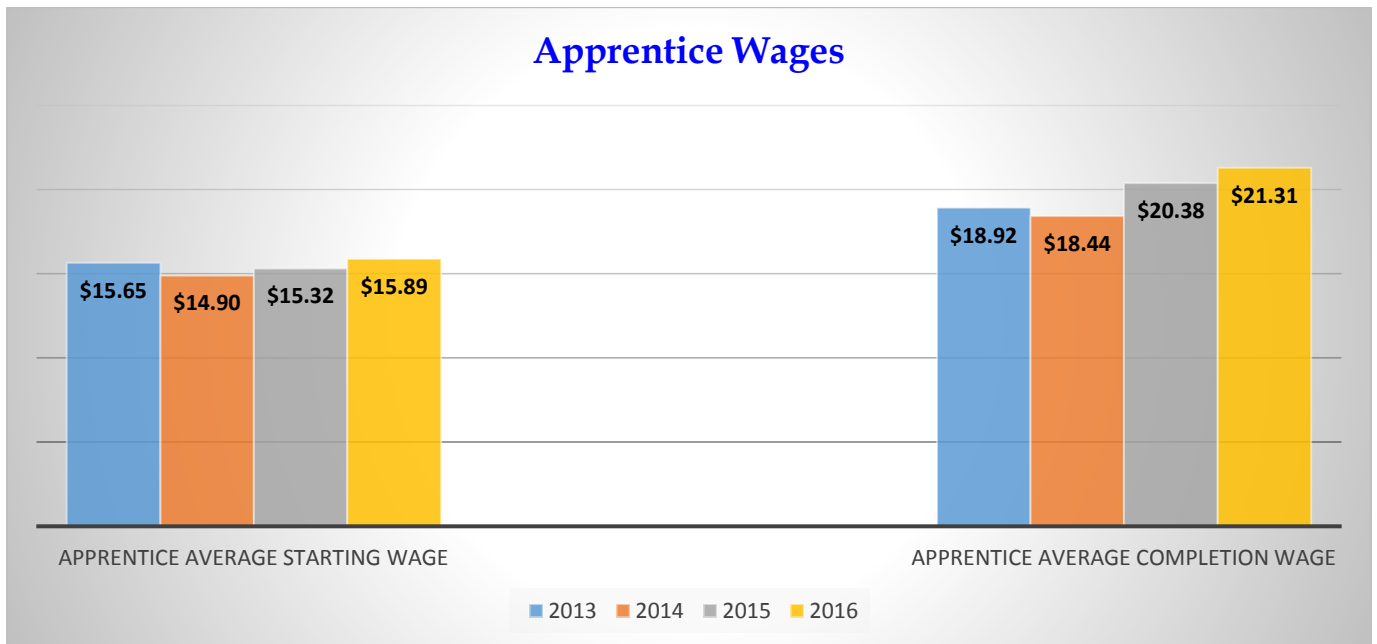
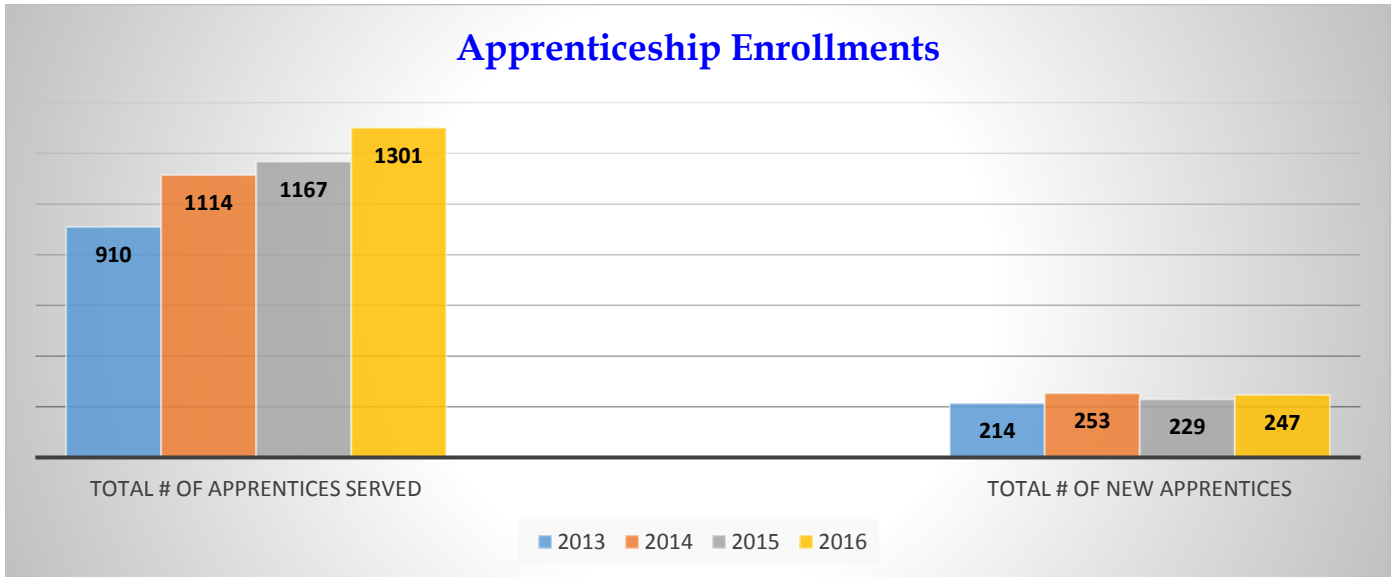


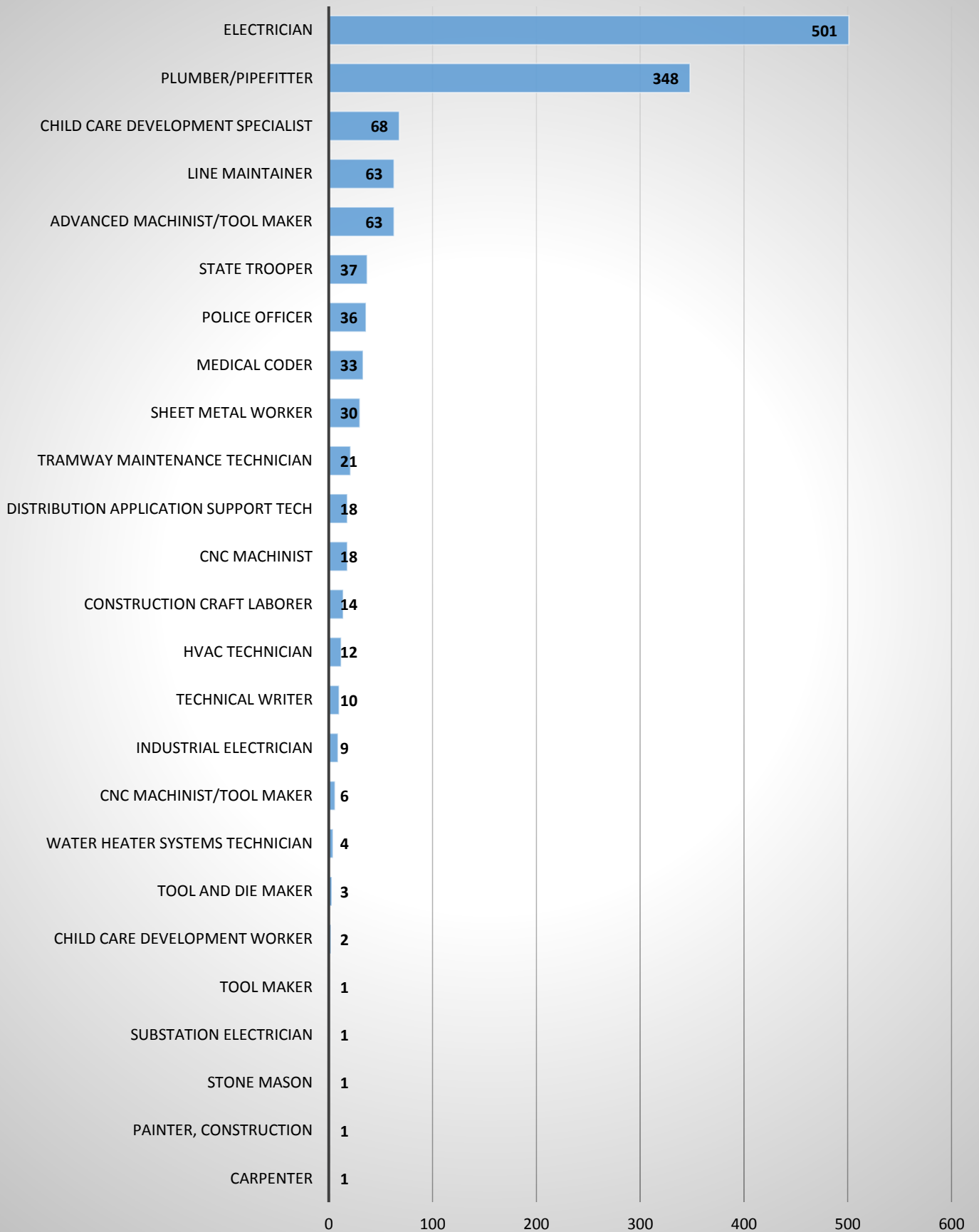
Vermont Registered Apprenticeship Program

2013 - 2016



Wage data varies based on apprentice occupation. Low range for Child Care Apprentice: \$10.00/hour starting wage to \$12.50/hour completion wage. High range for Line Maintainer Apprentice: \$31.00/hour starting wage to \$39.00/hour completion wage.

Apprentice Occupations 10/1/15 - 9/30/16



November 16, 2016

In 2014, President Obama set out an ambitious goal to double the number of apprenticeships to 750,000 by the end of 2018, and to diversify them as well. This year the half million mark was passed. However, despite their increasing popularity and proven benefit to workers, apprenticeships are not fully understood in the United States, especially from the point of view of U.S. employers. The skilled trades that support our nation's construction industry still represent the core of American apprenticeships, but many other industries, like health care and information technology (IT), are adopting apprenticeships to create a skilled workforce for jobs they cannot otherwise fill easily, if at all. Along the way, firms are not only starting apprenticeships in new occupations and industries but also opening doors for women and minorities.

The basic components of apprenticeships are the same today as in 1937, when the National Apprenticeship Act set the foundation for apprenticeships in the United States. Apprentices enter into a structured training program of classroom and paid on-the-job training under the guidance of a mentor. As their skills increase, so do their wages. Upon completion of the program, apprentices earn an industry-recognized credential and usually are hired into a job that marks the start of a career. The payoff for workers is clear: 91 percent of apprentices find employment after completing their program, and their average starting wage is above \$60,000.¹ Because of these positive results, the U.S. Department of Labor (DOL) has invested \$265 million since 2015 to expand apprenticeships. Many states are increasing funding for technical assistance, tax credits to employers, and career and technical training to prepare students for apprenticeships.²

The biggest investment in apprenticeship programs, however, is made by businesses themselves. Yet surprisingly little is known about the payoff to businesses from these investments. Our study is one of a very few to examine these returns to business, and it attempts to avoid methodological issues common in the other studies. We examine 13 businesses and intermediaries from a variety of occupations, industries, and regions and ask: What motivated them to create apprenticeships? What are the costs and benefits? And if not apprenticeships, how else would they fill their workforce needs?

Within the apprenticeship framework, companies found great flexibility to adapt the model to their needs. As a result, apprenticeship programs vary significantly in length and cost. The longest program we studied lasted more than four years; the shortest, one year. Not considering start-up costs, the most expensive program in our sample of firms cost \$250,000 per apprentice; the least less than \$25,000. Apprentices' compensation costs over the duration of the program were the major cost for all companies, and together with program length were the major factor in the cost differences among the programs in our study. Other important costs were program start-up, tuition and educational materials, mentors' time, and overhead. One cost that was largely absent was the loss of apprentices from poaching by other companies; few companies noted poaching fears or reality.

The Benefits and Costs of Apprenticeships: A Business Perspective

The companies in our study were unanimous in their support of apprenticeships. They found value in the program and identified benefits that more than justified the costs and commitments they made to the apprentices. Our study team worked with two firms to analyze in detail how company performance was tied to their apprenticeship program. Using internal production data, we analyzed certain productivity metrics to put a dollar value on some of the benefits these two companies reap from their apprenticeship programs.

- Dartmouth-Hitchcock in Lebanon, New Hampshire, found that apprenticeship was essential to a major expansion and re-organization of its provision of medical services. The apprenticeship program cost of \$59,700 per medical assistant (MA) apprentice was offset by a \$48,000 per-apprentice reduction in overtime costs and \$7,000 per apprentice in increased revenue from medical appointment bookings. The program nearly paid for itself within the first year and had an internal rate of return of at least 40 percent. In addition, reducing the long-term use of overtime helped relieve staff burnout and turnover. Our analysis also showed that the quality of care was at least as high after the MA apprentices were introduced.
- Siemens USA obtains at least a 50 percent rate of return on its apprenticeship program, compared to hiring machinists off the street. Most of the gains stem from the way that apprenticeship allows Siemens to more flexibly fill its capacity in Charlotte, North Carolina. The plant makes generators for electric utilities and seeks work repairing generators when it has capacity left over from making new products. Because apprentice graduates have a strong grasp of the principles of their work, they are particularly well suited for tasks like repair work, which involve more judgment than standard projects. Apprentice graduates' flexibility helps the plant make full use of its capacity. We find that this ability to perform a variety of tasks is enormously valuable. In fact, one year of this additional capacity is worth an amount similar to the cost of a worker's apprenticeship program. Apprentices also were more likely to finish their work on time and were slightly more productive than machinists hired off the street.

All of the firms we studied believe that apprenticeships improve their overall performance and provide a competitive advantage over other firms. Companies most often turned to apprenticeships because they could not find labor that met their minimum standards. We can measure the benefits to the apprenticeship model, which is often referred to as "earn and learn," using three types of metrics:

- **Production:** Companies gain the value of output by apprentices and later by apprentice graduates, plus a reduction in errors.
- **Workforce:** Companies experience reduced turnover and improved recruitment, gain a pipeline of skilled employees, and develop future managers.
- **Soft skills:** Apprenticeships lead to improved employee engagement, greater problem-solving ability, flexibility to perform a variety of tasks, and a reduced need for supervision.

Certain employer decisions greatly affect program costs, benefits, and design, such as: program length, apprenticeship wages, training equipment, and program management. Whether companies work alone or in partnership with other businesses, educational institutions, unions, or non-profits also affects the start-up and ongoing costs. In the least expensive programs,

employers often worked with the local public school system, especially in states that explicitly connected their career and technical training programs to apprenticeships. Grant funding also offset costs for some firms.

Once a decision has been made to include apprenticeships in a company's workforce strategy, the key to sustaining an apprenticeship program over time is to balance the interests of the employer, the apprentices, and the incumbent workforce. A successful program is one in which all three groups see benefits. It can be tempting for employers to focus too narrowly on their own short-term interests in structuring apprenticeship programs. However, to attract good apprentices, employers must offer a competitive package of current pay, portable credentials, and a relatively high probability of a good job. Similarly, incumbent workers also must benefit from having apprentices by seeing them as teammates helping the company grow and not as competitors for their jobs or promotion opportunities.

Companies generally recognized these multifaceted costs and benefits of apprenticeships but typically measured only some. Surprisingly few calculated the return on their firm's investment in their apprenticeship program. Because there is no existing toolkit for employers to measure the benefits and costs of apprenticeship programs and few firms explicitly collect data to do so, this report provides a roadmap to help employers get started.

Apprenticeship Program



What is Apprenticeship?



The Vermont Registered Apprenticeship is a structured system of training designed to prepare individuals for skilled occupations. It is a combination of on-the-job learning under the supervision of experienced journey workers along with related classroom instruction. The apprenticeship is sponsored by employers, employer associations or labor/management groups that can hire and train in a work environment.

The apprenticeship employment opportunity is the basic requirement for an apprenticeship. Without an employer sponsored job, there is no “on the job” learning which accounts for approximately 90% of the apprenticeship program. Apprentices who successfully complete the required number of training hours in an apprenticeship program become certified skilled workers and if appropriate may apply for a state license in the occupation.

In Vermont, there are approximately 1300 active apprentices participating in more than 25 different occupations.

Vermont Registered Apprenticeship Program employers participate by sponsoring individuals as an apprentice in their business. The employer establishes a progressive wage scale, agrees to provide supervised on-the-job training and assists their apprentices by financially supporting the cost of the related classroom instruction component of the program.

The related classroom instruction component of the Vermont Registered Apprenticeship Program can be delivered in a variety of formats. For instance, in plumbing and electrical occupations, most apprentices attend classes through the Vermont Technical College at a number of educational facilities located around the state. Other occupations have related classroom instruction delivered by employer sponsors. For union sponsors, the related classroom instruction is delivered at union training centers.

If you are an employer interested in sponsoring an apprentice, contact **Judy Bourbeau at the Vermont Department of Labor's Apprenticeship office in Montpelier at 828-5250**. An Apprenticeship Field Representative will make an on-site visit to help develop the program.

Classes begin in September each year and are generally held in Barre, Hartford, Rutland, Springfield and Essex Junction. Selected classes are also offered in Newport and in St. Johnsbury, depending upon need. In addition, classes are now offered via VTC Telepresence in many communities around the state.



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