

2015 in Review:

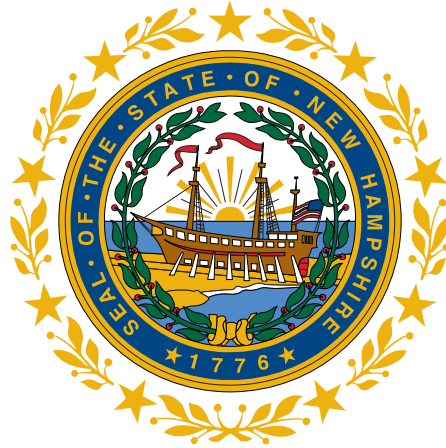
A Perspective of New Hampshire's Future Labor Market

June 2016



2015 In Review:

A Perspective of New Hampshire's Future Labor Market



State of New Hampshire

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June 2016

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Cover Photo: The New Hampshire Division of Parks and Recreation - White Lake State Park

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Introduction

Strong labor demand – Where are the workers going to come from?

The Granite State Poll for February 2016¹ revealed that “*Jobs/Economy*” is no longer the top concern for most Granite Staters. The state’s drug crisis was most commonly cited as the most important problem facing the state (40 percent of respondents). The fourteen percent share of respondents that continued to view *Jobs/Economy* as the most important problem facing the State of New Hampshire in February 2016 has not been this low since September 2007. In the eye of most Granite Staters, New Hampshire’s economy has recovered from the downturn following the Great Recession.

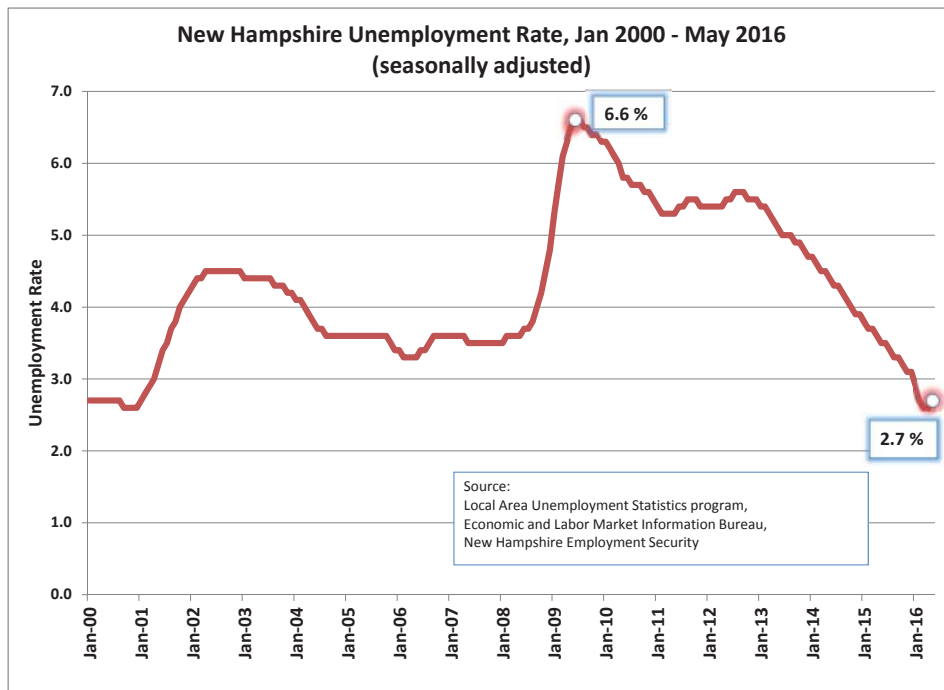
Over the last several years, employers could pick and choose between many jobseekers while the need to hire additional workers was limited. Companies now are more eager to expand their workforce, yet fewer unemployed persons are available. For persons already employed, changing jobs typically occurs when pay is higher, more hours of work are offered, a better fitting work schedule is available or other benefits offered are better than in their current position.

The following core labor market indicators show the current strength of the State’s economy.

- **Unemployment Rate**

New Hampshire’s unemployment rate, seasonally adjusted, increased slightly to 2.7 in May 2016, after two months at 2.6 percent. The unemployment rate is down from 3.5 percent in May 2015. The unemployment rate in New Hampshire has not been this low since January 2001.

However, the number of persons working part-time for economic reason, also known as involuntary part-time, is still elevated in comparison to the pre-recession level (2008 and earlier). This indicates there is still some slack in the labor market.

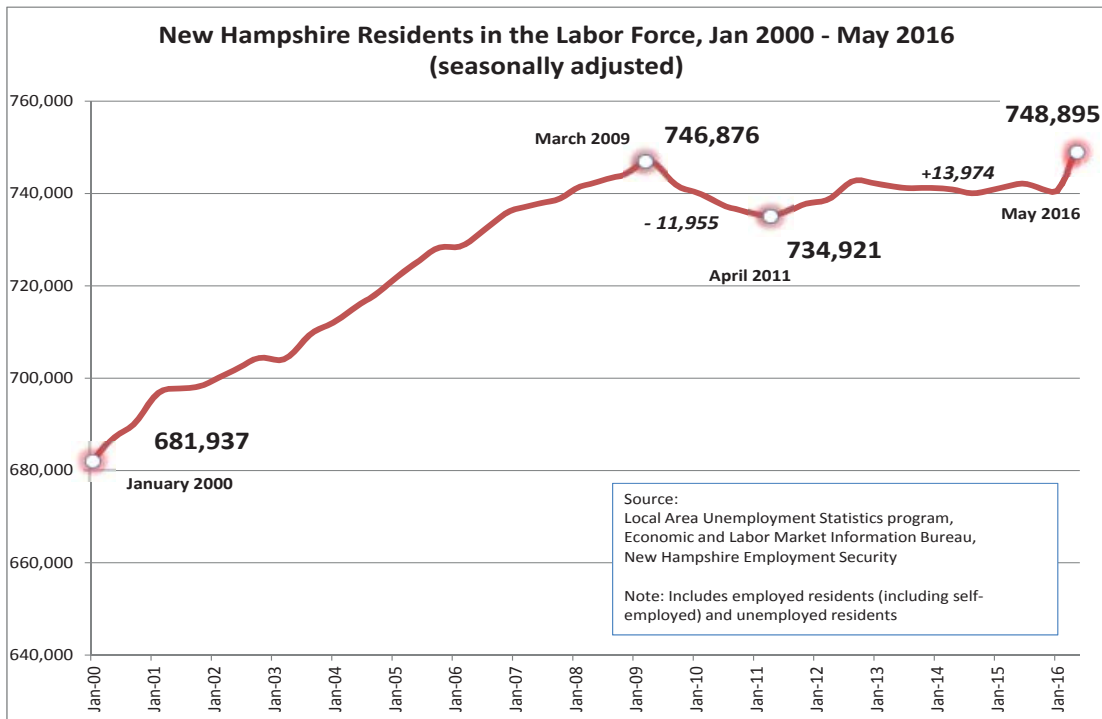


¹ The WMUR Granite State Poll, March 1, 2016. Accessed on June 14, 2016 at http://cola.unh.edu/sites/cola.unh.edu/files/research_publications/gsp2016_winter_govleg030116.pdf

● Labor Force

New Hampshire's labor force peaked at 746,876 in March 2009, just as the state's labor market was weakening. The labor force declined to 734,921 in April 2011, then it started to grow again. In May 2016, New Hampshire's labor force reached a new high of 748,895 residents.

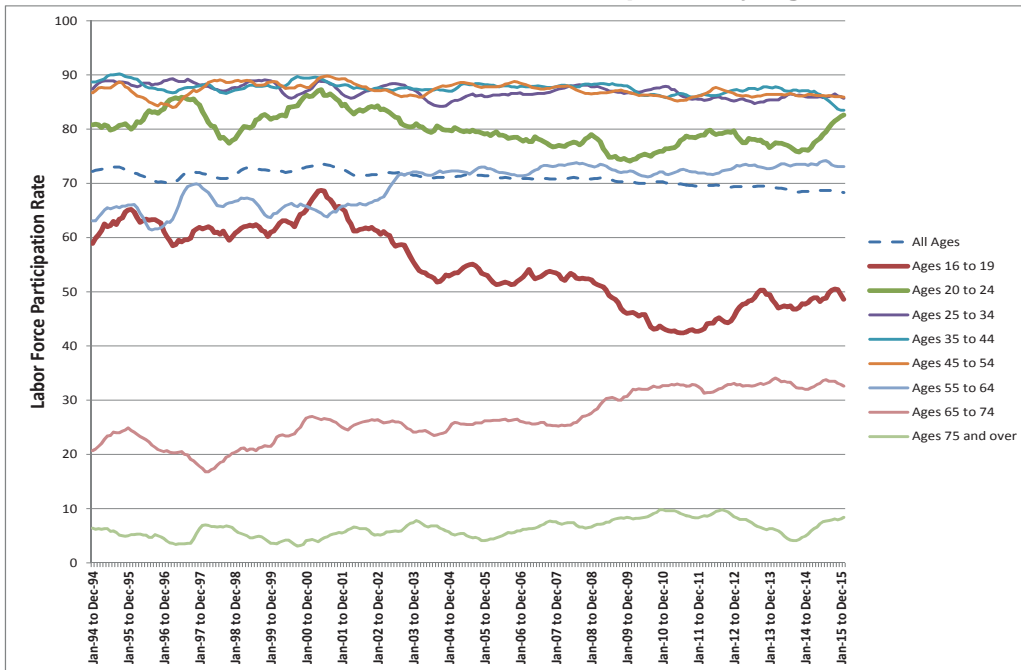
There are three factors determining the size of the labor force. One is the size of the population, another is age distribution and the last is labor force participation. The annual population growth rates in New Hampshire from 2010 to 2015 were about one-fourth the growth rates experienced from 2000 to 2010. Median age of the New Hampshire population has increased from 41.1 years in 2010 to 42.8 in 2015. The last factor is the labor force participation rate. In May 2016, the participation rate was 68.8 percent, seasonally adjusted, compared to the labor force participation rate of 73.0 percent in 2000.



● Labor force participation rate by age

In 2015, the labor force participation rate of persons age 16 and over was 68.4 percent. The labor force participation rate for persons age 16-19 dropped from close to 70 percent in 2000 to about 50 percent in 2015. On the other end of the age spectrum, the participation of persons age 65-74 has increased from around 25 percent in 2007 to about 33 percent in 2015. The labor force participation rates among other age groups have stayed relatively flat. Still, the impact of a high median age in New Hampshire creates a downward pressure on the overall labor force participation rate. The older workers continue to grow larger as a share of the overall population.

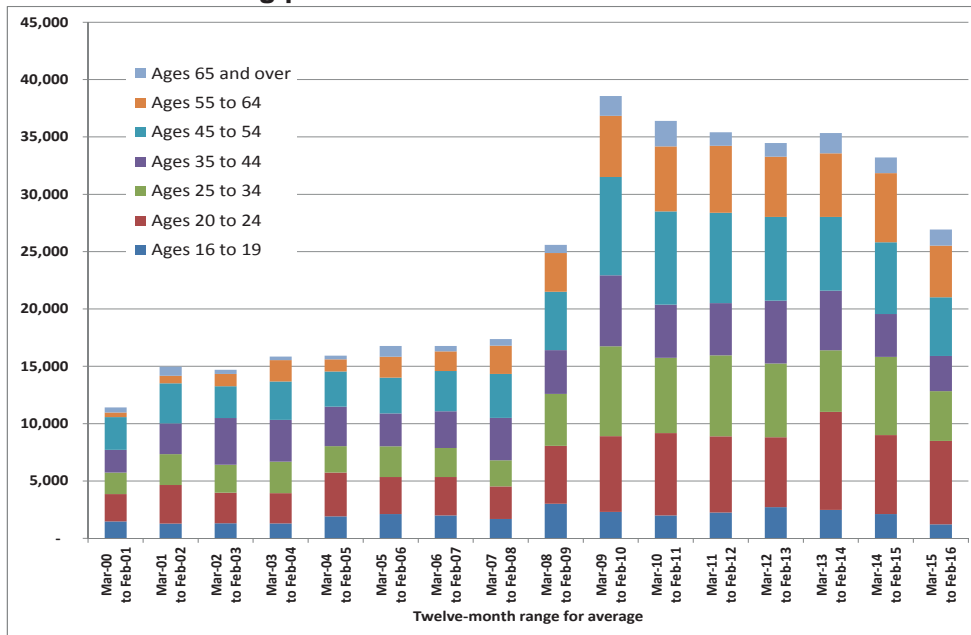
Trends in Labor Force Participation by Age



● **Persons working part-time who would like full-time work**

The number of persons working part-time for economic reasons has declined since peaking at 39,000 in 2009. On average, from March 2015 to February 2016, this number was close to 27,000. In years prior to 2009, the number of persons working part-time for economic reasons was even lower. From March 2007 to February 2008, the average number of persons working part-time but wanting full-time work was about 17,000. The largest segment of part-time workers that would like full-time work is the age cohort 20-24. One in four of all underutilized part-time workers are in this age group.

Persons working part-time for economic reasons remain elevated



● Job growth

Nonfarm employment for May 2016, seasonally adjusted, was reported at 661,100. The state recovered to its pre-recession peak in October 2013, and nonfarm jobs in New Hampshire are currently 19,300 above that level. Since the depth of the recession in January 2010, the state has gained 39,100 jobs.

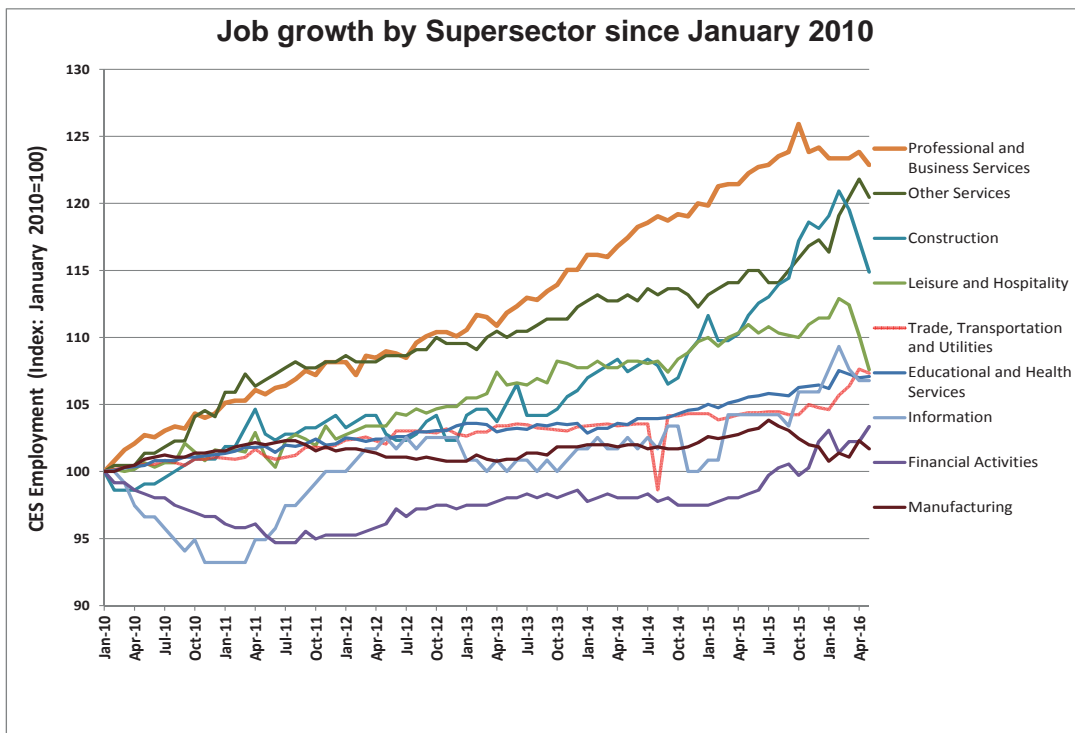
Indexing jobs to the January 2010 employment level illustrates job growth over time. The supersector growing the most from January 2010 to May 2016 was *Professional and business services*, with 14,300 jobs added. *Other services* and *Construction* also experienced strong growth, but these two supersectors are the second and third smallest supersectors (with approximately 25,000 jobs each).

Employment in *Construction* and *Leisure and hospitality* was better than expected in the earlier months of 2016, likely spurred by mild winter conditions. Seasonal adjustment of individual supersectors can be volatile, especially when atypical events occur.

Education and health services and *Trade, transportation and utilities* are the two largest supersectors, encompassing on average about 119,000 and 139,000 jobs, respectively. These two supersectors have grown by approximately seven percent each.

Job growth in *Financial activities* and *Information* seemed to drag as the other supersectors in New Hampshire's economy started to recover. More recently, these two supersectors are gaining jobs at a faster pace. *Manufacturing* gained the smallest number of jobs among the supersectors since January 2010; however, employment is still above the January 2010 employment level.

Government is the only entity that has not gained employment since January 2010. Total government employment in New Hampshire declined by 8,300 jobs from January 2010 to May 2016. The May 2016 level of employment in Government (88,200 jobs) is at the lowest point since September 2002.



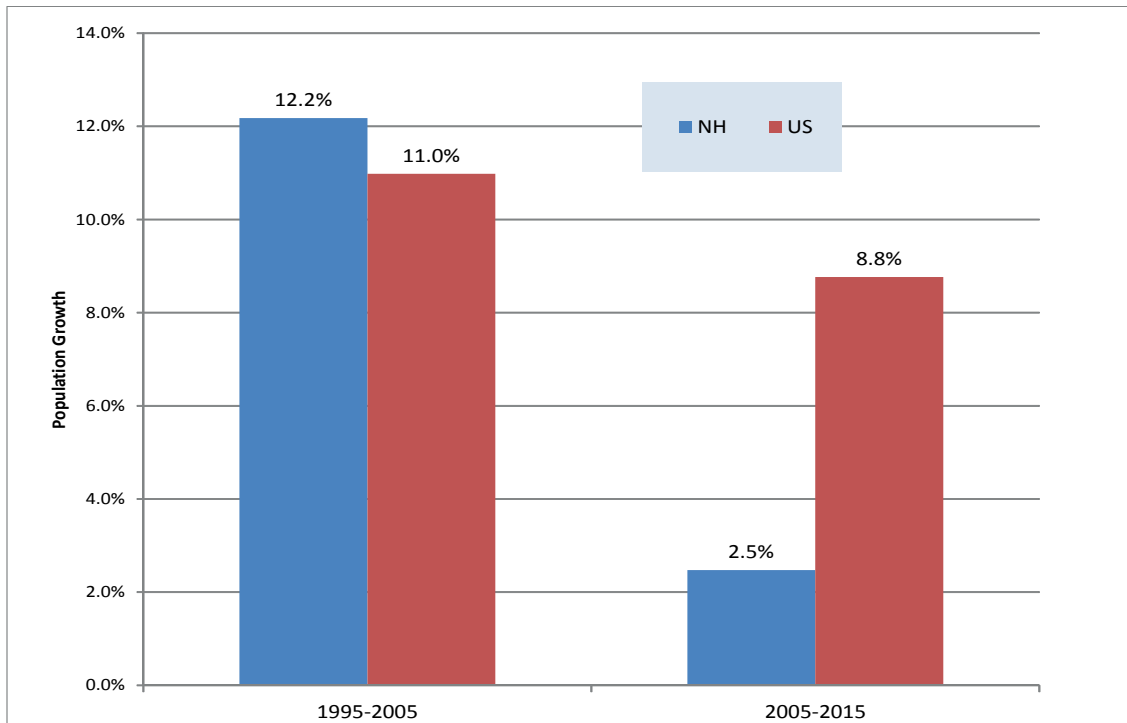
Population Update

A detailed analysis of the factors contributing to New Hampshire's population growth

According to the July 1, 2015 Census population estimates, there were 1,330,608 persons living in New Hampshire. Since 2010, the state's population grew by only 1.1 percent; a low population growth in comparison to the nation's growth of 4.1 percent. Even so, New Hampshire's population grew at a faster pace than other New England states, with the exception of Massachusetts. Maine and Vermont, the neighbors to New Hampshire on the east and west sides, experienced essentially no population growth over those five years, whereas Massachusetts' population grew by 3.8 percent and was the fastest growing state in the Northeast.

New Hampshire's population grew 12.2 percent between 1995 and 2005, compared to 2.5 percent between 2005 and 2015. Over the 1995 to 2005 period, New Hampshire's population grew at a faster pace than the nation, while the nation's population grew more than three times faster than New Hampshire over the 2005 to 2015 period. What in the state's components of population change can help explain slower growth over the last ten years?

New Hampshire's population has slowed down – growing slower than the nation over the last decade



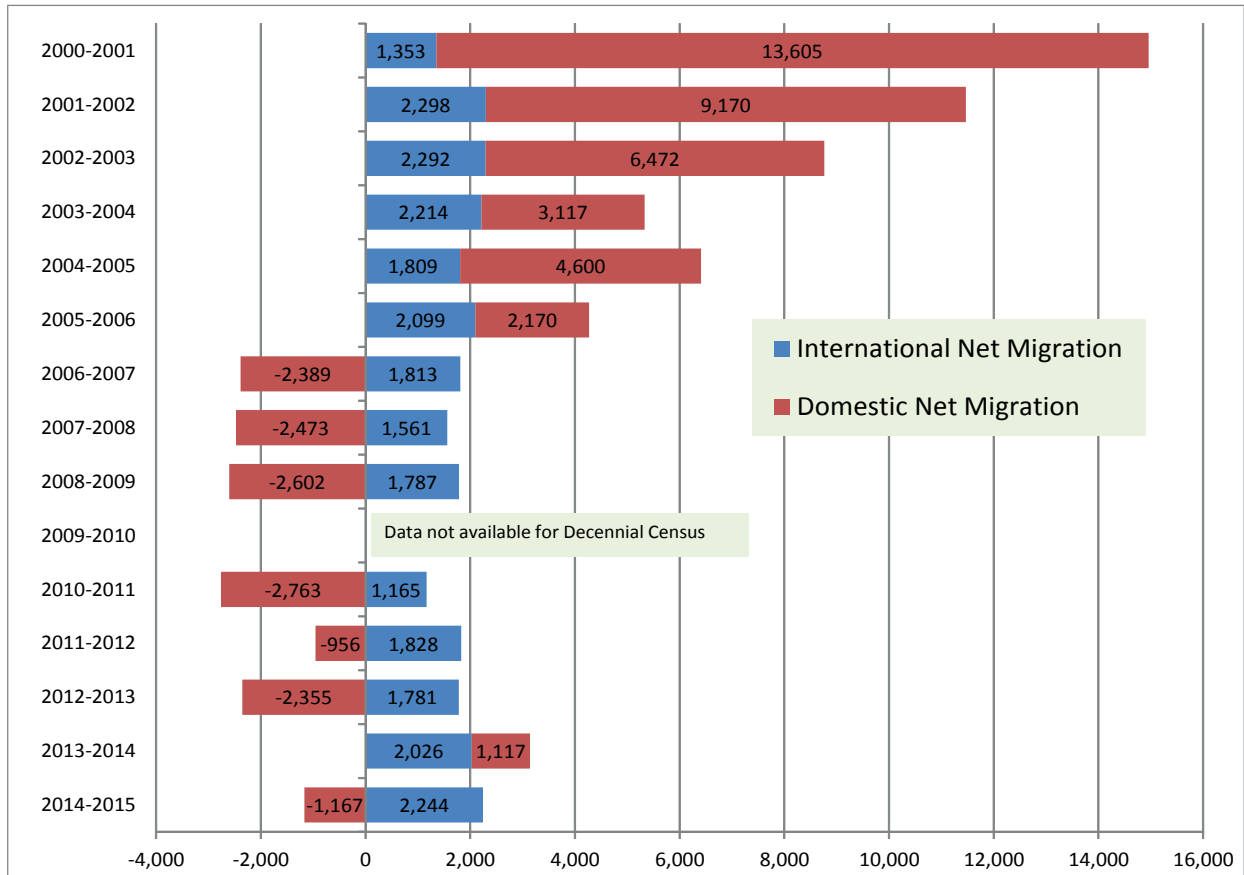
Component of New Hampshire's population growth

Statistics from Census on the components of population change provide a look at the underlying dynamics of population change in New Hampshire. There are two major components to total population change: *Net Migration* and *Natural Increase*. *Net Migration* is the combined total of domestic and international net migration, and *Natural Increase* is the difference between two vital events: births minus deaths.

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Data on *Net Migration* since 2000-2001² reveals that there has been a significant slowdown in domestic net migration. Since 2006-2007, New Hampshire has had only one over-the-year occurrence of a net gain in domestic migration. International migrants, on the contrary, have contributed to the influx of population to New Hampshire in all years since 2000-2001, ranging from about 1,100 to 2,300 persons annually. Overall, *Net Migration* for New Hampshire has been negative in most years since 2005-2006, which is in stark contrast to the earlier portion of 2000s. Over the last two years, however, New Hampshire has experienced positive *Net Migration*.

International Migration continues to contribute to New Hampshire's population



The other component of population change is *Natural Increase*, which is the net change between births and deaths. Looking at changes in the components of *Natural Increase* back to 2000-2001, there were roughly 14,000 births each year to 2008-2009. From 2010-2011 to 2014-2015, the number of births in New Hampshire declined to about 12,500 on average. The lower numbers of births will have implications for the economy in the coming years; from the number of school children to the future of the labor force. As New Hampshire's population is aging, lower number of births is likely related, in part, to fewer women in the childbearing age groups.³

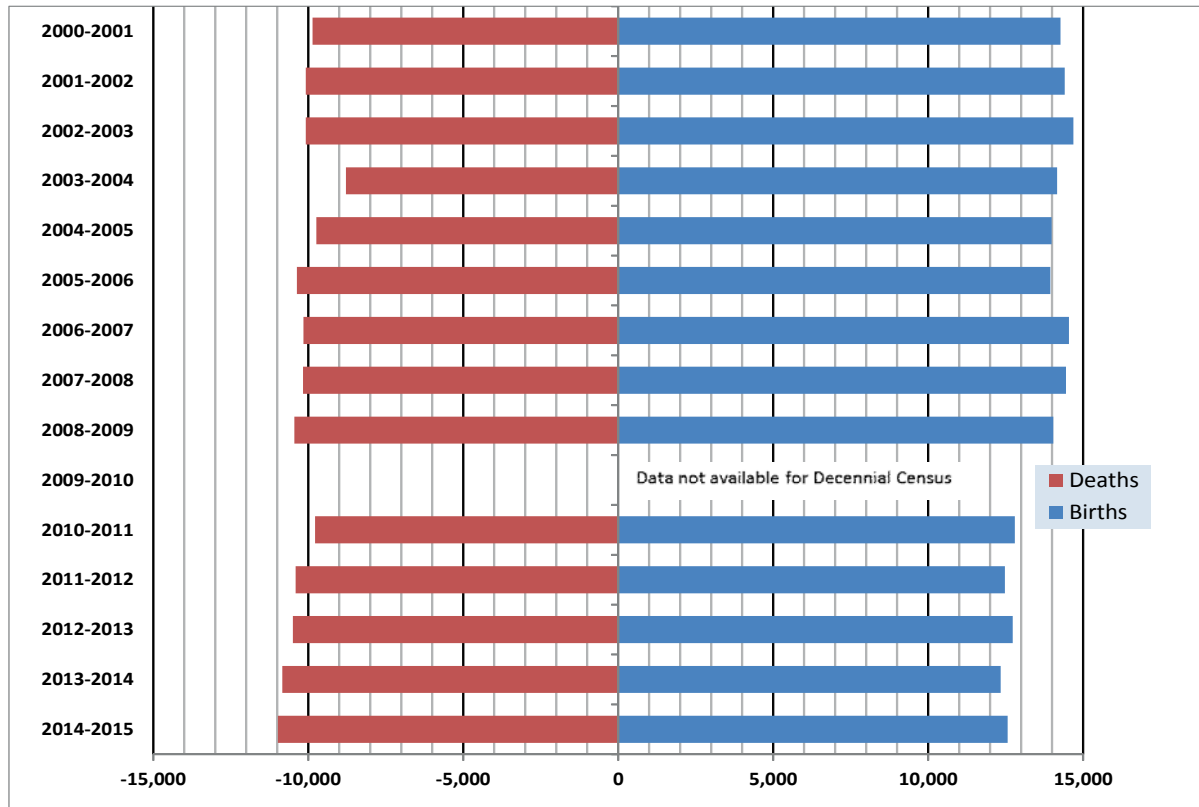
² The annual estimates of the components of population change are measured using differences in the population between July 1 of the current year and July 1 of the prior year. U.S. Census. Estimates of the Components of Resident Population Change for the United States, Regions, States, and Puerto Rico: July 1, 2000 to July 1, 2015.

³ According to American Community Survey, in 2005 there were about 260,000 females in the age group 15 to 44, but the number of females in New Hampshire age 15 to 44 dropped to about 245,000 in 2014. 2005 and 2014 American Community Survey 1-year estimates. Table S0101.

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The other component of *Natural Increase* is the number of deaths occurring year-over-year. The number of deaths in New Hampshire had been about 10,500 or less from 2000-2001 to 2012-2013, but there has been an elevation in the number of deaths in New Hampshire over the last two years. In the over-the-year comparison from 2014 - 2015, there were 10,980 deaths in New Hampshire; the most observed since at least 1980 (as far back as these Census population estimates are available). An aging population in New Hampshire is one factor contributing to the higher number of deaths.

There have been fewer births in New Hampshire over the last five years



Combined, births minus deaths (*Natural Increase*) has continued to be a net contributor to population increase in New Hampshire since at least 2000-2001, but instead of a net gain of more than 4,000 persons, over the last couple of years, the net gain has contributed roughly 2,000 or less to the state's population. As the population ages, the state is likely to gain little additional population from *Natural Increase*. One thing that could contribute to the reverse of this trend would be an influx of younger residents settling down in New Hampshire and starting families.

Where are new residents coming from and where are current residents moving to?

To identify patterns of domestic migration into and out of New Hampshire, migration data from the U.S. IRS Statistics of Income (SOI) were examined. Comparing tax returns filed with IRS based on year-to-year address changes, provides a measure of how many residents have moved into or out of New Hampshire. The data include the location to where New Hampshire's residents have moved as well as where new residents are coming from.

The prior section showed a drastic slowdown over the last decade in the number of domestic migrants moving into New Hampshire. To further illustrate migration pattern, two periods were examined: one with the most current data available and another period ten years prior. Also, in order not to rely on a single year of data for this migration trend analysis, each of the two periods display three individual years of the net differences between inflow and outflow.

The top ten states from where New Hampshire gained the most new residents between 2011-2012, 2012-2013 and 2013-2014 were similar to the list of states from where New Hampshire gained residents between 2001-2002, 2002-2003 and 2003-2004. States included on the top of both lists were Massachusetts, New Jersey, Connecticut and Illinois. While New Hampshire gained the most residents from Massachusetts in all time periods, the net inflow of residents from Massachusetts was substantially smaller in the most recent three year period than the time periods ten years earlier. In the earlier years (2001-2002, 2002-2003 and 2003-2004), the net new gain of residents from Massachusetts exceeded 10,000. More recently, net gains of residents from Massachusetts were under 4,000.

Net Inflow by States

Top ten net Inflow by 2013-2014	Net Gain 2011-2012	Net Gain 2012-2013	Net Gain 2013-2014
Massachusetts	1,795	3,949	3,869
New York	528	731	501
Connecticut	402	550	455
New Jersey	288	267	312
Vermont	6	47	154
Rhode Island	117	89	150
Illinois	172	92	74
Pennsylvania	76	114	47
Virginia	-137	-127	38
Maryland	28	91	1

Top ten net Inflow 2003-2004	Net Gain 2001-2002	Net Gain 2002-2003	Net Gain 2003-2004
Massachusetts	10,035	10,361	10,359
New Jersey	255	345	1,370
Texas	21	-141	1,208
Connecticut	295	288	423
Ohio	80	-35	227
Illinois	76	168	113
Maryland	14	85	110
Foreign	414	187	82
South Carolina	-167	-233	31
Michigan	53	47	14

Overall resident outflow from New Hampshire to other states diminished in the time periods following 2005-2006 and in 2009-2010 dropped to the lowest level on record,⁴ correlating with firms nationally doing very little hiring⁵ which diminished the incentive to move.

The net change of resident inflow and outflow between New Hampshire and all other geographies (U.S. and foreign) turned negative from 2006-2007 to 2010-2011, mainly due to a decline in the inflow of residents to New Hampshire. Since 2011-2012, this migratory equation has turned slightly positive again.

Looking at the individual states to which New Hampshire lost the most residents, Florida, Maine, North Carolina, South Carolina, and Texas were the top destinations. The net outflow from New Hampshire to Florida was between 2,200 to 3,700 annually back in the early 2000s, whereas the net outflow was reduced by more than half in the three latter periods (2011-2012, 2012-2013 and 2013-2014). The resident outflow to Maine was similarly reduced dramatically. At the same time, net outflow to North Carolina, South Carolina, and Texas increased.

⁴ Since at least 1990-1991 which is the first time period with SOI tax stats available.

⁵ Job Openings and Labor Turnover Survey (JOLTS) data show that the level of hiring declined to an annual low in 2009 of 46.2 million hires, a 15.7 percent decline from 2008. The 2009 annual level of hiring was at its lowest level since the beginning of the data series in 2000. Bureau of Labor Statistics. Accessed on <http://www.bls.gov/jlt/#data>.

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It is likely that migration to Florida, North Carolina, and South Carolina is linked to an aging population moving south as they retire. With New Hampshire's population getting older, it could be expected that the resident outflow to southern destinations would have become stronger. But the net outflow to Florida was reduced and instead, there has been a shift in the outflow of residents toward the Carolinas. The stronger net outflow to Texas is more likely related to strong job creation during this time frame.⁶ The lower net outflow from New Hampshire to Maine is in line with less outbound migration from Massachusetts to New Hampshire.

Net Outflow by States

Top ten Net Out-flow 2013-2014	Net Loss 2011-2012	Net Loss 2012-2013	Net Loss 2013-2014
Florida	-751	-1,382	-1,639
North Carolina	-525	-556	-563
Texas	-415	-517	-543
South Carolina	-301	-307	-367
Maine	-394	-229	-270
Arizona	-151	165	-176
California	-106	-116	-165
Georgia	-101	-13	-150
Foreign	-261	-204	-109
Colorado	-10	-45	-106

Top ten Net Out-flow 2003-2004	Net Loss 2001-2002	Net Loss 2002-2003	Net Loss 2003-2004
Florida	-2,199	-2,334	-3,703
Vermont	-14	-68	-1,499
New York	384	86	-1,194
Maine	-1,273	-1,450	-941
North Carolina	-273	-338	-820
Virginia	-14	-270	-722
Washington	12	63	-386
Arizona	-148	-155	-344
Pennsylvania	4	-100	-314
Georgia	-101	-209	-298

Methodology

Migration data prior to 2011-2012 was produced by Census for Statistics of Income (SOI) and the methodology for producing the migration data differed from the current methodology. The data compilation from 2011-2012 onwards has been produced by SOI and includes enhancements to the data series. Most importantly, the migration data from Census only included individual income tax returns filed before the end of September of each calendar year, representing approximately 95 to 98 of total annual filings. For this reason, a strict comparison should not be made.⁷ As the new methodology is more inclusive, both the out migration and the in-migration will likely increase.

In order to mitigate the impact of the differences in methodology, only the States with inflow and outflow of more than 250 exemptions (representing persons claimed on each IRS return) were included. After subtracting the number of residents moving out of New Hampshire from the number of residents moving into New Hampshire for each of the other states, a list of the top ten states from where New Hampshire received a net gain of residents was created. A similar list of the top ten states to where New Hampshire would experience a net loss of residents was created.

Using the net differences between inflow and outflow make a comparison of the ranking of the states with which New Hampshire has the largest migration ties viable in spite of the difference in methodology before and after 2011.

⁶ Texas total nonfarm employment grew by 991,000 from 2011 to 2014, the state with the second most jobs created over the period. California grew the most with more than 1.1 million jobs from 2011 to 2014. As a percent change, the job growth in Texas ranked third after North Dakota and Utah. Bureau of Labor Statistics, Current Employment Statistics, Accessed on April 15, 2016 at <http://www.bls.gov/sae/>

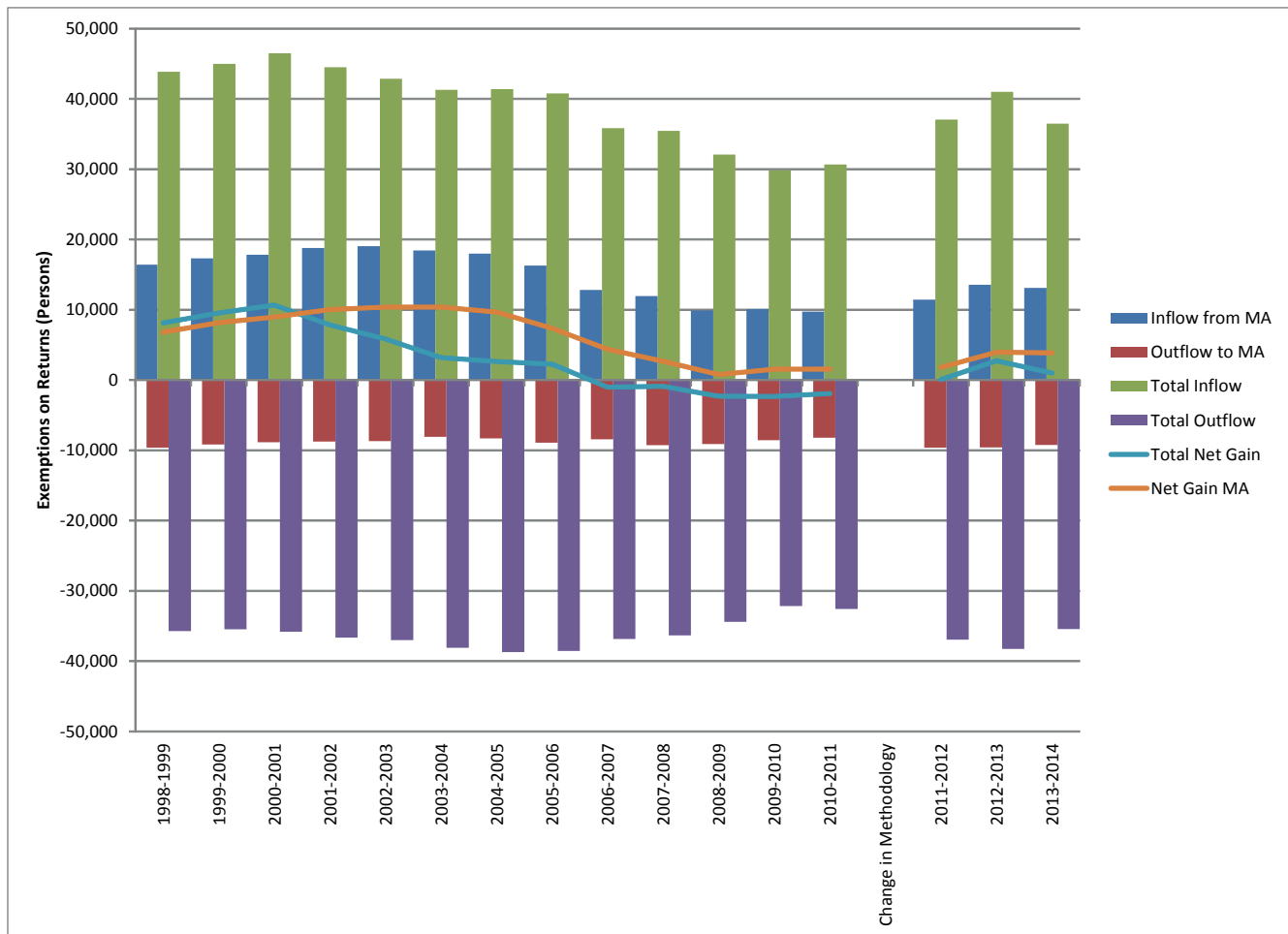
⁷ SOI Migration Data: A New Approach, Statistics of Income, Kevin Pierce. Summer 2015. Accessed on June 16, 2016 at <https://www.irs.gov/pub/irs-soi/soi-a-inmig-id1509.pdf>

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Looking at the more detailed micro data from SOI, New Hampshire differs somewhat from the Northeast region, as the state is not shedding a large amount of population to the Sunbelt, a trend from the early 2000s that has picked back up recently. Strong outmigration from New York and Connecticut benefits New Hampshire, and outmigration from New Hampshire is spread more widely among states and less concentrated toward a single state: Florida.

It can be concluded that the main reason for the slowdown in New Hampshire's population growth is a reduction in the net gain of residents from Massachusetts as opposed to a larger out-migration to all other states.

Comparison of Inflow / Outflow over Time



A low unemployment rate back in the late 1990s to early 2000s, created a different labor market dynamic than the 2016 labor market in New Hampshire due to the willingness of the residents of neighboring states to relocate. In the 1980s and mid to late 1990s, there was a stronger job creation rebound after the 1980-1982 and 1991 recessions which produced a corresponding stronger population response. Whether it was a different generation, wanting a more suburban lifestyle with close access to recreational opportunities or whether companies were more aggressive at recruiting people to come to the state for these jobs, is hard to say. But the major influx of domestic migrants came to a halt in 2006-2007, after it had started to slow down in the years following the 2001 recession.

Employment Projections

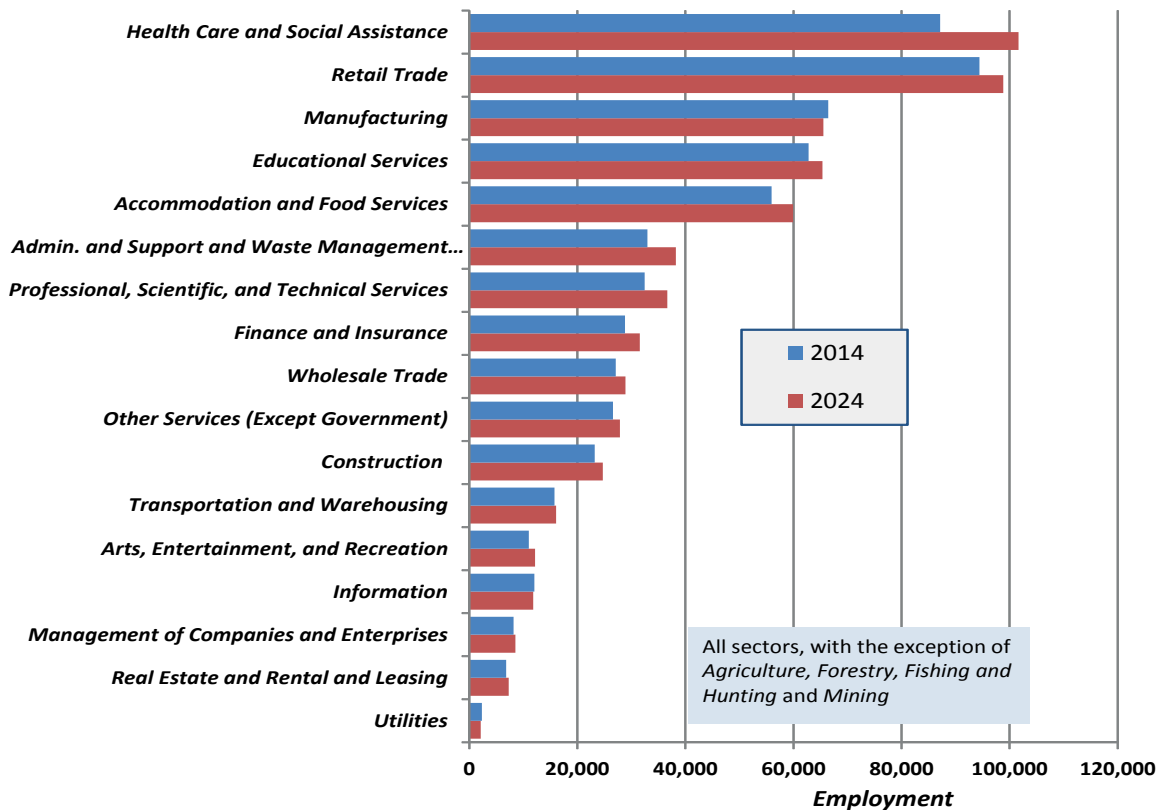
New Hampshire Outlook by Industry: 2014-2024

Long-term total employment in New Hampshire is projected to grow by 7.0 percent, creating 47,293 additional jobs by 2024. This translates into an annual growth rate of 0.7 percent. With both current and projected population growth in the state being low due to a mix of fewer migrants and fewer births, New Hampshire's economy is not projected to generate the job growth that it did in the mid- to late-1990's. From 1993 to 2000, over-the-year employment growth was 2.5 percent or more, whereas the strongest over-the-year growth since 2000 was 1.5 percent from 2003 to 2004.

Over the last 50 years, there has been an on-going shift in employment away from goods-producing industries to service-providing industries in both the U.S. and New Hampshire. This structural employment shift is expected to continue.

Factors that impact projected employment growth are demographics, personal income, and the industry composition of the state's economy. Location can also impact job growth, and New Hampshire is well situated in terms of geography, with southern portions of the state part of the Boston CMSA,⁸ a large metropolitan technology and healthcare hub. New Hampshire's median household income was \$66,532, above the median household income for the nation at \$53,657.⁹ These factors promote employment growth in a range of sectors, from technology-related industries to hospitality.

Health and Social Assistance projected to be the largest employment sector in New Hampshire by 2024



⁸ CMSA – Consolidated Metropolitan Statistical Area

⁹ 2014 ACS 1 –year estimates. Census Bureau.

Highlights of the 2014-2024 employment projections:

- Large employment gains are projected in *Health care and social assistance* – about 14,500 jobs over the ten-year period, a 16.6 percent increase. Employment growth in this sector is related to an aging population and expanded access to health care.
- In addition to the projected employment gains in *Health care and social assistance*, employment growth is distributed across a broad number of sectors, ranging from 5,250 additional jobs in *Administrative and support and waste management services* to about 1,150 jobs in *Arts, entertainment and recreation*.
- Only three sectors are projected to experience relatively small declines in employment: *Utilities, Information, and Manufacturing*. Innovation and technology helps reduce the level of personnel needed in these sectors. Manufacturing is projected to decline the most, dropping by approximately 900 jobs.
- *Health care and social assistance* is projected to become the sector employing the largest number of workers in New Hampshire by 2024, surpassing *Retail trade*. *Manufacturing* is still projected to employ the third largest number of workers in New Hampshire. Employment in *Educational services (private and public)* is projected to be close to the employment in *Manufacturing*.
- The outsourcing of business functions will spur growth in sectors such as *Professional, scientific, and technical Services* and *Administrative and support and waste management services*. In terms of job growth from 2014 to 2024, these two sectors rank behind *Health care and social assistance* with *Administrative and support and waste management services* projected to grow by 15.9 percent and *Professional, scientific, and technical services* by 13.0 percent.
- Online shopping has been dampening the growth of employment in *Retail trade* and is expected to continue to do so. Therefore by 2024 the employment level for *Retail trade* is projected to recede, becoming the second largest sector behind *Health care and social assistance*.

The industry projections are the backbone on which the occupational employment projections are based. The strong growth in *Health care and social assistance* drives the growth in the health care-related occupations. There is a constant underlying transformation occurring in the labor market impacting the occupational composition of any industry.

Occupational Employment Outlook

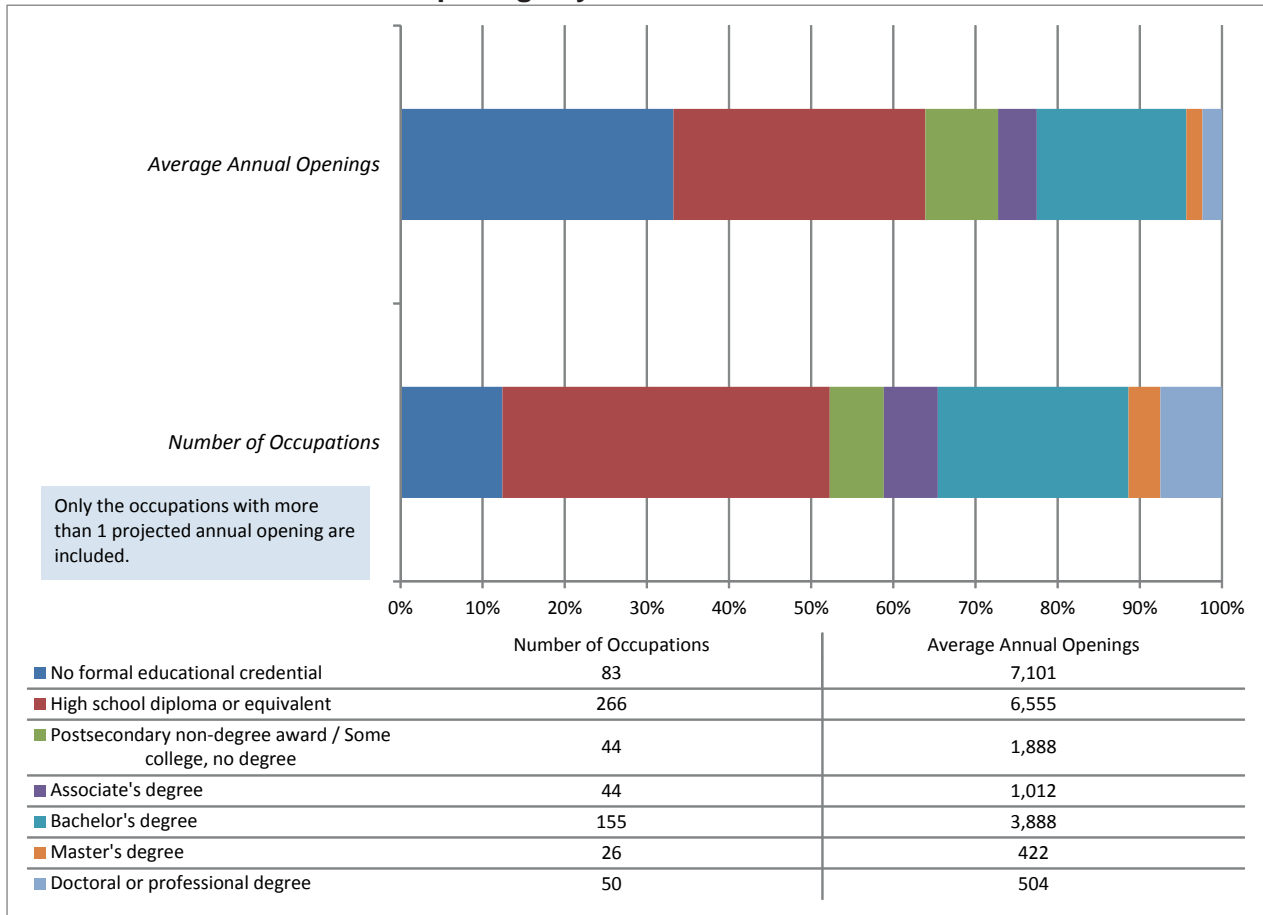
Employment is projected for 769 unique occupations in New Hampshire.¹⁰ Occupations projected to grow the most from 2014 to 2024 are *Registered nurses, Retail salespersons, and Combined food preparation and serving workers, including fast food*. At the other end of the spectrum, occupations that are expected to decline the most by 2024 are *Bookkeeping, accounting, and auditing clerks, Postal service mail carriers, and Molding, coremaking, and casting machine setters, operators, and tenders, metal and plastic*.

Projections for total annual openings include two variables, which are openings due to new job growth and openings due to replacements, created when a worker leaves an occupation to retire or work in some other occupation.¹¹ Over the period 2014-2024, 21,370 average annual openings are projected. Three out of four annual openings are expected to come from replacement needs.

¹⁰ Data for some occupations are not being disclosed. These occupations are still listed to indicate these occupations have a presence in New Hampshire. Additional information is displayed for each occupation such as the educational level needed, as well as prior work experience and/or if job training is required. Requirements listed are those that typically are needed for an entry-level position.

¹¹ Employment Projections do not distinguish between full- and part-time jobs.

Projected annual openings and number of occupations with openings by educational attainment



The following is a breakout of the occupational outlook by educational attainment:

- There were 668 occupations with one or more annual openings. Of these, the largest number of occupations (266) require a high school diploma or equivalent for entry-level employment. The majority of these occupations (180) require post-hire training of either moderate or long-term on-the-job training, or apprenticeship, or previous work experience in the occupation. In other words, in order to qualify for a majority of these jobs, more than just high school diploma is really needed.
- Occupations requiring no formal educational credential make up a large share of annual openings. There were 83 occupations (12.4 percent) that required no formal educational credential, making up close to one third of the average annual openings. More than half of these projected annual openings were concentrated in five occupations: *Retail salesperson, Cashiers, Waiters and waitresses, Combined food preparation and serving workers, including fast food, and Stock clerks and order fillers.*
- There were 300 occupations requiring educational attainment of more than a high school diploma. There is a large share of occupations that require a Bachelor's degree, both in terms of the number of occupations (23.2 percent) and the number of projected annual openings (18.2 percent).

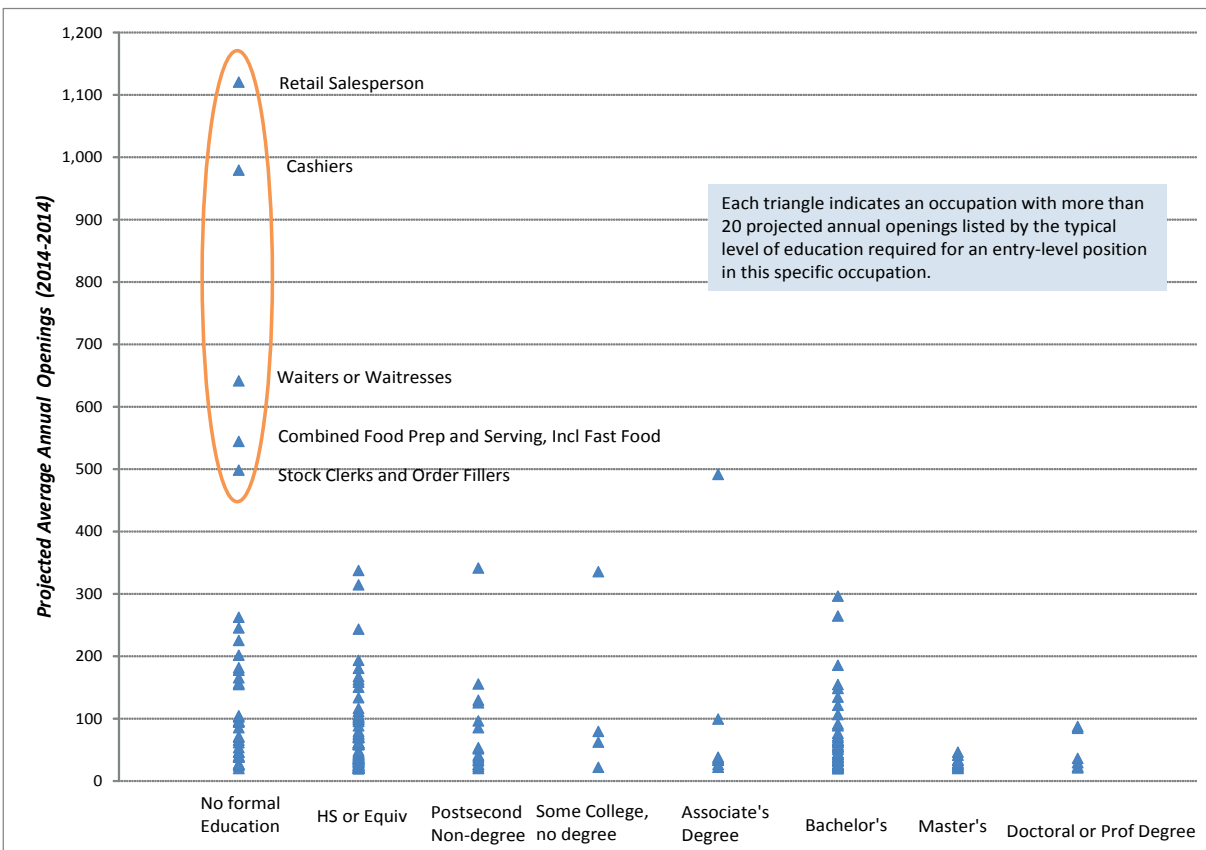
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- For occupations requiring a doctoral or professional degree level, the share of occupations at this educational attainment level (7.5 percent) is proportionately much larger than the share of annual openings projected for these occupations (2.4 percent).

Keep in mind, the educational attainment attached to each occupation is the typical educational requirement needed to enter the occupation. For example, some teachers have master's degrees or PhDs, but possessing such degrees is not a requirement for teaching in New Hampshire. The requirement is a bachelor's degree and completion of an internship in a teaching environment. As New Hampshire and the nation experienced a tough labor market, in the post-2007 recession era, with many job applicants to choose from, there was a tendency among employers to require a higher level of skills and experience than what was needed in a specific job.¹² As the labor pool is shrinking because of fewer unemployed persons and lower labor force participation, it is pivotal for employers to assess their expectations of job candidates as well as expand their ability and willingness to train workers.

From the overall labor market perspective, the 2014-2024 occupational employment projections for New Hampshire show as higher educational attainment is required to enter a given profession, fewer persons will be needed in those positions. There are several reasons for this dynamic.

Projected annual openings educational attainment needed



¹² Upskilling: Do Employers Demand Greater Skills When Skilled Workers Are Plentiful. Alicia Sasser Modestino et al. Federal Reserve Bank of Boston. Accessed on June 16, 2016 at <www.bostonfed.org/economic/wp/wp2014/wp1417.htm>

2015 In Review: A Perspective of New Hampshire's Future Labor Market

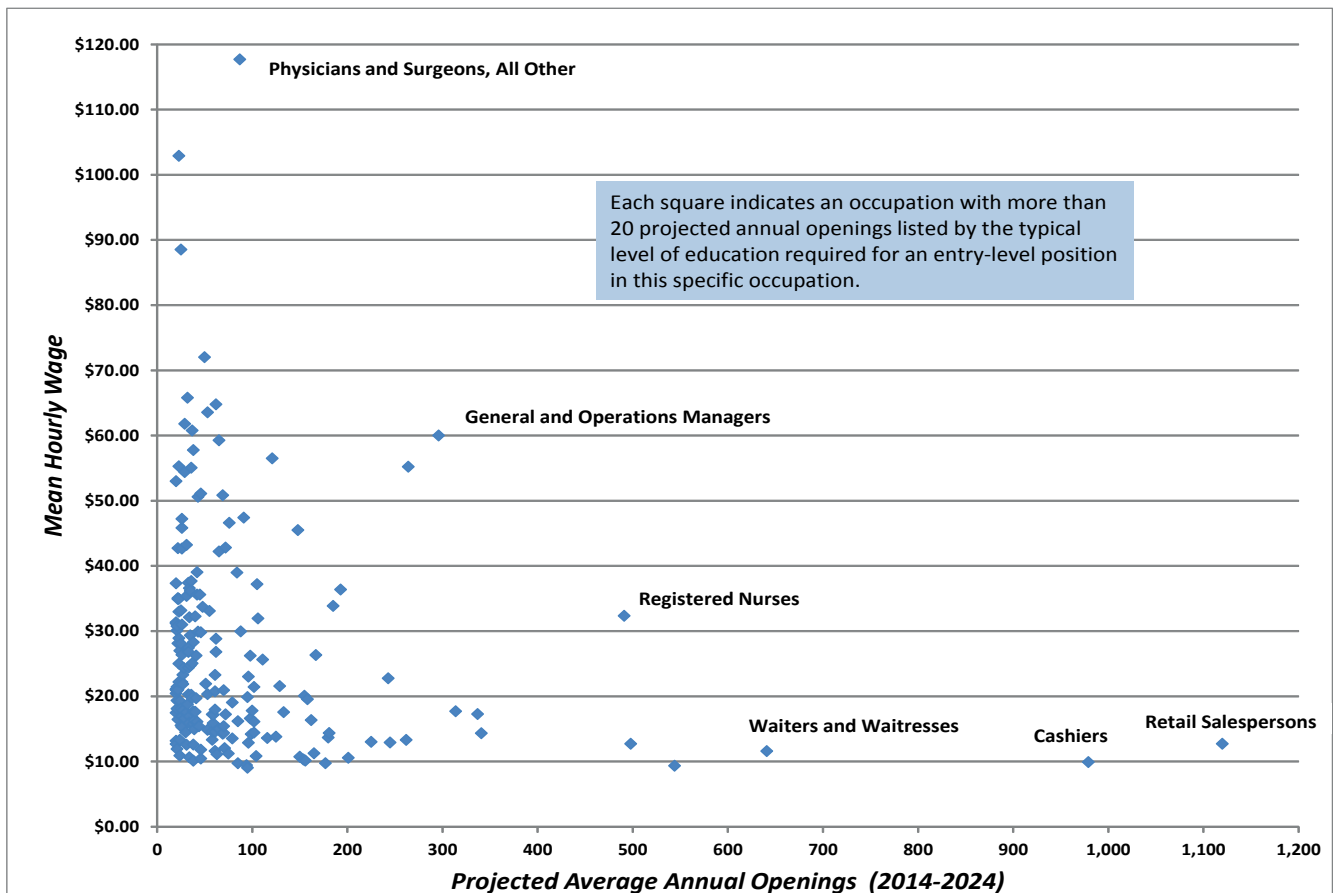
Individuals in occupations requiring a high level of educational attainment have invested time and money in career preparation. This means that these individuals are less likely to move from one occupation to another. Job specialization also makes it unlikely that persons will shift occupations, although they might change jobs. The projected annual openings do not include jobs vacated by a jobholder that leaves a job to start a job in the same occupation. Openings only include those jobs vacated when the jobholder leaves to take a job in another occupation. To clarify the difference between a job change and an occupational change, consider the following examples:

- A student works after school as a *Cashier* twice a week. Over the summer, this student would like to work more hours and therefore starts working as an *Amusement and recreation attendant*, where this student was offered a weekly schedule of 30-40 hours. In this case, this person changed both job and occupation. As this person changed jobs, an occupational job opening for a *Cashier* was generated. The student did not need additional attainment; nor will the student's replacement need more than short-term on-the-job training.

Now consider another example;

- A *Registered nurse* working at a local hospital decides to take another position as a nurse at a doctor's office. In this case, the *Registered nurse* changes from one job to another job, but the person did not change occupation, so there would be no additional occupational opening available. A *Registered nurse* is less likely to change occupations, as investment in education and experience has been made.

Projected annual openings and mean hourly wage rate associated with those occupational openings



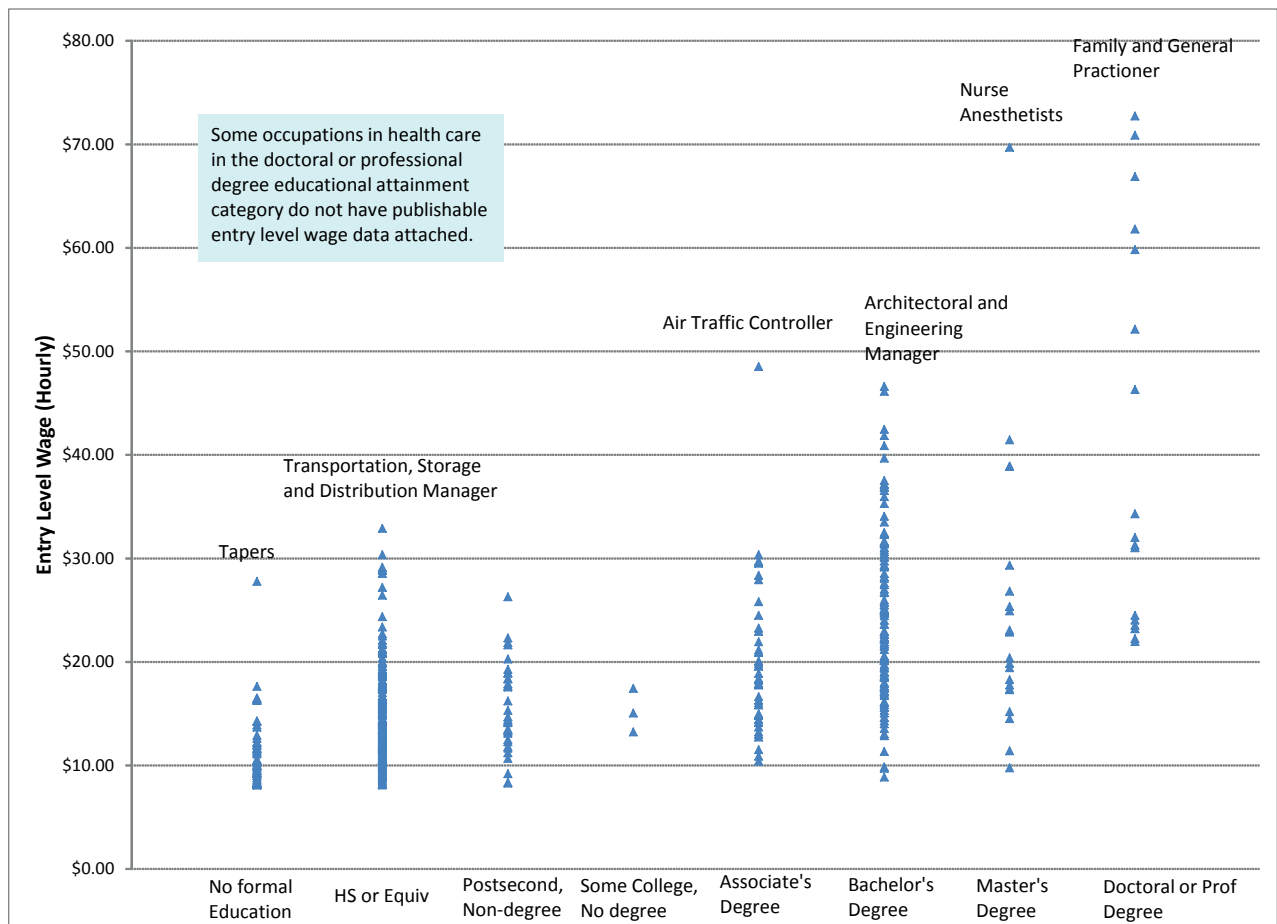
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Most of our societal organizations, from businesses, to government, to the military, are structured in a hierarchical nature. Positions at the bottom (lowest paying) of these organizations are likely to require less education and positions at the top (highest paying) of these organizations require more education. Consider a medium to large size company. In such company, you would have many direct line staff, then fewer first-line supervisors and a fairly small leadership team. In any given organization, a person needs either more educational attainment or work experience to climb the career ladder. Therefore, these organizational structures tend to create fewer occupational openings at the higher leadership level.

The labor market dynamic between wages and demand is shown in the chart comparing the projected number of average annual openings with the mean hourly wage.¹³ Generally, as wages rise, fewer openings will be available. But there are many occupations with a projected number of annual openings from 20 to 100 with average wages at all levels of the pay scale.

There are a handful of occupations with a very large number of projected openings, all with average hourly wages at the lower end of the pay scale. The five occupations are: *Retail salespersons, Cashiers, Waiters and waitresses, Combined food preparation and serving workers, including fast food, and Stock clerks and order fillers*. All of these occupations typically require no formal education.

Entry level wage by occupations – grouped by typical level of education required



¹³ New Hampshire Occupational Employment and Wages, May 2015 (Published April 2016). Occupational Employment Statistics Program. <http://www.nhes.nh.gov/elmi/products/oes-prod.htm>.

As a general rule, there is a wage progression with rising educational attainment. The majority of occupations with an entry level hourly wage of \$10 dollars or less require no formal education or a high school diploma. Most occupations with high entry level wages require a doctoral or professional degree. The opposite is not true – occupations with low entry level wages are not mostly those that require no formal education. There is a relatively broad spectrum of occupations with a similar entry level of pay, no matter the educational attainment. The implication of this overlap in entry level pay is that there are no guarantees that a postsecondary diploma or degree will translate into higher pay, especially for new labor market entrants. In 2015, entry level hourly wages ranged from just below \$9.00 dollars to over \$70.00 dollars.¹⁴ There are a few occupations paying entry level wage rates above the norm for a given educational attainment level:

- For occupations that do not require formal education, Tapers had an entry level hourly wage of \$27.72. The entry level hourly wage for the second highest paying occupation (*Pipelayers*) was much lower at \$17.58.
- For two other educational attainment categories, high school or equivalent and the Bachelor's degree, the occupations at the top pay scale are both managerial positions: *Transportation, storage and distribution manager* and *Architectural and engineering manager*. In addition to the typical educational attainment required, persons entering these positions would likely be expected to have work experience of five years or more.
- The typical entry level education for *Air traffic controllers* is an Associate's degree. In comparison to all other occupations in the educational attainment category, the hourly pay rate for *Air traffic controller* is high.¹⁵ In addition to the educational requirement, an *Air traffic controller* needs long-term on-the-job training. The hourly pay rate at entry level for *Nurse Anesthetists*, an occupation that typically requires a Master's degree, is also much higher than other occupation with similar educational attainment.
- The projected number of openings for any of these top paying occupations is small. These occupations were highlighted to show that the educational attainment is not the only qualifier for entry into an occupation; work experience and job training can be requirements for entry as well which often factors into the rate of pay.

Despite what may be seen as a relatively weak outlook for occupations requiring a college degree, there are plenty of reasons for pursuing postsecondary education. A higher educational attainment level increases opportunities for individuals to climb the career ladder and generally increases earnings potential.

¹⁴ Entry Level Wage is the mean of the lower third of the population.

¹⁵ According to the 2014 staffing patterns, 96.0 percent of Air traffic controllers are employed by the Federal government.

Assessing Skills

As the New Hampshire labor market has improved over the last year, it is no surprise that employers are concerned about being able to find qualified workers. Yet some employers expressed this concern while the state's unemployment rate was much higher. Among countless other reasons, a *skills gap* has been blamed for employers having difficulty finding applicants qualified for available jobs.

What is a skills gap and how can this gap be measured? First, the definition of a skill is needed. According to Merriam-Webster, the dictionary definition of a skill is:¹⁶

a: the ability to use one's knowledge effectively and readily in execution or performance

b: dexterity or coordination, especially in the execution of learned physical tasks

Using this definition, a skill refers to both *knowledge application* and *physical execution* of tasks.

While a skills gap might indicate a measurement comparing individuals to each job, an examination of the skills of millions of persons versus skill requirements of millions of jobs would be overwhelming. However, skill expectations for workers in specific occupations are available through O*Net.¹⁷ O*Net is a database of standardized and occupation-specific descriptors. A broad range of workers are continually surveyed to obtain information about each occupation — including skills, knowledge, and abilities. Skills are a worker-oriented characteristic, and the skill measure is that of persons performing the occupation. O*Net skills data provide a measure of both the importance and the level of 35 basic and cross-functional skills, which may be compared between occupations. Using the information in O*Net, individuals may compare their own knowledge, skills, and abilities to determine if there is a gap. The importance measure for each skill is rated with a number from 0 to 100, with a higher number indicating the skill's level of importance to the occupation .

Skills in Demand

One way to identify the demand for skills is to compare the skill requirements of occupations that are in demand. To identify skills most in demand in New Hampshire, occupations projected to have a very high 2014-2024 rate of growth (12.1 percent or higher) and at least 75 annual average job openings were selected. The resulting list includes 16 occupations of varying educational requirements, representing nearly 14 percent of total projected average annual openings. The skills for each of these occupations were compiled into a grid to allow visual comparison of projected in-demand skills. (For a definition of the 35 O*Net skills, see Appendix A on page 21).

- Five of the ten basic skills were rated important for all but one occupation — Active listening, Critical thinking, Monitoring, Reading comprehension, and Speaking. For *Combined food preparation and serving workers, including fast food*, Speaking skills were of low importance.
- Three of the 25 cross-functional skills were rated important for all 16 occupations — Social perceptiveness, Judgment and decision making, and Coordination.

¹⁶ Merriam-Webster <www.merriam-webster.com/dictionary/skill>

¹⁷ O*Net Resource Center, About O*Net <www.onetcenter.org/overview.html>

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In-Demand Skills Grid	Business and IT		Health care							Hospitality and Service			Production and Repair			
	Management Analysts	Accountants and Auditors	Software Developers, Applications	Physicians and Surgeons, All Other (Average for 12 Specialties)	Physical Therapists	Registered Nurses	Licensed Practical and Licensed Vocational Nurses	Home Health Aides	Nursing Assistants	Medical Assistants	Cooks, Restaurant	Combined Food Prep and Serving Workers, Incl. Fast Food	Personal Care Aides	Industrial Machinery Mechanics	Computer-Controlled Machine Tool Operators, Metal and Plastic	Machinists
Basic Skills	Active Listening	78	72	60	79	72	78	75	69	66	72	60	63	53	53	50
	Critical Thinking	75	66	63	79	75	72	72	60	53	66	44	50	63	66	53
	Monitoring	66	53	53	71	72	69	75	56	56	69	53	53	53	69	50
	Reading Comprehension	78	69	56	79	78	72	75	56	53	72	41	47	47	56	50
	Speaking	78	66	60	76	75	75	75	53	56	75	19	56	50	50	47
	Writing	69	69	50	72	69	66	56	53	47	63	0	47	44	44	44
	Active Learning	60	56	47	70	56	60	60	50	38	56	41	44	47	50	44
	Learning Strategies	47	44	41	57	53	53	53	50	38	50	31	44	44	38	44
	Mathematics	41	72	60	45	35	47	44	31	28	41	38	44	22	28	47
	Science	31	22	44	65	53	47	47	16	16	44	6	56	19	25	25
	Social Perceptiveness	63	47	44	70	72	78	75	63	66	72	44	56	66	44	47
	Judgment and Decision Making	69	63	66	74	63	69	69	50	47	53	47	47	50	53	53
	Coordination	60	53	53	63	60	72	75	50	56	63	53	53	50	50	50
	Service Orientation	47	44	44	64	72	75	78	66	75	60	35	53	72	25	28
	Complex Problem Solving	72	60	72	71	60	60	56	50	44	44	35	35	44	53	56
Time Management	60	60	56	60	63	50	75	53	47	56	41	16	50	50	53	
Cross-Functional Skills	Instructing	47	38	44	61	53	56	53	53	41	50	31	50	44	47	
	Systems Analysis	63	53	69	56	53	47	47	25	22	41	28	25	25	47	
	Persuasion	47	41	44	55	50	50	50	53	35	47	28	38	31	35	
	Management of Personnel Resources	50	41	50	52	50	47	50	31	28	41	41	38	22	38	
	Systems Evaluation	63	44	66	55	50	47	41	25	25	38	25	10	25	47	
	Negotiation	50	44	41	46	44	47	50	47	35	44	31	31	25	28	
	Operation Monitoring	6	16	44	35	28	47	47	28	31	44	44	31	75	75	
	Quality Control Analysis	10	3	47	37	31	47	28	25	28	35	47	31	25	66	
	Operation and Control	0	0	31	21	22	35	38	10	10	22	35	25	19	66	
	Operations Analysis	56	44	63	22	50	25	28	3	3	16	13	3	0	44	
	Troubleshooting	10	0	56	18	22	19	22	19	22	19	16	28	19	72	
	Management of Material Resources	22	19	28	27	22	28	25	25	19	25	35	25	16	22	
	Technology Design	13	13	56	18	22	19	22	6	13	10	38	10	25	25	
	Management of Financial Resources	16	35	28	24	19	22	22	25	10	19	28	19	10	13	
	Equipment Selection	3	0	28	9	19	19	3	0	10	6	19	0	0	60	
Programming	3	10	72	17	13	16	6	0	0	13	0	10	0	25		
Equipment Maintenance	0	0	10	0	3	0	0	0	0	3	3	0	0	78		
Repairing	0	0	10	0	3	0	0	0	0	0	0	0	0	78		
Installation	0	0	28	0	0	0	0	0	0	0	0	0	0	35		

O*Net Importance Scale (0 -100) 0-19 20-39 40-59 60-74 75+

- The skills grid illustrates that transferring from one occupation to another would be relatively easy if the two occupations are closely related to another; for example, *Registered nurses* and *Licensed practical and licensed vocational nurses* had similar importance ratings on every skill measure. But for occupations with similar skill importance ratings that are unrelated, such as *Physical therapists* and *Management analysts*, it is far more difficult for a worker to transfer from one to another occupation. In addition, the educational attainment, knowledge, and abilities required for one occupation would not easily transfer to an unrelated occupation.
- For occupations in Production and Repair, the skills highest in importance — such as repairing, equipment selection, and equipment maintenance — are low importance for most other occupations on the list. The skills with lower importance are largely more specialized skills that are important to a small number of occupations. Another example of such more specialized skill is programming, which is a skill of high importance for *Software developers, applications*. The demand for highly specialized skilled workers cannot always easily be met as it can be difficult to transfer in workers with other occupational background.

Although the occupations included in this *In-Demand* skills grid only represent a small share of all the occupations in New Hampshire, these 16 occupations represent skills needed in the broader New Hampshire economy — now as well as in the future.

APPENDIX A

O*Net Basic and Cross-functional Skills definitions

Active Learning	Understanding the implications of new information for both current and future problem-solving and decision-making.
Active Listening	Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.
Complex Problem Solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.
Coordination	Adjusting actions in relation to others' actions.
Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.
Equipment Maintenance	Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.
Equipment Selection	Determining the kind of tools and equipment needed to do a job.
Installation	Installing equipment, machines, wiring, or programs to meet specifications.
Instructing	Teaching others how to do something.
Judgment and Decision Making	Considering the relative costs and benefits of potential actions to choose the most appropriate one.
Learning Strategies	Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.
Management of Financial Resources	Determining how money will be spent to get the work done, and accounting for these expenditures.
Management of Material Resources	Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.
Management of Personnel Resources	Motivating, developing, and directing people as they work, identifying the best people for the job.
Mathematics	Using mathematics to solve problems.
Monitoring	Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.
Negotiation	Bringing others together and trying to reconcile differences.
Operation and Control	Controlling operations of equipment or systems.
Operation Monitoring	Watching gauges, dials, or other indicators to make sure a machine is working properly.
Operations Analysis	Analyzing needs and product requirements to create a design.
Persuasion	Persuading others to change their minds or behavior.
Programming	Writing computer programs for various purposes.
Quality Control Analysis	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.
Reading Comprehension	Understanding written sentences and paragraphs in work related documents.
Repairing	Repairing machines or systems using the needed tools.
Science	Using scientific rules and methods to solve problems.

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O*Net Basic and Cross-functional Skills definition

Service Orientation	Actively looking for ways to help people.
Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.
Speaking	Talking to others to convey information effectively.
Systems Analysis	Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.
Systems Evaluation	Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.
Technology Design	Generating or adapting equipment and technology to serve user needs.
Time Management	Managing one's own time and the time of others.
Troubleshooting	Determining causes of operating errors and deciding what to do about it.
Writing	Communicating effectively in writing as appropriate for the needs of the audience.