's workers. A year after graduation, apprentices had an average wage of \$58,086, nearly \$11,600 higher than the statewide average wage.
- Apprenticeships help retain skilled workers in Montana. Approximately 84% of apprentices who graduated before 2015 were still working for a Montana employer five years later.
- The number of active sponsors has increased by approximately 8.5% per year in the last five years. About 650 sponsors had an active apprentice in 2019.
- Since 2000, 54 out of Montana's 56 counties have had at least one apprenticeship participant.
- The programs are primarily based in the more populated counties, with 46% of all apprenticeship programs in Lewis & Clark, Gallatin, and Yellowstone counties. The counties with the highest growth in new apprenticeships from 2018 to 2019 are Custer (57 new), Ravalli (19 new), and Silver Bow (10 new) counties.
- Apprentices were trained in 82 different occupations in 2019, and over 110 occupations have been apprenticed in Montana. Montana Registered Apprenticeship staff assists interested employers in establishing apprenticeships in new fields.
- Construction-related trades make up the greatest share of apprenticeships overall. Of those in construction, 34% of apprentices are in programs for electricians and 21% programs for plumbing. These two occupations require an apprentice certificate for licensing in Montana.
- Some of the fastest-growing apprenticeship opportunities are in the healthcare field. From 2015 to 2019, certified nursing assistants (CNA) have had the highest growth in apprenticeships, while medical coding ranks sixth and medical assistants ranks tenth.
- In 2019, 77% of apprentices were between the ages of 16 and 34, suggesting that work-based learning in the form of apprenticeship is becoming a well-known option for young adults to pursue directly after high school.
- The share of women in apprenticeships has increased over the past five years, from 4.4% in 2015 to 21.3% in 2019. Most of this growth has occurred in apprenticeships for certified nursing assistants, medical coding, and child care workers.

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How Does the Montana Registered Apprenticeship Program Work?

Registered apprenticeships involve a worker, called an apprentice, participating in a structured work-based learning program that involves both technical instruction and on-the-job practical training. A Registered Apprenticeship Program must meet national standards for curriculum and training under the monitoring of the Montana Department of Labor & Industry (DLI). DLI's Registered Apprentice Program is a recognized State Apprenticeship Agency by the U.S. Department of Labor, allowing the Department to monitor the apprenticeship and award apprenticeship credentials.

After completing a registered apprenticeship, the participant receives a national industry-recognized credential. Many states, including Montana, require a registered apprentice certification for state licensing in trade occupations such as plumbers or electricians. In many instances, the participant may also earn a simultaneous post-secondary degree.

DLI works with employers to help them set up customized programs that follow the recommended curriculum. DLI monitors program progress to ensure that the apprentice and business sponsor meet program goals. The Department can help businesses find potential workers to fill apprenticeship positions, but the employer completes the hiring process. Approximately 649 Montana businesses were serving as active apprenticeship sponsors in 2019.

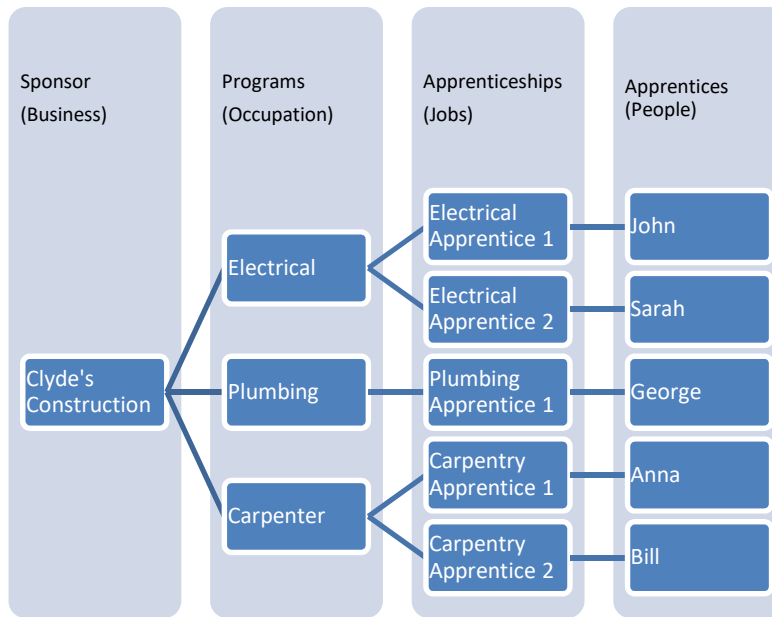
The U.S. Department of Labor maintains a list of all eligible occupations for registered apprenticeships. Montana sponsors have offered training in over 110 of these occupations. The largest apprentice groups in Montana are in trades occupations. Programs are expanding to include in-demand jobs in professions like nursing aides, daycare providers, radiologic technicians, and computer programmers.

The expected completion of most apprenticeships is in 8,000 hours, or approximately four years. However, the training for some occupations can be as short as one year. Apprentices begin with a probationary period equal to six months, or 25% of the program's length, whichever is shorter. Apprenticeships can be canceled by either the employer or the apprentice if the job match is unsuitable. The training costs, such as tuition payments, books, or supplies, are typically paid by the apprentice, although sponsors can also meet these needs. Sponsors must pay the apprentice a wage, create a mentorship with existing staff to provide on-the-job guidance, and allow additional time for training while completing a job. In exchange, employers benefit from having a specifically trained worker to meet the exact needs of their business. Starting in the 2018 tax year, eligible sponsors can receive a tax credit for sponsoring an apprentice.

Common terminology is illustrated in Figure 1:

- Sponsors: Businesses that are willing to train an apprentice.
- Programs: The unique business/occupation combination through which an apprentice will be trained.
- Apprenticeships: The jobs that exist within which the worker will receive apprentice training.
- Apprentices: The people that fill the apprenticeships. One apprentice may have participated in more than one apprenticeship.

Figure 1: Illustration of Terminology used in the Registered Apprenticeship Program

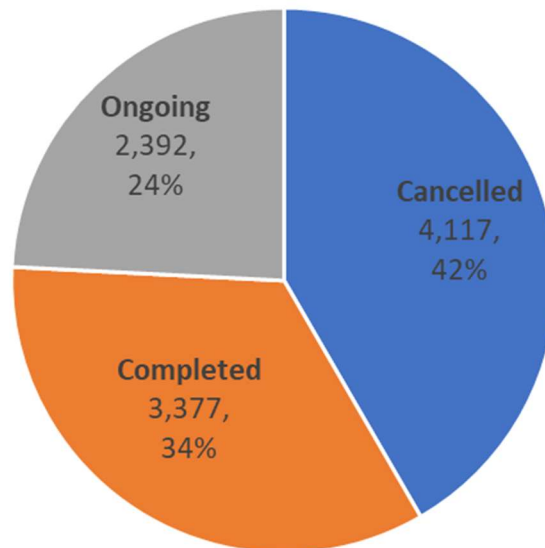


Apprenticeship Outcomes

From January 1, 2000, to September 30, 2020, the Montana Department of Labor & Industry’s Registered Apprenticeship program has administered 9,886 apprenticeships for 8,858 individual apprentices. Roughly 3,377 apprenticeships have been completed by 3,335 individuals. Figure 2 shows the outcomes of apprenticeships as of September 30, 2020.

Approximately 34% of apprenticeships were completed, while 24% are ongoing, and 42% were canceled. If an apprentice transfers to a different program, it is recorded as a cancellation of the first apprenticeship. About 28.6% of apprenticeships are canceled within their probation period. The other 71% cancel after the probation period, possibly because the employers and apprentices find that the job match is not working out well or that the worker is no longer needed. The average time until cancellation is 16.1 months. In addition, some apprentices complete more than one program.

Figure 2: Apprenticeships by Outcome

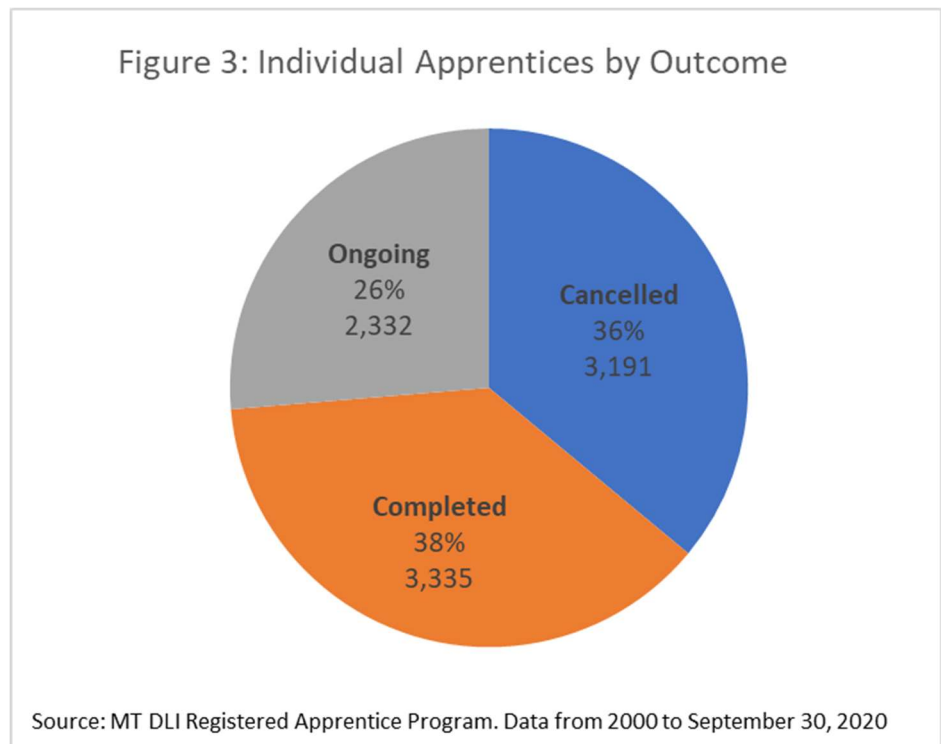


Source: MT DLI Registered Apprentice Program. Data from 2000 to September 30, 2020

The difference between total individuals (8,858) and apprenticeships (9,886) is due to individuals participating in multiple apprenticeships. For example, an apprentice who starts one apprenticeship and cancels it to start another would be counted as a single apprentice and two apprenticeships.

Figure 3 shows the number of individual apprentices by their outcome. Occasionally, an apprentice will complete a program first and cancel a second program later. In those instances, we count their

completed apprenticeship as the final result. Of the total apprentices, 38% of people complete an apprenticeship, while 26% are ongoing and 36% were canceled. Excluding apprentices in an ongoing program, 51% of apprentices completed an apprenticeship.



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Compared to other similar types of training programs, a completion rate of 51 percent is high. For example, among first-time, full-time associate degree seekers entering the Montana University System schools from 2012 to 2016, about 21-24% of first-time, full-time associate degree seekers successfully graduated within four years.ⁱⁱ Compared to college, where the student generally determines whether they will continue through a degree program, the apprenticeship relationship can be ended by either the apprentice or the employer. Data from the Bureau of Labor Statistics show that the median duration with one employer for U.S. workers is 4.1 years, with workers aged 25 to 34 having an even shorter span of 2.8 years.ⁱⁱⁱ For many apprenticeships, completion requires training on the job with an employer for four years.

Figures 2 and 3 demonstrate that participation in Montana’s registered apprenticeship program can either be calculated as the number of training positions (9,886) or as the number of people who have filled these positions (8,858). For example, a person can be in both an electrician program and a plumbing program and participate in these programs at different times. This analysis will primarily focus on the apprenticeships and their outcomes, though demographic data will be broken down by the number of apprentices.

Montana’s Registered Apprenticeship Program Continues to Grow

New apprenticeships in Montana have continued to grow each year. Figure 4 shows the number of apprenticeships across the years by whether they were new, completed, canceled, or ongoing (started in a previous year and not canceled or completed in the current year). There is some overlap between these groups. For example, an apprentice can be new and canceled in a given year. The “In Program” count provides the total

number of apprenticeships regardless of their completion status, which is conceptually similar to enrollment statistics for colleges and universities, including all students served regardless of the outcome.

Figure 4: Apprenticeship Program Participation

Result	2013	2014	2015	2016	2017	2018	2019	2020 (through Sept. 30)
In Program	1,275	1,454	1,706	1,896	2,074	2,341	2,632	2,458
Completed	157	136	170	140	220	260	287	196
Cancelled	194	200	262	262	301	185	323	200
Ongoing	920	1,114	1,269	1,486	1,499	1,719	1,929	2,032
New	424	536	592	627	720	841	916	530

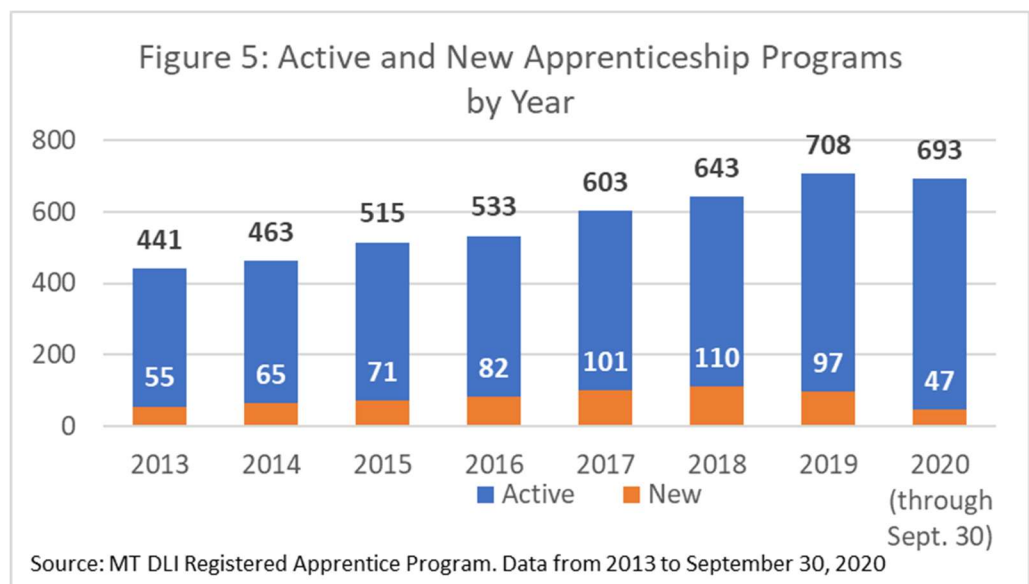
Source: MT DLI Registered Apprentice Program. Data from 2013 to September 30, 2020

In 2019, there were 916 new apprenticeship training positions, which is approximately 490 more than in 2013. As new apprenticeships have increased, the total number of apprenticeships has grown from approximately 1,300 in 2013 to 2,600 in 2019. Over the period from 2013 to 2019, an annual average of 200 apprenticeships were completed, while 250 were canceled.

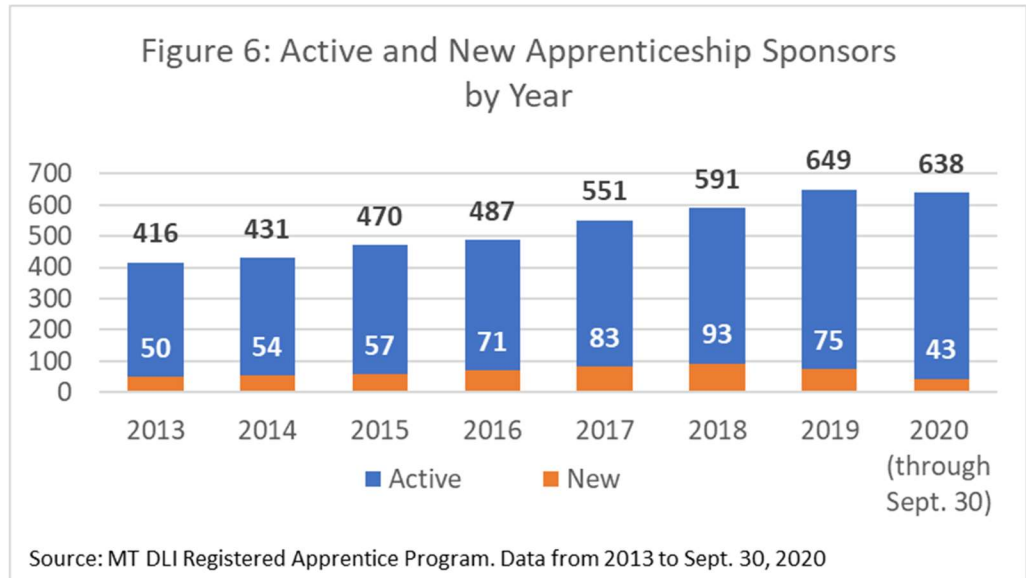
Business Sponsors and Number of Programs

There are approximately 1,300 businesses that have sponsored an apprentice since 2000. Many businesses provide training in multiple occupations resulting in over 1,400 different programs since 2000. A program is a separate field of study with a specific business. For example, if a company hosts two plumbing apprentices and one electrician

apprentice, they would be hosting two programs (plumbing and electricians) and three apprenticeships. See Figure 1 for an illustration of the terminology. Figure 5 shows that the number of programs has continued to grow, with approximately 360 more active programs in 2019 compared to 2013.



While there are more than 1,300 business sponsors registered, approximately half are active in any given year. Figure 6 lists the number of active and new sponsors by year since 2013. Sponsors have also increased steadily over the years. A large part of this expansion is from growth in programs for traditional trade occupations, such as



plumbing and electrician apprenticeships, which make up a bulk of total apprenticeships. However, programs have been spreading into new fields such as healthcare, childcare, and information technology, highlighting the success of the Department’s initiatives to develop work-based learning into non-traditional fields.

As seen in Figures 5 and 6, there were 708 programs in 2019 sponsored by 649 businesses. Of these businesses:

- 50% of the 649 businesses sponsored just one apprenticeship
- 21% of the 649 businesses sponsored two apprenticeships
- 18 businesses sponsored over 20 apprenticeships

Sponsors by Industry

Figure 7 shows apprenticeship sponsors active in 2019 by industry. The majority of businesses sponsor apprentice programs in traditional trades within the construction industry (72%). Healthcare and social assistance, an industry targeted for boosting in recent years, and the largest private employing industry in Montana, accounts for the second most sponsors with 57 active sponsors in 2019.

Figure 7: Apprenticeship Sponsors by Industry in 2019

NAICS	NAICS description	Total
11	Agriculture, Forestry, Fishing and Hunting	-
21	Mining, Quarrying, and Oil and Gas Extraction	-
22	Utilities	9
23	Construction	513
31-33	Manufacturing	13
42	Wholesale Trade	3
44-45	Retail Trade	6
48-49	Transportation and Warehousing	2
51	Information	2
52	Finance and Insurance	1

53	Real Estate and Rental and Leasing	-
54	Professional, Scientific, and Technical Services	11
55	Management of Companies	1
56	Administrative and Support Services	6
61	Educational Services	2
62	Health Care and Social Assistance	57
71	Arts, Entertainment, and Recreation	1
72	Accommodation and Food Services	2
81	Other Services (except Public Administration)	12
92	Public Administration	8
Total		649

Source: MT DLI Registered Apprentice Program. Data includes active apprenticeship sponsors in 2019.

Work Location of Apprenticeships and Sponsors

The Registered Apprenticeship Program has reached almost every Montana county, with most apprenticeships occurring in counties with higher populations. Of the total apprenticeships, approximately 60% occurred in the top five counties listed in Figure 8. The program is widespread across Montana, with 54 out of Montana’s 56 counties having at least one apprenticeship. The only two counties that have never had an apprenticeship are Petroleum and Treasure counties.

Lewis and Clark, Gallatin, and Yellowstone counties have had the most apprenticeships based on sponsor location. Since 2000, these counties account for approximately 46% of all apprenticeships. The full table with all counties included is available in Figure 26 in the appendix.

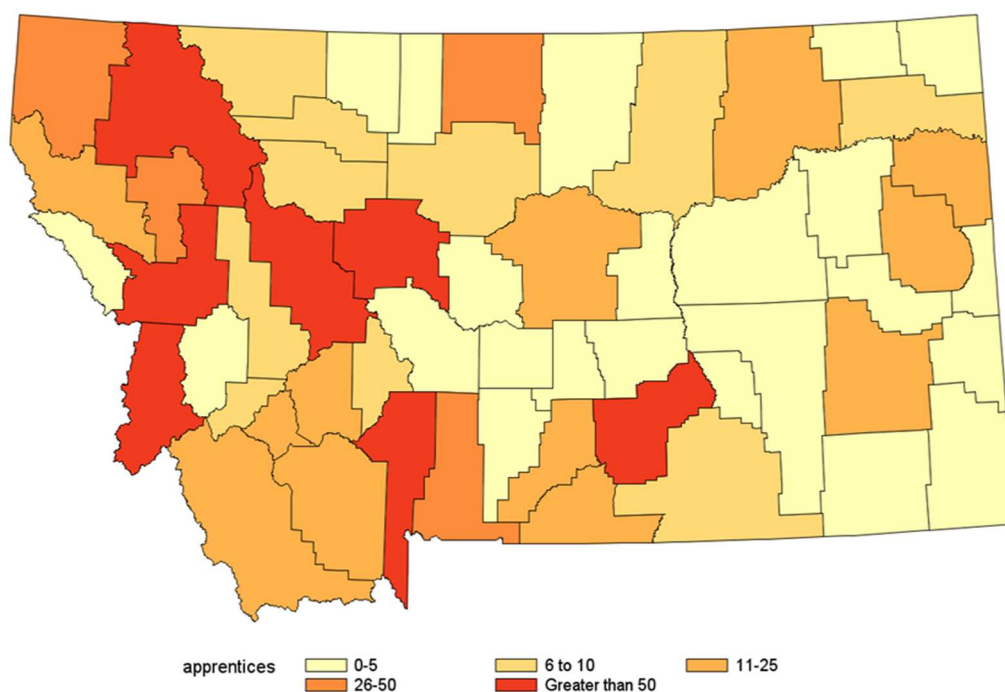
Figure 8: Top Five Counties with the Most Apprenticeships - January 1, 2000 to September 30, 2020

FIPS	County	Total Apprenticeships	Completed Apprenticeships
49	LEWIS AND CLARK	1,935	674
31	GALLATIN	1,280	421
111	YELLOWSTONE	1,028	433
29	FLATHEAD	784	216
93	SILVER BOW	770	382
Total		5,797	2,126

Source: MT DLI Registered Apprentice Program. Data from 2000 to September 30, 2020

The number of new apprenticeships has been increasing each year, with much of the growth coming from larger counties. From 2015 to 2019, the counties that rank as having the highest growth are Lewis and Clark, which had 671 new apprenticeships, followed by Gallatin (480), Yellowstone (342), Flathead (283), and Silver Bow (261). When considering growth in new apprenticeships, from 2018 to 2019, Custer and Ravalli counties had the most development. Figure 27 in the appendix lists new apprenticeships by county for the years 2017 to 2019.

Figure 9: Total Sponsors since 2000



Source: DLI Registered Apprenticeship Program. Data from 2000 to September 30, 2020

Each county must have a sponsor to host the apprentices, with some sponsors hosting multiple apprentices. Figure 9 illustrates the number of sponsors by county. In general, the counties with the most apprenticeships also have the most sponsors, reflecting that most sponsors host one or two apprentices.

Types of Occupations

Apprentices have trained in over 110 different occupations since 2000, although not all are active in any given year. Apprentices were trained in 82 different occupations in 2019.^{iv}

Most apprenticeship training is in the trades. The most common occupation by total apprenticeships is electrician, which make up 34% of the total, followed by plumbing (21%) and structural iron and steel workers (5%). The remaining 40% of the apprenticeships are split between other occupations. Some of the fastest-growing occupations are within the healthcare field, such as nurse assistants and medical coders, which had an increase in new apprenticeships over the past 5 years. Figure 10 lists the top 20 occupations by total trained since 2000, along with the new apprenticeships by year. The full table of occupations can be found in Figure 28 in the appendix.

Figure 10: Top 20 Occupations by Total Apprenticeships

ONET	Occupation	2017	2018	2019	2020 (through Sept. 30)	Total Trained since 2000
47-2111.00	Electricians	226	265	252	169	3,472
47-2152.02	Plumbers	131	155	152	108	2,106
47-2221.00	Structural Iron and Steel Workers	20	24	53	27	492
47-2152.01	Pipe Fitters	33	32	22	18	390
47-2211.00	Sheet Metal Workers	22	21	28	18	373
39-9011.00	Child Care Workers	14	15	8	12	368
47-2031.01	Carpenter	11	6	8	33	345
31-1014.00	Nurse Assistant Certified	87	55	84	12	274
47-2011.00	Boilermaker	15	10	29	0	271
49-9051.00	Electrical Power-Line Installers and Repairers	18	8	9	11	243
47-2031.00	Carpenters	31	73	48	43	233
51-8021.00	Stationary Engineers & Boiler Operators	4	9	4	0	124
47-2073.00	Operating Engineers	9	2	19	2	122
49-9021.01	Heating & Air Conditioning Mechanic & Installer	20	25	22	10	117
47-2181.00	Roofers	5	6	7	0	113
47-2021.00	Bricklayer/Brickmasons & Blockmasons	4	11	8	4	104
47-2061.00	Construction Laborers	3	1	2	4	99
49-9041.00	Industrial Machinery Mechanics	0	0	0	14	83
33-2011.01	Municipal Fire Fighters	1	0	0	0	76
29-2071.00	Medical Record and HIT/Medical Coders	7	41	22	0	70

Source: MT DLI Registered Apprentice Program. Data from 2000 to September 30, 2020

Forty-six new occupations have been added since 2017. The new occupations, the year added, and the total number of participants are listed in Figure 11. The newest occupations added in 2020 include paralegals and legal assistants, professional brewers, fine artists, registered nurses, cooks, and dental laboratory technicians.

Figure 11: New Registered Apprenticeship Occupations Added Since 2017

Year Added	ONET	Occupation	Apprenticeships
2017	29-2071.00	Medical Record and HIT/Medical Coders	70
2017	31-9092.00	Medical Assistants	22
2017	43-3031.00	Bookkeeping, Accounting, and Auditing Clerks	12
2017	29-2061.00	Licensed Practical and Licensed Vocational Nurses	9
2017	31-9094.00	Medical Transcriptionists	5
2017	13-1031.00	Claims Adjusters, Examiners, and Investigators	4
2017	49-2092.00	Electric Motor, Power Tool, and Related Repairers	3
2017	29-2055.00	Surgical Technologists	1
2017	17-3023.03	Electrical Engineering Technicians	1

2018	21-1091.00	Health Educators	13
2018	17-3029.09	Manufacturing Production Technicians	6
2018	15-1151.00	Computer User Support Specialists	6
2018	41-3041.00	Travel Agents	5
2018	29-2053.00	Psychiatric Technicians	3
2018	29-2012.00	Medical and Clinical Laboratory Technicians	3
2018	51-9012.00	Master Brewer	3
2018	51-6093.00	Upholsterers	3
2018	49-9094.00	Locksmiths and Safe Repairers	3
2018	49-3022.00	Automotive Glass Installers and Repairers	2
2018	31-9097.00	Phlebotomists	2
2018	11-9081.00	Lodging Managers	2
2018	49-2011.00	Computer, Automated Teller, and Office Machine Repairers	2
2018	51-9012.00	Master Brewer	2
2018	15-1142.00	Network and Computer Systems Administrators	1
2018	49-3023.00	Automotive Technician Specialist	1
2018	11-3021.00	Computer and Information Systems Managers	1
2018	27-1025.00	Interior Designers	1
2019	29-2041.00	Emergency Medical Technicians and Paramedics	10
2019	47-2082.00	Tapers	9
2019	29-2099.00	Health Technologists and Technicians, All Other	6
2019	27-2042.02	Musicians, Instrumental	2
2019	29-1171.00	Nurse Practitioners	2
2019	13-1151.00	Training and Development Specialists	1
2019	35-1011.00	Chefs and Head Cooks	1
2019	11-9199.02	Compliance Managers	1
2019	49-3053.00	Outdoor Power Equipment and Other Small Engine Mechanics	1
2019	23-1022.00	Arbitrators, Mediators, and Conciliators	1
2019	53-3032.00	Heavy and Tractor-Trailer Truck Drivers	1
2020	29-1141.00	Registered Nurses	5
2020	51-9012.00	Professional Brewer	2
2020	51-2041.00	Structural Metal Fabricators and Fitters	2
2020	49-3041.00	Farm Equipment Mechanics and Service Technicians	1
2020	35-2014.00	Cooks, Restaurant	1
2020	51-9081.00	Dental Laboratory Technicians	1
2020	27-1013.00	Fine Artists, Including Painters, Sculptors, and Illustrators	1
2020	23-2011.00	Paralegals and Legal Assistants	1

Source: MT DLI Registered Apprentice Program. Data from 2000 to September 30, 2020

In some occupations, apprentices make up a large share of the total employment. For example, over one-third of all electricians employed in Montana in 2019 were apprentices. Figure 12 shows the top ten occupations by active apprenticeship and total employment in each for 2019. Overall, workers undergoing apprentice training in 2019 comprised 3.1% of Montana’s employment in apprenticed occupations, highlighting the program's importance to meet training needs and the potential for more apprenticeships.

Figure 12: Number of Active Apprenticeships in 2019

ONET	Occupation	Active Apprenticeships	Total Employment	Percent of Total Employment
47-2111.00	Electricians	898	2,390	37.6%
47-2152.02	Plumbers	514	1,990	25.8%
31-1014.00	Nurse Assistant Certified	161	5,760	2.8%
47-2031.00	Carpenters	128	4,550	2.8%
47-2152.01	Pipe Fitters	116	1,990	5.8%
47-2211.00	Sheet Metal Workers	84	410	20.5%
47-2221.00	Structural Iron and Steel Workers	78	200	39.0%
29-2071.00	Medical Record and HIT/Medical Coders	68	1,020	6.7%
49-9021.01	Heating & Air Conditioning Mechanic & Installer	59	1,120	5.3%
47-2011.00	Boilermaker	56	120	46.7%

Source: MT DLI Registered Apprentice Program 2019. Total Employment from BLS Occupational Employment Statistics 2019. *Excludes apprentices and jobs that are confidential in the BLS OES 2019 data.

Apprentices by Industry

Figure 13 shows apprentices by industry in 2019. Most apprentices are in traditional trades in the construction industry, which accounted for 79% of all apprentices in 2019. The healthcare and social assistance industry make up the second-largest share of apprentices with approximately 9% of the total. The remaining 12% of apprentices are in other industries, such as professional, scientific, and technical services, manufacturing, and utilities.

Figure 13: Apprentices by Industry in 2019

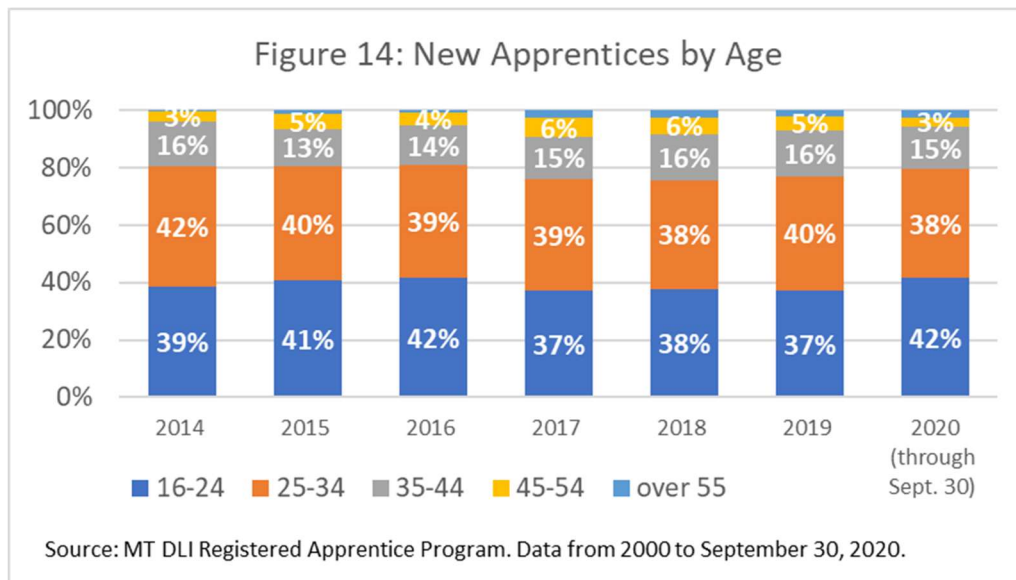
NAICS	NAICS description	Total
11	Agriculture, Forestry, Fishing and Hunting	-
21	Mining, Quarrying, and Oil and Gas Extraction	-
22	Utilities	103
23	Construction	1,859
31-33	Manufacturing	112
42	Wholesale Trade	21
44-45	Retail Trade	8
48-49	Transportation and Warehousing	3
51	Information	2

52	Finance and Insurance	1
53	Real Estate and Rental and Leasing	-
54	Professional, Scientific, and Technical Services	17
55	Management of Companies	4
56	Administrative and Support Services	11
61	Educational Services	74
62	Health Care and Social Assistance	316
71	Arts, Entertainment, and Recreation	1
72	Accommodation and Food Services	3
81	Other Services (except Public Administration)	26
92	Public Administration	40
Total		2,601

Source: MT DLI Registered Apprenticeship Program. Data includes active apprenticeship sponsors in 2019.

Age of Apprentices

Figure 14 shows apprentices by age group. Since 2020, 78% of all apprentices have been between 16 and 34 years of age, while 22% are over 35, suggesting that apprenticeship is relatively more popular among younger workers.



Gender of Apprentices

Men have accounted for approximately 89% of total apprenticeships since 2000. However, the share of women has risen in recent years. From 2017 to 2019, women made up about 20% of apprentices compared to previous years when they represented between 3-9% of apprentices. In 2020, the share of women in apprenticeship went down, however, due to a decrease in medical coders and certified nurse assistants, likely connected to the effects of the COVID-19 pandemic.

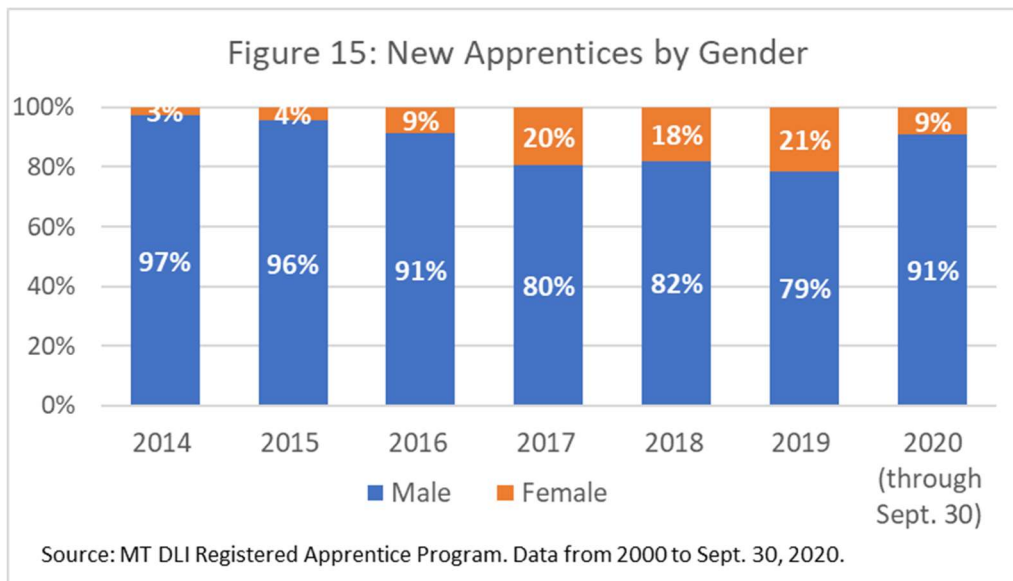


Figure 15 lists new apprentices by gender. From 2016 to 2019, the Montana Registered Apprenticeship Program has implemented initiatives to make the program more diverse by gender and by types of jobs trained. Encouraging employers to hire a more diverse set of workers and expanding apprenticeship into occupations with more female workers has successfully increased the share of female apprentices.

Figure 16: Female Apprentices by Occupation

ONET	Occupation	2017	2018	2019	2020 (through Sept. 30)	Total Apprentices 2000
39-9011.00	Child Care Workers	14	15	8	12	356
31-1014.00	Nurse Assistant Certified	79	49	71	11	246
47-2111.00	Electricians	7	10	8	6	96
29-2071.00	Medical Record and HIT/Medical Coders	7	40	21	0	68
47-2152.02	Plumbers	7	4	7	2	38
47-2011.00	Boilermaker	4	0	9	0	24
31-9092.00	Medical Assistants	2	2	13	3	20
47-2073.00	Operating Engineers	2	0	3	0	19
47-2061.00	Construction Laborers	0	0	1	0	16
21-1091.00	Health Educators	0	2	6	5	13

Source: MT DLI Registered Apprenticeship Program. Data from 2000 to September 30, 2020

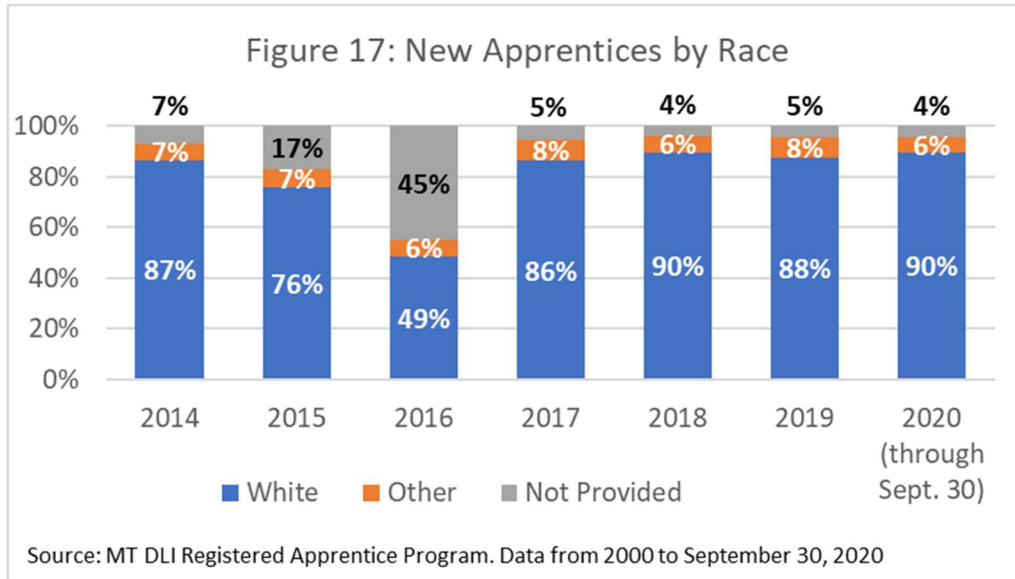
Figure 16 lists the top ten occupations by total female apprentices. Two of the most popular apprenticeships among women include child care workers (356) and certified nursing assistants (246). Other healthcare-related occupations have also been popular, including medical assistants, health educators, and medical coders, which started in 2019 and have trained 68 total apprentices.

Part of the reason for the historically low enrollment of female apprentices is that the most popular apprenticeship programs are typically in male-dominated occupations and industries. The two most popular apprenticed occupations overall, plumbers and electricians, are part of the construction industry, of which only

8% of Montana’s construction workers in 2019 were women.^v Though some construction-related occupations make the top ten list for women, these occupations have also been part of the Registered Apprenticeship program longer, while certified nurse assistants and medical coders are newer and have already had more female apprentices. As apprenticeships expand into more female-dominated fields, the share of women will likely continue to grow.

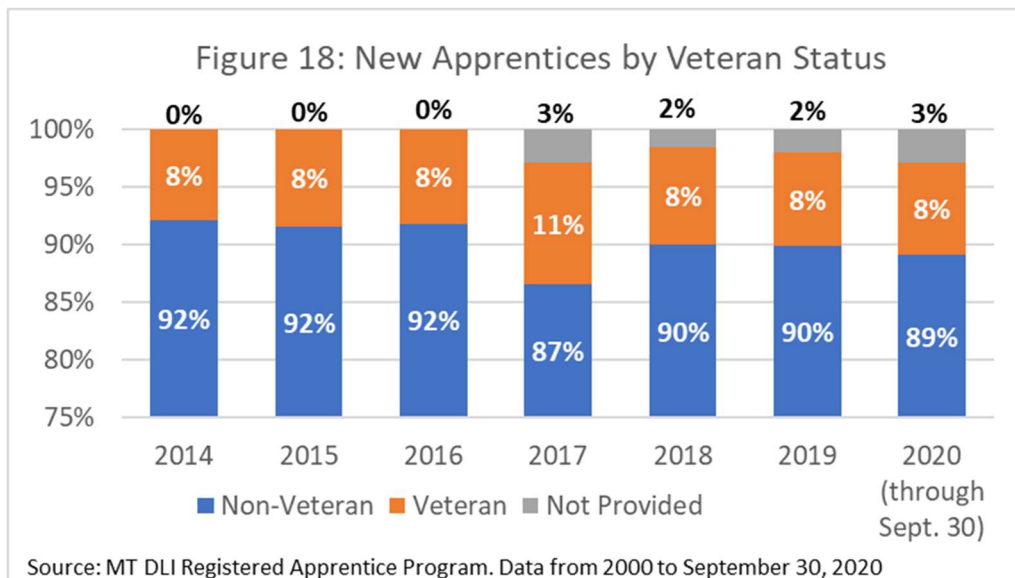
Race of Apprentices

Figure 17 lists new apprentices by race. Since 2000, approximately 88% have been white, while 6% have been other races, and 6% have not provided a race.



Veterans in Apprenticeship

Figure 18 shows the share of new apprenticeships by veteran status. The percentage has remained relatively consistent over time. However, the number of new veterans signing up for apprenticeships has increased from 41 in 2014 to 74 in 2019. Starting in 2018, sponsors were able to receive a tax credit for hiring an apprentice, with the size of the tax credit increasing if the apprentice is a veteran.



Time to Completion

Most apprenticeships are expected to be completed in 8,000 hours, which translates to approximately four years. Some programs are expected to be done in 6,000 hours (three years) or 4,000 hours (two years). There have been 2,381 completed apprenticeships over the last ten years, since 2009. Of those, 1,477 of them, or 61%, finished their program within the recommended time. If information on program length was not immediately available, this analysis uses 48 months as the recommended completion time. Figure 19 lists these statistics for the top 15 occupations.

Figure 19: Top 15 Occupations by Number of Completed Apprenticeships within the Program Length

ONET	Occupation	Program Length (Years)	Completed within the Program Length?		
			Yes	No	% Yes
47-2111.00	Electricians	4	435	403	51.91%
47-2152.02	Plumbers	4	201	255	44.08%
49-9051.00	Electrical Power-Line Installers and Repairers	4	93	13	87.74%
31-1014.00	Nurse Assistant Certified	1	82	28	74.55%
47-2152.01	Pipe Fitters	4	70	64	52.24%
39-9011.00	Child Care Workers	2	67	11	85.90%
51-8021.00	Stationary Engineers & Boiler Operators	4	54	5	91.53%
47-2221.00	Structural Iron and Steel Workers	4	47	5	90.38%
49-9041.00	Industrial Machinery Mechanics	4	43	2	95.56%
33-2011.01	Municipal Fire Fighters	4	43	0	100.00%
47-2211.00	Sheet Metal Workers	4	42	63	40.00%
47-2011.00	Boilermaker	4	40	19	67.80%
47-2031.01	Carpenter	4	31	10	75.61%
47-2073.00	Operating Engineers	4	28	0	100.00%
47-2021.00	Bricklayer/Brickmasons & Blockmasons	4	15	5	75.00%
49-2098.00	Security and Fire Alarm Systems Installers	4	14	0	100.00%
49-2095.00	Powerhouse Mechanic	4	12	0	100.00%
31-9092.00	Medical Assistants	4	8	0	100.00%
43-3031.00	Bookkeeping, Accounting, and Auditing Clerks	4	7	0	100.00%
49-9044.00	Millwrights	4	7	0	100.00%

Source: MT DLI Registered Apprentice Program. Data from 2009 to September 30, 2020

Looking at data for the past ten years, the average time it takes to complete an apprenticeship is 41 months, or just under four years. Figure 20 shows, by occupation, the number of apprenticeships completed within these 41 months. Figure 20 also shows the average number of months it takes to complete a program by occupation.

Figure 20: Apprenticeship Completion Rates by Occupation

ONET	Occupation	Apprenticeships Completed in 41 Months or Less	Average Completion Time (Months)
47-2111.00	Electricians	344	44.9
47-2152.02	Plumbers	166	49.2
31-1014.00	Nurse Assistant Certified	110	11.2
39-9011.00	Child Care Workers	78	18.4
47-2152.01	Pipe Fitters	54	42.2
51-8021.00	Stationary Engineers & Boiler Operators	48	36.2
49-9051.00	Electrical Power-Line Installers and Repairers	43	40.6
33-2011.01	Municipal Fire Fighters	43	36.6
47-2221.00	Structural Iron and Steel Workers	41	35.6
49-9041.00	Industrial Machinery Mechanics	34	37.6
47-2011.00	Boilermaker	28	44.0
47-2073.00	Operating Engineers	28	21.1
47-2031.01	Carpenter	23	38.1
47-2211.00	Sheet Metal Workers	16	48.1
47-2021.00	Bricklayer/Brickmasons & Blockmasons	13	38.7
49-2098.00	Security and Fire Alarm Systems Installers	12	33.0
49-2095.00	Powerhouse Mechanic	11	37.5
31-9092.00	Medical Assistants	9	11.3
43-3031.00	Bookkeeping, Accounting, and Auditing Clerks	7	16.3
29-2071.00	Medical Record and HIT/Medical Coders	7	15.8
49-9044.00	Millwrights	7	6.0
47-2031.00	Carpenters	5	33.2
49-3043.00	Rail Car Repairers	5	31.6
49-9097.00	Signal and Track Switch Repairers	5	30.2
51-4041.00	Machinists	5	30.0
49-9052.00	Telecommunications Line Installers and Repairers	4	37.5
47-2181.00	Roofers	4	35.4
49-2022.00	Telecommunications Technician	4	34.7
47-2061.00	Construction Laborers	3	69.1
49-9021.01	Heating & Air Conditioning Mechanic & Installer	3	43.5
41-3041.00	Travel Agents	3	12.0
13-1031.00	Claims Adjusters, Examiners, and Investigators	3	10.9
29-2061.00	Licensed Practical and Licensed Vocational Nurses	3	10.4
49-2096.00	Electronic Equipment Installers and Repairers, Motor Vehicles	2	40.4
49-2095.00	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	2	37.8
51-8012.00	Power Distributors and Dispatchers	2	37.0
17-3012.02	Electrical Drafters	2	32.2
51-9199.00	Production Workers, All Other	2	28.3

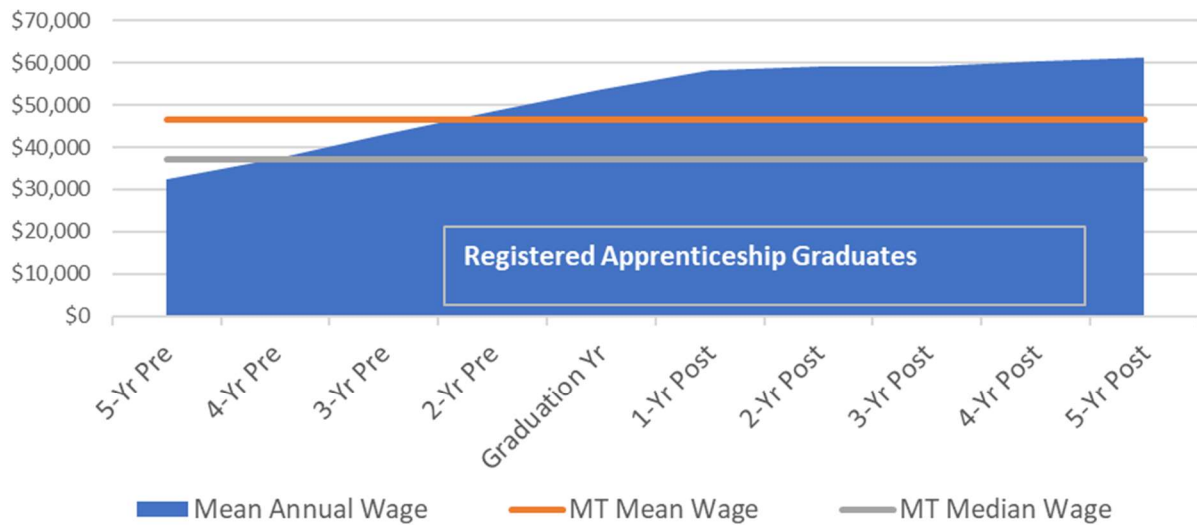
51-8013.00	Power Generating Plant Operators, Except Auxiliary Equipment Operators	2	27.7
49-9021.02	Refrigeration Mechanics	2	23.7
29-2041.00	Emergency Medical Technicians and Paramedics	2	17.1
15-1151.00	Computer User Support Specialists	2	11.1
29-2099.00	Health Technologists and Technicians, All Other	2	10.4
49-3021.00	Automotive Body and Related Repairers	1	62.4
51-3023.00	Slaughterers and Meat Packers	1	43.0
49-2093.00	Electrical and Electronics Installers and Repairers, Transportation Equipment	1	41.8
49-3052.00	Motorcycle Mechanics	1	40.2
51-3021.00	Butchers and Meat Cutters	1	39.6
17-3022.00	Civil Engineering Technicians	1	37.8
29-2055.00	Surgical Technologists	1	37.4
47-2132.00	Insulation Workers, Mechanical	1	36.1
15-1131.00	Computer Programmers	1	23.7
11-9111.00	Medical and Health Services Managers	1	20.1
27-2042.02	Musicians, Instrumental	1	17.0
51-9012.00	Master Brewer	1	16.6
29-2034.02	Radiologic Technicians	1	13.9
13-1151.00	Training and Development Specialists	1	13.6
49-2092.00	Electric Motor, Power Tool, and Related Repairers	1	12.8
51-4011.00	Numerical Control Machine Tool Operators and Tenders, Metal and Plastic	1	12.7
31-9095.00	Pharmacy Aides	1	10.8
17-3029.09	Manufacturing Production Technicians	1	9.8
53-5011.00	Able Seamen	0	86.7
47-4021.00	Elevator Installers and Repairers	0	78.8
49-9071.00	Maintenance and Repair Workers, General	0	55.0
17-3011.01	Drafter, Heating & Ventilate/Plumbing	0	52.3
47-2044.00	Tile and Marble Setters	0	51.3

Source: MT DLI Registered Apprenticeship Program. Data from 2009 to September 30, 2020

Wages of Apprentices

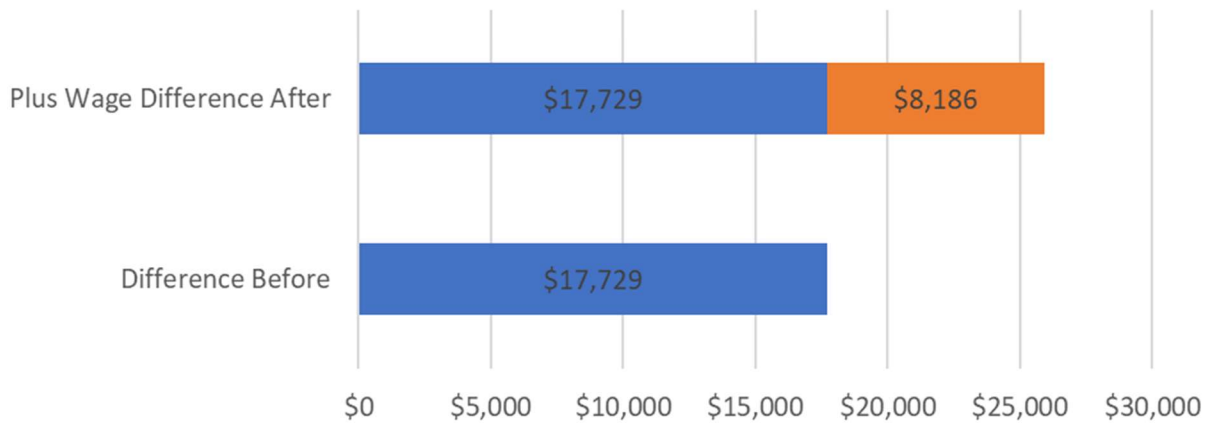
Figure 21 shows apprentice wages before, during, and after the program. One year after graduating a program, apprentices had 25% higher wages than the average Montana wage and 52% higher than those who did not complete their apprenticeship program. However, non-completers also had lower wages prior to their apprenticeship, suggesting that individuals who had lower wages before they participated in the apprenticeship and during were less likely to graduate. Still, the difference in the wages before and after the program suggests that apprenticeships are worth the investment. Figure 22 shows the difference in annual wages between those who complete a program and non-completers increases by \$8,200 in the five years after the program. Further, wages increase by more on average for completers, with average wages rising by approximately \$5,900 each year, compared to \$2,400 for non-completers.

Figure 21: Average Wages of Apprentice Before, During, and After Graduation



Source: MT Registered Apprenticeship Program and UI wage match. Includes all Registered Apprenticeship graduates since from 2000 to 2019. Real wages reported in 2019 dollars using CPI-U. Average and Median wages from the 2019 Occupational Employment Statistics

Figure 22: Difference Between Graduate and Non-Graduate Wages Before and After Graduation Date



Source: MT Registered Apprenticeship Program and UI wage match. Includes all Registered Apprenticeship graduates since from 2000 to 2019. Real wages reported in 2019 dollars using CPI-U. Average and Median wages from the 2019 Occupational Employment Statistics

Another benefit of the apprenticeship program is that apprentice graduates also appear to stay with Montana employers longer after graduating. Of the more than 2,600 people who completed an apprenticeship before 2018, 92% were employed and still working in Montana two years later. Further, of those who graduated before 2015, approximately 84% were still employed in Montana 5 years later. By comparison, only 72% of non-completers were employed in Montana after two years and only 64% of those who would have graduated before 2015 were still employed in Montana after 5 years.

Not only do apprentices see higher wages post-graduation, but they also earn relatively high wages while earning their certification. The average wage for Montanans in registered apprenticeship training was about \$45,572 in 2019, which is higher than the typical income potential of a college student working around a class schedule.

The wages continue to increase as workers gain skills and experience, increasing by approximately \$16,500 compared to wages four years prior until their graduation year. In real terms, wages rise by 79.4% one year after graduation compared to one year before an individual started a program (compared to a 35.3% increase for non-completers).

Many apprenticeships are in occupations that pay high wages. Figure 23 shows the top ten apprenticeships by average wage in their first year after graduation. The 25th-percentile is provided to represent the expected entry-level wages for workers beginning their careers. Average wages include all workers, including those with extensive training and experience. Wages in the top ten are relatively high compared to the entry-level wage for the occupation, and most are higher than the state average wage for the occupation. For roughly half of the occupations, recent apprenticeship graduates were earning wages significantly higher than the statewide average. In all of the occupations shown, the apprentice graduates were earning wages above the entry-level occupational wage.

Figure 23: Top Ten Apprenticeships by Average Wage in First Year After Graduation

Occupation	Apprentices	Graduated Apprentice Average Wage	Entry-Level Wage (25th Percentile)	State Average Wage
Power Distributors and Dispatchers	10	\$127,000	\$96,000	\$101,000
Maintenance and Repair Workers, General	82	\$120,000	\$30,000	\$40,000
Stationary Engineers and Boiler Operators	8	\$116,000	\$46,000	\$61,000
Industrial Machinery Mechanics	58	\$108,000	\$46,000	\$61,000
Power Plant Operators	162	\$100,000	\$78,000	\$89,000
Electrical Power-Line Installers and Repairers	8	\$98,000	\$83,000	\$92,000
Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	10	\$94,000	\$80,000	\$90,000
Elevator Installers and Repairers	10	\$84,000	\$57,000	\$88,000
Telecommunications Equipment Installers and Repairers, Except Line Installers	16	\$84,000	\$57,000	\$88,000
Telecommunications Line Installers and Repairers	146	\$84,000	\$52,000	\$65,000

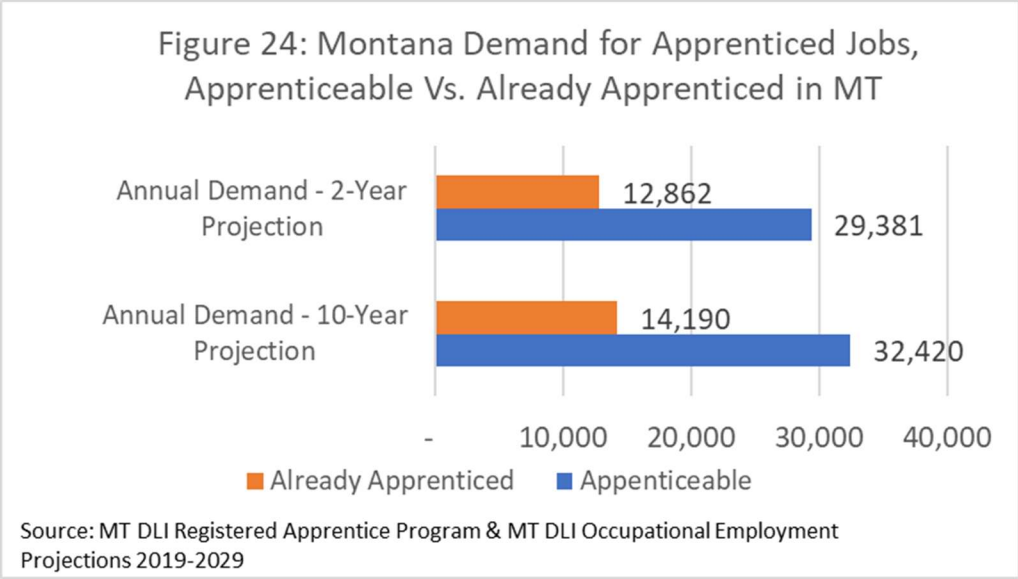
Source: MT DLI Registered Apprenticeship Program and UI wage match. OES wage data from the May 2019 Bureau of Labor Statistics Occupation Employment Survey, Montana. Excludes occupations with less than 5 apprentice graduates.

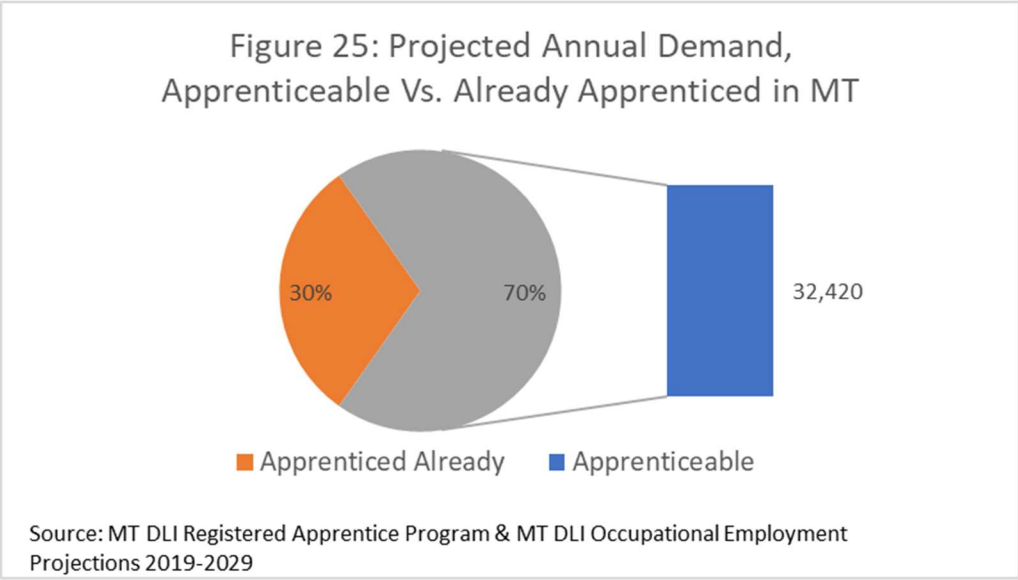
These high wages suggest apprentices are getting a good return on their investment, consistent with other apprenticeship research. One study found that apprenticeship training returns exceed the return on investment for other training types, with the long-term gains or apprenticeship training of about \$266,000 over the worker’s career compared to only \$130,000 for a community college degree.^{vi}

To track apprentice wages before and after they have graduated an apprenticeship, this report matches apprentices to wages from the mandatory reporting of employment and wages from the Montana Department of Labor & Industry’s Unemployment Insurance Division. UI wage data provides quarterly wages for nearly all Montana employees. However, self-employed individuals and employers outside Montana are not included in the data, which may result in underestimates of the number of apprentices working after training. The wage match was completed for apprentices who successfully completed their training before 2019, and for participants who started an apprenticeship but did not complete it. The non-completers were included in the analysis to provide a group of workers similar to the successful apprentices prior to the training, the difference in the average wage before and after the apprenticeships.

Apprenticeships in the Future - Expected Worker Demand for Apprenticeable Jobs

The Montana Department of Labor & Industry’s forecasts for 2019-2021 and 2019-2029 demonstrate the demand for apprenticeable jobs. Nationally, over 1,150 occupations are deemed apprenticeable, while Montana has produced apprenticeships in over 110 occupations. Figure 24 shows that Montana’s annual demand for jobs in apprenticeable occupations is expected to be more than 29,400 per year over the next two years. Of this demand, 12,900 is in occupations that have already been apprenticed in Montana. Looking at longer-term forecasts for apprenticeable occupations, the annual demand for apprenticeable jobs is estimated to be 32,400, of which 14,200 is in occupations that have already been apprenticed in Montana.





In total, apprenticeable occupations represent nearly 47% of Montana’s projected worker demand. Figure 25 shows that of the annual demand for apprenticeable occupations over the next ten years, Montana has already had apprenticeships in areas that account for 30% of future demand. This suggests the demand for apprenticeship will continue in Montana. It also shows that there is a large share of apprenticeable occupations that will be in demand and that have not yet been apprenticed in Montana. 70% of projected annual demand, or 22,700 jobs per year is in occupations that are apprenticeable, but have not had apprenticeship programs in Montana, which suggests that Montana workers and employers will likely benefit from continuing to expand the apprenticeship program to new occupations.

Apprenticeship Tax Credit

The 2017 Legislature passed HB308, which created a tax credit for employers that employ apprentices. The first year that businesses were eligible to claim this credit was in 2019 for apprentices hired in 2018. The credit is either \$750 or \$1,500 per apprentice, depending on the apprentice’s veteran status, and is available to employers for apprentices that have completed their probationary training period.

In 2019, 314 businesses were eligible to claim the tax credit compared to 249 in 2018. Of the businesses eligible, 102 employers were part of JATC programs and 25 employers were in healthcare. A total of 1,000 apprentices were eligible, 76 of which were veterans. The combined tax credits available for all eligible employers was \$807,000 in tax year 2019.

Appendix: Data Tables

Figure 26: Total Apprenticeships by County - January 1, 2000 to September 30, 2020

FIPS	County	Total	Completed	FIPS	County	Total	Completed
49	Lewis And Clark	1,935	674	7	Broadwater	32	11
31	Gallatin	1,280	421	73	Pondera	30	6
111	Yellowstone	1,028	433	89	Sanders	27	4
29	Flathead	784	216	91	Sheridan	26	11
93	Silver Bow	770	382	77	Powell	23	6
63	Missoula	655	232	71	Phillips	21	6
13	Cascade	492	136	5	Blaine	20	6
81	Ravalli	347	79	35	Glacier	19	2
67	Park	238	59	55	McCone	19	13
17	Custer	234	95	65	Musselshell	18	6
41	Hill	148	62	99	Teton	17	6
83	Richland	111	34	59	Meagher	13	1
53	Lincoln	86	17	75	Powder River	13	2
43	Jefferson	79	22	15	Chouteau	12	5
47	Lake	76	19	19	Daniels	10	5
1	Beaverhead	63	15	97	Sweet Grass	10	5
87	Rosebud	62	25	45	Judith Basin	9	1
27	Fergus	55	12	51	Liberty	9	6
57	Madison	51	18	79	Prairie	9	3
23	Deer Lodge	50	25	101	Toole	8	3
85	Roosevelt	49	24	109	Wibaux	6	5
21	Dawson	48	16	107	Wheatland	5	1
9	Carbon	44	15	37	Golden Valley	4	.
105	Valley	43	9	61	Mineral	3	1
3	Big Horn	40	14	33	Garfield	2	.
95	Stillwater	39	11	39	Granite	2	.
25	Fallon	34	16	11	Carter	1	.

Source: MT DLI Registered Apprentice Program. Data from 2000 to September 30, 2020

Figure 27: New Apprenticeships by County

FIPS	County	2017	2018	2019	FIPS	County	2017	2018	2019
1	Beaverhead	1	13	4	55	McCone	2	0	0
3	Big Horn	12	6	0	57	Madison	9	5	3
5	Blaine	7	8	3	59	Meagher	1	3	3
7	Broadwater	1	2	3	61	Mineral	0	0	0
9	Carbon	4	1	3	63	Missoula	38	50	52
11	Carter	0	0	0	65	Musselshell	1	1	2
13	Cascade	36	40	42	67	Park	14	26	23
15	Chouteau	0	2	2	71	Phillips	3	1	1
17	Custer	39	47	104	73	Pondera	3	3	2
19	Daniels	0	0	2	75	Powder River	0	1	3
21	Dawson	1	9	2	77	Powell	1	3	1
23	Deer Lodge	4	1	0	79	Prairie	1	2	0
25	Fallon	4	2	2	81	Ravalli	34	25	44
27	Fergus	4	6	13	83	Richland	4	5	2
29	Flathead	46	86	71	85	Roosevelt	11	0	3
31	Gallatin	104	102	106	87	Rosebud	6	14	6
33	Garfield	0	0	0	89	Sanders	3	0	3
35	Glacier	1	2	0	91	Sheridan	0	0	6
37	Golden Valley	0	0	0	93	Silver Bow	63	42	52
39	Granite	0	0	1	95	Stillwater	3	4	4
41	Hill	17	5	12	97	Sweet Grass	0	1	1
43	Jefferson	8	7	11	99	Teton	1	1	0
45	Judith Basin	0	1	0	101	Toole	0	0	0
47	Lake	7	9	7	105	Valley	9	5	4
49	Lewis And Clark	100	168	172	107	Wheatland	1	2	1
51	Liberty	4	0	4	109	Wibaux	1	1	0
53	Lincoln	6	8	4	111	Yellowstone	43	72	68

Source: MT DLI Registered Apprentice Program. Data from 2015 to 2019

Figure 28: New Apprenticeships by Occupation

ONET	Occupation	2014	2015	2016	2017	2018	2019	2020 (through Sept. 30th)	Total Trained since 2000
47-2111.00	Electricians	186	219	229	226	265	252	169	3,472
47-2152.02	Plumbers	116	109	146	131	155	152	108	2,106
47-2221.00	Structural Iron and Steel Workers	33	10	17	20	24	53	27	492
47-2152.01	Pipe Fitters	35	29	34	33	32	22	18	390
47-2211.00	Sheet Metal Workers	23	16	26	22	21	28	18	373
39-9011.00	Child Care Workers	1	5	7	14	15	8	12	368
47-2031.01	Carpenter	19	24	24	11	6	8	33	345
31-1014.00	Nurse Assistant Certified	0	2	34	87	55	84	12	274
47-2011.00	Boilermaker	6	21	3	15	10	29	0	271
49-9051.00	Electrical Power-Line Installers and Repairers	11	18	9	18	8	9	11	243
47-2031.00	Carpenters	3	8	20	31	73	48	43	233
51-8021.00	Stationary Engineers & Boiler Operators	14	7	4	4	9	4	0	124
47-2073.00	Operating Engineers	0	0	0	9	2	19	2	122
49-9021.01	Heating & Air Conditioning Mechanic & Installer	6	4	8	20	25	22	10	117
47-2181.00	Roofers	17	14	13	5	6	7	0	113
47-2021.00	Bricklayer/Brickmasons & Blockmasons	4	5	4	4	11	8	4	104
47-2061.00	Construction Laborers	2	6	2	3	1	2	4	99
49-9041.00	Industrial Machinery Mechanics	9	2	0	0	0	0	14	83
33-2011.01	Municipal Fire Fighters	1	2	0	1	0	0	0	76
29-2071.00	Medical Record and HIT/Medical Coders	0	0	0	7	41	22	0	70
49-2022.00	Telecommunications Technician	0	4	3	2	1	4	2	69
47-4021.00	Elevator Installers and Repairers	3	7	3	5	5	9	1	68
49-2098.00	Security and Fire Alarm Systems Installers	1	0	0	0	0	0	0	36
49-9052.00	Telecommunications Line Installers and Repairers	2	3	0	3	5	3	4	29
17-3011.01	Drafter, Heating & Ventilate/Plumbing	5	4	4	4	4	2	1	25
31-9092.00	Medical Assistants	0	0	0	2	3	14	3	22
49-3021.00	Automotive Body and Related Repairers	0	1	0	7	2	4	2	21
49-9044.00	Millwrights	0	0	0	0	0	16	1	20
49-2095.00	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	0	2	0	1	1	1	2	18
49-9021.02	Refrigeration Mechanics	0	2	0	2	2	2	1	18
47-2051.00	Cement Masons and Concrete Finishers	0	0	0	0	0	0	0	17

49-2096.00	Electronic Equipment Installers and Repairers, Motor Vehicles	1	2	0	5	4	2	2	17
49-2095.00	Powerhouse Mechanic	3	5	3	2	2	1	0	17
49-9071.00	Maintenance and Repair Workers, General	0	1	0	0	0	1	0	14
21-1091.00	Health Educators	0	0	0	0	2	6	5	13
43-3031.00	Bookkeeping, Accounting, and Auditing Clerks	0	0	0	1	7	4	0	12
51-3021.00	Butchers and Meat Cutters	1	0	2	1	3	3	0	12
51-3023.00	Slaughterers and Meat Packers	1	0	3	0	1	0	0	12
51-8012.00	Power Distributors and Dispatchers	0	3	1	1	0	0	0	12
51-8013.00	Power Generating Plant Operators, Except Auxiliary Equipment Operators	0	0	0	0	0	0	0	11
29-2041.00	Emergency Medical Technicians and Paramedics	0	0	0	0	0	10	0	10
11-9111.00	Medical and Health Services Managers	0	0	2	2	1	3	1	9
29-2061.00	Licensed Practical and Licensed Vocational Nurses	0	0	0	1	2	6	0	9
47-2082.00	Tapers	0	0	0	0	0	9	0	9
47-2141.00	Painters, Construction and Maintenance	0	1	0	0	0	0	0	9
49-2093.00	Electrical and Electronics Installers and Repairers, Transportation Equipment	6	3	0	0	0	0	0	9
51-4041.00	Machinists	3	3	0	0	1	1	0	9
47-2044.00	Tile and Marble Setters	0	0	0	0	0	0	0	8
49-3023.02	Automotive Specialty Technicians	0	1	0	5	2	0	0	8
49-9097.00	Signal and Track Switch Repairers	3	5	0	0	0	0	0	8
15-1151.00	Computer User Support Specialists	0	0	0	0	4	2	0	6
17-3029.09	Manufacturing Production Technicians	0	0	0	0	2	4	0	6
29-2099.00	Health Technologists and Technicians, All Other	0	0	0	0	0	6	0	6
49-3023.01	Automotive Master Mechanics	0	0	0	0	0	0	3	6
49-3043.00	Rail Car Repairers	2	4	0	0	0	0	0	6
49-3052.00	Motorcycle Mechanics	0	1	0	0	0	0	0	6
51-6041.00	Shoe and Leather Workers and Repairers	0	0	0	0	3	2	0	6
29-1141.00	Registered Nurses	0	0	0	0	0	0	5	5
31-9094.00	Medical Transcriptionists	0	0	0	5	0	0	0	5
41-3041.00	Travel Agents	0	0	0	0	4	1	0	5
49-3031.00	Bus and Truck Mechanics and Diesel Engine Specialists	0	0	1	0	0	0	0	5
51-9061.00	Inspectors, Testers, Sorters, Samplers, and Weighers	0	1	1	2	0	0	0	5

13-1031.00	Claims Adjusters, Examiners, and Investigators	0	0	0	2	1	1	0	4
31-9095.00	Pharmacy Aides	0	0	0	0	0	1	0	4
47-2132.00	Insulation Workers, Mechanical	0	0	0	1	0	1	0	4
29-2012.00	Medical and Clinical Laboratory Technicians	0	0	0	0	1	2	0	3
29-2053.00	Psychiatric Technicians	0	0	0	0	1	2	0	3
49-2092.00	Electric Motor, Power Tool, and Related Repairers	0	0	0	1	0	2	0	3
49-9094.00	Locksmiths and Safe Repairers	0	0	0	0	2	0	1	3
51-6093.00	Upholsterers	0	0	0	0	2	1	0	3
51-9199.00	Production Workers, All Other	0	1	0	1	0	1	0	3
53-5011.00	Able Seamen	0	0	0	0	0	0	0	3
51-9012.00	Master Brewer	0	0	0	0	3	0	0	3
11-9081.00	Lodging Managers	0	0	0	0	2	0	0	2
13-2021.02	Appraisers, Real Estate	0	0	0	0	0	0	0	2
15-1131.00	Computer Programmers	0	0	1	0	0	1	0	2
17-3012.02	Electrical Drafters	1	0	1	0	0	0	0	2
27-2042.02	Musicians, Instrumental	0	0	0	0	0	1	1	2
29-1171.00	Nurse Practitioners	0	0	0	0	0	2	0	2
31-9097.00	Phlebotomists	0	0	0	0	1	1	0	2
47-2022.00	Stonemasons	0	2	0	0	0	0	0	2
49-2011.00	Computer, Automated Teller, and Office Machine Repairers	0	0	0	0	2	0	0	2
49-2094.00	Electrical and Electronics Repairers, Commercial and Industrial Equipment	1	0	0	0	0	0	0	2
49-3022.00	Automotive Glass Installers and Repairers	0	0	0	0	2	0	0	2
49-9012.00	Meter Mechanics	0	2	0	0	0	0	0	2
49-9031.00	Electric Home Appliance and Power Tool Repairers	0	0	0	0	0	0	0	2
51-2041.00	Structural Metal Fabricators and Fitters	0	0	0	0	0	0	2	2
51-4121.06	Welders and Cutters	0	1	0	0	0	1	0	2
51-9012.00	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	0	0	0	0	1	0	1	2
51-9012.00	Professional Brewer	0	0	0	0	0	0	2	2
11-3021.00	Computer and Information Systems Managers	0	0	0	0	1	0	0	1
11-9199.02	Compliance Managers	0	0	0	0	0	1	0	1
13-1151.00	Training and Development Specialists	0	0	0	0	0	1	0	1
15-1142.00	Network and Computer Systems Administrators	0	0	0	0	1	0	0	1
17-3022.00	Civil Engineering Technicians	0	0	0	0	0	0	0	1
17-3023.03	Electrical Engineering Technicians	0	0	0	1	0	0	0	1

23-1022.00	Arbitrators, Mediators, and Conciliators	0	0	0	0	0	1	0	1
23-2011.00	Paralegals and Legal Assistants	0	0	0	0	0	0	1	1
27-1013.00	Fine Artists, Including Painters, Sculptors, and Illustrators	0	0	0	0	0	0	1	1
27-1025.00	Interior Designers	0	0	0	0	1	0	0	1
29-2034.02	Radiologic Technicians	0	0	1	0	0	0	0	1
29-2052.00	Pharmacy Technicians	0	0	0	1	0	0	0	1
29-2055.00	Surgical Technologists	0	0	0	1	0	0	0	1
35-1011.00	Chefs and Head Cooks	0	0	0	0	0	1	0	1
35-2014.00	Cooks, Restaurant	0	0	0	0	0	0	1	1
41-2022.00	Parts Salespersons	0	0	0	0	0	0	0	1
49-3041.00	Farm Equipment Mechanics and Service Technicians	0	0	0	0	0	0	1	1
49-3042.00	Mobile Heavy Equipment Mechanics, Except Engines	0	0	0	0	0	0	0	1
49-3053.00	Outdoor Power Equipment and Other Small Engine Mechanics	0	0	0	0	0	1	0	1
51-4011.00	Numerical Control Machine Tool Operators and Tenders, Metal and Plastic	1	0	0	0	0	0	0	1
51-9021.00	Crushing, Grinding, and Polishing Machine Setters, Operators, and Tenders	0	0	0	0	0	0	0	1
51-9081.00	Dental Laboratory Technicians	0	0	0	0	0	0	1	1
53-3032.00	Heavy and Tractor-Trailer Truck Drivers	0	0	0	0	0	1	0	1
49-3023.00	Automotive Technician Specialist	0	0	0	0	1	0	0	1

Source: MT DLI Registered Apprenticeship Program. Data from 2000 to September 30, 2020

ⁱ All apprenticeship data is from the Montana Department of Labor & Industry's Registered Apprenticeship Program as of October 1, 2020. Apprenticeship wages are calculated from the unemployment insurance wage match.

ⁱⁱ Montana University System, Graduation Rates, Student cohort FY2016. Available at <https://mus.edu/data/dashboards/graduation-rates.asp>.

ⁱⁱⁱ Bureau of Labor Statistics Employee Tenure data, January, 2020, available at www.bls.gov.

^{iv} Occupation counts are based on ONET codes.

^v 2019 American Community Survey 1-Year Estimates, U.S. Census Bureau

^{vi} Lerman, Robert. 2012. "Can the United States Expand Apprenticeship? Lessons from Experience" American University and the Urban Institute. Available at <http://ftp.iza.org/pp46.pdf>