Impact of Increasing Education and Employment Rates in West Michigan

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Executive Summary

Today, unemployment in West Michigan is below 4 percent, suggesting a very strong underlying economy, and the region ranks high in several national studies of growth and quality of life. However, West Michigan still faces significant challenges. A skills mismatch has left many employers struggling to fill positions, even while working-age adults cannot find work or fail to move into higher-paying positions. The need for talent in West Michigan will only increase over time due to age demographics. Regardless of these successes and challenges, the region must be more successful in producing highly skilled workers that meet employer needs if it is going to remain competitive.

While West Michigan has increased the percentage of adults with post-secondary education, it lags behind top performing communities in the country. This study, commissioned by Talent 2025, a nonprofit organization dedicated to increasing the quality and quantity of talent in West Michigan, seeks to measure the impact of moving these measures (labor force participation rate and educational attainment) for families, the economy, and state and local tax revenue.

West Michigan's business and community leaders have consistently sought to improve the region's economy and quality of life for its residents through collaboration and partnerships, and have often looked across the country to study top performing communities for leading practices that could be replicated in the region. In that vein, this report models what the region would look like if it were a top performer. Specifically, the report contains estimates of the additional income that workers in the region would earn if the region had the same employment rate and education attainment as the Hartford (Connecticut) Combined Statistical Area (CSA). The Hartford CSA is a top performer and has been identified as a region that is a good aspirational model for West Michigan.

To be clear, West Michigan is not striving to be Hartford. The two regions are distinct, and although they both have a significant share of their economy engaged in manufacturing, their industry clusters are very different. They are also in different parts of the country and face different economic challenges. However, Hartford does provide a means of grounding aspirational assumptions. West Michigan is striving to increase the talent of its workforce and the share of its population that is employed. The economy of the Hartford CSA is similar enough that it provides a framework for what West Michigan could achieve as a top performer. It provides a concrete example of an achievable goal for the region.

The findings of this study estimate that improving West Michigan's education and employment levels to those seen in a leading region would increase the area's income by $3.7 billion (17 percent), or approximately $1,700 per capita. This improved economic performance would help spur a virtuous cycle. With increased education and employment levels, fewer residents would rely on social welfare programs and more households would overcome their struggles to provide basic necessities, and instead earn enough to live more comfortable lives.

Alongside these benefits, the additional tax revenues generated through improved economic performance could be redirected to address remaining employment barriers, helping to spur additional growth. Simulations that raise both employment and education rates to the level of the Hartford CSA estimate an increase in tax revenue of $170 million per year. Higher incomes would also reduce the region's reliance on social welfare programs; however, since most of the funding for these programs comes from the federal government, little of the savings could be redirected into the region.

This report also addresses the barriers the region faces in trying to match the Hartford CSA's level of employment and education. The analysis shows that employment rates for workers ages 56 to 65 are much lower in West Michigan than in Hartford, revealing a potential source of short-run talent for the Talent 2025 region. Other shorter-run strategies include addressing challenges with child care and transportation for

low-income workers and better aligning education and training with industry needs. Over the longer run, increased investments in early childhood programs and improving the K–12 system are good strategies for addressing talent shortages.

Talent 2025 Region

A brief summary of the report's key findings is included below:

- The employment rate of the Grand Rapids CSA is 71.3 percent, slightly higher than the median CSA's value of 69.8 percent. The Grand Rapids CSA ranks 59th out of 166 CSAs on this measure.

- With respect to education, 35.7 percent of the working-age population in the Grand Rapids CSA has an associate's degree or higher, compared to 34.8 percent for the median CSA. The Grand Rapids CSA ranks 76th on this measure.

- The Hartford CSA is used as a comparison region. In the Hartford CSA, 74.3 percent of the working-age population is employed, and 43.5 percent have an associate's degree or better, ranking 29th and 19th respectively on these measures.

- One striking difference between the Grand Rapids and Hartford CSAs is the share of the population ages 56 to 65 that is employed. Among men, 59 percent of this age cohort is employed in Grand Rapids compared to 71 percent in Hartford, while among women, the totals are 50 percent and 62 percent respectively. The lower employment rates for this age group in West Michigan suggests that people in this age bracket may be a promising source of new talent for West Michigan employers.

- Based on a simulation, if the Grand Rapids CSA had the same education and employment profile as the Hartford CSA, earnings in the region would be $3.7 billion higher (17.3 percent), or approximately $1,700 per person. This additional income would generate another $250 million per year in tax revenues.

OVERVIEW

Talent 2025 is a CEO-led effort to make West Michigan a top 20 region in the United States. Its work is focused on dramatically improving the quality and quantity of the region's talent, since they recognize this will be one of the key drivers of regional prosperity. Talent is defined as a combination of knowledge, creativity, and entrepreneurship. A talented workforce is needed for economic growth; it is essential to the region's ability to be competitive in growing, attracting, and retaining businesses.

The Talent 2025 region consists of 13 West Michigan counties: Allegan, Barry, Ionia, Kent, Lake, Mason, Mecosta, Montcalm, Muskegon, Newaygo, Oceana, Osceola, and Ottawa. The region has a population of approximately 1.6 million and a workforce of 860,000. In some ways, the region is extremely successful. Its unemployment rate has been below 4 percent for eight consecutive months.[1] Quality of life, growth potential, and competitiveness are considered to be high. In recent rankings, Grand Rapids has been cited as a top 10 "emerging city" in the United States for global trade; West Michigan's economy was cited as the fifth-fastest growing in the United States; Grand Rapids was cited as the second-best place to live; and *Forbes* named Grand Rapids the best city for raising a family (The Right Place 2016).[2]

Despite these positive metrics, however, there is reason to believe that the region could do better. The region is not a top performer in some important metrics, including the percentage of the workforce employed, education levels, and median income. A mismatch between the skills needed by employers and the skills of West Michigan's workforce results in many employers reporting struggles to fill openings while at the same time many residents struggle to find work or struggle to move from low-paying jobs into higher-paying ones. The region's low unemployment rate does not include workers who are not actively seeking work. It is likely that many in West Michigan are not seeking employment because they do not feel there are jobs available to them.

There is little doubt that the region could be more prosperous if it did better on employment and education measures, but what does that really mean? This report seeks to provide a quantitative answer to that question. It identifies a top-performing region that shares some important characteristics with West Michigan, and then uses that region to estimate West Michigan's upside potential. The report also discusses the barriers the region needs to address to achieve this prosperity. These barriers include the aforementioned mismatch between the skills of the workforce and the needs of employers. West Michigan has many middle- and upper-skill jobs that employers are struggling to fill. If West Michigan could move some of its lower-skilled workers into the middle-skills category and middle-skilled workers into the upper-skills category, many current employment vacancies could be filled and West Michigan workers would earn higher wages. The increase in skills would also result in higher tax revenues for the region and a reduced reliance on social welfare programs.

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[1] The unemployment rate cited in this statement is the rate for the Grand Rapids-Wyoming-Muskegon Combined Statistical Area.

[2] We use the terms West Michigan and Talent 2025 region interchangeably in this report.

HOW DOES WEST MICHIGAN RANK?

As noted, West Michigan performs very well on some metrics. At less than 4 percent, the region's unemployment rate is below the level that economists generally consider to indicate full employment.[3] There are drawbacks to the unemployment rate measure, however. A person who is not employed and not actively seeking work is not included in the rate. Of course, sometimes this is appropriate. Homemakers and retirees often actively choose not to participate in the workforce, and those who make that choice should not be counted with those who are seeking work but cannot find it. Some individuals would work if they thought jobs were available for them, but an unsuccessful job search has left them discouraged, and they have stopped looking. These discouraged workers are not counted in the official unemployment rate, and are often referred to as "marginally attached" to the labor force. The rate also does not capture workers who are working part-time but would like to be working full-time, or who may be underemployed given their skill set.

The impact of these factors can be significant. The Bureau of Labor Statistics' standard definition of unemployment is called U-3. An alternate unemployment measure, U-6, includes the total number of people unemployed under the U-3 definition, plus marginally attached workers (those who have stopped looking for work), plus the total employed part-time for economic reasons (meaning the workers would prefer full-time work). For the second quarter of 2015 through the first quarter of 2016, Michigan's official unemployment rate (U-3) was 5.2 percent, while its U-6 rate was 11.2 percent. Michigan's U-3 rate suggests that only 1 in 20 workers is unemployed, while the U-6 rate suggests significantly more labor market stress. The U-6 rate is not available on a regional level, so a comparable figure for West Michigan is not available (Bureau of Labor Statistics 2016). However, we can surmise that things are similar in West Michigan and that the U-6 rate would likely be significantly higher than the U-3 rate.

In this study, we use three metrics to assess regional success: the employment rate, defined as the share of the working-age population (ages 20 to 64) currently employed; the average education level of the community; and worker wages. We looked at these metrics for all U.S. Combined Statistical Areas (CSAs). CSAs are two or more adjacent metropolitan and micropolitan statistical areas that have a substantial sharing of employment between them (U.S. Census Bureau 2016a). A metropolitan area has an urban core area with more than 50,000 people, while a micropolitan area has an urban core area with 10,000 to 50,000 people.

The Census Bureau has defined 166 CSAs for the United States. To measure the relative education of a CSA's population, we used the percentage of the population 25 years of age and older with an associate's degree. To measure income, we used the median wage for workers. We used the Grand Rapids-Wyoming-Muskegon CSA (hereafter referred to as the Grand Rapids CSA) as a proxy for the Talent 2025 region. We used data from the five-year 2014 American Community Survey (ACS) extracted using the Census Bureau's American FactFinder tool (U.S. Census Bureau 2016b).

Based on these metrics the performance of the Grand Rapids CSA is better than average, but it is not a top performer (see Exhibit 1). The 2014 population of the Grand Rapids CSA was 826,358, ranking 38th biggest, while the median population of the CSAs was 319,593. The share of the working-age population employed in Grand Rapids was 71.3 percent, above the median CSA rate of 69.8 percent. However, this rate is well below the average 79.6 percent rate of the top 15 CSAs. The Grand Rapids CSA ranks 59th best on this measure. Similarly, the share of the population with an associate's degree or better in the Grand Rapids CSA exceeds the median rate, but is well below the rate for the top 15 categories, and ranks 76th best. Finally, the median income of workers in Grand Rapids is approximately equal to the median income among

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[3] There is no single agreed upon unemployment rate indicating full employment. However, the range is generally accepted by economists to be between 4 and 6 percent.

all CSAs and is only three-quarters of the income of the top 15 CSAs. Income comparisons between CSAs are a bit problematic because they are also impacted by the cost of living of the respective areas.

We also ranked the CSAs based on a combination of their employment and education rankings. We did this by averaging those two rankings among the CSAs. Based on this metric, the Grand Rapids CSA ranks 60th, just out of the top third and in the second quintile.

EXHIBIT 1. 2014 Population, Employment, and Income for Combined Statistical Areas, Sorted by Combined Education and Employment Rank

| Combined Statistical Area | Average Rank Education and Employment Rank | Population | | Employment Age 20 to 64 | | | | | |
		Ages 20 to 64	Rank	Rate	Rank	% Assoc. or Higher	Rank	Median Income For Workers	Rank
Grand Rapids-Wyoming-Muskegon, MI CSA	60	826,358	38	71.3%	59	35.7%	76	$27,118	84
Median		319,593		69.8%		34.8%		$27,120	
Average Top 15 in Each Category		5,181,552		79.6%		48.0%		$35,295	
Fargo-Wahpeton, ND-MN CSA	1	150,009	116	83.2%	1	48.0%	6	$29,534	61
Edwards-Glenwood Springs, CO CSA	2	81,651	147	80.5%	4	48.8%	4	$33,456	10
Cedar Rapids-Iowa City, IA CSA	3	256,252	94	79.7%	5	46.4%	11	$31,534	27
Minneapolis-St. Paul, MN-WI CSA	3	2,302,822	14	79.4%	7	47.7%	9	$36,351	5
Lincoln-Beatrice, NE CSA	5	202,421	105	79.2%	8	45.9%	13	$27,104	85
Madison-Janesville-Beloit, WI CSA	5	523,468	58	78.9%	9	46.2%	12	$31,377	30
Rochester-Austin, MN CSA	5	144,732	121	82.3%	2	43.5%	19	$34,486	8
Des Moines-Ames-West Des Moines, IA CSA	8	450,808	62	79.5%	6	45.1%	16	$32,829	13
Washington-Baltimore-Arlington, DC-MD-VA-WV-PA CSA	8	5,822,587	4	75.9%	19	48.9%	3	$43,023	1
Denver-Aurora, CO CSA	10	2,009,800	16	76.1%	18	47.8%	7	$35,132	7
Steamboat Springs-Craig, CO CSA	11	23,702	166	78.4%	13	44.9%	17	$30,062	52
Boston-Worcester-Providence, MA-RI-NH-CT CSA	12	4,924,467	6	75.1%	21	46.9%	10	$37,296	4
Portland-Lewiston-South Portland, ME CSA	13	381,119	76	76.6%	16	43.2%	23	$31,019	32
Mankato-New Ulm-North Mankato, MN CSA	14	74,291	151	82.3%	2	39.8%	38	$26,147	114
Omaha-Council Bluffs-Fremont, NE-IA CSA	15	549,591	56	78.5%	12	41.1%	30	$31,678	24
Hartford-West Hartford, CT CSA	16	900,281	35	74.3%	29	43.5%	19	$38,208	2
Raleigh-Durham-Chapel Hill, NC CSA	17	1,229,387	29	72.3%	42	47.8%	7	$32,390	16
Bloomington-Pontiac, IL CSA	18	139,677	123	74.6%	26	42.9%	26	$29,998	56

Combined Statistical Area	Average Rank Education and Employment	Population		Employment Age 20 to 64					
	Rank	Ages 20 to 64	Rank	Rate	Rank	% Assoc. or Higher	Rank	Median Income For Workers	Rank
Columbia-Moberly-Mexico, MO CSA	19	137,648	125	72.8%	39	45.5%	15	$25,283	136
Savannah-Hinesville-Statesboro, GA CSA	20	5,229,740	5	71.8%	50	48.6%	5	$26,225	107
San Jose-San Francisco-Oakland, CA CSA	21	1,341,695	27	74.4%	28	41.3%	28	$26,225	107
Kansas City-Overland Park-Kansas City, MO-KS CSA	22	1,429,129	24	74.7%	24	40.4%	35	$31,905	20
Albany-Schenectady, NY CSA	23	710,432	45	73.6%	33	42.7%	27	$33,167	12
Eau Claire-Menomonie, WI CSA	24	125,539	133	76.8%	15	38.7%	47	$25,235	137
Appleton-Oshkosh-Neenah, WI CSA	25	240,810	99	78.6%	11	37.9%	53	$31,795	23
Rochester-Batavia-Seneca Falls, NY CSA	26	705,097	46	72.2%	46	43.4%	22	$30,663	40
Sioux City-Vermillion, IA-SD-NE CSA	27	2,769,204	13	71.6%	55	45.8%	14	$26,225	107
Milwaukee-Racine-Waukesha, WI CSA	28	1,220,298	30	74.5%	27	39.0%	43	$31,879	21
Chicago-Naperville, IL-IN-WI CSA	29	6,009,937	3	72.0%	48	41.3%	28	$33,907	9
New York-Newark, NY-NJ-CT-PA CSA	30	14,321,861	1	71.5%	58	43.4%	21	$37,691	3
Rapid City-Spearfish, SD CSA	31	96,708	142	75.8%	20	37.5%	60	$26,312	106
Salt Lake City-Provo-Orem, UT CSA	32	1,745,587	18	72.6%	40	39.2%	42	$30,791	37
Dallas-Fort Worth, TX-OK CSA	33	4,282,151	8	73.8%	30	37.8%	56	$32,521	14
Buffalo-Cheektowaga, NY CSA	34	727,094	44	71.6%	55	40.6%	34	$30,823	36
Pittsburgh-New Castle-Weirton, PA-OH-WV CSA	34	1,590,654	20	72.2%	46	39.0%	43	$31,293	31
Cincinnati-Wilmington-Maysville, OH-KY-IN CSA	36	1,311,166	28	72.5%	41	38.0%	51	$31,828	22
Ithaca-Cortland, NY CSA	36	93,822	143	69.1%	90	51.3%	2	$25,693	126
Pullman-Moscow, WA-ID CSA	38	51,449	162	68.6%	95	54.1%	1	$14,823	166
Green Bay-Shawano, WI CSA	39	212,453	104	76.6%	16	34.7%	84	$30,328	46
Atlanta–Athens-Clarke County–Sandy Springs, GA CSA	40	3,730,996	11	70.4%	73	41.1%	30	$31,662	25
Columbus-Marion-Zanesville, OH CSA	40	1,437,356	23	72.3%	42	37.4%	61	$31,615	26
Portland-Vancouver-Salem, OR-WA CSA	40	1,835,756	17	70.5%	71	40.9%	32	$30,498	45

Combined Statistical Area	Average Rank Education and Employment	Population		Employment Age 20 to 64					
	Rank	Ages 20 to 64	Rank	Rate	Rank	% Assoc. or Higher	Rank	Median Income For Workers	Rank
Syracuse-Auburn, NY CSA	43	442,677	64	70.5%	71	40.8%	33	$31,487	28
Charlotte-Concord, NC-SC CSA	44	1,488,707	21	71.2%	62	39.0%	43	$30,935	33
Nashville-Davidson–Murfreesboro, TN CSA	44	1,138,161	31	72.3%	42	36.7%	63	$30,520	44
Philadelphia-Reading-Camden, PA-NJ-DE-MD CSA	46	4,293,706	7	71.0%	64	39.0%	43	$35,404	6
Indianapolis-Carmel-Muncie, IN CSA	47	1,386,276	25	72.3%	42	36.6%	66	$30,777	39
Springfield-Jacksonville-Lincoln, IL CSA	47	418,922	67	70.6%	69	39.7%	39	$30,629	41
Wausau-Stevens Point-Wisconsin Rapids, WI CSA	47	181,519	108	78.1%	14	33.6%	94	$29,096	67
Wichita-Arkansas City-Winfield, KS CSA	50	389,424	73	73.6%	33	35.5%	77	$30,181	50
Davenport-Moline, IA-IL CSA	51	275,884	90	74.7%	24	34.5%	87	$30,535	43
Harrisburg-York-Lebanon, PA CSA	52	732,071	43	75.0%	23	33.0%	96	$32,245	18
Asheville-Brevard, NC CSA	53	271,340	91	69.7%	84	40.0%	37	$26,104	115
Lansing-East Lansing-Owosso, MI CSA	54	326,482	82	69.5%	85	39.7%	39	$25,357	133
South Bend-Elkhart-Mishawaka, IN-MI CSA	54	104,114	140	78.8%	10	30.9%	114	$26,225	107
Houston-The Woodlands, TX CSA	56	3,880,377	9	71.7%	52	35.8%	74	$32,266	17
Peoria-Canton, IL CSA	56	243,105	97	72.0%	48	35.5%	78	$30,868	35
Lexington-Fayette–Richmond–Frankfort, KY CSA	58	435,111	65	70.1%	77	37.9%	53	$26,535	101
St. Louis-St. Charles-Farmington, MO-IL CSA	59	188,244	107	71.8%	50	35.2%	81	$30,791	37
Grand Rapids-Wyoming-Muskegon, MI CSA	60	826,358	38	71.3%	59	35.7%	76	$27,118	84
Lubbock-Levelland, TX CSA	61	190,989	106	73.3%	37	32.8%	100	$23,264	152
Oklahoma City-Shawnee, OK CSA	61	820,751	39	71.6%	55	34.9%	82	$28,904	69
Boise City-Mountain Home-Ontario, ID-OR CSA	63	418,387	68	70.4%	73	36.6%	65	$26,543	100
Cleveland-Akron-Canton, OH CSA	63	2,069,973	15	71.7%	52	34.5%	86	$30,269	47
Lafayette-West Lafayette-Frankfort, IN CSA	65	147,697	118	70.3%	76	36.7%	63	$22,421	159
Miami-Fort Lauderdale-Port St. Lucie, FL CSA	65	3,797,316	10	69.8%	80	37.5%	59	$27,459	79

Combined Statistical Area	Average Rank Education and Employment	Population		Employment Age 20 to 64					
	Rank	Ages 20 to 64	Rank	Rate	Rank	% Assoc. or Higher	Rank	Median Income For Workers	Rank
Fort Wayne-Huntington-Auburn, IN CSA	67	357,659	78	73.1%	38	31.8%	108	$29,952	58
Bloomington-Bedford, IN CSA	68	130,978	127	67.5%	111	40.1%	36	$20,718	163
Idaho Falls-Rexburg-Blackfoot, ID CSA	68	127,150	130	70.8%	68	35.4%	79	$21,344	160
Bend-Redmond-Prineville, OR CSA	70	108,014	139	68.0%	102	38.6%	48	$25,620	129
Findlay-Tiffin, OH CSA	71	76,935	150	73.7%	32	29.8%	120	$27,188	82
Tulsa-Muskogee-Bartlesville, OK CSA	72	656,939	48	71.0%	64	33.7%	89	$29,983	57
Albuquerque-Santa Fe-Las Vegas, NM CSA	73	695,733	47	67.9%	105	38.4%	49	$29,356	64
Amarillo-Borger, TX CSA	73	163,692	113	73.4%	36	30.3%	118	$28,677	70
Tallahassee-Bainbridge, FL-GA CSA	73	253,591	95	66.2%	129	43.1%	25	$26,721	95
Virginia Beach-Norfolk, VA-NC CSA	76	1,108,669	32	68.0%	102	37.6%	58	$31,452	29
Springfield-Branson, MO CSA	77	402,425	71	67.6%	108	37.9%	53	$27,782	77
Columbia-Orangeburg-Newberry, SC CSA	78	554,518	55	67.9%	105	37.7%	57	$27,359	80
Sacramento-Roseville, CA CSA	79	1,473,842	22	66.7%	123	39.6%	41	$32,133	19
Midland-Odessa, TX CSA	80	173,088	110	75.1%	21	25.9%	145	$32,492	15
Orlando-Deltona-Daytona Beach, FL CSA	80	1,744,698	19	68.4%	100	36.6%	66	$26,750	93
Greenville-Washington, NC CSA	82	133,929	126	68.0%	102	36.6%	66	$25,061	144
Los Angeles-Long Beach, CA CSA	82	11,094,818	2	68.5%	97	36.2%	71	$30,156	51
Louisville/Jefferson County–Elizabethtown–Madison, KY-IN CSA	82	896,775	36	70.4%	73	33.3%	95	$30,060	53
Toledo-Port Clinton, OH CSA	82	387,244	74	69.8%	80	34.0%	88	$26,756	91
Huntsville-Decatur-Albertville, AL CSA	86	408,600	70	68.2%	101	36.4%	69	$29,456	62
Lima-Van Wert-Celina, OH CSA	86	126,151	131	73.6%	33	26.7%	137	$27,121	83
Quincy-Hannibal, IL-MO CSA	88	66,140	157	73.8%	30	26.5%	141	$26,639	97
Gainesville-Lake City, FL CSA	89	213,200	103	63.2%	148	43.1%	24	$24,974	145
State College-DuBois, PA CSA	89	147,590	119	66.8%	122	38.0%	50	$22,884	156
Manhattan-Junction City, KS CSA	91	82,752	146	62.3%	155	44.1%	18	$25,577	130

Combined Statistical Area	Average Rank Education and Employment	Population		Employment Age 20 to 64					
	Rank	Ages 20 to 64	Rank	Rate	Rank	% Assoc. or Higher	Rank	Median Income For Workers	Rank
Kalamazoo-Battle Creek-Portage, MI CSA	92	312,319	85	69.1%	90	34.7%	84	$25,670	127
Reno-Carson City-Fernley, NV CSA	92	352,880	80	69.5%	85	33.7%	89	$29,449	63
Greensboro–Winston-Salem–High Point, NC CSA	94	955,846	33	69.5%	85	33.6%	91	$27,812	76
Tucson-Nogales, AZ CSA	94	599,729	52	66.5%	125	38.0%	51	$26,083	116
Harrisonburg-Staunton-Waynesboro, VA CSA	96	146,125	120	71.0%	64	30.9%	113	$25,143	142
El Paso-Las Cruces, TX-NM CSA	97	110,200	138	68.6%	95	34.9%	83	$30,002	55
Spokane-Spokane Valley-Coeur d'Alene, WA-ID CSA	98	414,772	69	71.0%	64	30.5%	116	$26,747	94
Detroit-Warren-Ann Arbor, MI CSA	99	3,193,318	12	66.9%	119	37.2%	62	$30,878	34
Rockford-Freeport-Rochelle, IL CSA	99	258,335	93	71.3%	59	29.1%	122	$29,046	68
Jacksonville-St. Marys-Palatka, FL-GA CSA	101	915,849	34	67.2%	114	36.3%	70	$30,627	42
Dayton-Springfield-Sidney, OH CSA	102	631,197	50	69.1%	90	32.9%	98	$27,886	74
Jackson-Vicksburg-Brookhaven, MS CSA	103	396,877	72	67.0%	117	36.1%	72	$29,321	65
Springfield-Greenfield Town, MA CSA	104	311,375	86	69.8%	80	31.1%	112	$24,023	149
Tyler-Jacksonville, TX CSA	104	150,889	115	69.5%	85	32.0%	107	$26,356	104
Erie-Meadville, PA CSA	106	216,285	102	69.3%	89	32.0%	106	$25,705	124
Little Rock-North Little Rock, AR CSA	107	536,388	57	68.7%	93	32.4%	103	$29,768	59
Joplin-Miami, MO-OK CSA	108	118,320	136	71.2%	62	26.9%	135	$25,212	138
Memphis-Forrest City, TN-MS-AR CSA	109	818,676	40	68.5%	97	32.7%	101	$29,712	60
North Port-Sarasota, FL CSA	109	474,201	60	66.5%	125	35.9%	73	$26,553	99
Cape Coral-Fort Myers-Naples, FL CSA	111	519,297	59	66.6%	124	35.7%	75	$25,817	122
Dixon-Sterling, IL CSA	112	53,864	159	71.3%	59	26.3%	143	$27,845	75
Victoria-Port Lavaca, TX CSA	112	67,133	156	71.7%	52	25.5%	150	$27,601	78
Williamsport-Lock Haven, PA CSA	114	92,159	144	70.0%	78	28.6%	125	$25,875	121
Morgantown-Fairmont, WV CSA	115	121,819	134	66.5%	125	33.6%	91	$25,153	140
Cape Girardeau-Sikeston, MO-IL CSA	116	79,851	148	70.6%	69	25.8%	148	$24,892	146

Combined Statistical Area	Average Rank Education and Employment	Population		Employment Age 20 to 64					
	Rank	Ages 20 to 64	Rank	Rate	Rank	% Assoc. or Higher	Rank	Median Income For Workers	Rank
Greenville-Spartanburg-Anderson, SC CSA	116	816,222	41	66.9%	119	32.9%	98	$26,896	86
New Orleans-Metairie-Hammond, LA-MS CSA	118	889,765	37	67.8%	107	31.2%	111	$30,221	49
Birmingham-Hoover-Talladega, AL CSA	119	786,635	42	66.3%	128	33.6%	91	$30,269	47
Seattle-Tacoma, WA CSA	119	312,989	84	65.3%	139	35.3%	80	$26,225	107
Corpus Christi-Kingsville-Alice, TX CSA	121	296,778	89	70.0%	78	25.9%	145	$26,345	105
Knoxville-Morristown-Sevierville, TN CSA	121	651,029	49	67.3%	113	31.3%	110	$26,873	89
Bowling Green-Glasgow, KY CSA	123	128,420	128	68.7%	93	27.4%	132	$24,019	150
Myrtle Beach-Conway, SC-NC CSA	124	264,359	92	65.6%	134	33.0%	97	$22,890	155
Las Vegas-Henderson, NV-AZ CSA	125	1,351,955	26	67.6%	108	28.6%	125	$30,055	54
Moses Lake-Othello, WA CSA	125	59,660	158	69.8%	80	24.4%	153	$24,628	147
Saginaw-Midland-Bay City, MI CSA	127	227,144	101	66.2%	129	32.4%	105	$26,225	107
Mobile-Daphne-Fairhope, AL CSA	128	354,540	79	65.6%	134	31.8%	109	$27,252	81
Paducah-Mayfield, KY-IL CSA	129	78,401	149	66.9%	119	27.8%	130	$26,030	117
Chattanooga-Cleveland-Dalton, TN-GA-AL CSA	130	554,525	54	67.2%	114	26.7%	137	$26,387	103
Clovis-Portales, NM CSA	131	40,567	164	65.4%	137	30.4%	117	$24,042	148
Lafayette-Opelousas-Morgan City, LA CSA	131	365,399	77	68.5%	97	23.7%	157	$28,070	72
Columbus-Auburn-Opelika, GA-AL CSA	133	298,219	88	62.5%	152	32.4%	103	$25,915	120
New Bern-Morehead City, NC CSA	134	114,096	137	62.4%	154	32.6%	102	$26,016	118
Bloomsburg-Berwick-Sunbury, PA CSA	135	157,082	114	67.6%	108	25.7%	149	$26,890	87
Youngstown-Warren, OH-PA CSA	136	386,474	75	67.0%	117	26.3%	143	$25,697	125
Longview-Marshall, TX CSA	137	164,651	111	67.4%	112	25.0%	152	$26,884	88
Medford-Grants Pass, OR CSA	137	163,902	112	63.1%	149	30.8%	115	$22,850	157
Parkersburg-Marietta-Vienna, WV-OH CSA	139	90,260	145	65.9%	131	27.0%	134	$26,764	90
Elmira-Corning, NY CSA	140	591,928	53	64.2%	143	29.1%	123	$33,456	10
Johnson City-Kingsport-Bristol, TN-VA CSA	140	300,647	87	65.4%	137	28.1%	129	$25,396	132

Combined Statistical Area	Average Rank Education and Employment	Population		Employment Age 20 to 64					
	Rank	Ages 20 to 64	Rank	Rate	Rank	% Assoc. or Higher	Rank	Median Income For Workers	Rank
Jonesboro-Paragould, AR CSA	142	98,000	141	67.1%	116	25.2%	151	$25,210	139
Hickory-Lenoir, NC CSA	143	241,270	98	65.6%	134	26.7%	137	$25,721	123
Mount Pleasant-Alma, MI CSA	143	69,825	154	63.5%	147	28.7%	124	$16,226	165
Dothan-Enterprise-Ozark, AL CSA	145	144,666	122	64.3%	142	27.6%	131	$26,716	96
Hot Springs-Malvern, AR CSA	146	73,540	152	64.6%	141	27.1%	133	$23,106	153
Macon-Warner Robins, GA CSA	146	247,040	96	63.1%	149	28.6%	125	$28,380	71
Johnstown-Somerset, PA CSA	148	128,022	129	65.9%	131	25.9%	145	$26,573	98
Monroe-Ruston-Bastrop, LA CSA	149	148,320	117	63.9%	146	26.9%	135	$25,064	143
Pueblo-Cañon City, CO CSA	150	121,476	135	59.1%	163	30.2%	119	$25,554	131
Mansfield-Ashland-Bucyrus, OH CSA	151	126,091	132	65.9%	131	24.4%	153	$25,995	119
Fayetteville-Lumberton-Laurinburg, NC CSA	152	326,196	83	54.9%	165	29.3%	121	$26,756	91
Redding-Red Bluff, CA CSA	153	138,026	124	59.5%	162	28.4%	128	$26,180	113
Fresno-Madera, CA CSA	154	627,413	51	62.2%	156	26.7%	137	$23,357	151
Kokomo-Peru, IN CSA	154	69,428	155	64.8%	140	24.4%	153	$26,427	102
Charleston-Huntington-Ashland, WV-OH-KY CSA	156	419,183	66	61.9%	157	26.4%	142	$27,901	73
Richmond-Connersville, IN CSA	157	52,899	161	64.1%	144	22.8%	161	$25,665	128
Rocky Mount-Wilson-Roanoke Rapids, NC CSA	158	178,708	109	62.7%	151	23.8%	156	$25,338	135
McAllen-Edinburg, TX CSA	159	458,250	61	64.0%	145	20.4%	166	$18,984	164
Modesto-Merced, CA CSA	160	447,591	63	62.5%	152	22.6%	162	$25,342	134
Rome-Summerville, GA CSA	161	71,039	153	60.7%	160	23.2%	159	$25,147	141
Brownsville-Harlingen-Raymondville, TX CSA	162	231,898	100	60.9%	159	21.1%	163	$20,750	162
Martin-Union City, TN-KY CSA	162	42,595	163	61.4%	158	21.0%	164	$22,432	158
Cleveland-Indianola, MS CSA	164	37,140	165	52.1%	166	23.7%	157	$20,935	161
DeRidder-Fort Polk South, LA CSA	164	52,941	160	55.4%	164	23.2%	159	$29,217	66
Visalia-Porterville-Hanford, CA CSA	166	340,206	81	60.7%	160	20.8%	165	$22,940	154

WHY THESE VARIABLES MATTER

The relationship between an individual's level of education and earnings is well known. However, does this carry over in the aggregate? Does a community's education level impact the wages of its workers? It seems likely that this relationship would hold, and a cursory examination of the data shows that it does. Exhibit 2 plots the median wage of a CSA against the percentage of the population with an associate's degree or higher. The median income for a CSA's workers and this measure of a community's education are clearly highly correlated. While a scatter plot does not demonstrate causality, the plot does strongly suggest that increasing the education level of a community is a good strategy for increasing earnings. It is also the reason that we include this measure when ranking CSAs.

EXHIBIT 2. Percentage of Population with an Associate's Degree and Higher and Median Income for Workers by Combined Statistical Area
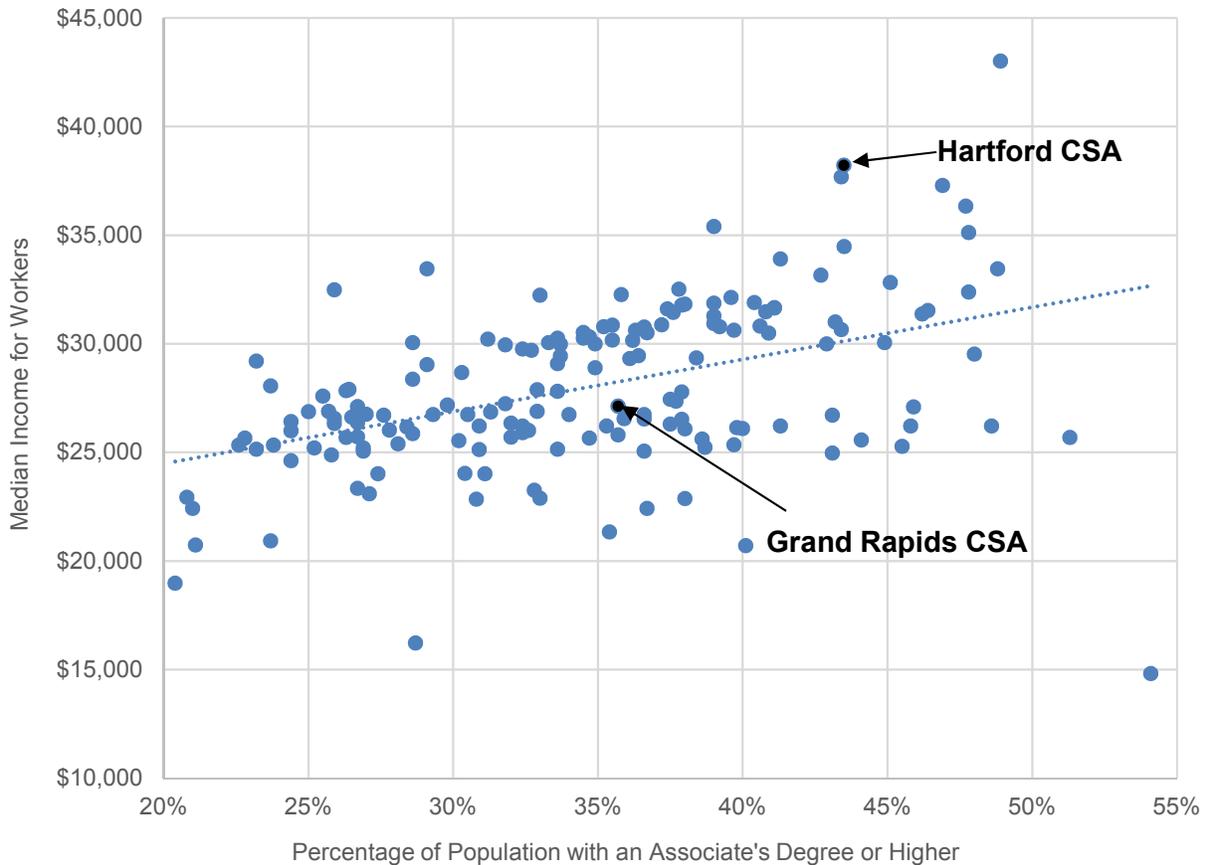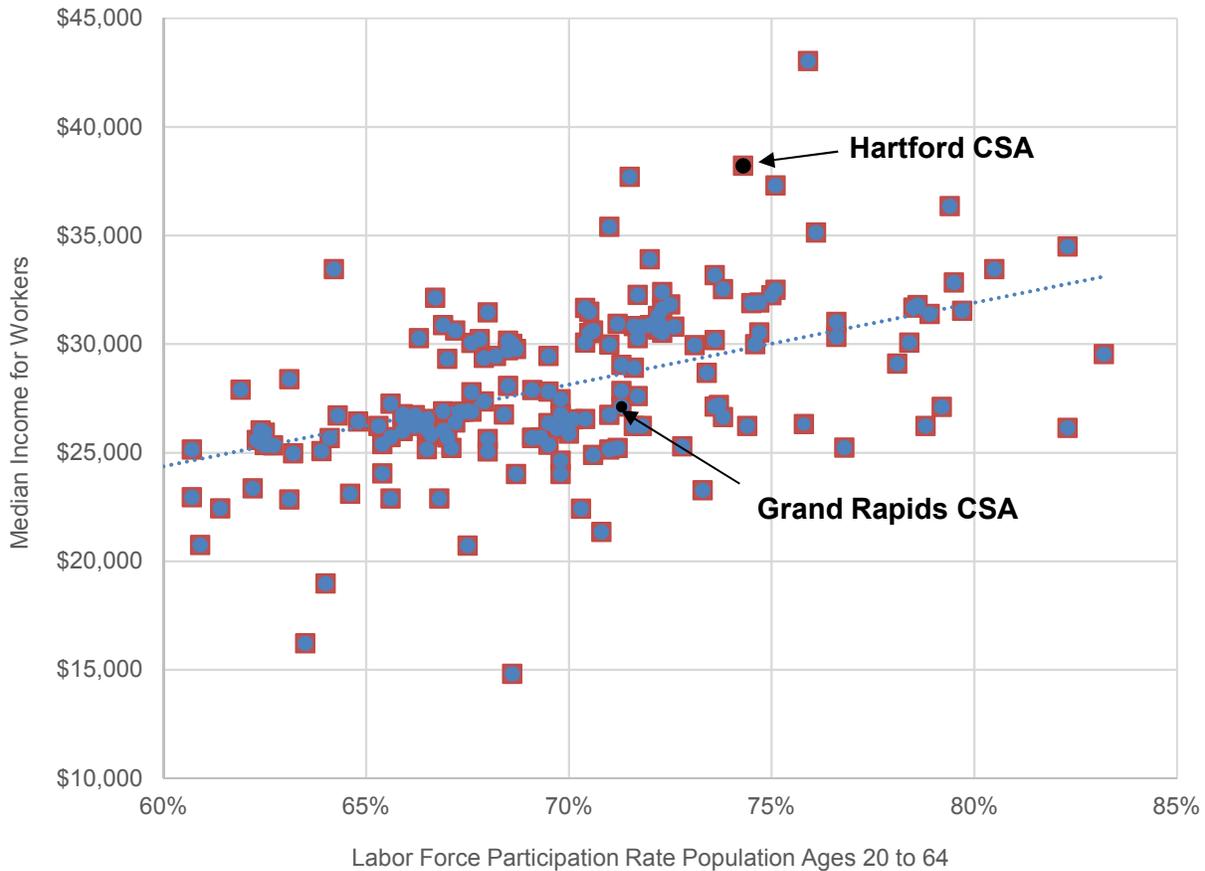

SOURCE: 2014 five-year American Community Survey data and PSC calculations.

The median wage for workers in a CSA is also correlated with the percentage of the population employed. Higher wages entice more workers into the labor force, and when a higher percentage of the population is employed, employers must pay higher wages to attract workers. Exhibit 3 shows the median wage for workers plotted against the employment rate for CSAs. In terms of increasing community prosperity, there are two benefits arising from increasing the employment rate. First, income is added to the area when workers who were previously unemployed begin earning wages. Second, as the overall employment rate

increases, the median wage also increases, suggesting that the benefit of increased employment is spread across a large set of workers, not just the newly employed.

EXHIBIT 3. Percentage of Population Ages 20 to 64 Employed and Median Income for Workers by Combined Statistical Area

SOURCE: 2014 five-year American Community Survey data and PSC calculations.

WEST MICHIGAN CAN DO BETTER: HARTFORD CSA

The diversity in CSAs can limit the benefits of comparisons. For example, the lessons Grand Rapids can learn from the New York–Newark CSA are limited. The Grand Rapids CSA has fewer than 1 million people ages 20 to 64, while the New York–Newark CSA has over 14 million. In addition, economic policies that may be applicable in one area may not be applicable to Grand Rapids due to other variations among CSAs. As an example, areas with a lot of income earned from oil and natural gas extraction might not have economic development lessons that would be useful to Grand Rapids.

Talent 2025 has identified CSAs that are good comparison regions for Grand Rapids. In particular, it has identified CSAs within 30 percent of the Talent 2025 region's population that also have manufacturing contributing more than 10 percent of the region's GDP. Comparable statistical areas under these criteria are listed in Exhibit 4.

EXHIBIT 4. Combined Statistical Areas Comparable to Grand Rapids

CSA Name	Population	Employment Percent Ages 20 to 64	Pct. Pop with Associate's Degree or Higher	Median Income
Birmingham, AL	786,635	66.3%	33.6%	$30,269
Buffalo, NY	727,094	71.6%	40.6%	$30,823
Grand Rapids, MI	826,358	71.3%	35.7%	$27,118
Greensboro, NC	955,846	69.5%	33.6%	$27,812
Greenville, SC	816,222	66.9%	32.9%	$26,896
Harrisburg, PA	732,071	75.0%	33.0%	$32,245
Hartford, CT	900,281	74.3%	43.5%	$38,208
Knoxville, TN	651,029	67.3%	31.3%	$26,873
Louisville, KY	896,775	70.4%	33.3%	$30,060
Nashville, TN	1,138,161	72.3%	36.7%	$30,520
Rochester, NY	705,097	72.2%	43.4%	$30,663
Tulsa, OK	656,939	71.0%	33.7%	$29,983

SOURCE: U.S. Census Bureau and Talent 2025 Analysis. Data are for 2014.

Based on this list and conversations with Talent 2025, we identified the Hartford–West Hartford, Connecticut, CSA (hereafter referred to as the Hartford CSA) as a good aspirational model for the West Michigan region. The Hartford CSA's population is similar to the Grand Rapids CSA's population, and although Grand Rapids relies more heavily on manufacturing, both have a significant share of their employment in this sector. Hartford has a higher share of its working-age population employed, and is more highly educated, but Hartford's employment and education percentages seem attainable for West Michigan.

To be clear, West Michigan is not trying to be Hartford. West Michigan has its own DNA. Its industry clusters, geography, people, governments, and aspirations all differ from the Hartford CSA's. However, what the Hartford CSA does provide is a realistic framework for grounding aspirational goals. West Michigan leaders are striving to make the region a top economic performer—a top 20 CSA nationally and a leader among comparable regions. The Hartford CSA is several rungs up the ladder from West Michigan in education and employment. Its performance in these measures provides realistic guideposts for what is attainable. Applying Hartford's education and employment profile to West Michigan allows the economic benefits to success in these areas to be measured.

Exhibit 5 provides additional detail on the education attainment of the Grand Rapids and Hartford CSAs. The Hartford CSA actually has a smaller percentage of its population with an associate's degree than does the Grand Rapids CSA. However, the share of the Hartford CSA with a bachelor's degree is 2.2 percentage points higher than the Grand Rapids CSA, and the share of the population with a graduate degree is 6.5 percentage points higher.

EXHIBIT 5. Education Attainment for Grand Rapids and Hartford CSAs

Education Level	Grand Rapids	Hartford	Pct. Pt. Difference
Less than H.S.	10.5%	9.9%	-0.6%
H.S. Graduate	30.9%	28.2%	-2.7%
Some College	23.0%	18.3%	-4.7%
Associate's Degree	9.0%	8.1%	-0.9%
Bachelor's Degree	17.6%	19.8%	2.2%
Graduate Degree	9.1%	15.6%	6.5%
Associate's or Higher	35.7%	43.5%	7.8%
Bachelor's or Higher	26.7%	35.4%	8.7%

SOURCE: 2014 five-year American Community Survey data and PSC calculations.

The differences in the share of the population employed in the Grand Rapids and Hartford CSAs is more complex. Hartford's employment rate is higher partly because the population is more highly educated than is the Grand Rapids population, and employment rates in general rise with education. However, the two CSAs have differences in their employment rates for the various levels of education, as well as differences based on gender and age. Detailed information about the employment rates by age, gender, and education level for the two CSAs is included later in the report. However, one differential is striking and worth noting now. The employment rate for those ages 56 to 65 is much higher for the Hartford CSA than it is for the Grand Rapids CSA. For example, the employment rate for men ages 56 to 65 is 59 percent in the Grand Rapids CSA and 71 percent for the Hartford CSA. For women, the rate is 50 percent in Grand Rapids and 62 percent in Hartford. The differentials for this age class hold across all education levels except for those with just a high school diploma, for whom the employment rate is lower in Hartford. Although workers in this age bracket are nearing the end of their careers, this differential is stark enough to demonstrate that older residents of the Grand Rapids region who are not currently participating in the labor force potentially represent a significant source of untapped talent.

EXHIBIT 6. Employment Rate for People Ages 56 to 65:
Grand Rapids and Hartford CSAs
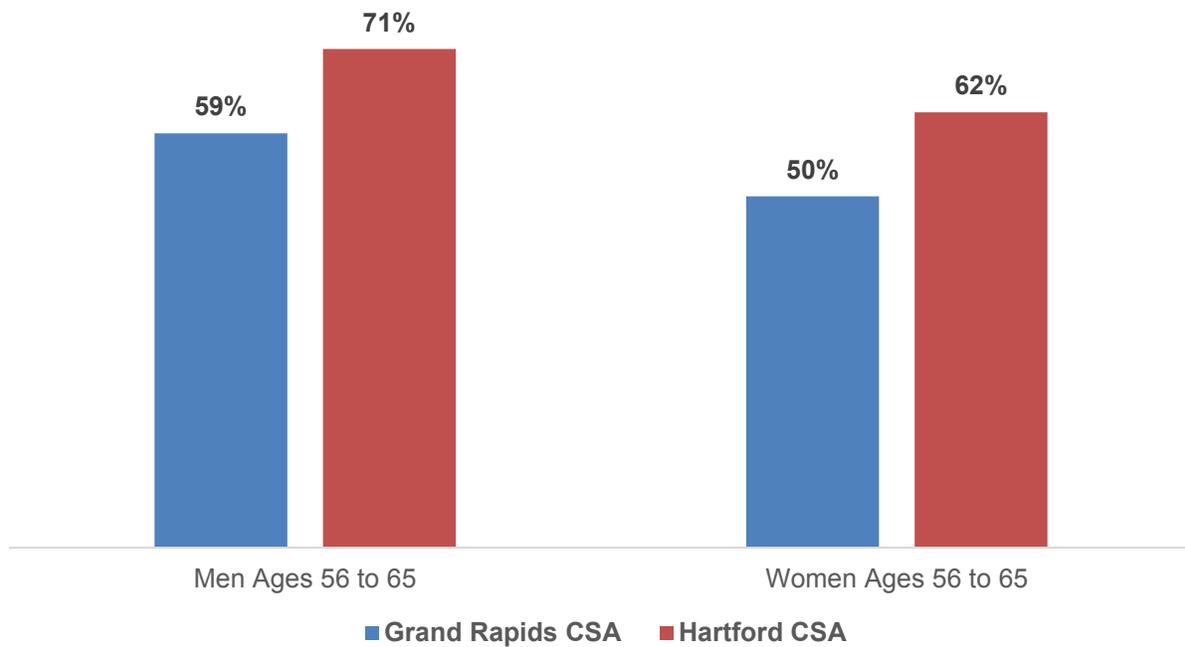
SOURCE: 2014 five-year American Community Survey data and PSC calculations.

APPROACH TO MODELING

In this section, we calculate how much additional income the Talent 2025 region would have if its employment and education rates matched those of the Hartford CSA. To increase the accuracy of the estimates, we divided each CSA into 44 population cohorts based on age, gender, and education level. We constructed these cohorts using the 5 percent (five-year) ACS sample for 2014 using raw Census data assembled by the Minnesota Population Center (Ruggles et. al. 2015).

The cohorts are divided as follows:

- Gender: male; female
- Age: 25 to 35; 36 to 45; 46 to 55; 56 to 65
- Education Level: Less than high school; high school; some college but less than a bachelor's degree; bachelor's degree; graduate degree

Therefore, an example of one of the 44 cohorts would be men ages 25 to 35 with less than a high school diploma. For each of these cohorts we calculate:

- Population count
- Percentage of the population working
- Total wages earned
- Average wage earned by workers

LIMITATIONS

There are some limitations to the data used in this analysis. First, since the data are based on the American Community Survey, the information is self-reported by survey participants. Therefore, it is possible that participants do not accurately report some of their personal information, such as their employment status or wages earned. Second, even though the 5 percent sample represents a significant portion of the population, dividing this sample into small cohorts means that there is likely significant sampling error. In general, the smaller the portions into which population is subdivided, the greater the sampling error. The ACS samples 1 percent of the population each year. The 5 percent sample represents five years of data, so the 2014 five-year ACS sample uses data from 2010 through 2014. We used the 5 percent ACS sample to allow for the largest possible sample size.

The five-year 2014 sample for Michigan has 494,466 observations, which constitutes a large number of observations. Still, once this sample is parsed down to a gender, age, and education level for the West Michigan region, the sample size is small enough that estimation error becomes a potential factor. For men aged 25 to 35 with less than a high school diploma who are located in West Michigan, the five-year ACS sample contains just 486 observations. This is a high enough number of observations that the estimates can be used effectively for our purposes, but obviously quite small when compared to the 494,466 observations in the full sample. The reader should bear in mind that all reported figures for the cohorts are estimates based on the 5 percent sample and subject to sampling error.

METHODOLOGY

After calculating the total wages earned for each cohort for West Michigan, we calculate how much the total wages would have been if West Michigan had had the same education level and employment rate as the Hartford CSA. We refer to these alternative calculations as simulations. We keep the average wage for each simulation group cohort the same as the corresponding West Michigan cohort. For example, 16.5 percent of West Michigan men ages 56 to 65 have a bachelor's degree, but no graduate degree. The employment rate of this cohort is 72 percent, and the average wage is $78,540. When we recalculate total earnings for this cohort in the simulation using Hartford's education level and employment rate, we maintain the original average wage of $78,540 for the corresponding Talent 2025 region cohort. We do not use the higher wage for the Hartford cohort of $91,607, because there are numerous factors impacting that wage, such as the overall price level in the Hartford area. By keeping the wage the same in West Michigan, we keep the analysis simple. This is a conservative approach because as we have seen, wages are likely to increase if the overall employment rate increases.

To create the full simulations, we repeat this calculation for each of the 44 Talent 2025 region cohorts. The overall population in the simulation group is the same as the Talent 2025 region. However, the population in each cohort changes due to the changes in the distribution of education attainment made as part of the simulation.

Before discussing the results of the simulations, we provide some additional detail about the two comparison regions in the sections below.

REGIONAL PROFILE: TALENT 2025

As noted earlier, the Talent 2025 region consists of 13 counties in western Michigan. Grand Rapids is the largest city in the region and the second-largest city in Michigan. West Michigan has a diverse economy. Although agribusiness, life sciences, information technology, and tourism are all important, the region is known most for manufacturing, especially furniture manufacturing.

In the discussion earlier in the paper, the Grand Rapids CSA is used as a proxy for the region. For the simulation analysis, we attempt to more accurately construct the full 13-county Talent 2025 region. The geographic coding in the raw Census data can be challenging to work with, because not all counties are coded. This means we could not simply construct the Talent 2025 region by using the 13 underlying counties. Instead, we constructed the Talent 2025 region using a combination of the county codes that were available and the public use microdata area (PUMA) codes. The 13 counties in the Talent 2025 region have a total population of 1,536,039. Using the county and PUMA codes, the region we constructed had a population of 1,365,283, which is 89 percent of the region's total.[4]

The average wage for male workers in the region is $50,257, while the average wage for female workers is $33,412. The cohort with the lowest average wage is females ages 25 to 35 without a high school diploma, with an average annual wage of $13,591; the cohort with the highest average wage is men with a graduate degree ages 46 to 55, with an average annual wage of $112,638.

The percentage of the population working is lowest for workers without a high school diploma, with just over half of men without a high school diploma working and only 41 percent of women without a high school diploma employed. The rate of employment is similar for workers with a bachelor's degree and workers with a graduate degree. Among men, 88 percent of those with a bachelor's degree and 89 percent

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[4] We used county codes 81 (Kent), 121 (Muskegon), and 139 (Muskegon), and PUMA codes 1700 (Allegan, Barry), 2100 (Ionia), and 1100 (Lake, Mason, Mecosta, Newaygo, Oceana, and Osceola).

of those with a graduate degree are employed. For women, 75 percent of those with a bachelor's degree and 81 percent of those with a graduate degree are employed.

The employment rates for those ages 56 to 65 are significantly lower than they are for younger workers. Just 59 percent of men and 50 percent of women ages 56 to 65 are employed. With few exceptions, at each education level, wages are highest for workers ages 46 to 55.

EXHIBIT 7. Talent 2025 Cohorts

Gender	Age	Education	Total Count	% of Total For Age	Working % Pop	Average Wage
Male	25 to 65	All	360,970	100%	74%	$50,257
Male	25 to 35	All	99,165	100%	79%	$38,112
Male	36 to 45	All	85,915	100%	80%	$52,212
Male	46 to 55	All	96,548	100%	77%	$58,197
Male	56 to 65	All	79,342	100%	59%	$55,153
Male	25 to 65	< H.S.	37,383	10.4%	54%	$28,150
Male	25 to 35	< H.S.	11,358	11.5%	60%	$22,548
Male	36 to 45	< H.S.	9,223	10.7%	57%	$29,511
Male	46 to 55	< H.S.	10,600	11.0%	51%	$32,053
Male	56 to 65	< H.S.	6,202	7.8%	42%	$31,924
Male	25 to 65	H.S.	112,429	31.1%	68%	$35,855
Male	25 to 35	H.S.	29,449	29.7%	70%	$29,089
Male	36 to 45	H.S.	25,539	29.7%	74%	$36,915
Male	46 to 55	H.S.	32,868	34.0%	71%	$40,664
Male	56 to 65	H.S.	24,573	31.0%	55%	$36,484
Male	25 to 65	College < BA	115,808	32.1%	76%	$43,562
Male	25 to 35	College < BA	32,193	32.5%	83%	$35,060
Male	36 to 45	College < BA	27,738	32.3%	82%	$46,051
Male	46 to 55	College < BA	29,801	30.9%	80%	$50,185
Male	56 to 65	College < BA	26,076	32.9%	56%	$44,409
Male	25 to 65	College = BA	64,365	17.8%	88%	$68,021
Male	25 to 35	College = BA	20,074	20.2%	92%	$49,625
Male	36 to 45	College = BA	15,670	18.2%	94%	$71,814
Male	46 to 55	College = BA	15,558	16.1%	92%	$81,432
Male	56 to 65	College = BA	13,063	16.5%	68%	$78,540
Male	25 to 65	Grad Degree	30,985	8.6%	89%	$91,183
Male	25 to 35	Grad Degree	6,091	6.1%	93%	$66,453
Male	36 to 45	Grad Degree	7,745	9.0%	97%	$86,705
Male	46 to 55	Grad Degree	7,721	8.0%	97%	$112,638
Male	56 to 65	Grad Degree	9,428	11.9%	73%	$93,128
Female	25 to 65	All	358,940	100%	66%	$33,412
Female	25 to 35	All	96,501	100%	71%	$28,678
Female	36 to 45	All	83,514	100%	73%	$34,435
Female	46 to 55	All	97,688	100%	70%	$36,145
Female	56 to 65	All	81,237	100%	50%	$35,193
Female	25 to 65	< H.S.	29,242	8.1%	41%	$16,546
Female	25 to 35	< H.S.	8,307	8.6%	37%	$13,591
Female	36 to 45	< H.S.	7,104	8.5%	55%	$14,107
Female	46 to 55	< H.S.	8,045	8.2%	42%	$21,325
Female	56 to 65	< H.S.	5,786	7.1%	30%	$18,067
Female	25 to 65	H.S.	96,978	27.0%	58%	$23,681
Female	25 to 35	H.S.	20,429	21.2%	60%	$18,612
Female	36 to 45	H.S.	17,649	21.1%	63%	$24,256

Female	46 to 55	H.S.	31,593	32.3%	66%	$26,104
Female	56 to 65	H.S.	27,307	33.6%	44%	$24,128
Female	25 to 65	College < BA	126,801	35.3%	70%	$29,274
Female	25 to 35	College < BA	34,185	35.4%	74%	$23,103
Female	36 to 45	College < BA	30,683	36.7%	76%	$28,234
Female	46 to 55	College < BA	33,237	34.0%	74%	$33,167
Female	56 to 65	College < BA	28,696	35.3%	54%	$34,689
Female	25 to 65	College = BA	72,089	20.1%	75%	$40,952
Female	25 to 35	College = BA	25,177	26.1%	82%	$35,289
Female	36 to 45	College = BA	18,935	22.7%	75%	$44,293
Female	46 to 55	College = BA	16,998	17.4%	78%	$44,440
Female	56 to 65	College = BA	10,979	13.5%	54%	$44,930
Female	25 to 65	Grad Degree	33,830	9.4%	81%	$59,290
Female	25 to 35	Grad Degree	8,403	8.7%	83%	$53,383
Female	36 to 45	Grad Degree	9,143	10.9%	86%	$59,661
Female	46 to 55	Grad Degree	7,815	8.0%	89%	$67,876
Female	56 to 65	Grad Degree	8,469	10.4%	66%	$55,484

SOURCE: 2014 five-year American Community Survey data and PSC calculations.

REGIONAL PROFILE: HARTFORD CONNECTICUT

Hartford is the capital of Connecticut and is located in the center of the state. It is approximately 100 miles from Boston and 121 miles from New York City. The Hartford region is particularly known for the insurance industry, but manufacturing is also important, with over 10 percent of the workforce engaged in that sector.

We constructed the Hartford region from the underlying Census data in a manner similar to what we did for the Talent 2025 region. The constructed region has a population of 857,183, representing 95 percent of the population of the CSA (900,281).

The region has the second-highest median income for workers among the CSAs at $38,208. Of course, the cost of living is higher on the East Coast, so this high median income may be somewhat deceiving with respect to purchasing power. The cost of living calculator on Bankrate.com indicates that a worker earning the median income of $27,118 in the Grand Rapids CSA would need to earn $36,510 in Hartford to have the same purchasing power (Bankrate.com 2016). Therefore, although the average worker earns more in the Hartford CSA than in the Grand Rapids CSA, this earnings differential is much smaller once differences in the cost of living are factored in.

The Hartford region is relatively well educated. At 43.5 percent, the share of the population with an associate's degree or better ranks 19th-highest among CSAs. Approximately 35 percent of men and 40 percent of women have a bachelor's degree or better, a rate approximately 10 percentage points higher than the rate for West Michigan.

Just as in West Michigan, the employment rate for those without a high school diploma is low in Hartford, with just 53 percent of working-age men and 47 percent of working-age women in this age group employed. The cohort with the lowest average wage is women ages 25 to 35 without a high school diploma, at $17,740; the highest average wage is for men ages 46 to 55 with a graduate degree, at $137,853.

The rate of employment drops for those ages 56 to 65, but not nearly as much as it does in West Michigan. Approximately 71 percent of men in this age bracket and 62 percent of women are employed. In West Michigan the rates are 59 percent and 50 percent respectively.

EXHIBIT 8. Hartford CSA Cohorts

Gender	Age	Education	Total Count	% of Total For Age	Working % Pop	Average Wage
Male	25 to 65	All	388,966	100%	80%	$69,185
Male	25 to 35	All	91,801	100%	80%	$46,435
Male	36 to 45	All	90,058	100%	85%	$75,251
Male	46 to 55	All	115,882	100%	82%	$78,231
Male	56 to 65	All	91,225	100%	71%	$74,462
Male	25 to 65	< H.S.	33,885	8.7%	53%	$33,582
Male	25 to 35	< H.S.	8,660	9.4%	51%	$26,511
Male	36 to 45	< H.S.	7,853	8.7%	60%	$33,329
Male	46 to 55	< H.S.	9,714	8.4%	52%	$37,426
Male	56 to 65	< H.S.	7,658	8.4%	50%	$37,019
Male	25 to 65	H.S.	116,350	29.9%	75%	$45,684
Male	25 to 35	H.S.	27,496	30.0%	75%	$34,468
Male	36 to 45	H.S.	25,672	28.5%	78%	$45,182
Male	46 to 55	H.S.	39,217	33.8%	78%	$51,508
Male	56 to 65	H.S.	23,965	26.3%	66%	$49,605
Male	25 to 65	College < BA	101,180	26.0%	80%	$54,179
Male	25 to 35	College < BA	25,402	27.7%	80%	$40,871
Male	36 to 45	College < BA	22,797	25.3%	86%	$56,920
Male	46 to 55	College < BA	28,295	24.4%	84%	$61,332
Male	56 to 65	College < BA	24,686	27.1%	71%	$56,812
Male	25 to 65	College = BA	81,103	20.9%	89%	$88,912
Male	25 to 35	College = BA	20,105	21.9%	91%	$56,317
Male	36 to 45	College = BA	20,472	22.7%	94%	$101,250
Male	46 to 55	College = BA	22,835	19.7%	92%	$104,383
Male	56 to 65	College = BA	17,691	19.4%	75%	$91,607
Male	25 to 65	Grad Degree	56,448	14.5%	90%	$117,995
Male	25 to 35	Grad Degree	10,138	11.0%	94%	$74,465
Male	36 to 45	Grad Degree	13,264	14.7%	97%	$126,250
Male	46 to 55	Grad Degree	15,821	13.7%	93%	$137,853
Male	56 to 65	Grad Degree	17,225	18.9%	81%	$119,109
Female	25 to 65	All	394,874	100%	73%	$47,865
Female	25 to 35	All	86,788	100%	76%	$39,373
Female	36 to 45	All	93,470	100%	76%	$49,237
Female	46 to 55	All	118,617	100%	79%	$52,607
Female	56 to 65	All	95,999	100%	62%	$48,169
Female	25 to 65	< H.S.	23,948	6.1%	47%	$23,317
Female	25 to 35	< H.S.	5,152	5.9%	43%	$17,740
Female	36 to 45	< H.S.	5,175	5.5%	52%	$21,810
Female	46 to 55	< H.S.	6,415	5.4%	54%	$22,430
Female	56 to 65	< H.S.	7,206	7.5%	39%	$30,332

Female	25 to 65	H.S.	93,198	23.6%	67%	$31,428
Female	25 to 35	H.S.	16,288	18.8%	65%	$24,481
Female	36 to 45	H.S.	19,622	21.0%	70%	$31,348
Female	46 to 55	H.S.	31,215	26.3%	74%	$33,407
Female	56 to 65	H.S.	26,073	27.2%	58%	$33,352
Female	25 to 65	College < BA	119,222	30.2%	75%	$40,013
Female	25 to 35	College < BA	25,906	29.8%	77%	$31,241
Female	36 to 45	College < BA	27,657	29.6%	78%	$41,029
Female	46 to 55	College < BA	36,789	31.0%	80%	$43,270
Female	56 to 65	College < BA	28,870	30.1%	63%	$43,123
Female	25 to 65	College = BA	89,388	22.6%	79%	$56,349
Female	25 to 35	College = BA	24,057	27.7%	83%	$47,163
Female	36 to 45	College = BA	23,170	24.8%	79%	$56,019
Female	46 to 55	College = BA	25,761	21.7%	81%	$66,601
Female	56 to 65	College = BA	16,400	17.1%	68%	$54,269
Female	25 to 65	Grad Degree	69,118	17.5%	82%	$72,577
Female	25 to 35	Grad Degree	15,385	17.7%	85%	$55,519
Female	36 to 45	Grad Degree	17,846	19.1%	83%	$74,376
Female	46 to 55	Grad Degree	18,437	15.5%	91%	$84,348
Female	56 to 65	Grad Degree	17,450	18.2%	70%	$72,518

SOURCE: 2014 five-year American Community Survey data and PSC calculations.

SIMULATION RESULTS

In our simulations, we recalculated earnings in the Talent 2025 region assuming that the region's employment rate and education profile matched the Hartford CSA's. We do the simulation three ways. First, we recalculated the Talent 2025 region's earnings assuming it had the same employment rate as the Hartford CSA; second, we recalculated the region's earnings assuming it had the same education level as Hartford; and finally, we recalculated the region's earnings assuming both the employment rate and earnings level match Hartford's.

Employment Rate Change Simulation

In the first simulation, we raised the employment rate in the Talent 2025 region to match the Hartford CSA's employment rate. This calculation was done at the cohort level. Hartford's employment rate is not higher than the Grand Rapids rate for every single cohort. For example, in the Talent 2025 region, 60 percent of men ages 25 to 35 without a high school diploma are employed, while just 51 percent of such men are employed in the Hartford CSA. In the simulation, we use Hartford's employment rate for the cohort, regardless of whether it is higher or lower.

In total, 74 percent of working-age men are employed in the Talent 2025 region and 78 percent of men in the Hartford CSA. For women, the totals are 66 percent and 72 percent respectively. The differences in the employment rates between the two regions become more pronounced as workers get older. The Hartford CSA's employment rate for men ages 25 to 35 is actually lower than the Talent 2025 region's. However, Hartford's employment rate is 11 percentage points higher for men ages 56 to 65. For women, Hartford's rate is higher for every age cohort, but the difference is particularly large for ages 46 to 55 (7 percentage points) and ages 56 to 65 (11 percentage points).

EXHIBIT 9. Employment Rate by Age–Talent 2025 Region and Hartford CSA

Age	Gender	TALENT 2025 Employment Rate	Hartford CSA Employment Rate	Pct. Pt Difference
25 to 35	Male	79%	78%	-1%
36 to 45	Male	80%	83%	+3%
46 to 55	Male	77%	81%	+4%
56 to 65	Male	59%	70%	+11%
25 to 35	Female	71%	74%	+3%
36 to 45	Female	73%	75%	+2%
46 to 55	Female	70%	77%	+7%
56 to 65	Female	50%	61%	+11%

SOURCE: PSC calculations using detailed 5 percent (five-year) ACS sample.

More people employed means more people earning income in the region. In total, if the Talent 2025 region had the same employment rates as the Hartford CSA, earnings from wages in the region would be $1.2 billion higher, an increase of 5.5 percent. In this simulation, older workers drive much of the differential. The increase in the assumed employment rate for workers ages 56 to 65 accounts for 61 percent of the wage differential.

The detail on the calculations and the simulated wages for each of the 44 cohorts is included in the Appendix.

Education Attainment Differential

In the second simulation, we changed the education distribution of the Talent 2025 region to match the Hartford CSA's distribution. The education attainment for the two regions was presented in Exhibit 5; the share of Hartford's population with a bachelor's degree or better is 8.7 percentage points higher than the Talent 2025 region's. As might be expected, earnings are higher for workers with more education. In the Talent 2025 region, the average wage for a male worker with a bachelor's degree is $68,021, compared to an average wage of $35,855 for a man with just a high school diploma. The average wage for a woman with a bachelor's degree is $40,952, compared to $23,681 for women with just a high school diploma.

The simulation based on changing education attainment showed that wages in the Talent 2025 region would be $2.6 billion higher if its education profile were the same as the Hartford CSA's, an increase of 11.9 percent. The detailed calculations by cohort are included in the Appendix.

Employment Rate and Education Attainment Simulation

In the third simulation, we simultaneously adjusted the employment rate and the education attainment rate. Again, we changed the rates of the Talent 2025 region to match the Hartford CSA's rate, and we kept the average wage for each cohort the same. Under this simulation, total wages are $3.7 billion higher, an increase of 17 percent. The detailed calculations by cohort are included in the Appendix.

The results of the three simulations are summarized in Exhibit 10. Changing only the employment rate increased overall wages earned in the region by 5.5 percent, while changing only the education level increased wages by 11.9 percent. Changing both simultaneously increased wages by 17.3 percent.

EXHIBIT 10. Simulation Results (millions of $)

Simulation	Original Talent 2025 Wages	Simulated Wages	New Wages	Percent Increase
Change in Employment Rate	$21,431	$22,611	$1,180	5.5%
Change in Education Attainment	$21,431	$23,990	$2,558	11.9%
Change in Employment and Education	$21,431	$25,135	$3,704	17.3%

SOURCE: PSC calculations.

POLICY IMPLICATIONS OF QUANTITATIVE FINDINGS

Importance of Education Attainment

The simulation findings suggest a number of important points for consideration. First, the data illustrate the importance of education attainment. When looking at earnings in the Talent 2025 region, we see that earnings increase with each step of education attainment. In West Michigan, the average wage earned by working high school graduates is 29 percent higher than the average for those without a high school diploma (see Exhibit 11). For workers with some college but not a bachelor's degree, average earnings are 19 percent higher than for high school graduates. Workers with a bachelor's degree earn 51 percent more on average than those with some college, and workers with a graduate degree earn 37 percent more on average than those with a bachelor's degree.

EXHIBIT 11. West Michigan Education and Wages, Workers Ages 25 to 65

Highest Education Attainment	Average Wage
Less than High School	$23,786
High School Graduate	$30,695
Some College	$36,378
Bachelor's Degree	$54,777
Graduate Degree	$75,268
Average for All Education Levels	$42,327

SOURCE: PSC calculations using the detailed 5 percent (five-year) ACS sample for 2014. Average wage is the average annual earnings from wages for those working during the year.

Individuals who are more highly educated earn more because these degrees represent a good proxy for employment skills. Policies that increase the education level of the region will increase the prosperity of the region. The simulation that changed education attainment to match that of the Hartford CSA resulted in an 11.9 percent increase in overall wages. The simulation held the wages in each cohort constant. The increased economic prosperity from a more talented workforce would likely also increase the wages for each cohort, so the 11.9 percent increase is likely an underestimate of the upside potential of a more highly educated workforce.

Older Workers and Women as a Source of Regional Talent

While increasing the overall education attainment of the region would increase earnings and prosperity, increasing the talent pool in that manner represents a longer-term solution. For example, investments in

early childhood programs is a proven strategy for improving education attainment. However, investments made in young children now will not increase the skills in the workforce until 15 to 20 years pass. This analysis finds that if the region is looking to address talent shortages immediately, turning both to workers ages 56 to 65 and to female workers may be a promising strategy.

The differences in the employment rates for workers ages 56 to 65 between the Talent 2025 region and the Hartford CSA are striking. Hartford's employment rate for this age group is 11 percentage points higher for both men and women, and the rate is higher for this age group at every education level. **This means that there are potential workers available in West Michigan at every skill level.** It is worth investigating why the employment rate for this age group in West Michigan is as low as it is, and whether something can be done to lure these workers back into the labor force.

Women represent the second place to turn to access talent immediately. The difference in the employment rates and average wages between men and women is striking. In West Michigan, there are more women than men in the cohorts having bachelor's degrees, but the employment rate of men is 10 percentage points higher and average earnings 58 percent higher than the rates for women. The lower earnings of women are a national phenomenon. A number of reasons for this difference in earnings have been identified:

- Women often self-select into lower-paying occupations.
- Women often bear most of the responsibility for child rearing. As a result, women are more likely to choose part-time work, choose work with more flexible hours, exit the labor force for significant periods of time, and work closer to home, all of which can have a negative impact on earnings.
- Employers may discriminate against women and offer them less money for the same work done by men.

Some women may prefer to work part-time or take extended absences from work so that they can spend more time with their children, even if it negatively impacts their earnings. However, such choices may often be involuntary. Some women work part-time because they cannot access high-quality child care (or any child care) or face other hurdles in their effort to join the labor force while raising their children. Helping women to meet these challenges could significantly increase the talent available to employers in West Michigan. This topic is addressed further in the discussion of barriers to employment in the next section of the report.

New Tax Revenue

Increasing education levels and addressing barriers to labor force participation often require the investment of public and private dollars. But, as we have seen, there would be a significant return on this investment. West Michigan has roughly 1.5 million people. The estimated new income arising from increasing the employment rates and education rates to match Hartford's totals approximately $1,700 per capita. This additional income would produce significant new tax revenues.

Exhibit 12 shows Michigan state and local taxes as a percentage of personal income for fiscal year 2013. In 2013, total tax payments to the state were equivalent to 6.4 percent of state personal income, and tax payments to local governments totaled 3.1 percent of personal income. While these represent average rates, not the marginal rates on new income, they do serve as a good proxy for the type of tax revenue likely to be generated through increased earnings. The $2.7 billion in new income estimated in the simulation would translate to an estimated $170 million in new state tax revenues and $84 million in additional local tax payments.

EXHIBIT 12. FY 2013 Michigan State and Local Tax Rates as a
Percentage of Personal Income

Tax	State	Local	Total
Property	0.5%	2.9%	3.4%
Sales	2.2%	0.0%	2.2%
Income	2.1%	0.1%	2.2%
Other	1.7%	0.1%	1.8%
Total	**6.4%**	**3.1%**	**9.6%**

SOURCE: Urban Institute (2016) and PSC Calculations. Columns may not total due to rounding.

Asset Limited, Income Constrained

The Michigan Association of United Ways (MAUW 2014) has estimated that up to 40 percent of Michigan households struggle to afford the basic necessities of housing, child care, food, healthcare, and transportation. In particular, they found that many of these households were headed by workers, but these workers did not earn enough to provide for basic needs. MAUW refers to this cohort as ALICE (Asset Limited, Income Constrained, Employed). MAUW defines a household survival budget (Exhibit 13), which includes the cost of basic housing, child care, food, transportation, and healthcare, and a household stability budget, which also ensures a level of stability and savings at a modest level.

EXHIBIT 13. Household Survival Budget, Kent County

	Single Adult	Family (Infant and Pre-K)
Housing	$578	$744
Child Care	-	$1,214
Food	$196	$592
Transportation	$341	$581
Healthcare	$130	$518
Miscellaneous	$138	$412
Taxes	$137	$372
Monthly total	$1,519	$4,534
Annual total	$18,226	$54,404
Hourly wage	$9.11	$27.20

SOURCE: MAUW 2014.

MAUW estimates that in Kent County, an hourly wage of $9.11 for a single individual and $27.20 for a family of four is needed to cover the basic survival budget. The association further estimates that 15 percent of households in Kent County are below the poverty line, and an additional 24 percent do not meet the ALICE household survival budget. As we can see from the Talent 2025 cohort data, even a family with two breadwinners would struggle to meet the ALICE threshold if neither of the earners had a high school diploma. The average wage of men without a high school diploma ages 25 to 35 is $26,511; for women in this age and education bracket it is $17,740. Combining these incomes would leave a household with $44,251, well below the ALICE threshold. Even for high school graduates, meeting this ALICE threshold could prove difficult, and the same is true for households headed by a single earner.

There is a risk in doing this assessment using average earnings figures. There is likely a considerable range in earnings within each cohort. For example, there is a wide range of skills for those with just a high school diploma. High school graduates who complete construction apprenticeship programs likely earn well above the average wage of their cohort. Part of the challenge in getting households to the ALICE threshold and beyond is not just increasing the number of high school graduates or graduates with an associate's degree, but also making sure that these graduates have skills valued by employers. Middle skills, which are required in roughly half of employment, are defined as skills requiring more than a high school diploma but less than a bachelor's degree (Holzer and Lerman 2007). Employers struggling to fill jobs often have difficulty finding workers with those necessary middle skills. Policies that address this skills mismatch may be a promising way to spur economic development and move more families in West Michigan above the ALICE household survival and stability budget thresholds.

Reliance on Social Welfare Programs

Increasing the employment rate and education level in West Michigan would also help to reduce reliance on social welfare programs. Exhibit 14 shows the numbers of recipients of major social welfare programs in the Talent 2025 region for February of 2016. These programs include:

- *Family Independence Program (FIP)*—Michigan's primary program providing temporary cash assistance to low-income families with children. This program is supported in part by federal Temporary Assistance for Needy Families (TANF) dollars.
- *Food Assistance Program (FAP)*—Michigan's version of the federal Supplemental Nutrition Assistance Program, known colloquially as food stamps.
- *State Disability Assistance*—Cash assistance to eligible disabled adults.
- *Child and Development Care Program*—Michigan's implementation of the federal Child Care Development Fund program. This program provides child care subsidies on behalf of eligible children.
- *Medicaid Eligible*—Medicaid provides coverage for some low-income families, particularly children, pregnant women, and low-income elderly individuals residing in nursing homes.
- *Healthy Michigan Program*—The expanded Medicaid population made eligible through the enactment of the Affordable Care Act.

In February 2016 there were 370,608 recipients of these programs in the Talent 2025 region, meaning that roughly one in four residents received benefits from at least one of these programs in that month. Because individuals cycle in and out of these programs, the total number of those who participate in one of these programs at some point during a given year is likely even higher.

Excluding Medicaid, spending for these programs totaled $25 million for February 2016. (Medicaid spending was unavailable.) Increasing worker earnings in West Michigan could significantly reduce the need to fund these programs. However, much of the funding for these programs comes from the federal government, reducing the amount that could be redirected back to the community if reliance on these programs were reduced. For example, the FAP is entirely funded by the federal government. In addition, two-thirds of Medicaid funding and three-quarters of the Child and Development Care Program funding is from the federal government.

Although reduced reliance on these programs would not free up significant new revenues that could be redirected in the region, it is still a desirable outcome. Recipients of these programs represent individuals and families that do not earn enough income from working to adequately meet their basic needs, including food and healthcare. Increasing the skills, employment, and earnings of the Talent 2025 region's workforce would be a positive outcome representing increased prosperity for families in the region.

EXHIBIT 14. Total Eligible Recipients by Social Welfare Program, February 2016

County	Family Independence Program	Food Assistance Program	State Disability Assistance	Child and Development Care	Medicaid Eligible	Healthy Michigan Program	Unduplicated Recipient Count
Allegan	339	11,219	35	341	17,540	4,885	23,963
Barry	113	5,497	20	129	7,935	2,620	11,366
Ionia	106	7,623	18	126	10,283	3,161	14,467
Kent	3,185	79,399	347	2,660	108,619	33,733	152,610
Lake	96	2,728	18	71	3,053	1,025	4,353
Mason	134	4,352	14	185	5,642	2,026	8,214
Mecosta	166	5,923	23	166	7,181	2,872	10,808
Montcalm	139	9,318	24	178	12,297	4,083	17,624
Muskegon	1,498	35,230	89	1,500	40,478	12,964	57,625
Newaygo	222	8,694	38	209	10,743	3,373	15,156
Oceana	126	4,340	13	78	6,305	1,896	8,762
Osceola	120	3,722	21	125	5,148	1,492	7,084
Ottawa	321	15,418	41	600	28,187	8,045	38,576
Talent 2025 Total Recipients	6,565	193,463	701	6,368	263,411	82,175	370,608
Total Spending (Feb. 2016)	$972,266	$22,089,342	$174,846	$1,258,108	N/A	N/A	N/A
Spending Per Recipient	$148	$114	$249	$198	N/A	N/A	N/A

SOURCE: Michigan Department of Health and Human Services, 2016.

OVERVIEW

This report has outlined the potential upside of increasing employment rates and the overall education level in the Talent 2025 region. In this section of the report we discuss some barriers that, if addressed, would help move the region closer to matching the performance of the Hartford CSA. We also discuss potential policies to address these barriers. Becoming a top region is not a small undertaking. Increasing the employment rate of the population and raising the education level and overall skill level of the workforce is a significant challenge. Improving the region's overall education profile will take years, if not decades. For example, even if the region is successful in increasing the share of current high school students who go on to earn a four-year degree, it would take a long time before such a strategy resulted in enough college graduates to really move the needle on the overall share of the population with a degree. Policymakers should really think about this challenge as two separate problems. First, what can be done right now to help employers fill jobs with employees who have the right skills, and to help people in the community develop the skills needed to increase their earning potential? Second, what are the longer-term strategies that the region should be employing so that it will have the skills and talent profile needed to be competitive in the future?

The barriers to regional success discussed in this section are:

- Skills gap
- Child care
- Transportation
- Employability
- Returning Older Workers to the Labor Force

SKILLS GAP

Increasing the employment rate in West Michigan will in part require addressing the gap between the skills that employers desire and the skills that employees bring to the workforce. A survey of employers conducted for Talent 2025 by the W.E. Upjohn Institute for Employment Research (Erickcek et al. 2013) highlighted employer concerns in this area, with almost 70 percent of employers listing the availability of talent as a challenging or very challenging issue that they face. The talent issue may become more acute, since Upjohn also noted that if the region is going to remain competitive, the share of working-age adults with a postsecondary degree will need to rise from 33 percent to 43 percent by 2025.

Addressing the mismatch between employer needs and worker skills is a complex problem that defies an easy solution. Improving the skills of students as they exit the K–12 system has been an ongoing policy challenge. Postsecondary training is also challenging, although there are some promising models. Given the breadth of this problem and its potential solutions, only a cursory treatment is provided here.

Early Childhood Investment

Extensive research has documented the period from birth to age three as being critical to child development. Increased investment in early childhood programs can provide lifelong benefits to children and increase their future education attainment, employability, and earnings. Investing in young children is a long-term strategy with dividends accruing well into the future. An exception is investment in high-quality child care, which provides long-term benefits to children but may also provide an immediate talent benefit by allowing parents easier access to the labor market. For these reasons, child care is given its own discussion in this

report. In addition to child care, other areas identified as good places for investment in young children include home visiting programs, medical homes, and preschool for three-year-olds (Public Sector Consultants 2014).

K–12

The quality of Michigan's K–12 system is a cause for major concern with respect to the talent that will be available to West Michigan in the future. A recent report from the Education Trust–Midwest (2016) highlighted the reasons for concern. Michigan, which ranked 28th in fourth-grade reading in 2003, now ranks 41st among the states. Other measures in the report are equally discouraging. An overall strategy to improve the K–12 system is beyond the scope of this report. However, improvement in this system is vital if the region is going to have the talent it needs to compete in the future.

Provide Postsecondary Training in High School

Improving the postsecondary skills that students learn in high school can be an effective way to address the middle-skills shortages discussed in the New Tax Revenue section of this report. Career and technical training can provide students with skills that make them more employable upon graduation. In addition, middle college and dual enrollment opportunities, which allow students to take community college classes while still in high school, can be an effective strategy for addressing the shortage of workers with middle skills. Students who participate in dual enrollment or early college opportunities can often earn an associate's degree just one year after graduating from high school.

Better Align Education and Training with Industry Needs

Education and workforce systems should collaborate to align training and education—including K–12, career and technical education, and college and adult education—with industry talent needs. This includes aligning investments and creating common career pathways. The State of Washington's establishment of Centers for Excellence provides a good model for these practices and processes. Each center in Washington focuses on a targeted industry that is central to the state's economy. Colleges or universities in the center work with industry representatives and economic development agencies to design training programs specifically aimed at the target industry. The centers not only generate talent pools for key industries but can be used by economic development agencies to recruit firms in key industries to the state. West Michigan could consider establishing similar centers of excellence in the region.

Establish Skilled Trades Training Programs

Michigan's Workforce Development Agency (WDA) administers Michigan's Skilled Trades Training Fund (STTF). The STTF provides competitive awards aimed at helping employers provide training that enhances talent, increases employee retention, and raises the quality and competitiveness of businesses. The funds are very flexible and can be used to fill any documented skills mismatch. The training must be short in duration, lasting three months or less, and cost no more than $1,500 per trainee. The flexibility of this program makes it a valuable tool to meet talent shortages. However, such a program requires careful management to ensure that the funds support new training that would not have occurred in the absence of the program, as opposed to simply paying for employer training that would have occurred anyway. This program will be supported by a state appropriation of $30.9 million in FY 2017. The Talent 2025 region could consider providing funds similar to the STTF on a regional basis, perhaps in conjunction with Michigan Works! agencies. Talent 2025 could convene a workgroup consisting of employers and Michigan Works! to identify the potential unmet need in West Michigan.

Apprenticeship Programs

Apprenticeship programs, particularly in the construction trades, tool and die, and machining, have proved to be a valuable way to increase the level of middle skills in the workforce. Apprenticeship programs consist of a combination of on-the-job training and classroom instruction. Workers earn a full-time wage while they are participating in the programs. Registered apprenticeships generally last four years, but can run from one to six years. Graduates receive a nationally recognized credential. Apprenticeship programs tend to compare very favorably with community colleges: the completion rate of these programs tends to be higher than the community college graduation rate, earnings for graduates are similar, and apprenticeship programs are privately funded.

CHILD CARE

Almost 57 percent of all children under four years of age in Michigan are being raised in households in which all parents in the home are working, according to U.S. Census data. Despite parental employment, 21 percent of these children live in families with incomes below the federal poverty level, and 41 percent are below 185 percent of the poverty line, the level needed to qualify for reduced price school lunches (Public Sector Consultants 2014).

Accessing high-quality child care is a significant challenge for these families. High-quality center-based care can easily cost $9,000 to $10,000 per year, an amount that is out of reach for many families. Many families instead turn to friends and family to provide care. Friends and family care can be very high quality but often is not, and it too can represent a significant financial challenge for families.

Child care is an important issue with respect to having a talented workforce. First, evidence suggests positive long-run outcomes for children in high-quality child care. The evidence for lower-quality care is ambiguous, but some studies suggest a correlation with negative outcomes, especially in social development (Public Sector Consultants 2014).

Child care is also important to the parents' ability to access the labor force. Without access to child care, parents cannot work. A disruption in existing child care can cause a parent to miss work, and those absences can have negative employment consequences. Nearly one-quarter of adults in the workforce report that they have lost a job or have been threatened with job loss for absence due to illness or having to care for a sick child or relative (Council of Economic Advisers 2014). This issue is most acute for low-wage workers, who are least likely to have workplace flexibility and can least afford to take unpaid leave. Low-wage workers often have unpredictable schedules, which can make scheduling child care a challenge.

Michigan subsidizes child care for low-income families through the Child Development and Care program (CDC), Michigan's implementation of the federal Child Care and Development Fund program. Michigan's support of child care is relatively low compared to other states. In 2013, Michigan's per-child spending ranked 11th lowest at $336, compared to a national average of $679. Michigan's eligibility limits are among the strictest in the nation. A 2015 report published by the National Women's Law Center (NWLC) shows that Michigan's income limit for initial eligibility for child care subsidy support is the lowest in the nation in dollar terms and exceeds the threshold of only one other state (Maryland) as a percentage of state median income (Schulman and Blank 2015). Finally, Michigan's support for the program has dropped dramatically in recent years. Spending on the program dropped from $416 million in 2007 to $135 million in 2013, and the average number of children served fell from 106,062 to 43,246.

Addressing the child care issue is not easy. High-quality care is expensive, and subsidizing care for low-wage earners raises questions regarding how much public support per hour should be provided to keep a parent in a low-wage job. At the same time, child care challenges can keep families in poverty. Many low-wage workers are marginally attached to the workforce. A disruption in child care or the loss of

transportation can quickly cost these workers their jobs and lead to a cascading set of problems including homelessness.

PSC recently completed research with Michigan's Office of Great Start exploring ways to improve access to high-quality care. The work identified five areas of focus to increase care access.

1. **Increase financial assistance to families**. Recommendations in this area include raising the subsidy reimbursement rate, helping families to access the subsidy more quickly, and improving the application process.

2. **Increase access to quality providers**. Recommendations in this area include reassessing how providers are reimbursed, contracting directly with quality providers, and exploring community-based eligibility.

3. **Make it easier for providers to improve their programs**. Recommendations include creating a provider advisory team, exploring ways to support unlicensed care providers, and providing funding to support quality improvements.

4. **Increase access to quality information**. Recommendations include supporting a hotline to answer questions from parents, providers, and caseworkers; expanding training for caseworkers; and improving the Great Start to Quality website.

5. **Support the early childhood workforce**. Recommendations include assessing professional development opportunities for providers and exploring ways to improve wages and benefits.

Labor force participation rates for women are significantly lower than for men in West Michigan across all income levels. It seems reasonable to assume that much of this differential is due to women providing more parental care than men. Some of the lower participation rates may simply be due to women choosing to be home with their children rather than work outside of the home. However, it seems reasonable to assume that difficulties in accessing high-quality care at an affordable price (or at any price) is also suppressing women's labor force participation rate.

West Michigan's unemployment rate is low enough that finding employees is likely a significant challenge across the skills spectrum. Finding innovative ways to address child care issues could help women increase their labor force participation, thereby increasing the pool of skilled workers significantly.

TRANSPORTATION

A 2015 survey of 400 Michigan Works! job seekers in Region 9 found that nearly half (48 percent) say transportation is a major factor in finding and keeping a job. Those with access to a vehicle are more likely to be employed, even when controlling for factors such as age, race, and education (Washtenaw County Office of Community and Economic Development 2015). Employers report that transportation is a major barrier to retaining former welfare recipients or to even hiring them in the first place (Waller 2005).

Much like unreliable child care, unreliable transportation can lead workers to miss work and lose their jobs. Enhanced public transit is one potential way to address this issue. However, the effect of access to public transit on the likelihood of employment for welfare recipients is mixed at best, with one study finding that in six metropolitan areas, better access to public transit had no effect on employment outcomes for welfare recipients who do not have a car. Comparatively, people with access to a car are more likely to work, and car ownership is positively associated with high earnings and more work hours (Waller 2005). This suggests that while providing an effective mass transit system could be an effective strategy to abating poverty and increasing labor force participation, a strategy that helps low-income residents obtain reliable cars could be even more effective.

EMPLOYABILITY

There are two other issues that may be keeping many potential workers from accessing the labor force: having been involved in the criminal justice system and/or the inability to pass a drug test. Many employers ask potential employees to disclose felony or misdemeanor convictions on employment applications. Although data on the share of the population with a criminal record is limited, anecdotal evidence suggests the share is substantial. One study (Schmitt and Warner 2010) suggests that one in 33 working-age adults is an ex-prisoner and one in 15 working-age adults is an ex-felon. Among men, one in 17 working-age adults is an ex-prisoner and one in 15 is an ex-felon. The shares for some subgroups are much higher. The Sentencing Project (2013) estimates that black men are six times more likely to be incarcerated than white men are, and Hispanic men two and a half times more likely.

Anecdotal reports indicate that many employers struggle to find employees who can pass a drug test. Data on this front are also scarce, since applicants who would have difficulty passing a drug test are unlikely to apply for jobs that require it. Statistics from a company reporting its results on employer-testing data indicated that 4.7 percent of workers tested positive for illicit drugs in 2013 (Calmes 2016).

Criminal records and the inability to pass a drug test are likely more of an issue for workers trying to access low- to middle-skill jobs. Having been involved in the criminal justice system and drug issues are a significant challenge for people trying to escape poverty and for employers trying to fill low-skill jobs. Individuals who have a history with the criminal justice system and people with current or past drug problems are not likely to represent the first choice for employers seeking to fill positions. However, given the low unemployment rate in West Michigan, helping these populations successfully transition into the workforce could help ease the talent shortage. This population often has many who are ready, willing, able, and motivated to perform, and helping them to successfully access the labor force can be an important strategy in addressing poverty.

RETURNING OLDER WORKERS TO THE LABOR FORCE

The low rate of labor force participation among older workers in West Michigan merits further study. These workers may represent a source of talent that West Michigan employers could tap into immediately. Developing strategies aimed at older workers, such as increasing the amount of part-time work, or helping individuals access care for ailing spouses, could help these older workers reenter the workforce.

ISSUES OF RACE

Policymakers need to be sensitive to racial issues when working to increase the talent and prosperity level of West Michigan. People of color in West Michigan have lower education levels and lower employment rates than white residents. In addition, poverty rates are much higher for minority groups, even after adjusting for education levels.

West Michigan is less diverse than Michigan as a whole. In West Michigan, 86.0 percent of the population is white, 6.9 percent is black, and 7.1 percent of the population falls into some other category.[5] For Michigan, 79.9 percent of the population is white, 14.2 percent is black, and 5.9 percent of the population falls into a different category.

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[5] The "other" category for the census includes American Indian or Alaska Native, Chinese, Japanese, Other Pacific Islander, other race not elsewhere classified, two major races, and three or more major races. In West Michigan, the largest group in "other" is two or more races with 2.7 percent of the region's population and 37 percent of the "other" category.

Education attainment for black West Michigan residents is significantly lower than for white residents (see Exhibit 14). The share of working-age black residents with less than a high school diploma is more than double the rate of white working-age residents, and the rate of college attainment is less than half. Twenty-nine percent of white residents have a bachelor's degree or better, while just 13 percent of black residents do.

EXHIBIT 14. West Michigan Education Attainment by Race—Percentage of Population Ages 25 to 65 at Each Education Level

Education Level	All	White	Black	Other
Less than H.S.	9%	7%	19%	23%
High School	29%	29%	31%	25%
Some College	34%	34%	37%	23%
Bachelor's Degree	19%	20%	8%	21%
Graduate Degree	9%	9%	5%	8%
Total	100%	100%	100%	100%

SOURCE: PSC calculations. Columns may not total due to rounding.

Employment rates for white and black West Michigan residents are similar for college graduates. However, the story is dramatically different for those with less education (see Exhibit 15). White West Michigan residents with a bachelor's degree have an 81 percent employment rate, compared to 79 percent for black residents, while the employment rate for both black and white residents with a graduate degree is the same at 85 percent. Among those without a high school diploma, 47 percent of whites are employed compared to just 35 percent of black residents. Among those with only a high school diploma, 65 percent of whites are employed compared to just 44 percent of blacks, a difference of more than 20 percentage points. This large difference in employment rates is worthy of further investigation. Interestingly, the employment rate among those in the "other" classification is significantly higher than both black and white residents without a high school diploma, while the rate among high school graduates is virtually the same for both white and black residents.

EXHIBIT 15. West Michigan Percentage of Population Employed by Education Level for Ages 25 to 65

Education Level	All	White	Black	Other
Less than H.S.	48%	47%	35%	64%
High School	63%	65%	44%	64%
Some College	73%	74%	59%	72%
Bachelor's Degree	81%	81%	79%	78%
Graduate Degree	85%	85%	85%	84%
Total for Population	70%	72%	53%	70%

SOURCE: PSC calculations using detailed 5 percent (five-year) ACS sample.

These differences between black and white residents in education levels and employment rates are a major contributor to the differences in the poverty rates among the two groups. A staggering 41 percent of black residents between the ages of 25 and 65 lives in a household with income below the poverty line, compared to just 11 percent of white residents (see Exhibit 16). However, there is more going on beneath these

numbers than education levels and employment rates. The employment rates for black and white West Michigan residents with a college degree is virtually identical. Yet at 11 percent, the poverty rate for blacks with a bachelor's degree is almost triple the rate for whites with a bachelor's degree (4 percent). For those with a graduate degree, the poverty rate among blacks (8 percent) is double the rate among whites (4 percent).

EXHIBIT 16. Percentage of Population Living in a Household with Income Below the Poverty Line by Education Level for Ages 25 to 65

Education Level	All	White	Black	Other
Less than H.S.	38%	35%	65%	26%
High School	18%	15%	47%	28%
Some College	12%	10%	33%	18%
Bachelor's Degree	4%	4%	11%	11%
Graduate Degree	4%	4%	8%	5%
Total for Population	**14%**	**11%**	**41%**	**20%**

SOURCE: PSC calculations using detailed 5 percent (five-year) ACS sample.

A deep dive into the causes of the differences between the outcomes of black and white West Michigan residents is beyond the scope of this paper. However, it is important that policymakers and business leaders in West Michigan be aware that there is a problem and that the problem is multidimensional. The issue includes lower education rates for black residents in West Michigan. Black residents at the lower end of the education spectrum have significantly lower employment rates. Finally, the much higher poverty rate among college-educated black residents suggests an issue that goes even deeper.

SUCCESSFUL STRATEGIES

Addressing the challenges outlined in this section will not be easy. Government agencies and nonprofits are continually working to develop new strategies to help people transition out of poverty. However, with the right programs in place, progress can be made. West Michigan's Cascade Engineering has a nationally recognized welfare to career (W2C) program. W2C has had to address many of the issues identified in this section. Clients often lack reliable transportation and child care or have struggled with substance abuse. W2C works to address these problems. Government case workers are housed on-site. A local nonprofit helps with transportation issues, and a regional agency helps find child care (Bradley 2003). Three important lessons can be drawn from Cascade's experience. First, the best ways to successfully transition people from welfare to work are not always obvious, but progress can be made with the right programs in place. Second, successful programs are going to need the leadership and commitment of the business community and significant support from nonprofit agencies and the government. Third, patience and the willingness to stick with the challenge are important. Cascade did not have immediate success. Its first effort in 1991 resulted in all ten welfare recipients either quitting or being fired. However, the company learned from its mistakes, made changes, and now has a model program in place.

West Michigan is becoming a leader in these types of strategies. The Source in Grand Rapids is a nonprofit employee support organization designed to help keep employees in their jobs and to provide enhanced training. This employer-led nonprofit works with other nonprofits and with government agencies to help employees improve their economic status and overall quality of life, while at the same time helping employers to see bottom-line results (The Source 2016).

Conclusion

The Talent 2025 region is economically vibrant and has a high quality of life. When compared to areas around the country, the region is above average on a number of key metrics. However, with respect to employment rates and education levels, the region—while above average—is not a top performer. This report shows that moving the region from where it is now to a level comparable with the country's top performers would result in a significant increase in the income of workers and the region's overall level of prosperity.

The region's low unemployment rate suggests that many employers are already struggling to fill vacancies. At the same time, there is the feeling that many workers are struggling to find employment, or are employed in low-wage jobs because they do not have the skills needed to work in higher-paying occupations. This report discusses strategies to help overcome these employment barriers. Overcoming the barriers can help West Michigan become a top region for employment rate and level of education, both in the short run and long run. West Michigan is strong. Addressing these challenges will make the region stronger and will ensure continued prosperity for the next generation.

In the short run, West Michigan could access additional talent by addressing barriers to participation affecting the current working-age population. West Michigan's labor force participation rate for workers ages 56 to 65 is 11 percentage points lower than the Hartford CSA's participation rate for this group. These older workers represent a talent pool that could be tapped immediately if strategies to bring them into the workforce can be identified.

Some policies that can help employers gain access to new workers can also help alleviate poverty. A lack of reliable child care and transportation is a significant challenge for many low-income workers. Policies that help ensure reliable child care and transportation help improve the reliability of the workforce for employers, and help to keep families out of poverty. Alongside these advantages, programs that help individuals who have a history with the criminal justice system or substance abuse issues to access the labor force can have similar benefits.

Over the longer term, improvements in the state's P–20 system are needed for success. A strong research base shows that early childhood investments pay long-run dividends, and strengthening the K–12 system is important if West Michigan and the state are going to remain competitive. Finally, providing post-secondary training to students while they are still in high school can result in significant returns.

Moving people from poverty to workforce success is challenging but West Michigan does have promising efforts underway. Cascade Engineering's W2C program is a nationally recognized welfare to career program, and The SOURCE in Grand Rapids, a nonprofit employee support organization, is a promising model for employers as well.

This report shows the power of addressing these challenges. Increasing the region's employment rate to the rate of the Hartford CSA, is estimated to increase wages in the region by 5.5 percent. Increasing the education level to match Hartford's would increase wages by an estimated 11.9 percent, while increasing both education and employment would raise wages by 17.3 percent, or approximately $3.7 billion. This new income would translate into an estimated $170 million in new state tax revenues and $84 million in additional local tax payments.

Success on the talent front can beget success. As talent in the region increases, workers become more employable and labor force participation increases. As more workers become employed, income for the region increases, the need for social welfare programs decreases, and more tax revenue is generated and available to use in addressing remaining employment barriers.

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Appendix

This appendix contains the estimates by cohort for each of the three simulations.

EXHIBIT A1. Simulation 1: Change in Employment Rate

Gender	Age	Education	Talent 2025 Total Population	Talent 2025 Working % Pop	Hartford Working % Pop	Pct. Pt. Increase in Working Pop	Additional Workers	Average Wage	Net New Wages
Male	25 to 65	All	360,970	74%	78%	N/A	14,412	N/A	$613,598,694
Male	25 to 35	All	99,165	79%	78%	N/A	(664)	N/A	-$20,578,619
Male	36 to 45	All	85,915	80%	83%	N/A	2,457	N/A	$99,965,006
Male	46 to 55	All	96,548	77%	81%	N/A	3,626	N/A	$139,657,907
Male	56 to 65	All	79,342	59%	70%	N/A	8,993	N/A	$438,602,645
Female	25 to 65	All	358,940	66%	72%	N/A	20,190	N/A	$566,250,698
Female	25 to 35	All	96,501	71%	74%	N/A	3,122	N/A	$70,834,982
Female	36 to 45	All	83,514	73%	75%	N/A	1,906	N/A	$54,985,548
Female	46 to 55	All	97,688	70%	77%	N/A	6,386	N/A	$191,319,522
Female	56 to 65	All	81,237	50%	61%	N/A	8,776	N/A	$279,819,493
Male	25 to 65	< H.S.	37,383	54%	54%	0%	(6)	$28,150	-$182,717
Male	25 to 35	< H.S.	11,358	60%	51%	-8%	(943)	$22,548	-$21,255,903
Male	36 to 45	< H.S.	9,223	57%	60%	3%	282	$29,511	$8,329,697
Male	46 to 55	< H.S.	10,600	51%	52%	2%	182	$32,053	$5,829,943
Male	56 to 65	< H.S.	6,202	42%	50%	8%	472	$31,924	$15,069,583
Female	25 to 65	< H.S.	29,242	41%	47%	6%	1,782	$16,546	$29,479,833
Female	25 to 35	< H.S.	8,307	37%	43%	6%	494	$13,591	$6,711,563
Female	36 to 45	< H.S.	7,104	55%	52%	-3%	(202)	$14,107	-$2,852,236
Female	46 to 55	< H.S.	8,045	42%	54%	13%	1,008	$21,325	$21,505,203
Female	56 to 65	< H.S.	5,786	30%	39%	8%	482	$18,067	$8,700,717
Male	25 to 65	H.S.	112,429	68%	75%	7%	7,485	$35,855	$268,378,318
Male	25 to 35	H.S.	29,449	70%	75%	4%	1,287	$29,089	$37,447,981
Male	36 to 45	H.S.	25,539	74%	78%	4%	1,004	$36,915	$37,058,594
Male	46 to 55	H.S.	32,868	71%	78%	7%	2,382	$40,664	$96,863,257
Male	56 to 65	H.S.	24,573	55%	66%	11%	2,812	$36,484	$102,585,473
Female	25 to 65	H.S.	96,978	58%	67%	9%	8,762	$23,681	$207,484,274

Gender	Age	Education	Talent 2025 Total Population	Talent 2025 Working % Pop	Hartford Working % Pop	Pct. Pt. Increase in Working Pop	Additional Workers	Average Wage	Net New Wages
Female	25 to 35	H.S.	20,429	60%	65%	5%	1,087	$18,612	$20,240,344
Female	36 to 45	H.S.	17,649	63%	70%	7%	1,166	$24,256	$28,292,971
Female	46 to 55	H.S.	31,593	66%	74%	9%	2,767	$26,104	$72,222,206
Female	56 to 65	H.S.	27,307	44%	58%	14%	3,741	$24,128	$90,264,073
Male	25 to 65	College < BA	115,808	76%	81%	5%	5,641	$43,562	$245,751,066
Male	25 to 35	College < BA	32,193	83%	80%	-3%	(860)	$35,060	-$30,143,140
Male	36 to 45	College < BA	27,738	82%	86%	4%	1,168	$46,051	$53,792,613
Male	46 to 55	College < BA	29,801	80%	84%	4%	1,294	$50,185	$64,943,097
Male	56 to 65	College < BA	26,076	56%	71%	15%	4,039	$44,409	$179,365,888
Female	25 to 65	College < BA	126,801	70%	75%	5%	6,250	$29,274	$182,972,647
Female	25 to 35	College < BA	34,185	74%	77%	3%	1,101	$23,103	$25,443,630
Female	36 to 45	College < BA	30,683	76%	78%	2%	487	$28,234	$13,762,447
Female	46 to 55	College < BA	33,237	74%	80%	6%	1,989	$33,167	$65,968,729
Female	56 to 65	College < BA	28,696	54%	63%	9%	2,673	$34,689	$92,706,806
Male	25 to 65	College = BA	64,365	88%	89%	1%	783	$68,021	$53,274,301
Male	25 to 35	College = BA	20,074	92%	91%	-1%	(192)	$49,625	-$9,543,878
Male	36 to 45	College = BA	15,670	94%	94%	0%	(39)	$71,814	-$2,816,146
Male	46 to 55	College = BA	15,558	92%	92%	0%	59	$81,432	$4,802,132
Male	56 to 65	College = BA	13,063	68%	75%	7%	956	$78,540	$75,065,953
Female	25 to 65	College = BA	72,089	75%	79%	4%	3,003	$40,952	$122,969,347
Female	25 to 35	College = BA	25,177	82%	83%	1%	277	$35,289	$9,777,878
Female	36 to 45	College = BA	18,935	75%	79%	4%	737	$44,293	$32,664,075
Female	46 to 55	College = BA	16,998	78%	81%	3%	451	$44,440	$20,022,787
Female	56 to 65	College = BA	10,979	54%	68%	14%	1,538	$44,930	$69,087,319
Male	25 to 65	Grad Degree	30,985	89%	90%	2%	509	$91,183	$46,377,726
Male	25 to 35	Grad Degree	6,091	93%	94%	1%	44	$66,453	$2,916,320
Male	36 to 45	Grad Degree	7,745	97%	97%	1%	42	$86,705	$3,600,248
Male	46 to 55	Grad Degree	7,721	97%	93%	-4%	(291)	$112,638	-$32,780,522

Gender	Age	Education	Talent 2025 Total Population	Talent 2025 Working % Pop	Hartford Working % Pop	Pct. Pt. Increase in Working Pop	Additional Workers	Average Wage	Net New Wages
Male	56 to 65	Grad Degree	9,428	73%	81%	8%	714	$93,128	$66,515,749
Female	25 to 65	Grad Degree	33,830	81%	82%	1%	394	$59,290	$23,344,597
Female	25 to 35	Grad Degree	8,403	83%	85%	2%	162	$53,383	$8,661,567
Female	36 to 45	Grad Degree	9,143	86%	83%	-3%	(283)	$59,661	-$16,881,709
Female	46 to 55	Grad Degree	7,815	89%	91%	2%	171	$67,876	$11,600,597
Female	56 to 65	Grad Degree	8,469	66%	70%	4%	344	$55,484	$19,060,578

EXHIBIT A2. Change in Education Rate

Gender	Age	Education	Total Population	Talent 2025 % in Group	Education Hartford % in Group	Change in Population to Sim Group	Talent 2025 Working %	Number New Workers	Simulated Employment Rate	Average Wage	Net New Wages
Male	25 to 65	All	360,970	100%	100%	-		5,804	76%	N/A	$1,449,003,714
Male	25 to 35	All	99,165	100%	100%	-		1,089	80%	N/A	$216,082,737
Male	36 to 45	All	85,915	100%	100%	-		1,709	82%	N/A	$388,245,117
Male	46 to 55	All	96,548	100%	100%	-		2,090	79%	N/A	$558,276,454
Male	56 to 65	All	79,342	100%	100%	-		1,218	60%	N/A	$320,184,131
Female	25 to 65	All	358,940	100%	100%	-		7,643	69%	N/A	$1,109,006,426
Female	25 to 35	All	96,501	100%	100%	-		2,239	73%	N/A	$302,213,114
Female	36 to 45	All	83,514	100%	100%	-		1,191	74%	N/A	$258,938,461
Female	46 to 55	All	97,688	100%	100%	-		2,669	73%	N/A	$393,692,491
Female	56 to 65	All	81,237	100%	100%	-		1,185	52%	N/A	$166,134,094
Male	25 to 65	< H.S.	37,383	10%	9%	(5,783)	53%	(3,070)	54%	$28,150	-$86,422,992
Male	25 to 35	< H.S.	11,358	11%	9%	(2,003)	60%	(1,196)	60%	$22,548	-$26,976,517
Male	36 to 45	< H.S.	9,223	11%	9%	(1,731)	57%	(987)	57%	$29,511	-$29,138,250
Male	46 to 55	< H.S.	10,600	11%	8%	(2,507)	51%	(1,267)	51%	$32,053	-$40,598,399
Male	56 to 65	< H.S.	6,202	8%	8%	458	42%	195	42%	$31,924	$6,213,557
Female	25 to 65	< H.S.	29,242	8%	6%	(7,509)	40%	(3,007)	42%	$16,546	-$49,757,531
Female	25 to 35	< H.S.	8,307	9%	6%	(2,578)	37%	(955)	37%	$13,591	-$12,976,305
Female	36 to 45	< H.S.	7,104	9%	6%	(2,480)	55%	(1,365)	55%	$14,107	-$19,256,799
Female	46 to 55	< H.S.	8,045	8%	5%	(2,762)	42%	(1,147)	42%	$21,325	-$24,466,713
Female	56 to 65	< H.S.	5,786	7%	8%	312	30%	94	30%	$18,067	$1,703,499
Male	25 to 65	H.S.	112,429	31%	30%	(4,719)	68%	(3,221)	68%	$35,855	-$115,490,968
Male	25 to 35	H.S.	29,449	30%	30%	253	70%	178	70%	$29,089	$5,174,135
Male	36 to 45	H.S.	25,539	30%	29%	(1,048)	74%	(771)	74%	$36,915	-$28,476,072
Male	46 to 55	H.S.	32,868	34%	34%	(194)	71%	(137)	71%	$40,664	-$5,583,953
Male	56 to 65	H.S.	24,573	31%	26%	(3,730)	55%	(2,050)	55%	$36,484	-$74,805,938
Female	25 to 65	H.S.	96,978	27%	24%	(13,564)	58%	(7,889)	58%	$23,681	-$186,822,819
Female	25 to 35	H.S.	20,429	21%	19%	(2,318)	60%	(1,387)	60%	$18,612	-$25,818,928

Gender	Age	Education	Total Population	Talent 2025 % in Group	Education Hartford % in Group	Change in Population to Sim Group	Talent 2025 Working %	Number New Workers	Simulated Employment Rate	Average Wage	Net New Wages
Female	36 to 45	H.S.	17,649	21%	21%	(117)	63%	(74)	63%	$24,256	-$1,801,830
Female	46 to 55	H.S.	31,593	32%	26%	(5,886)	66%	(3,856)	66%	$26,104	-$100,658,580
Female	56 to 65	H.S.	27,307	34%	27%	(5,243)	44%	(2,307)	44%	$24,128	-$55,664,845
Male	25 to 65	College < BA	115,808	32%	26%	(21,575)	76%	(16,327)	76%	$43,562	-$711,231,396
Male	25 to 35	College < BA	32,193	32%	28%	(4,753)	83%	(3,931)	83%	$35,060	-$137,807,797
Male	36 to 45	College < BA	27,738	32%	25%	(5,990)	82%	(4,901)	82%	$46,051	-$225,702,852
Male	46 to 55	College < BA	29,801	31%	24%	(6,227)	80%	(4,969)	80%	$50,185	-$249,345,589
Male	56 to 65	College < BA	26,076	33%	27%	(4,606)	56%	(2,577)	56%	$44,409	-$114,429,975
Female	25 to 65	College < BA	126,801	35%	30%	(18,556)	70%	(12,971)	70%	$29,274	-$379,725,237
Female	25 to 35	College < BA	34,185	35%	30%	(5,380)	74%	(3,958)	74%	$23,103	-$91,447,546
Female	36 to 45	College < BA	30,683	37%	30%	(5,972)	76%	(4,564)	76%	$28,234	-$128,845,355
Female	46 to 55	College < BA	33,237	34%	31%	(2,939)	74%	(2,168)	74%	$33,167	-$71,914,483
Female	56 to 65	College < BA	28,696	35%	30%	(4,265)	54%	(2,311)	54%	$34,689	-$80,168,698
Male	25 to 65	College = BA	64,365	18%	21%	11,295	88%	9,905	88%	$68,021	$673,779,545
Male	25 to 35	College = BA	20,074	20%	22%	1,644	92%	1,517	92%	$49,625	$75,305,036
Male	36 to 45	College = BA	15,670	18%	23%	3,860	94%	3,632	94%	$71,814	$260,835,538
Male	46 to 55	College = BA	15,558	16%	20%	3,467	92%	3,184	92%	$81,432	$259,308,147
Male	56 to 65	College = BA	13,063	16%	19%	2,324	68%	1,579	68%	$78,540	$123,999,121
Female	25 to 65	College = BA	72,089	20%	24%	10,456	75%	7,796	75%	$40,952	$319,255,094
Female	25 to 35	College = BA	25,177	26%	28%	1,572	82%	1,293	82%	$35,289	$45,616,671
Female	36 to 45	College = BA	18,935	23%	25%	1,767	75%	1,324	75%	$44,293	$58,633,942
Female	46 to 55	College = BA	16,998	17%	22%	4,218	78%	3,294	78%	$44,440	$146,369,089
Female	56 to 65	College = BA	10,979	14%	17%	2,899	54%	1,562	54%	$44,930	$70,165,582
Male	25 to 65	Grad Degree	30,985	9%	15%	20,783	89%	18,516	89%	$91,183	$1,688,369,524
Male	25 to 35	Grad Degree	6,091	6%	11%	4,860	93%	4,520	93%	$66,453	$300,387,881
Male	36 to 45	Grad Degree	7,745	9%	15%	4,909	97%	4,737	97%	$86,705	$410,726,752
Male	46 to 55	Grad Degree	7,721	8%	14%	5,460	97%	5,278	97%	$112,638	$594,496,249
Male	56 to 65	Grad Degree	9,428	12%	19%	5,553	73%	4,072	73%	$93,128	$379,207,367

Gender	Age	Education	Total Population	Talent 2025 % in Group	Education Hartford % in Group	Change in Population to Sim Group	Talent 2025 Working %	Number New Workers	Simulated Employment Rate	Average Wage	Net New Wages
Female	25 to 65	Grad Degree	33,830	9%	18%	29,173	81%	23,715	81%	$59,290	$1,406,056,918
Female	25 to 35	Grad Degree	8,403	9%	18%	8,704	83%	7,246	83%	$53,383	$386,839,222
Female	36 to 45	Grad Degree	9,143	11%	19%	6,802	86%	5,870	86%	$59,661	$350,208,503
Female	46 to 55	Grad Degree	7,815	8%	16%	7,369	89%	6,547	89%	$67,876	$444,363,178
Female	56 to 65	Grad Degree	8,469	10%	18%	6,298	66%	4,147	66%	$55,484	$230,098,557

EXHIBIT A3. Change in Employment and Education Rates

Gender	Age	Education	Talent 2025 Total Population	Hartford Education Distribution	New Simulated Pop	Hartford Working % Pop	Simulated Workers	Average Wage	Total Simulated Wages	Actual Talent 2025 Wages	Net New Wages
Male	25 to 65	All	360,970	100%	360,970	80%	287,450	N/A	$15,520,890,303	$13,467,468,265	$2,053,422,038
Male	25 to 35	All	99,165	100%	99,165	80%	79,083	N/A	$3,191,056,620	$2,985,485,917	$205,570,703
Male	36 to 45	All	85,915	100%	85,915	85%	72,809	N/A	$4,076,334,713	$3,601,236,767	$475,097,946
Male	46 to 55	All	96,548	100%	96,548	82%	79,342	N/A	$4,975,340,833	$4,315,039,243	$660,301,590
Male	56 to 65	All	79,342	100%	79,342	71%	56,216	N/A	$3,330,887,891	$2,565,706,338	$765,181,553
Female	25 to 65	All	358,940	100%	358,940	74%	264,204	N/A	$9,614,448,814	$7,964,181,681	$1,650,267,133
Female	25 to 35	All	96,501	100%	96,501	76%	73,244	N/A	$2,328,576,671	$1,954,330,225	$374,246,446
Female	36 to 45	All	83,514	100%	83,514	76%	63,556	N/A	$2,390,415,900	$2,087,873,590	$302,542,310
Female	46 to 55	All	97,688	100%	97,688	79%	77,068	N/A	$3,060,232,178	$2,485,984,508	$574,247,670
Female	56 to 65	All	81,237	100%	81,237	62%	50,336	N/A	$1,883,721,052	$1,435,993,358	$447,727,694
Male	25 to 65	< H.S.	37,383	9%	31,600	53%	16,875	$28,150	$475,035,100	$563,906,277	-$88,871,177
Male	25 to 35	< H.S.	11,358	9%	9,355	51%	4,810	$22,548	$108,462,375	$152,945,685	-$44,483,310
Male	36 to 45	< H.S.	9,223	9%	7,492	60%	4,502	$29,511	$132,856,427	$155,228,564	-$22,372,137
Male	46 to 55	< H.S.	10,600	8%	8,093	52%	4,228	$32,053	$135,529,682	$171,676,812	-$36,147,130
Male	56 to 65	< H.S.	6,202	8%	6,660	50%	3,335	$31,924	$106,452,334	$84,055,216	$22,397,118
Female	25 to 65	< H.S.	29,242	6%	21,733	46%	10,083	$16,546	$166,834,858	$199,831,293	-$32,996,435
Female	25 to 35	< H.S.	8,307	6%	5,729	43%	2,462	$13,591	$33,458,560	$41,806,501	-$8,347,941
Female	36 to 45	< H.S.	7,104	6%	4,624	52%	2,413	$14,107	$34,043,340	$55,156,575	-$21,113,235
Female	46 to 55	< H.S.	8,045	5%	5,283	54%	2,857	$21,325	$60,924,208	$71,268,523	-$10,344,315
Female	56 to 65	< H.S.	5,786	8%	6,098	39%	2,351	$18,067	$42,472,955	$31,599,694	$10,873,261
Male	25 to 65	H.S.	112,429	30%	107,710	75%	80,532	$35,855	$2,887,486,663	$2,735,717,404	$151,769,259
Male	25 to 35	H.S.	29,449	30%	29,702	75%	22,209	$29,089	$646,051,518	$603,108,132	$42,943,386
Male	36 to 45	H.S.	25,539	29%	24,491	78%	18,989	$36,915	$700,998,620	$693,936,817	$7,061,803
Male	46 to 55	H.S.	32,868	34%	32,674	78%	25,490	$40,664	$1,036,522,114	$945,814,676	$90,707,438
Male	56 to 65	H.S.	24,573	26%	20,843	66%	13,844	$36,484	$505,066,893	$492,857,779	$12,209,114
Female	25 to 65	H.S.	96,978	23%	83,414	67%	55,912	$23,681	$1,324,050,297	$1,329,446,305	-$5,396,008
Female	25 to 35	H.S.	20,429	19%	18,111	65%	11,802	$18,612	$219,661,736	$227,537,018	-$7,875,282

Female	36 to 45	H.S.	17,649	21%	17,532	70%	12,285	$24,256	$297,994,940	$271,691,434	$26,303,506
Female	46 to 55	H.S.	31,593	26%	25,707	74%	19,094	$26,104	$498,425,910	$540,316,951	-$41,891,041
Female	56 to 65	H.S.	27,307	27%	22,064	58%	12,731	$24,128	$307,168,222	$289,900,902	$17,267,320
Male	25 to 65	College < BA	115,808	26%	94,233	80%	75,841	$43,562	$3,303,794,399	$3,819,774,084	-$515,979,685
Male	25 to 35	College < BA	32,193	28%	27,440	80%	21,958	$35,060	$769,834,523	$933,334,796	-$163,500,273
Male	36 to 45	College < BA	27,738	25%	21,748	86%	18,712	$46,051	$861,684,321	$1,045,210,541	-$183,526,220
Male	46 to 55	College < BA	29,801	24%	23,574	84%	19,834	$50,185	$995,377,646	$1,193,349,735	-$197,972,089
Male	56 to 65	College < BA	26,076	27%	21,470	71%	15,338	$44,409	$681,134,883	$647,879,012	$33,255,871
Female	25 to 65	College < BA	126,801	30%	108,245	75%	81,076	$29,274	$2,373,424,761	$2,595,681,032	-$222,256,271
Female	25 to 35	College < BA	34,185	30%	28,805	77%	22,123	$23,103	$511,090,946	$581,098,926	-$70,007,980
Female	36 to 45	College < BA	30,683	30%	24,711	78%	19,276	$28,234	$544,232,702	$661,994,225	-$117,761,523
Female	46 to 55	College < BA	33,237	31%	30,298	80%	24,165	$33,167	$801,465,143	$813,244,453	-$11,779,310
Female	56 to 65	College < BA	28,696	30%	24,431	63%	15,512	$34,689	$538,101,477	$539,343,428	-$1,241,951
Male	25 to 65	College = BA	64,365	21%	75,660	89%	67,295	$68,021	$4,577,444,812	$3,839,166,348	$738,278,464
Male	25 to 35	College = BA	20,074	22%	21,718	91%	19,841	$49,625	$984,621,758	$919,642,101	$64,979,657
Male	36 to 45	College = BA	15,670	23%	19,530	94%	18,327	$71,814	$1,316,151,520	$1,058,825,869	$257,325,651
Male	46 to 55	College = BA	15,558	20%	19,025	92%	17,545	$81,432	$1,428,759,942	$1,163,579,490	$265,180,452
Male	56 to 65	College = BA	13,063	19%	15,387	75%	11,581	$78,540	$909,536,221	$697,118,888	$212,417,333
Female	25 to 65	College = BA	72,089	23%	82,545	79%	65,149	$40,952	$2,668,018,351	$2,214,331,438	$453,686,913
Female	25 to 35	College = BA	25,177	28%	26,749	83%	22,285	$35,289	$786,424,225	$730,419,021	$56,005,204
Female	36 to 45	College = BA	18,935	25%	20,702	79%	16,315	$44,293	$722,648,802	$628,302,534	$94,346,268
Female	46 to 55	College = BA	16,998	22%	21,216	81%	17,130	$44,440	$761,253,236	$589,893,143	$171,360,093
Female	56 to 65	College = BA	10,979	17%	13,878	68%	9,419	$44,930	$423,212,948	$265,716,740	$157,496,208
Male	25 to 65	Grad Degree	30,985	14%	51,768	91%	46,907	$91,183	$4,277,129,329	$2,508,904,152	$1,768,225,177
Male	25 to 35	Grad Degree	6,091	11%	10,951	94%	10,264	$66,453	$682,086,447	$376,455,203	$305,631,244
Male	36 to 45	Grad Degree	7,745	15%	12,654	97%	12,279	$86,705	$1,064,643,825	$648,034,976	$416,608,849
Male	46 to 55	Grad Degree	7,721	14%	13,181	93%	12,244	$112,638	$1,379,151,450	$840,618,530	$538,532,920
Male	56 to 65	Grad Degree	9,428	19%	14,981	81%	12,120	$93,128	$1,128,697,560	$643,795,443	$484,902,117
Female	25 to 65	Grad Degree	33,830	18%	63,003	83%	51,984	$59,290	$3,082,120,548	$1,624,891,613	$1,457,228,935
Female	25 to 35	Grad Degree	8,403	18%	17,107	85%	14,573	$53,383	$777,941,204	$373,468,759	$404,472,445
Female	36 to 45	Grad Degree	9,143	19%	15,945	83%	13,266	$59,661	$791,496,117	$470,728,822	$320,767,295

Female	46 to 55	Grad Degree	7,815	16%	15,184	91%	13,822	$67,876	$938,163,680	$471,261,438	$466,902,242
Female	56 to 65	Grad Degree	8,469	18%	14,767	70%	10,323	$55,484	$572,765,450	$309,432,594	$263,332,856