

REGISTERED APPRENTICESHIP

Program Report 2023



Montana Department of
LABOR & INDUSTRY

Registered Apprenticeship Program Report 2023

December 2023

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Executive Summary

Apprenticeships are a time-honored tradition of passing on craftsmanship, knowledge, and skills to the next generation. The apprenticeship model marries traditional education with on-the-job training to provide apprentices with high-quality education and skills that translate directly into employment opportunities. The Montana Registered Apprenticeship program has become a critical training tool in addressing the state's workforce shortage – allowing workers access to high-quality training while remaining engaged in the labor force.

Trades like electrical, plumbing, and carpentry have long formed the cornerstone of the Montana Registered Apprenticeship program. However, apprenticeship opportunities have been expanding to new fields across the state. In 2023, the Montana Registered Apprenticeship program is training nearly 3,000 workers in over 60 high-demand occupations – including registered nurses, childcare providers, radiologic technicians, and computer programmers.

Program Participation Highlights include:

- Apprenticeship programs are more popular now than ever before.
 - o In 2023, Montana had more apprenticeships than in any other year with nearly 3,000 active apprenticeships.
 - o Montana set a record for the most apprenticeships added in 2022, with over 1,000 new apprenticeships. Another 750 apprenticeships were started in the first nine months of 2023.
 - o In 2023, there were over 660 Montana businesses utilizing apprenticeship to train their workforce – a record-high for business engagement.
- Registered Apprenticeship programs provided skilled workers to business in all areas of the state.
 - o In 2023, 82% of Montana counties have active registered apprenticeship programs providing high-quality training to the local workforce.
 - o Approximately 60% of apprenticeships are concentrated in Montana's most populous counties – Yellowstone, Missoula, Flathead, Lewis and Clark, Gallatin, and Silver Bow.
- Electricians and plumbers are the most common occupations among apprenticeships in 2023. However, some of the fastest growing apprenticeships are training workers to become industrial machinery mechanics, tapers, and construction laborers.
- New apprenticeship programs have been developed for nearly thirty high-demand occupations since 2019 – one of the more popular among them is the program to train registered nurses.
- Montana Registered Apprenticeship programs serve a higher share of older workers than traditional post-secondary education institutions. Less than 30% of Montana University System students are over the age of 24, compared to over 50% of apprentices in 2023.

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.

Workforce Outcome Highlights include:

- Apprenticeship graduates earn high wages with their credentials. One year after graduation, apprentices earned an average annual salary of \$65,930–\$11,400 higher than the statewide average wage.
- Five years after graduation, apprenticeship completers earned over \$20,000 more than those who did not complete their apprenticeship program.
- Apprenticeships help retain skilled workers in Montana. Approximately 86% of apprentice graduates were still working for a Montana employer five years later.
- The Montana Registered Apprenticeship program graduates more apprentices each year than the average two-year or community college in the Montana University System. From 2018 to 2023 an average of 295 apprenticeships have been completed each year.
- Completion rates are comparable to average rates across Montana's University System, with 47% of each year's cohort completing an apprenticeship.

Over the past two decades, the Montana Registered Apprenticeship program has grown to become one of the primary workforce training systems in the state. The Montana Department of Labor & Industry projects over half of job openings in the next ten years will be in apprenticeable occupations, suggesting considerable opportunities for continued growth. Apprenticeships will continue to be a vital component of meeting demand for skilled workers, helping to ensure Montana workers, businesses, and the economy can continue to flourish.

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Introduction

The apprenticeship training model offers a unique solution to many of Montana's most pressing workforce challenges – allowing participants to remain in the labor force and earn a paycheck while obtaining certification in their career field. The Montana 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. In 2023, the Montana Registered Apprenticeship program is training nearly 3,000 workers in over 60 high-demand occupations – including electricians, registered nurses, childcare providers, plumbers, and computer programmers.

This report provides an overview of the growth and expansion of Montana Registered Apprenticeship programs, as well as an analysis of workforce outcomes for apprenticeship completers in the five years after graduating from the program.

Understanding the role of the Montana Registered Apprenticeship program in workforce development efforts across the state is a critical component of ensuring Montana businesses have access to a highly qualified workforce so the economy can continue to grow.

Understanding the Montana Registered Apprenticeship Program

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 (MTDLI). Montana's Registered Apprentice Program (MRAP) is a recognized State Apprenticeship Agency by the U.S. Department of Labor, allowing the Department to monitor apprenticeship programs 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.

MTDLI works with employers to help them set up customized programs that follow the recommended curriculum per national standards. MTDLI 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. Over 660 Montana businesses were serving as active apprenticeship sponsors in 2023.

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 over the years. Trade occupations make up the largest group of apprentices. New programs are being established to include in-demand jobs in professions like nursing aides, daycare providers, radiologic technicians, and computer programmers.

Most apprenticeships require 8,000 hours of on-the-job experience, taking approximately four years. However, the training for some occupations can be as short as one year. Apprentices begin with a probationary period equal 25% of the program's length, or one year, whichever is shorter. Cancellations of an apprenticeship can be initiated by the sponsor or 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 may choose to cover these costs. 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 worker trained to meet the exact needs of their business. Starting in the 2018 tax year, eligible sponsors also receive a tax credit for sponsoring an apprentice.

Apprenticeship Terminology Explained

SPONSORS Are **BUSINESSES** that sponsor Apprenticeship Programs.



PROGRAMS Are based on **OCCUPATION** type. A business may sponsor multiple programs.



APPRENTICESHIPS Are the actual **JOBS** or positions available within a program.



APPRENTICES Are the **PEOPLE** filling the apprenticeship positions.

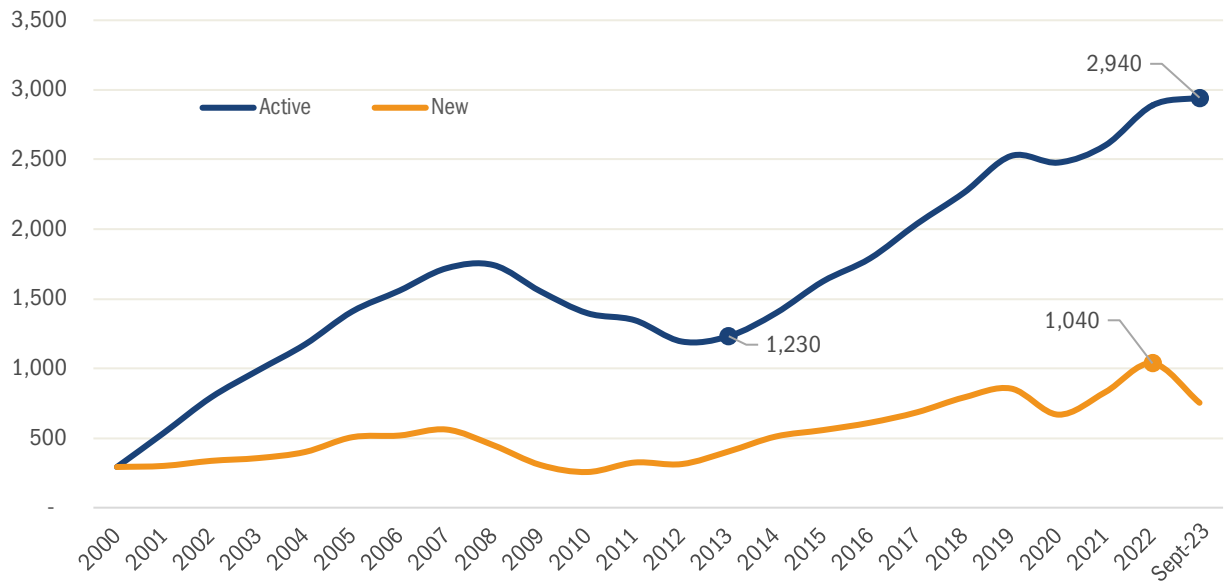


Apprenticeship Participation

The Montana Registered Apprenticeship Program (MRAP) has trained over 12,600 apprentices in more than 100 occupations since 2000. While apprenticeships have always played an important role in Montana’s workforce development efforts, the MRAP has grown significantly over the last ten years and is now more popular than ever before. In 2023, Montana has a record-high 2,940 active apprenticeships in the state – more than double the number of apprenticeships in 2013. Apprenticeships grew most dramatically in 2022, with over a thousand new apprenticeships. Another 750 apprenticeships were started in the first nine months of 2023. Figure 1 shows the number of new and active apprenticeships per year since 2000.

In 2023, Montana had nearly **3,000** active apprentices – setting a new record-high.

Figure 1: Active and New Apprenticeships

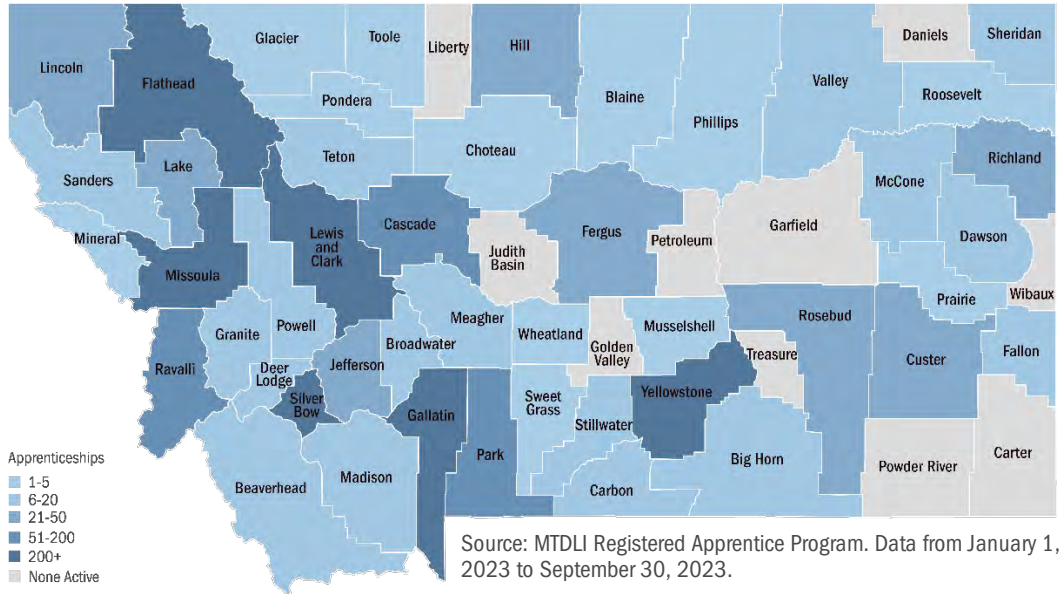


Source: MTDLI Registered Apprentice Program. Data from 2000 to September 30, 2023. Data rounded to nearest ten apprenticeships.

The Montana Registered Apprenticeship program trains workers throughout the state. Currently, apprenticeships exist in 82% of Montana counties. Figure 2 shows the number of active apprenticeships by county in 2023. Approximately 60% of apprenticeships are concentrated in Montana’s most populous counties – Yellowstone, Missoula, Flathead, Lewis and Clark, Gallatin, and Silver Bow. However, many rural counties are training more than twenty workers through apprenticeship programs – including Lincoln, Lake, Fergus, Hill, Ravalli, Richland, Custer, and Rosebud counties. County-level data on the number of active and new apprenticeships can be found in Figures A.1 and A.2 of the appendices.

82% of Montana counties have active registered apprenticeship programs providing high-quality training to the local workforce.

Figure 2. Active Apprenticeships by County in 2023



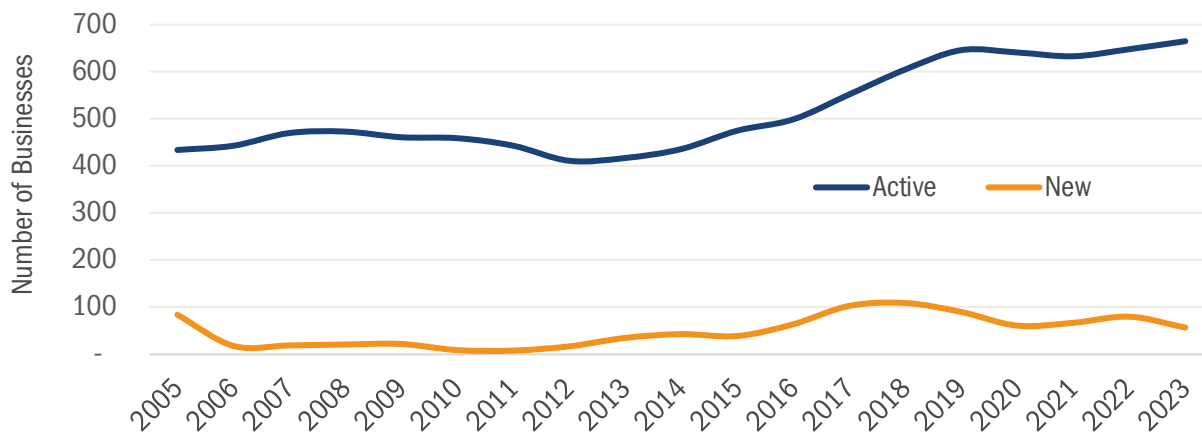
Business Sponsorship

Business engagement is an essential element of a successful registered apprenticeship program. Businesses are active partners in developing and administering an apprenticeship program, helping identify key proficiencies in program design and administering on-the-job training to participants. Businesses sponsoring an apprentice in a program pay the apprentice a wage and create a mentorship with existing staff to provide on-the-job guidance. In exchange, businesses benefit from having a specifically trained worker to meet the exact needs of their business.

Over 660 Montana businesses are active sponsors of a registered apprenticeship program in 2023 – a record-high level of business engagement.

The number of business sponsors reached a record high in 2023 – with over 660 Montana businesses using a registered apprenticeship program to train their employees. Figure 3 shows the number of businesses in the state with an active apprenticeship program and the number of new business sponsors in each year since 2005. Over the last ten years, the number of business sponsors has increased by 60% as more Montana businesses have utilized the apprenticeship training model to help address their workforce needs.

Figure 3: Active and New Apprenticeship Business Sponsors

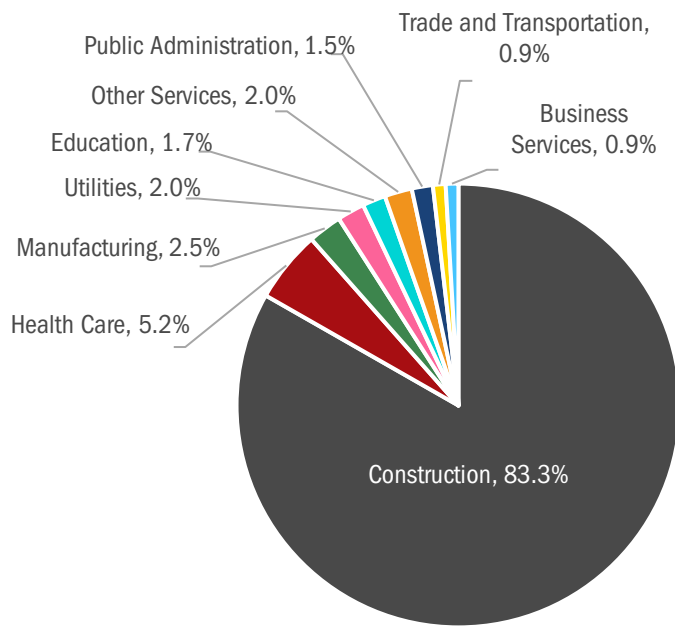


Source: MTDLI Registered Apprentice Program. Data from 2018 to September 30, 2023.

Most business sponsors are in the construction industry (83%). Healthcare and social assistance is the second largest industry by total business sponsors with over 30 sponsors in 2022. Figure 4 shows apprenticeship sponsors by industry.

A complete list of business sponsors by industry can be found in Figure A.3 of the appendix. Over the last five years, the Montana Registered Apprenticeship program has grown in popularity among business services, healthcare, and manufacturing businesses. About 16% of all new business sponsors since 2019 have been in one of those industries.

Figure 4. Active Business Sponsors by Industry, 2022



Source: MTDLI Registered Apprentice Program, 2022.

Apprenticeships by Occupation

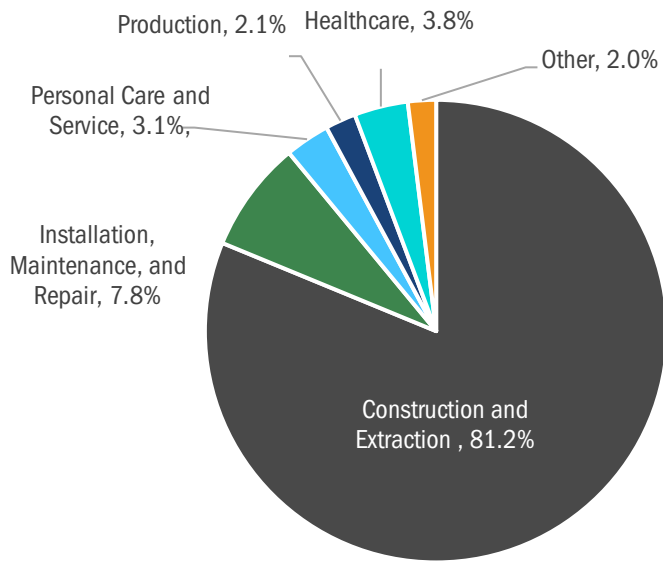
The Montana Registered Apprenticeship program has trained workers in over 110 occupations since 2000. Construction and extraction occupations formed the cornerstone of the Montana Registered Apprenticeship program over the last two decades, representing over 80% of all apprenticeships in the state. Figure 5 shows the distribution of apprenticeship by occupation type since 2000. Electrician (35%) and Plumbing (25%) are the two occupations with the most apprenticeships, due in large part to the registered apprentice certification requirement for state licensing. A complete list of detailed occupations trained through Montana registered apprenticeship program since 2000 can be found in Figure A.4 in the appendix.

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. The tax credit is available to employers for apprentices that have completed their probationary training period.

In 2022, 622 businesses were eligible for tax credits. A total of 1,863 apprentices were eligible, 139 of which were veterans. The combined tax credits available for all eligible employers was \$1,500,750 in tax year 2022.

Figure 5. Apprenticeships by Occupation Since 2000



Source: MTDLI Registered Apprentice Program. Data from 2000 to September 30, 2023.

Currently registered apprenticeship programs are training nearly 3,000 Montanans to work in over sixty high-demand occupations. Electricians and plumbers are the most common occupations among apprenticeships in 2023, with over 1,200 active electrician and 800 active plumbing apprenticeships. While these programs remain popular, apprenticeships have been expanding to new fields across the state. Some of the fastest growing apprenticeships are training workers to become industrial machinery mechanics, tapers, and construction laborers. Figure 6 shows top twenty occupations with the most active apprenticeships in 2023. A complete list of occupations with active apprenticeships can be found in Figure A.4 in the appendix.

Figure 6: Top 20 Occupations by Active Apprenticeships

ONET	Occupation	2019	2020	2021	2022	2023
47-2111	Electricians	860	844	980	1,132	1,209
47-2152	Plumbers, Pipefitters, and Steamfitters	603	599	663	765	832
47-2031	Carpenters	150	191	190	266	221
47-2211	Sheet Metal Workers	80	85	108	104	105
47-2221	Structural Iron and Steel Workers	69	78	80	100	78
49-9051	Electrical Power-Line Installers/Repairers	43	41	43	65	63
49-9021	HVAC Mechanics/ Installers	60	48	50	52	62
47-2073	Operating Engineers/Equipment Operators	26	21	22	25	32
39-9011	Childcare Workers	28	30	28	29	22
49-9052	Telecommunications Line Installers/Repairers	22	26	24	23	22
49-9041	Industrial Machinery Mechanics	11	19	9	13	21
47-4021	Elevator and Escalator Installers/Repairers	20	18	13	17	20
47-2061	Construction Laborers	10	12	13	14	18
47-2082	Tapers	9	11	14	14	18
29-1141	Registered Nurses	0	5	7	14	16
47-2021	Brickmasons and Blockmasons	21	18	21	17	15
21-1091	Health Education Specialists	7	10	7	3	14
17-3023	Electrical/Electronic Engineering Technologists/Technicians	0	0	0	13	13
47-2011	Boilermakers	49	40	29	22	12
17-3011	Architectural and Civil Drafters	15	12	12	15	11

Source: MTDLI Registered Apprentice Program. Data from 2019 to September 30, 2023.

Registered apprenticeships are the primary workforce training mechanism for several high-demand occupations in the state. For example, over half of all structural iron and steel workers are trained in an apprenticeship program. Additionally, 47% of sheet metal workers, 41% of electricians, and 38% of plumbers are apprentices in the Montana Registered Apprenticeship Program. Figure 7 shows the top ten occupations by active apprenticeships as a percent of total employment in 2022. In total, apprentices comprise about 3.8% of employment in apprenticed occupations.

Figure 7: Number of Active Apprenticeships as a Percent of Total Employment in 2022 by Occupation

ONET	Occupation	Active Apprenticeships	Total Employment	Percent of Total Employment
47-2111	Electricians	1,132	2,750	41%
47-2152	Plumbers, Pipefitters, and Steamfitters	765	2,020	38%
47-2031	Carpenters	266	4,800	6%
47-2211	Sheet Metal Workers	104	220	47%
47-2221	Structural Iron and Steel Workers	100	190	53%
49-9051	Electrical Power-Line Installers/Repairers	65	640	10%
49-9021	HVAC Mechanics/Installers	52	1,230	4%
31-1131	Nursing Assistants	37	4,990	1%
39-9011	Childcare Workers	29	2,120	1%
47-2073	Operating Engineers/Equipment Operators	25	3,620	1%

Source: MTDLI Registered Apprentice Program 2022. Total Employment from BLS Occupational Employment Statistics 2022.

*Excludes apprentices and jobs that are confidential in the BLS OES 2022 data

Over the past five years, new apprenticeship programs have been developed to train workers in about thirty additional occupations. Figure 8 lists the new apprenticeship programs that have been added since 2019 and the number of active apprenticeships in those programs. The newest programs added in 2022 train water and wastewater treatment plant operators, facilities managers, information security analysts, administrative services managers, and animal trainers.

New apprenticeship programs have been developed for nearly thirty high-demand occupations since 2019. The new apprenticeship program training Registered Nurses is one of the most popular among them.

Figure 8: New Registered Apprenticeships Added by Occupation, 2019-2022

Year Added	ONET	Occupation	Apprenticeships
2022	51-8031	Water and Wastewater Treatment Plant and System Operators	8
2022	11-3013	Facilities Managers	5
2022	15-1212	Information Security Analysts	4
2022	11-3012	Administrative Services Managers	3
2022	39-2011	Animal Trainers	2
2021	37-3013	Tree Trimmers and Pruners	5
2021	51-3092	Food Batchmakers	4
2021	51-9071	Jewelers and Precious Stone and Metal Workers	1
2020	29-1141	Registered Nurses	20
2020	51-9081	Dental Laboratory Technicians	3
2020	47-2121	Glaziers	2
2020	49-3041	Farm Equipment Mechanics and Service Technicians	2
2020	51-2041	Structural Metal Fabricators and Fitters	2
2020	23-2011	Paralegals and Legal Assistants	1
2020	27-1013	Fine Artists, Painters, Sculptors, and Illustrators	1
2020	35-2014	Cooks, Restaurant	1
2019	47-2082	Tapers	35
2019	29-2042	Emergency Medical Technicians	6
2019	29-2099	Health Technologists and Technicians, All Other	6
2019	27-2042	Musicians and Singers	4
2019	29-2043	Paramedics	4
2019	29-1171	Nurse Practitioners	2
2019	29-2053	Psychiatric Technicians	2
2019	11-9199	Compliance Managers	1
2019	13-1151	Training and Development Specialists	1
2019	23-1022	Arbitrators, Mediators, and Conciliators	1
2019	35-1011	Chefs and Head Cooks	1
2019	49-3053	Outdoor Power Equipment/Other Small Engine Mechanics	1
2019	53-3032	Heavy and Tractor-Trailer Truck Drivers	1

Source: MTDLI Registered Apprentice Program. Data from 2019 to September 30, 2023

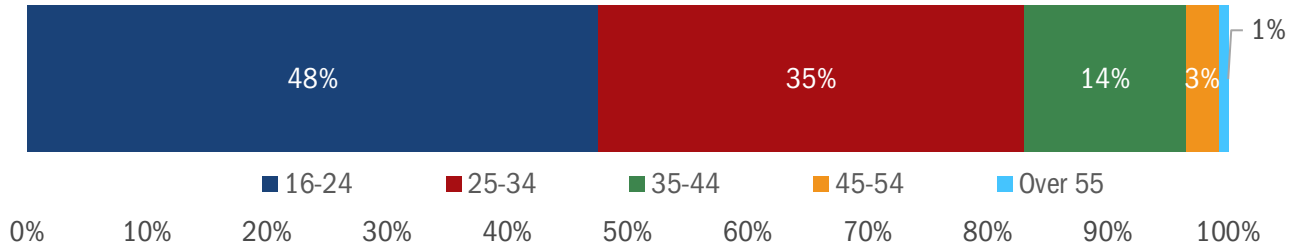
In 2020, the state began training registered nurses through an apprenticeship program. The program quickly became one of the most popular apprenticeship programs developed in the last five years. Nursing wages are rising, and more people are being attracted to the profession. However, the field continues to experience significant workforce shortages – signified by unemployment rates well below the national average.¹ The new registered apprenticeship program training RNs offers an innovative solution to address the significant shortage of nurses in the state.

¹ Trautman, Emily. MTDLI. October 2023. “Status of the Nursing Workforce in Montana: A Summary of the Results from the National Council State Board of Nursing 2022 Survey.” https://lmi.mt.gov/_docs/2023_NursingSurvey.pdf

Demographics of Apprentices in Montana

Apprenticeship continues to primarily serve workers in the early stages of their careers. However, Montana Registered Apprenticeship programs serve a higher share of older workers than traditional post-secondary education institutions. Over half of Montana apprentices are older than 24, compared to less than 30% of Montana University System students in 2023.²

Figure 9: Age Distribution of Apprentices



Source: MTDLI Registered Apprenticeship Program, 2023.

Apprentices have historically been predominantly male due to apprenticeship popularity among male-dominated fields like construction and transportation. The expansion of apprenticeship into childcare and healthcare occupations drew more women into apprenticeship programs. However, over 90% of apprentices in 2023 are men.

The racial composition of apprentices mirror that of the statewide population. 89% of apprentices in 2023 were white, while 6% were non-white, and 4% did not provide a race. Most non-white apprentices are Native American.

Top Five Apprenticeship Programs Among Females

1. Nursing Assistants
2. Electricians
3. Childcare Workers
4. Plumbers
5. Medical Assistants

Figure 10: Apprentices by Gender

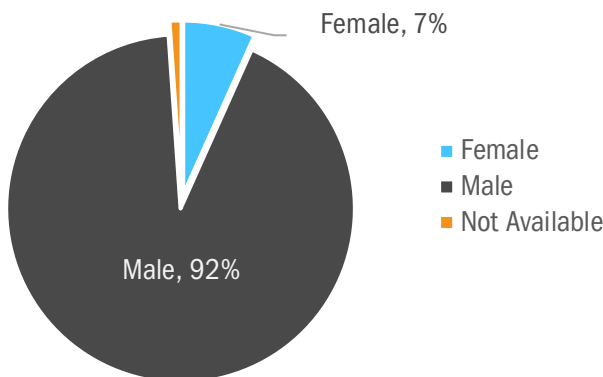
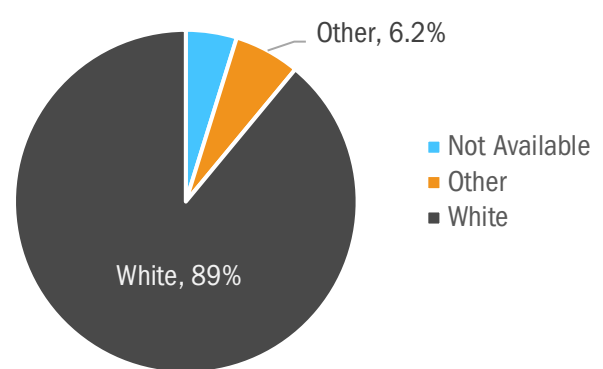


Figure 11: Apprentices by Race



Source: MTDLI Registered Apprenticeship Program, 2023.

9% of Montana Apprentices are Veterans.

² MUS age distribution based on Fall 2023 enrollment. <https://mus.edu/data/dashboards/headcount.html>

Apprenticeship Outcomes

Over the past two decades, the Montana Registered Apprenticeship program has grown to become one of the primary workforce training systems in the state. On average over the past five years, 295 apprenticeships have completed each year. The Montana Registered Apprenticeship program graduates more apprentices per year than the average two-year or community college in the Montana University System.³

The Montana Registered Apprenticeship program **graduates more apprentices each year** than the average two-year or community college in the Montana University System.

Time to Completion

Most apprenticeships require training for approximately 8,000 hours or four years. Some, such as firefighters and childcare workers, require only approximately two years of training (4,000 hours). Since 2000, the average time it takes to complete an apprenticeship is 41 months, or just under four years. Approximately 28% of apprenticeships are completed within the recommended timeframe.

On-time completion rates in apprenticeship are higher than MUS 4-year graduation rates, with 28% of apprentices completing within program length compared to 23% of students graduating in four years.⁴ When considering completions by cohort regardless of whether they are completed on-time, an average of 47% of apprentices complete their program. The overall completion rate for apprenticeships is slightly lower than the long-term graduation rate for MUS students.⁵

47% of apprentices complete their program. The average time to completion is 41 months, or just under four years.

Completion rates vary by occupation, with the apprenticeship program for firefighters reporting the highest rate of over 90%. The apprenticeship program to train firefighters is a three year program. Approximately 95% of firefighter apprentices complete their program, 79% completing within the three year timeframe. Other popular short-term apprenticeship programs with high completion rates include programs for power distributors and dispatchers, boiler operators, childcare workers, and nursing assistants. Figure 12 shows the completion rate of apprenticeship programs by occupation for those with at least ten graduates.

³ Watson, Amy. October 2022. "Montana Postsecondary Workforce Report" MTDLI. https://lmi.mt.gov/_docs/Publications/LMI-Pubs/Special-Reports-and-Studies/MTCollegeReport2022.pdf

⁴ Based on the average of MUS 4-year graduation rates for F2002-F2018. Apprentice calculation uses years 2000-2018.

⁵ Based on the average MUS 8-year graduation rates for cohorts from F2006 to F2013 from the MUS graduation rates dashboard at <https://mus.edu/data/dashboards/graduation-rates.html>. Apprenticeship calculation includes years 2000-2017.

Figure 12: Apprenticeship Completion Rate for Select Occupations

ONET	Occupation	Program Length (Years)	Overall Completion Rate	On-Time Completion Rate
33-2011	Firefighters	3	95%	79%
49-9041	Industrial Machinery Mechanics	4	88%	87%
51-8013	Power Plant Operators	4	88%	88%
49-2095	Electronics Repairers, Powerhouse/Substation	4	84%	84%
51-8012	Power Distributors and Dispatchers	3	83%	17%
49-9051	Electrical Power-Line Installers/Repairers	4	79%	71%
51-8021	Stationary Engineers/Boiler Operators	3	75%	44%
49-2098	Security and Fire Alarm Systems Installers	4	75%	75%
49-2022	Telecomm Equipment Installers/Repairers	4	73%	56%
49-9052	Telecomm Line Installers/Repairers	4	71%	38%
47-2211	Sheet Metal Workers	4	53%	34%
31-1131	Nursing Assistants	1	53%	39%
39-9011	Childcare Workers	2	51%	43%
47-2011	Boilermakers	4	47%	34%
47-2111	Electricians	4	46%	23%
47-2152	Plumbers, Pipefitters, and Steamfitters	4	44%	19%
47-2021	Brickmasons and Blockmasons	4	43%	36%
29-2072	Medical Records Specialists	1	42%	4%
47-2073	Operating Engineers/Equipment Operators	4	40%	40%
47-4021	Elevator and Escalator Installers/Repairers	4	37%	12%
47-2221	Structural Iron and Steel Workers	4	27%	23%
47-2031	Carpenters	4	21%	14%
47-2061	Construction Laborers	4	18%	12%
49-9021	HVAC Mechanics/ Installers	4	18%	10%
All Apprenticeships		3.4	47%	28%

Source: MTDLI Registered Apprenticeship Data 2000 to 2018. Occupations limited to those with at least ten completers from 2000 to 2018. Average time to completion listed for program length of all apprenticeships.

Not all apprenticeships end in completion. From 2018 to 2022, an average of 390 apprenticeships per year ended in cancellation. An apprenticeship may be cancelled by either the business sponsor or the apprentice. The most common reason an apprenticeship is cancelled is because the apprentice left to accept another employment opportunity. The next most common reason for cancellation of an apprenticeship is because the employers and apprentices find that the job match is not working out or that the worker is no longer needed.⁶ Of those that were cancelled, 47% of apprenticeships are cancelled within their probationary period.⁷ The average time to cancellation is 17 months, while the average time to completion is 3.4 years, though many apprenticeships take up to four years to complete.

⁶ Approximately 31% of canceled apprenticeships were canceled because the apprentice left to accept employment elsewhere. Another 25% were canceled because the apprentice was discharged by the employer. About 27% of canceled apprenticeship occurred because the apprentice voluntarily quit.

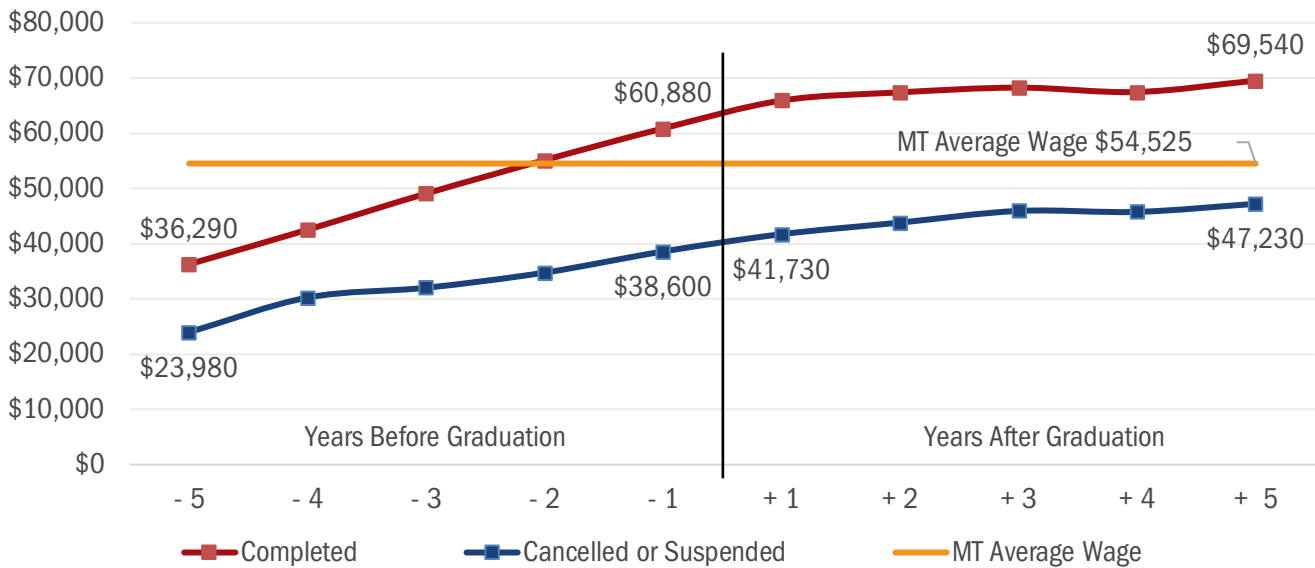
⁷ The probationary period cannot exceed 25 percent of the length of the program, or one year, whichever is shorter.

Workforce Outcomes of Apprentices

Most (86%) of Montana registered apprenticeship program completers work for a Montana employer five years after completing their program – making them more likely than non-completers to work in the state. In addition, apprenticeship completers experienced more significant wage growth than non-completers. Figure 13 shows apprentice wages before, during, and after the program by completion status.

86% of Montana Registered Apprenticeship Program completers work for a Montana employer five years after graduation.

Figure 13: Wages Before and After Apprenticeship by Completion Status



Source: MTDLI Registered Apprentice Program Data matched to UI Payroll Wage Data 2007 to 2023 Q1. Wages inflated to 2022 dollars using CPI-U from BLS. Wages rounded to thousands. US BLS and Montana Department of Labor & Industry, QCEW.

Five years prior to graduation, the average wage of those who eventually complete an apprenticeship is \$36,290. During their participation in the registered apprenticeship program the apprentice’s wages grow by 67% as they gain knowledge and proficiency in their career. By graduation, apprenticeship completers are earning an average wage of \$60,800. Wage growth continues at a slower pace for apprentices after graduation. Five years after graduation, the average wage of an apprenticeship completer reached \$69,540. By comparison, the average wage of non-completers was \$47,230 five years after leaving their apprenticeship program.

Many apprenticeships earn high wages for their occupation one year after graduation. Figure 14 shows the average wage of apprentices by occupation for the top fifteen occupations with the most apprentices. The 25th percentile is provided to represent the expected entry-level wages for workers beginning their careers. In almost every occupation, apprentices are making above entry-level wages one year after graduation. Many apprentices also make above the average wage for their occupation a year after graduation.

Apprenticeship completers earn **over \$20,000 more** than non-completers five years after graduation.

Figure 14: Average Wage in First Year After Graduation by Occupation

ONET	Occupation	Apprentices	Graduated Apprentice Avg Wage	Entry-Level Wage	MT Average Wage
47-2111	Electricians	1,096	\$61,820	\$47,500	\$62,250
47-2152	Plumbers, Pipefitters, and Steamfitters	810	\$67,600	\$56,650	\$69,450
47-2211	Sheet Metal Workers	153	\$55,740	\$45,780	\$54,460
49-9051	Electrical Power-Line Installers/Repairers	148	\$114,050	\$82,780	\$94,250
31-1131	Nursing Assistants	119	\$34,060	\$32,340	\$37,710
39-9011	Childcare Workers	85	\$25,370	\$21,990	\$26,480
47-2031	Carpenters	77	\$47,220	\$39,020	\$48,130
47-2221	Structural Iron and Steel Workers	76	\$44,860	\$49,920	\$59,750
47-2011	Boilermakers	74	\$63,690	\$56,090	\$71,760
51-8021	Stationary Engineers/Boiler Operators	70	\$132,200	\$63,570	\$82,910
49-9041	Industrial Machinery Mechanics	65	\$113,180	\$46,340	\$61,810
33-2011	Firefighters	61	\$86,440	\$45,410	\$51,730
47-2073	Operating Engineers/Equipment Operators	38	\$56,560	\$48,110	\$57,690
47-2021	Brickmasons and Blockmasons	33	\$45,440	\$55,780	\$60,710
29-2072	Medical Records Specialists	22	\$45,210	\$38,810	\$46,530

Source: MTDLI Registered Apprenticeship Program and UI wage match. Number of apprentices between 2006 and 2021. Table shows top fifteen occupations with the most apprentices. OEWS wage data from the May 2023. Bureau of Labor Statistics Occupation Employment Survey, Montana.

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.⁸ The Montana Postsecondary Workforce Report finds Montana's Registered Apprenticeship program completers have more than double the wage earnings of those earning an associate or bachelor's degree after one year.⁹

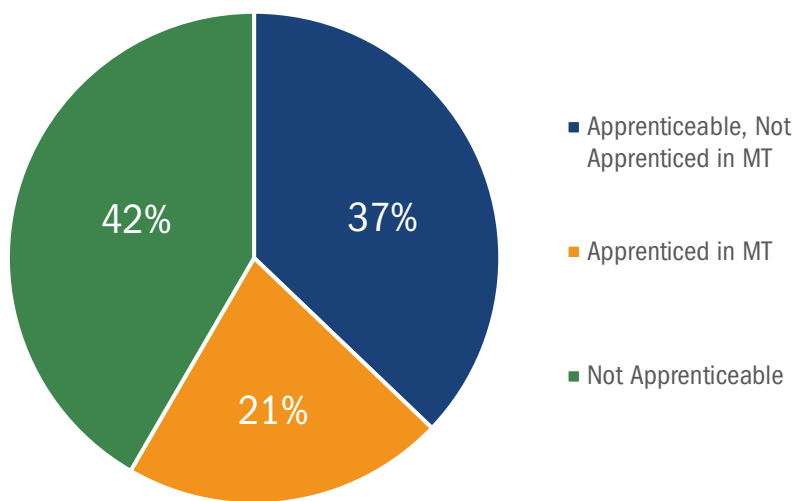
⁸ Lerman, Robert. 2012. "Can the United States Expand Apprenticeship? Lessons from Experience" American University and the Urban Institute. Available at <http://ftp.iza.org/pp46.pdf>

⁹ Watson, Amy. "Montana Postsecondary Workforce Report." October 2022. MTDLI.

Future Demand for Apprenticeable Jobs

The Montana Department of Labor & Industry’s employment forecasts for 2022-2032 demonstrate the demand for apprenticeable jobs. Nationally, there are over 400 occupations that can be trained through apprenticeship, with over 110 being apprenticed in Montana.¹⁰ Figure 15 shows that approximately 58% of Montana’s projected job openings over the next ten years will be in occupations that can be trained through apprenticeship. Montana’s current apprenticed occupations account for 21% of projected job openings, while occupations not yet apprenticed in Montana make up 37% of projected job openings, suggesting future opportunities to expand apprenticeship to more occupations.

Figure 15: Share of Projected Job Openings for Apprenticeable Occupations



58% of Montana’s projected job growth over the next ten years will be in apprenticeable occupations.

15,600 annual job openings are projected for occupations trained through existing Montana Registered Apprenticeship programs.

Source: MTDLI Registered Apprentice Program. Dept of Labor Apprenticeable Occupations and MTDLI 2022-2032 Employment Forecasts.

Approximately 73,600 annual job openings are projected over the next ten years.¹¹ In total, the Montana Department of Labor & Industry projects roughly 42,900 job openings per year in apprenticeable occupations, with 15,600 openings in occupations that are currently trained through a Montana Registered Apprenticeship program.

Figure 16 shows the forecasted annual job openings for the next ten years for some of Montana’s most popular apprenticeship programs. Many of the occupations are in high demand with 890 annual job openings for construction laborers, followed by carpenters (760), registered nurses (640), and childcare workers (550). Most also earn high wages with all but one making more than \$45,000.

¹⁰ Occupations based off ONET occupation codes. There are over 400 apprenticeable occupations based on the occupation list from the Registered Apprenticeship Partners Information Management Data System.

¹¹ MTDLI 2022-2032 Employment Forecasts. Total job openings include openings due to growth, labor force exits, and worker movement between occupations.

Figure 16: Job Openings for Select Apprenticed Occupations

ONET	Occupation	Annual Job Openings	Montana Average Wage
47-2061	Construction Laborers	890	\$46,500
47-2031	Carpenters	760	\$48,130
29-1141	Registered Nurses	640	\$78,350
39-9011	Childcare Workers	550	\$26,480
47-2073	Operating Engineers/Equipment Operators	510	\$57,690
47-2111	Electricians	380	\$62,250
47-2152	Plumbers, Pipefitters, and Steamfitters	270	\$69,450
49-9021	HVAC Mechanics and Installers	240	\$53,180
49-9041	Industrial Machinery Mechanics	130	\$61,810
17-3011	Architectural and Civil Drafters	80	\$58,480
49-9051	Electrical Power-Line Installers/Repairers	60	\$94,250
47-2211	Sheet Metal Workers	50	\$54,460
49-9052	Telecommunications Line Installers/Repairers	50	\$57,490
47-2021	Brickmasons and Blockmasons	40	\$60,710
21-1091	Health Education Specialists	30	\$52,730

Source: MTDLI Registered Apprenticeship Program. OEWS wage data from the May 2023. Bureau of Labor Statistics Occupation Employment Survey, Montana. Excludes occupations where projections were suppressed.

The apprenticeship model has been a success in upskilling Montana's workforce, but there is still opportunity to expand to new occupations and meet the 37% of worker demand not yet apprenticed. These occupations include a variety of occupations from project management specialists and business analysts to dental assistants and police officers.

Conclusion

Over the past two decades, the Montana Registered Apprenticeship program has become a vital piece of the state's workforce training landscape. With projections from the MTDLI indicating that over half of the forthcoming job growth will be in apprenticeable occupations, the Montana Registered Apprenticeship program will continue to be an important workforce training system for the state. Offering specialized training in areas like electricians, registered nurses, childcare providers, plumbers, and computer programmers, apprenticeships are tailored to meet the surging demand for skilled labor. This strategic approach not only enhances the competence of Montana's workforce but also strengthens local businesses and the overall economy. Apprenticeships are crucial in ensuring the state's sustained prosperity by equipping both workers and enterprises to thrive in the face of increasing workforce demands.

Appendix: Data Tables

Figure A.1 Total Apprenticeships by County - January 1, 2000 to September 30, 2023

County	Total	Completed	County	Total	Completed
Lewis and Clark	2,418	873	Pondera	33	9
Gallatin	1,645	506	McCone	31	16
Yellowstone	1,488	537	Sanders	30	4
Flathead	1,072	267	Powell	29	7
Silver Bow	998	484	Sheridan	26	12
Missoula	940	306	Phillips	25	10
Cascade	685	185	Teton	24	8
Ravalli	412	103	Mineral	23	12
Custer	282	132	Glacier	21	2
Park	280	88	Meagher	19	1
Big Horn	247	111	Blaine	18	8
Rosebud	237	159	Musselshell	18	5
Lake	232	57	Granite	16	0
Hill	163	73	Chouteau	15	7
Richland	148	39	Powder River	15	4
Jefferson	142	29	Sweet Grass	12	5
Lincoln	110	20	Toole	11	3
Fergus	94	18	Daniels	10	7
Valley	80	36	Judith Basin	10	1
Deer Lodge	68	30	Liberty	10	7
Beaverhead	64	18	Prairie	9	5
Madison	60	18	Wibaux	6	6
Dawson	58	17	Wheatland	5	2
Carbon	56	17	Golden Valley	4	0
Stillwater	56	16	Garfield	3	0
Roosevelt	49	25	Carter	1	0
Broadwater	41	13	Not Available	32	1
Fallon	36	18	Total	12,617	4,337

Source: MTDLI Registered Apprentice Program. Data from 2000 to September 30, 2023.

Figure A.2 New Apprenticeships by County

County	2019	2020	2021	2022	2023*	Total New Since 2019
Lewis and Clark	136	103	154	183	118	694
Gallatin	98	78	130	162	119	587
Yellowstone	90	82	114	156	106	548
Flathead	70	79	73	119	101	442
Missoula	58	73	72	99	80	382
Silver Bow	61	64	71	54	38	288
Cascade	44	51	51	56	56	258
Custer	104	17	12	4	20	157
Ravalli	36	27	22	28	10	123
Park	24	16	13	17	10	80
Fergus	13	9	10	14	12	58
Jefferson	11	9	12	17	8	57
Lake	6	5	12	27	3	53
Lincoln	4	8	8	13	4	37
Rosebud	10	4	6	10	7	37
Hill	5	6	9	12	3	35
Richland	2	6	8	10	9	35
Valley	12	3	3	6	1	25
Mineral	16	2	1	0	1	20
Carbon	4	2	4	3	3	16
Stillwater	5	1	4	1	5	16
Deer Lodge	1	3	2	5	4	15
Madison	2	2	3	3	4	14
Big Horn	3	2	4	3	1	13
Granite	1	0	5	4	3	13
Broadwater	3	0	4	1	4	12
Sanders	3	3	3	2	0	11
Beaverhead	2	3	1	2	2	10
Meagher	3	0	0	2	4	9
McCone	1	2	1	4	0	8
Powell	1	1	1	3	2	8
Teton	0	1	1	4	2	8
Dawson	2	0	3	1	1	7
Sheridan	1	1	1	2	2	7
Pondera	2	0	1	2	1	6
Powder River	3	1	2	0	0	6
Chouteau	2	1	0	2	0	5
Fallon	2	0	1	0	2	5
Liberty	4	0	1	0	0	5
Musselshell	2	1	0	1	1	5
Phillips	1	1	2	0	1	5
Blaine	3	0	1	0	0	4
Sweet Grass	1	0	1	2	0	4
Glacier	0	0	2	0	1	3
Toole	0	0	1	1	1	3
Daniels	2	0	0	0	0	2
Not Available	0	0	0	0	2	2
Carter	0	1	0	0	0	1
Garfield	0	0	0	1	0	1
Roosevelt	1	0	0	0	0	1
Wheatland	0	0	0	0	1	1
Total	855	668	830	1,036	753	4,195

Source: MTDLI Registered Apprentice Program. Data from 2017 to September 30, 2023. *As of Sept. 30, 2023

Figure A.3 Business Sponsors and Apprenticeships by Industry in 2022

NAICS	NAICS description	Apprenticeships	Business Sponsors
22	Utilities	130	13
23	Construction	2,374	542
31-33	Manufacturing	69	16
42	Wholesale Trade	21	4
44-45	Retail Trade	1	1
48-49	Transportation & Warehousing	2	1
51	Information	16	2
53	Real Estate & Rental & Leasing	1	1
54	Professional, Scientific, & Technical Services	12	4
56	Administrative Support & Waste Management	7	2
61	Educational Services	96	11
62	Health Care & Social Assistance	84	34
81	Other Services (except Public Administration)	34	10
92	Public Administration	42	10
Total		2,889	651

Source: MTDLI Registered Apprentice Program. Data includes active apprenticeships in 2022.

Figure A.4 Total Apprenticeships and New Apprenticeships by Occupation

ONET	Occupation	2019	2020	2021	2022	2023*	Total Since 2000
47-2111.00	Electricians	232	210	339	403	305	4,410
47-2152.00	Plumbers, Pipefitters, and Steamfitters	156	150	211	285	234	3,140
47-2031.00	Carpenters	54	84	52	103	18	726
47-2221.00	Structural Iron and Steel Workers	50	30	30	42	25	570
47-2211.00	Sheet Metal Workers	25	27	38	23	24	459
39-9011.00	Childcare Workers	8	10	10	11	7	392
31-1131.00	Nursing Assistants	84	32	21	0	0	316
49-9051.00	Electrical Power-Line Installers/Repairers	9	11	9	34	12	303
47-2011.00	Boilermakers	26	0	2	4	0	271
49-9021.00	HVAC Mechanics/ Installers	22	13	20	15	24	195
47-2073.00	Operating Engineers/Equipment Operators	19	5	10	12	13	161
51-8021.00	Stationary Engineers/Boiler Operators	4	0	3	5	0	130
49-9041.00	Industrial Machinery Mechanics	2	15	3	7	10	123
47-2181.00	Roofers	2	2	7	1	3	122
47-2021.00	Brickmasons and Blockmasons	8	6	10	4	2	116
47-2061.00	Construction Laborers	2	4	2	7	6	114
47-4021.00	Elevator and Escalator Installers/Repairers	9	2	3	5	5	81
49-2022.00	Telecommunications Equipment Installers/Repairers	4	2	3	2	3	77
33-2011.00	Firefighters	0	0	0	0	0	76
29-2072.00	Medical Records Specialists	8	0	1	0	0	54
49-9052.00	Telecommunications Line Installers/Repairers	4	6	2	2	4	42
49-2098.00	Security and Fire Alarm Systems Installers	0	0	0	0	0	36
47-2082.00	Tapers	9	6	7	4	9	35
17-3011.00	Architectural and Civil Drafters	2	1	4	3	1	33
49-2095.00	Electronics Repairers, Powerhouse, Substation, and Relay	5	2	0	0	5	31
51-8013.00	Power Plant Operators	2	4	1	5	2	30
31-9092.00	Medical Assistants	14	3	5	1	4	29
49-2096.00	Electronic Equipment Installers/Repairers, Motor Vehicles	2	2	4	6	1	28
49-3021.00	Automotive Body and Related Repairers	4	2	5	1	0	28
21-1091.00	Health Education Specialists	6	5	0	0	14	27
49-3023.00	Automotive Service Technicians/Mechanics	0	3	2	0	4	23
29-1141.00	Registered Nurses	0	5	4	7	4	20
49-9044.00	Millwrights	16	0	1	0	0	20
51-3021.00	Butchers and Meat Cutters	3	0	0	0	3	17
47-2051.00	Cement Masons and Concrete Finishers	0	0	0	0	0	16
17-3023.00	Electrical/Electronic Engineering Technologists/Technicians	0	0	0	13	1	15
49-9071.00	Maintenance and Repair Workers, General	1	0	1	0	0	15
51-8012.00	Power Distributors and Dispatchers	0	0	2	1	0	15
43-3031.00	Bookkeeping, Accounting, and Auditing Clerks	3	1	2	0	0	14
51-3023.00	Slaughterers and Meat Packers	0	0	0	0	0	13
51-4041.00	Machinists	1	0	0	2	0	12
17-3026.00	Industrial Engineering Technologists/Technicians	4	3	1	0	0	10
29-2061.00	Licensed Practical and Licensed Vocational Nurses	6	0	0	1	0	10
47-2141.00	Painters, Construction and Maintenance	0	0	0	0	1	10
49-2093.00	Electrical/Electronics Installers/Repairers, Transportation	0	0	0	0	0	10
11-9111.00	Medical and Health Services Managers	3	1	0	0	0	9
15-1232.00	Computer User Support Specialists	2	0	1	2	0	9

51-9012.00	Still Machine Setters/Operators	0	3	1	1	0	9
47-2044.00	Tile and Stone Setters	0	0	0	0	0	8
49-9097.00	Signal and Track Switch Repairers	0	0	0	0	0	8
51-8031.00	Water and Wastewater Treatment Plant and System Operators	0	0	0	5	3	8
31-9097.00	Phlebotomists	1	5	0	0	0	7
49-2011.00	Computer, Automated Teller, and Office Machine Repairers	1	0	0	2	0	7
29-2042.00	Emergency Medical Technicians	6	0	0	0	0	6
29-2099.00	Health Technologists and Technicians, All Other	6	0	0	0	0	6
41-3041.00	Travel Agents	2	0	0	0	0	6
49-3031.00	Bus and Truck Mechanics and Diesel Engine Specialists	0	0	0	0	0	6
49-3043.00	Rail Car Repairers	0	0	0	0	0	6
49-3052.00	Motorcycle Mechanics	0	0	0	0	0	6
51-4121.00	Welders, Cutters, Solderers, and Brazers	1	0	1	2	1	6
51-6041.00	Shoe and Leather Workers and Repairers	2	0	0	0	0	6
11-3013.00	Facilities Managers	0	0	0	5	0	5
31-9094.00	Medical Transcriptionists	0	0	0	0	0	5
37-3013.00	Tree Trimmers and Pruners	0	0	4	0	1	5
47-2132.00	Insulation Workers, Mechanical	1	0	0	1	0	5
49-9094.00	Locksmiths and Safe Repairers	0	1	1	0	1	5
51-9061.00	Inspectors, Testers, Sorters, Samplers, and Weighers	0	0	0	0	0	5
13-1031.00	Claims Adjusters, Examiners, and Investigators	1	0	0	0	0	4
15-1212.00	Information Security Analysts	0	0	0	4	0	4
27-2042.00	Musicians and Singers	1	1	1	1	0	4
29-2043.00	Paramedics	4	0	0	0	0	4
31-9095.00	Pharmacy Aides	1	0	0	0	0	4
51-3092.00	Food Batchmakers	0	0	4	0	0	4
51-6093.00	Upholsterers	1	1	0	0	0	4
11-3012.00	Administrative Services Managers	0	0	0	1	2	3
29-2012.00	Medical and Clinical Laboratory Technicians	2	0	0	0	0	3
49-2092.00	Electric Motor, Power Tool, and Related Repairers	2	0	0	0	0	3
49-3022.00	Automotive Glass Installers and Repairers	0	0	0	1	0	3
51-9081.00	Dental Laboratory Technicians	0	1	1	0	1	3
51-9199.00	Production Workers, All Other	1	0	0	0	0	3
53-5011.00	Sailors and Marine Oilers	0	0	0	0	0	3
11-9081.00	Lodging Managers	0	0	0	0	0	2
13-2023.00	Appraisers and Assessors of Real Estate	0	0	0	0	0	2
15-1251.00	Computer Programmers	1	0	0	0	0	2
17-3012.00	Electrical and Electronics Drafters	0	0	0	0	0	2
29-1171.00	Nurse Practitioners	2	0	0	0	0	2
29-2052.00	Pharmacy Technicians	0	0	0	0	0	2
29-2053.00	Psychiatric Technicians	2	0	0	0	0	2
29-9021.00	Health Information Technologists/Medical Registrars	0	0	0	0	0	2
39-2011.00	Animal Trainers	0	0	0	2	0	2
47-2022.00	Stonemasons	0	0	0	0	0	2
47-2121.00	Glaziers	0	2	0	0	0	2
49-2094.00	Electrical/Electronics Repairers, Industrial Equipment	0	0	0	0	0	2
49-3041.00	Farm Equipment Mechanics and Service Technicians	0	2	0	0	0	2
49-9031.00	Home Appliance Repairers	0	0	0	0	0	2
51-2041.00	Structural Metal Fabricators and Fitters	0	2	0	0	0	2
11-3021.00	Computer and Information Systems Managers	0	0	0	0	0	1
11-9199.02	Compliance Managers	1	0	0	0	0	1

13-1151.00	Training and Development Specialists	1	0	0	0	0	1
15-1244.00	Network and Computer Systems Administrators	0	0	0	0	0	1
17-3022.00	Civil Engineering Technologists and Technicians	0	0	0	0	0	1
23-1022.00	Arbitrators, Mediators, and Conciliators	1	0	0	0	0	1
23-2011.00	Paralegals and Legal Assistants	0	1	0	0	0	1
27-1013.00	Fine Artists, Painters, Sculptors, and Illustrators	0	1	0	0	0	1
27-1025.00	Interior Designers	0	0	0	0	0	1
29-2034.00	Radiologic Technologists and Technicians	0	0	0	0	0	1
29-2055.00	Surgical Technologists	0	0	0	0	0	1
35-1011.00	Chefs and Head Cooks	1	0	0	0	0	1
35-2014.00	Cooks, Restaurant	0	1	0	0	0	1
41-2022.00	Parts Salespersons	0	0	0	0	0	1
49-3042.00	Mobile Heavy Equipment Mechanics, Except Engines	0	0	0	0	0	1
49-3053.00	Outdoor Power Equipment/Other Small Engine Mechanics	1	0	0	0	0	1
51-9021.00	Crushing, Grinding, Polishing Machine Setters/Operators	0	0	0	0	0	1
51-9071.00	Jewelers and Precious Stone and Metal Workers	0	0	1	0	0	1
51-9161.00	Computer Numerically Controlled Tool Operators	0	0	0	0	0	1
53-3032.00	Heavy and Tractor-Trailer Truck Drivers	1	0	0	0	0	1

Source: MTDLI Registered Apprentice Program. Data from 2017 to September 30, 2023. *As of Sept. 30, 2023