



Toward 70% by 2025: An Analysis of Degree and Credential Eligibility

The goal of this whitepaper is to segment the Vermont population into eligibility pools that can be strategically targeted by Advance Vermont. It builds on discussions within the Advance Vermont Data & Analysis working group. With substantive working groups on youth and adults, we felt it would be advantageous to estimate the subpopulations that can be targeted to strategically increase degree and credential attainment across the state. As a starting point, this whitepaper also allows the Data and Analysis working group to establish baseline measures of progress toward the Advance Vermont goal.

Background research on the definition of “working-age” reveals that most states are using the range 25-64 as the definition for “working-age” adults.

If we follow that norm, we can use data from the 2012-2016 American Community Survey (ACS) to determine the denominator for our calculations to be 331,286. That is the 2016 estimate of Vermont working-age adults (defined as ages 25-64) from the American Community Survey’s 2012-2016 5-year estimates. See the attached Excel workbook (cell L4).

The goal of having 70% of working-age Vermonters with a degree or certificate translates into $.70 * 331,286 = 231,888$ Vermonters. If the size of the Vermont working-age population were to remain constant between now and 2025, we would need a total of 231,888 working-age Vermonters holding a postsecondary degree or certificate by 2025. Obviously, the size of the working-age population will change between this estimate and the 2025 goal year. The ACS estimates can be used to update this denominator each year, allowing a recalibration of the proportions and progress toward the goal.

What’s our current condition? And, how large is the gap we need to fill between now and 2025?

Let’s start with the current condition. As calculated in the 2018 version of Lumina’s *A Stronger Nation* report (Vermont portion attached), 47.7% of the Vermont working-age population holds a degree or certificate (educational certificates, occupational licenses, Registered Apprenticeships, and industry-recognized certifications that verify an individual’s competence in technical or occupational skills). Sources for these percentages are found at the back of the *A Stronger Nation* report. We are not scrutinizing those sources, simply using them as a standard for attainment initiatives like Advance Vermont.

Caveat emptor: No group seems to be able to count certificates (as a form of credential) accurately and this very likely leads to a significant understatement of postsecondary completion rates across the country and in Vermont.¹

¹ We commend several resources to help with this consideration. These include Ewert & Kominski 2014, Carnevale, et al. 2012, Kleiner & Krueger 2010, and Hout 2012. Agreement on a measureable definition of a “credential of value” in Vermont will alter (perhaps significantly) the numerator of our calculation of the state of progress toward the Advance Vermont goal. Through this paper, we establish a definition for “working-age” that enables a somewhat stable denominator for our calculations going forward.



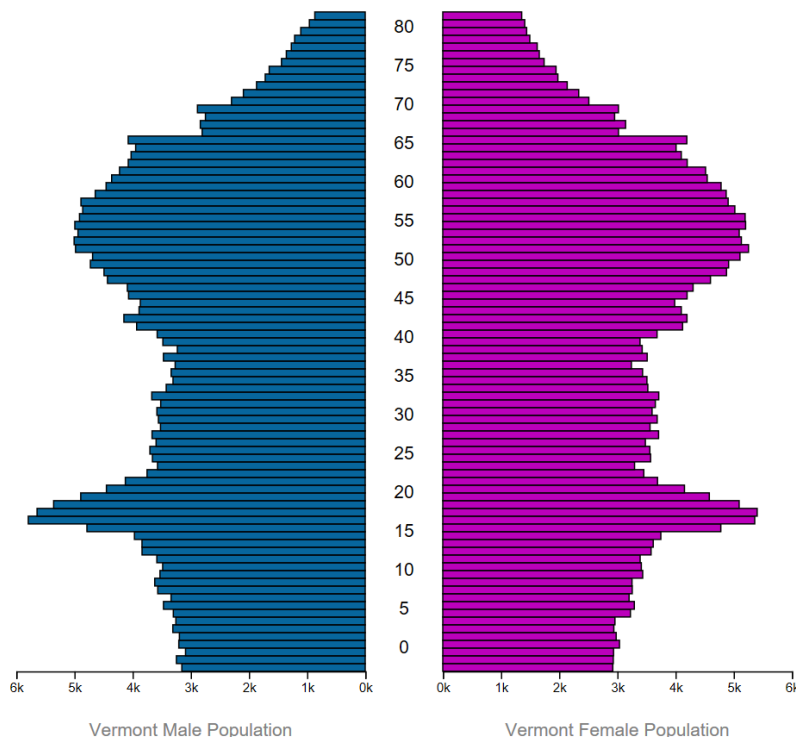
We can apply the educational attainment proportions provided in the Lumina report to the ACS estimates of Vermont’s “working-age” population. Let’s start with overall attainment and multiply Vermont’s working-age adult population by .477. That’s $331,286 * .477 = 158,023$ working-age Vermonters currently hold a postsecondary degree or credential. The gap? Subtract all those with a postsecondary degree or credential from 70% of the overall working-age population and we get, $231,888 - 158,023 = 73,865$ additional Vermonters that would need to receive a first degree or credential by 2025 to achieve the big goal of 70%. Our gap is 73,865 first degree recipients.

Now that’s all things being equal, which they are not. A few things we will need to account for (or acknowledge) include:

1. Current production rates of postsecondary degree and certificates (within the segments of the population that are eligible for first degrees or credentials that drive toward the 2025 goal),
2. Net migration (at the state level, by education level),
3. Mortality (by education level),
4. Changes in who is aging in and aging out of our definition of working-age (by education level).

Two data points for us to keep in mind. First, we know Vermont has a declining and an aging population. Here’s a population pyramid (produced by a trusted third party but not verified with raw US Census data) illustrating the age profile for the state (based on US Census data for 2015).

Figure 1. Vermont’s Population Pyramid (based on 2015 Current Population Survey)

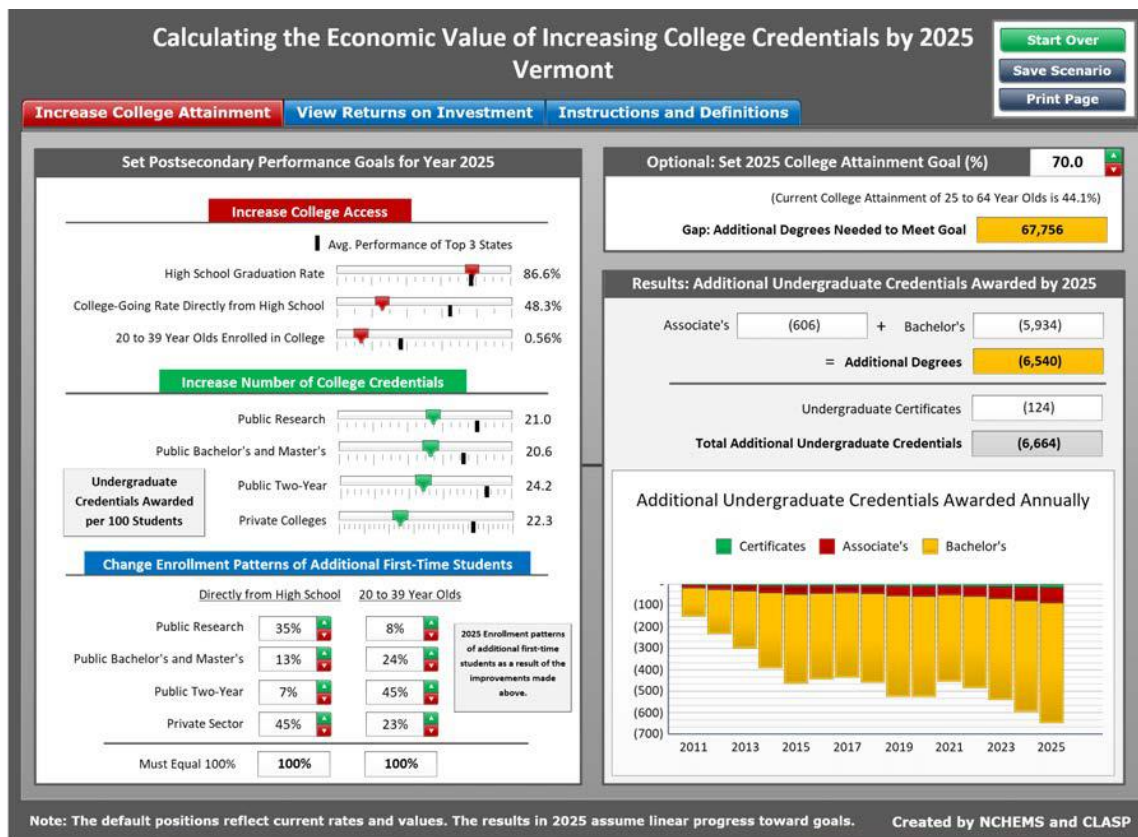


Source: <http://worldpopulationreview.com/blog/age-demographics-by-state/>

Second, in one of our previous meetings, we considered projections put together by the National Center for Higher Education Management Systems (NCHEMS). That effort by NCHEMS was funded by the Lumina Foundation to support the basis for state-level efforts like ours. The projections by NCHEMS incorporate Vermont’s demographic profile, net-migration (by education level), and current rates of degree and credential production. You may recall that we used their projection tool to reveal their estimate showing Vermont’s “steady state” scenario for 2025. That steady state scenario (in which there are no changes to the factors driving degree and credential production) revealed a net loss of 6,664 post-secondary degree and credentials holders by 2025 (see Figure 2 below). College access and postsecondary degree productivity are held constant, and this projected loss is a function of Vermont demographics and net-migration.

If we accept the NCHEMS projection, we need to add another 6,664 working age Vermonters to our gap of 73,865 identified above. That is, there will need to be an additional $73,865 + 6,664 = 80,529$ working age Vermonters awarded first post-secondary degrees or credentials by 2025 for the state to meet its 70% goal.²

Figure 2. NCHEMS Forecasting tool – Vermont 70x2025 “steady-state” projection for 2025



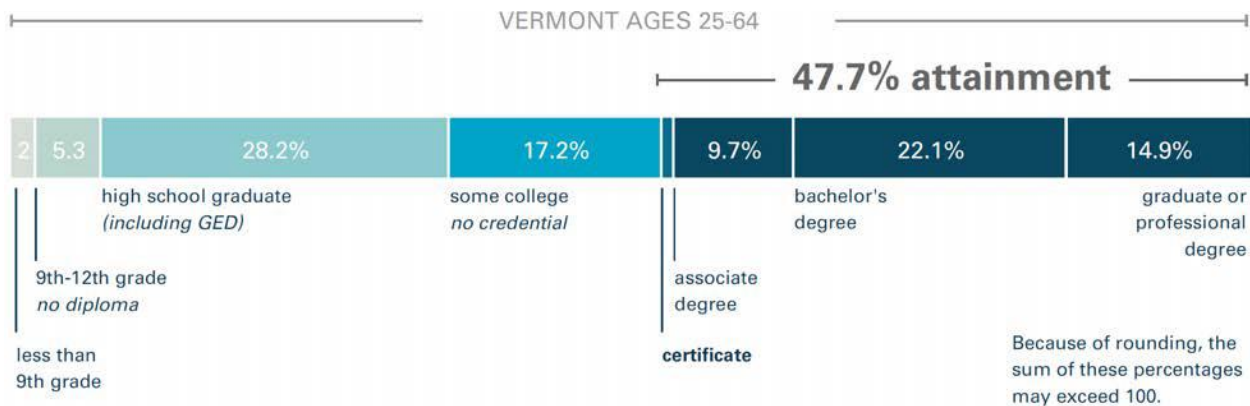
² This NCHEMS forecasted degree and credential production makes assumptions about the pipeline into and through the postsecondary sector. This becomes important in a subsequent section of this whitepaper that focuses on the 18-24 year old population.

Source: nchems.org/swf/NCHEMSCLASPVermontModel.swf

If we ballpark the gap at NCHEMS projected 67,756 degrees and credentials, we can then turn attention to capacity to fill the gap. Where are these non-degreed/non-credentialed Vermonters going to come from? Our answer to this will be important in informing the strategies identified by the working groups on adults and youth.

Let's go back to the recent Lumina, "A Stronger Nation" report that uses the most recent (2012-2016) ACS data to estimate educational attainment in Vermont. Figure 3 contains these estimates for Vermont.

Figure 3. Lumina's 2018 "A Stronger Nation" estimates for Vermont.



By applying these proportions to our denominator of 331,286 (working-age Vermonters, age 25-64), we can estimate the number of Vermonters in each educational category. Our interest is in those 173,263 Vermonters without postsecondary degrees or credentials $((1-.477)*331,286=173,263)$. The primary objective is to convert an additional 67,756 (39%) of those Vermonters to post-secondary degree or credential holders. That's additional to the current rate of degree and credential production in Vermont (through which we expect to see 112,171 degrees or credentials produced – see section above).

We can conceptualize our eligible conversion targets into four pools:

1. Those in the postsecondary pipeline (youth);
2. Those high school graduates in the 18-24 group with no college experience or with some college experience but no postsecondary degree or credential.
3. Those working-age high school graduates with no college experience;
4. Those working-age high school graduates with some college but no postsecondary degree or credential.

Let us consider each of these separately.



Pool 1 – Secondary School pipeline

School enrollments in Vermont have been declining over the last decade, a decline expected to continue through at least 2026, although slight (Table 203.30 – attached – from the National Center for Education Statistics, Digest of Education Statistics 2018). Table 203.40 (attached) shows public school 9-12 enrollments in 2014 (by grade). Grade level populations (9-12) range between 6,400 and 6,700 students each. Vermont has a high school graduation rate that is higher than the national average (for the high school class of 2012 is was 88% vs. 80% nationally). This means we have a higher proportion of post-secondary eligible young people in Vermont. Conversely, Vermont has a lower than national average rate of post-secondary attendance immediately after high school graduation (60 vs. 66% for the HS class of 2012) (VSAC, forthcoming).

The obvious opportunity here is to expand efforts to increase the continuation rate for our high school graduates. If we ballpark public school graduating classes at 6,500 and private school graduating classes at 900 we have an annual total of 7,400 post-secondary eligible youth entering the pool each year (drawing from historic data and projections by NCES). We know that in 2012, 60% of those graduates went on to some post-secondary opportunity immediately after graduation. That leaves $7,400 * .40 = 2,960$ that did not. For our purposes of Advance Vermont, if we decide on working-age being 25-64, the last eligible high school cohort graduated this year (2018). While we will surely continue to improve post-secondary continuation rates, those elementary and secondary school students graduating in 2019 and beyond will have no impact our 2025 goal of having 70% of working age Vermonters with a postsecondary degree or credential. Bottom line? **There are roughly 2,960 high school seniors who graduated with the class of 2018 (June, 2018) who will not attend any postsecondary education in the fall of 2018 and who are, therefore, eligible to earn a first postsecondary degree or credential.** They represent the first eligible pool for conversion to a degree or credential by 2025.

While we are focused here on achieving the very clear Advance Vermont goal, the real opportunity lies within our ability to have more Vermonters taking advantage of meaningful post-secondary opportunities in the much longer term. Work toward that broader goal necessarily begins much earlier in the educational experiences of our youngest Vermonters and should affirm the larger imperative of our realizing an educational infrastructure in Vermont that supports more post-secondary opportunities equally for all across the state. In short, while the date we've set for 70% is 2025, the spirit of the 70x2025 effort powerfully encourages us to be targeting 2043, the year that those born in 2018, for example, will enter what we are calling the working-age adult population. This whitepaper should in no way be seen as diminishing that much more important goal for the state and its citizens.

Pool 2 – Those 18-24 years of age, with no college experience or with some college but no postsecondary degree or credential.



If we go with the 25-64 year old span for working-age, we omit the group between 18 and 24 (inclusive) that is an important part of the pipeline for our Advance Vermont effort. Progress toward the 70% goal will be facilitated by the proportion of degree and credential earners in this population being greater than the proportion of those aging out of the 25-64 year old group. In others words, we can affect the replacement rate of degree and credential holders in the working-age population by focusing on degree and credential productivity of those within this age-range.³

Given this transitional window, easy to use completion and enrollment data are hard to come by for this group (one reason the modal definition of working-age begins at 25 years). The ACS uses the education attainment category “some college or associate’s degree” as a catch all, distinct from bachelor’s degree and HS graduate in this age range. There are an estimated 67,254 18-24 year-olds in Vermont (ACS 2012-2016). How many of them may be eligible for inclusion in our effort is a bit difficult to discern.

To ballpark this, we use Lumina’s ACS proportions to apply the high school completion proportion (.93) for working-age adults (25-64) and the proportion of associate’s degree holders (.097) in that population. The attached Excel workbook shows these calculations (see the Age 18-24 & Education tab). If we remove 7% of those in the “less than high school” group as high school non-completers (n=6,004), that leaves 1,748 eligible 18-24 year-olds with who are presumably still working toward high school completion (conceivably seniors or those held over for a variety of reasons). If we remove 9.7% of those in the “some college or associate’s degree” group as associate’s degree holders (n=6,524), that leaves 26,720 of that combined group eligible for a first postsecondary degree or credential.

The ACS does not provide an estimate of certificate or other credential holders. It is likely that some proportion of this 18-24 year old “some-college or associate’s degree” group actually holds a certificate or other credential. Estimates non-degree credential production vary widely across sources (we will share academic research and a thoughtful consideration by the US Census separately). Lumina uses 1% for working-age Vermonters. We will, therefore, adjust the “some college or associate’s degree pool” to recognize that some proportion (i.e. .01) of this group will have a certificate or other credential. We apply that adjustment by reducing the 26,720 estimated remaining in that group downward by 1%. This final adjustment leaves $26,720 - (26,270 * .01) = 26,008$ of the combined “some college or associate’s degree” group eligible for a first postsecondary degree or credential.

Finally, we can count all of the 19,324 of the high school graduates who have no postsecondary experience. Add those three categories to arrive at $1,748 + 26,008 + 19,324 = 47,080$.⁴

³ Of course, we also need to keep the degree and credential earners in Vermont to have them count toward the goal.

⁴ The 26,080 value actually overstates the size of this eligibility pool. Some unknown proportion of the 26,080 with some college but no degree or credential are actually actively enrolled in a degree or certificate program but have yet to be awarded the degree or certificate. We know from historic patterns that many of these will be on-track to receive the degree or certificate before the age into the “working-age” population. As such, a significant proportion of this group has already been factored into the “steady-state” scenario described toward the front of this whitepaper and are included in the NCHEMS projections of 112,171 degree or credential earners that are a natural part of the 231,900 working age Vermonters needing to hold a postsecondary degree or credential by 2025



There are roughly 47,080 18-24 year-old Vermonters who are eligible to earn a first postsecondary degree or credential. They represent the second eligible pool to earn a first postsecondary degree or credential by 2025.

Pool 3 – Working-age adult high school graduates with no postsecondary experience.

If we apply Lumina’s (ACS derived) proportion of the Vermont working-age population (25-64 years of age) graduating from high school (or GED) with no post-secondary experience, we can calculate $331,286 * .282 = 92,483$. **There are roughly 92,483 25-64 year old Vermonters who are high school graduates (or GED recipients) with no college experience and who eligible to earn a first postsecondary degree or credential.** They represent the third eligible pool to earn a first postsecondary degree or credential by 2025.

Pool 4 – Working-age adults with some college but no degree or credential

Again applying Lumina’s (ACS derived) proportion of the Vermont working-age population (25-64 years of age) with some post-secondary enrollment but no degree or credential, we can calculate $331,286 * .172 = 56,981$. **There are roughly 56,981 Vermonters who have some postsecondary experience and who are eligible to earn a first postsecondary degree or credential.** They represent the fourth eligible pool to earn a first postsecondary degree or credential by 2025.

Conclusion

Adding the ballpark estimates from pools 1 through 4 above, we arrive at a total of 2,960 + 47,080 + 92,483 + 56,981 = 199,504 Vermonters eligible for a first post-secondary degree or credential by 2025.

Recall that **our gap is 67,756 Vermonters**, all external influences constant. To achieve the 70% goal, this would mean converting slightly more than one-third of those without a post-secondary degree or credential ($0.340 = 67,756 / 199,504$).

Degree or Credential Eligible Vermonters	HS Age	Age 18-24		Age 25-64		Total Eligible	
		HS Continuers	Some Experience	No Experience	No Experience		Some Experience
	2,960	1,749	26,008	19,324	92,483	56,981	199,504

Raising completion rates within these four pools should be an exclusive target of the efforts by the substantive working groups on youth and adults.⁵ This means enrolling adult high school graduates in

to achieve the 70% goal. Basically, we need to adjust the eligibility pool downward to account for the proportion of this group who would have been projected to earn a postsecondary degree or credential without any intervention. We would welcome suggestions on how to adjust for this reality.

⁵ We again call attention to the importance of a continued focus on the development of a P-20 educational ecosystem that will better enable attainment for all Vermonters far beyond 2025. While focusing on those younger



degree or certificate programs AND altering (enhancing) the enrollment propensity for youth (those under 24) in Vermont. Vermont has an impressive array of opportunities for those seeking postsecondary degrees and credentials and there are many successful initiatives in place to drive greater attainment across the state. Our gains need to come in the considerable margin identified through this whitepaper. It is our hope that this whitepaper will help to enable thoughtful strategies specifically targeting the unique circumstance and need of the various eligibility pools identified here.

Movement toward the goal will also be influenced by:

1. Our ability to keep degree and credential earning Vermonters in Vermont.
2. Our ability to keep a larger proportion of out-of-state residents earning degrees and credentials from Vermont institutions in Vermont.
3. Our ability to draw already degreed and credentialed working-age adults from out-of-state.

We end on a cautionary note. Beyond the scope of our working group are the dynamics driving the three points above. Those dynamics powerfully shape the likelihood of meaningful progress to the 70% goal, however. Careful matching of degrees and credentials to labor market needs is essential to realize the state's interest and incentive to invest in the goal. In the first meeting of the Advance Vermont Council, we heard about Vermont's labor needs and about the many positions that are left unfilled across the state. Achieving greater degree and credential productivity in the absence of corresponding economic opportunities that match those skills may have the unintended consequence of creating greater interstate mobility for Vermonters to the benefit of other states. This is especially true as the costs of these degrees and credentials are born increasingly by individuals, many of whom will be compelled to seek immediate financial return.

References:

[Anthony Carnevale, Stephen Rose, and Andrew Hanson, Certificates: Gateway to Gainful Employment and College Degrees, Georgetown Center on Education and the Workforce, 2012.](#)

[Stephanie Ewert and Robert Kominiski, "Measuring Alternative Educational Credentials: 2012." US Department of Commerce, Economics and Statistics Administration, 2014.](#)

[Michael Hout, "Social and Economic Returns to College Education in the United States," Annual Review of Sociology, 38:379-400, 2012.](#)

[Morris Kleiner and Alan Krueger, "The Prevalence and Effects of Occupational Licensing," British Journal of Industrial Relations, 48:676-687, 2010.](#)

than 18 will have no impact on the goal of having 70% of Vermonters within a postsecondary degree or credential by 2025, increasing attainment for all, over the long run, is the ultimate goal of the Advance Vermont Council's efforts.



Advance Vermont

Subject	Vermont		
	Total	Male	Female
	Estimate	Estimate	Estimate
Total population	626,249	308,711	317,538
AGE			
15 to 19 years	7.10%	7.30%	6.90%
20 to 24 years	7.30%	7.70%	7.00%
25 to 29 years	5.70%	5.90%	5.60%
30 to 34 years	5.70%	5.80%	5.70%
35 to 39 years	5.50%	5.40%	5.50%
40 to 44 years	6.00%	6.10%	5.90%
45 to 49 years	6.80%	6.70%	6.80%
50 to 54 years	7.90%	7.80%	8.00%
55 to 59 years	8.00%	8.00%	8.00%
60 to 64 years	7.30%	7.10%	7.40%
65 to 69 years	5.80%	5.70%	5.90%
70 to 74 years	4.10%	4.10%	4.10%
SELECTED AGE CATEGORIES			
18 to 24 years	10.70%	11.20%	10.30%

Subject	Vermont		
	Total	Male	Female
	Estimate	Estimate	Estimate
Total population	626,249	308,711	317,538
AGE			
15 to 19 years	44,464	22,536	21,910
20 to 24 years	45,716	23,771	22,228
25 to 29 years	35,696	18,214	17,782
30 to 34 years	35,696	17,905	18,100
35 to 39 years	34,444	16,670	17,465
40 to 44 years	37,575	18,831	18,735
45 to 49 years	42,585	20,684	21,593
50 to 54 years	49,474	24,079	25,403
55 to 59 years	50,100	24,697	25,403
60 to 64 years	45,716	21,918	23,498
65 to 69 years	36,322	17,597	18,735
70 to 74 years	25,676	12,657	13,019
SELECTED AGE CATEGORIES			
18 to 24 years	67,009	34,576	32,706

Source: U.S. Census Bureau, 2012-2016 American Community Survey 5-Year Estimates
https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?_ft=table

331,286	Working Age = 25-64
398,294	Working Age = 18-64
	Working Age =
	Working Age =

Total Working Age		331,286	
Need for Goal in 2025	70.0%	231,900	Short
Current Level as of 2018	47.7%	158,023	73,877
Graduate Professional Degree	14.9%	49,362	
Bachelors Degree	22.1%	73,214	
Associate Degree	9.7%	32,135	
Credential	1.0%	3,313	
Some College no credential	17.2%	56,981	
HS Diploma/GED	28.2%	93,423	
9-12th grade, no diploma	5.3%	17,558	
less than 9th grade	1.7%	5,632	

Proportions from Lumina & ACS