

Making our Future: Manufacturing in the SCPA Region

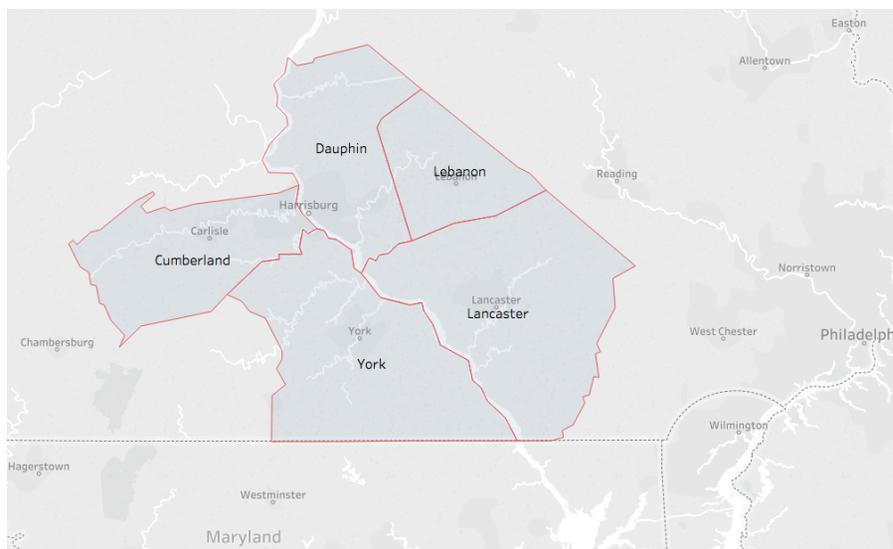
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Introduction

Manufacturing remains a major driver of the SCPA regional economy. It accounted for 13 percent of regional employment and 14 percent of regional wages. Manufacturing accounted for 17.6 percent of the GDP of the Lancaster metropolitan area in 2016 and was the sector with the largest share of the GDP. Each manufacturing worker in the region produces more than \$108,000 of GDP.

Figure 1: Map of South Central Pennsylvania (SCPA) Region



Manufacturing is a critical sector that plays an out-sized role in the economy. In the regional economy, \$1 billion generated in retail, distribution or services does not produce the same economic benefits as \$1 billion in manufacturing production.

According to the Bureau of Economic Analysis, every dollar spent in manufacturing generates \$1.48 in economic activity, more than any other major economic sector. Also, improvements in productivity have leveraged the productive power of the American worker, enabling more manufacturing output per person.¹

The links between our manufacturing base and innovation have also become more pronounced. Manufacturing accounts for two-thirds of all private spending on R&D, employs one out of three engineers, and accounts for sixty percent of royalties from licensing intellectual property.²

Findings

Understanding the convergence of key demographic points will help the region properly plan for, and ideally implement, key workforce development strategies to ensure the needed productive pipeline of talent to support the industry.

- The regional population is growing, but it is growing older and so is the United States, creating more competition for a shrinking pool of talent entering manufacturing

¹ Kurfess, T. (2013, November). Why Manufacturing Matters. Retrieved November 02, 2017, from <https://www.asme.org/engineering-topics/articles/manufacturing-processing/why-manufacturing-matters>

² *ibid.*

Beyond demographics, the region needs to monitor and understand the dynamics of growing and declining sub-sectors within manufacturing and how that might impact occupations within those sub-sectors and whether those changes will shift the training requirements and needs in the region.

- The region's manufacturing sector has been growing slowly with a transition from a group of larger, declining sectors to smaller growing sectors – that are growing fast enough to make up for the losses in other industries
- Regional manufacturers need to hire and replace 13,300 workers by 2026 – the GDP represented by these workers amounts to more than \$1.4 billion.
- 1,300 workers per year appears to be a manageable number, but it is more difficult than it seems
 - The older workers that need to be replaced have experience that is hard to transfer
 - It is more difficult to find workers interested in a manufacturing career
 - The region does not have a pool of experienced, middle-aged workers to replace the older workers
 - Nationally there is a shortage of younger workers entering manufacturing, which means there is more competition from other regions for these younger workers.
 - The hiring need may be greater, as the region's manufacturers are reporting many jobs they just can't fill; and potentially customers they can't serve.

Key Terms

An **establishment** is the physical location of a certain economic activity, for example, a factory, mine, store, or office. Generally, a single establishment produces a single good or provides a single service.

An **enterprise** is a private firm, government entity, or nonprofit organization that could consist of a single establishment or multiple establishments. A multi-establishment enterprise could have all its establishments in one industry (i.e., a chain), or could have various establishments in different industries (i.e., a conglomerate).

An **industry** is a group of establishments that produce similar products or provide similar services. For example, all establishments that manufacture automobiles are in the same industry. Industries may be grouped in sectors or clusters.

An **occupation** refers to a group of employees that perform similar activities or tasks. Employees that perform comparable tasks are in the same occupation, even if they are not in the same industry. Occupations may be concentrated in a few industries, or represented in many industries.

Age cohorts are groups of individuals of the same age. This analysis looks at age cohorts of ten or more years.

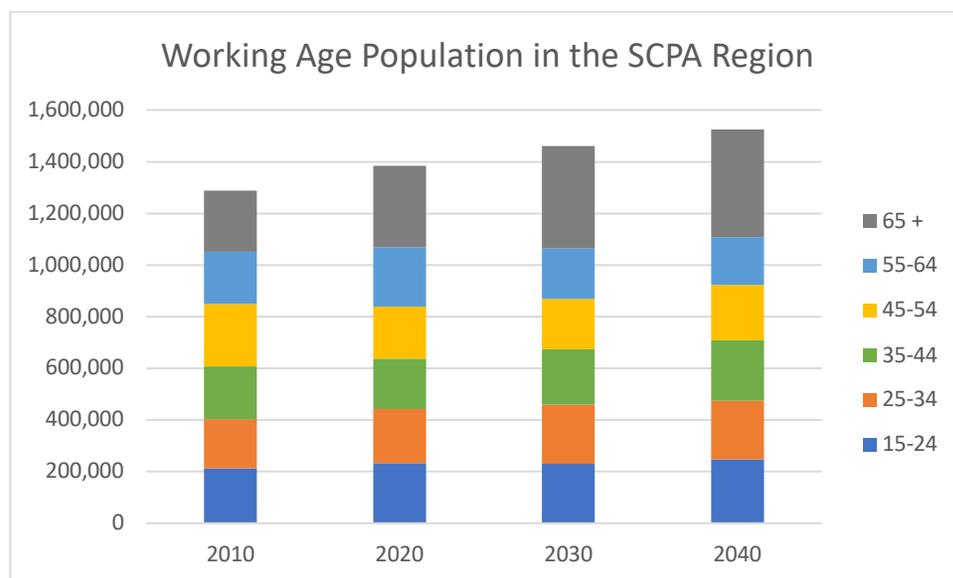
Population Dynamics and the Pool of Labor

Population by Age to 2040

- The region is growing.
- The 65 and older age cohort will be the largest in the region by 2020 and continue to grow through 2040.

By 2020, the decline in prime working age people (25-34 and 35-44) will not be offset by gains in younger workers. It will have to be made up by retaining older workers. By 2030, those age cohorts are projected to recover, but retaining older workers will continue to be critical for the labor market through that transition.

Figure 2



Source: Projections by the Pennsylvania State Data Center.

The population dynamics will create some challenges for the growth of regional manufacturing. Already manufacturers are struggling to find workers. This occurs both because of the small pool of younger workers, a negative stigma attached to blue collar work, and because recruiting the new generation of workers requires different approaches. The following comments from regional manufacturers illustrate these challenges:

- “It is easier to build a \$15 million piece of equipment than to find the ten people to run it.”

- “Millennials will be half the workforce by 2020 and they think differently than older generations – we have to adapt to that supply; trying to understand what does that mean?”
- “The generational change is that people are not looking for the lifelong employment, so turnover is higher – which makes it difficult to train people to the skill level required. Not really making a career out of it.”
- “One of our bigger challenges is the work-life balance that is available compared to other options. Strict shift-rotations and voluntary and forced overtime are not viewed as a plus any more.”
 - How can we adjust our scheduling and planning to balance the workload, the needs of the customers and the needs of the workers?
 - As the workforce gets older, these workers have more seniority (vacation time) that also strains the planning and recruiting.

Figure 3: Change in the Working Age Population

	2010-2020	2020-2030	2030-2040	2010-2040
15-24	20,879	(3,038)	16,055	33,896
25-34	18,244	21,589	(2,450)	37,383
35-44	(10,112)	19,017	21,733	30,638
45-54	(38,475)	(9,092)	18,879	(28,688)
55-64	27,306	(35,471)	(7,662)	(15,827)
65 +	77,598	83,332	17,271	178,201

Source: Projections by the Pennsylvania State Data Center.

Age of the manufacturing workforce

The change in the region's manufacturing workforce reflects the larger trend in the United States. The SCPA region is starting with a workforce with a slightly smaller share of younger workers and a larger share of older and middle-aged workers. By 2016, the LEDC region will have 30 percent of its workforce 55 or older and only 46 percent aged 35-54. The share of workers 34 and under will shrink to 25 percent, matching the share of the United States.

Figure 4

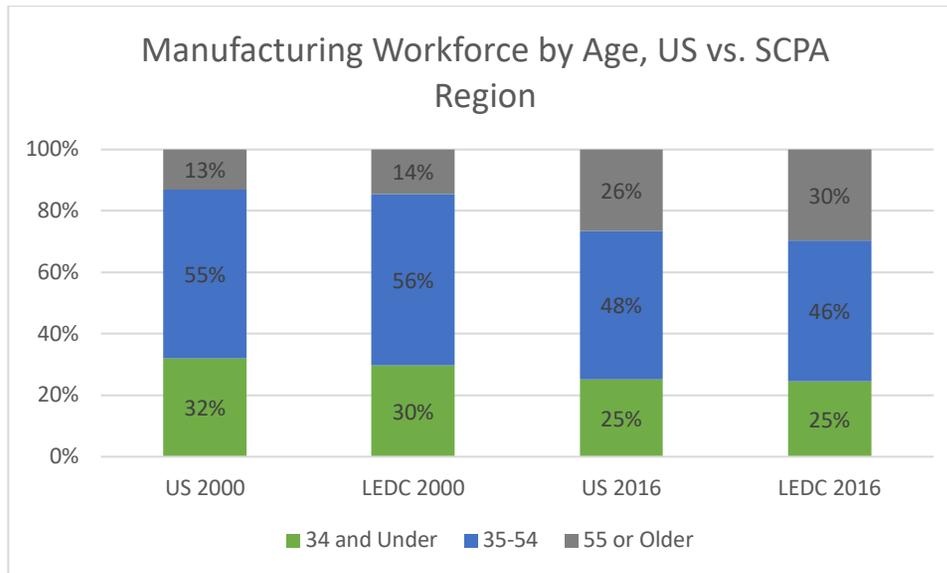


Figure 5: U.S. Manufacturing Workforce by Age, 2000-2016

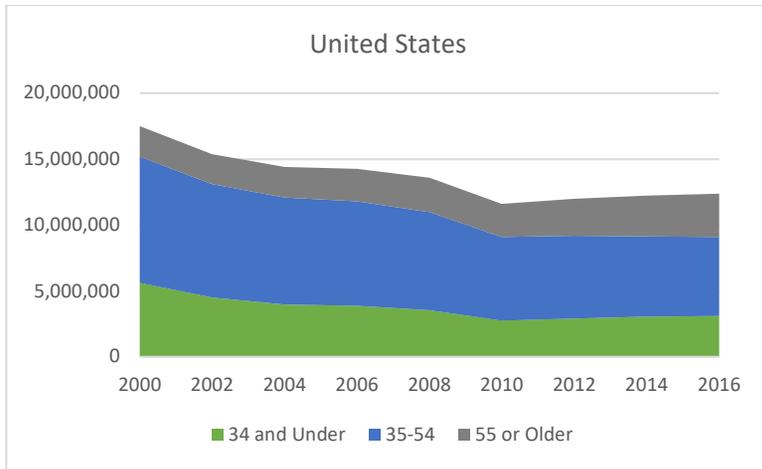
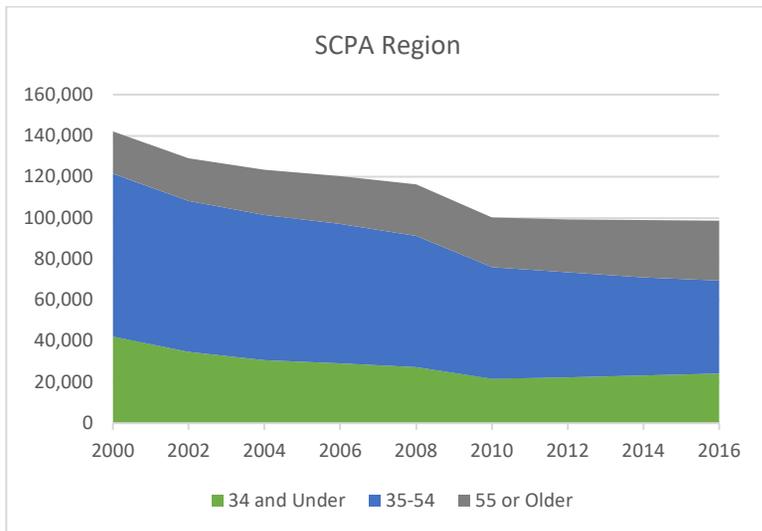


Figure 6: SCPA Region Manufacturing Workforce by Age, 2000-2016



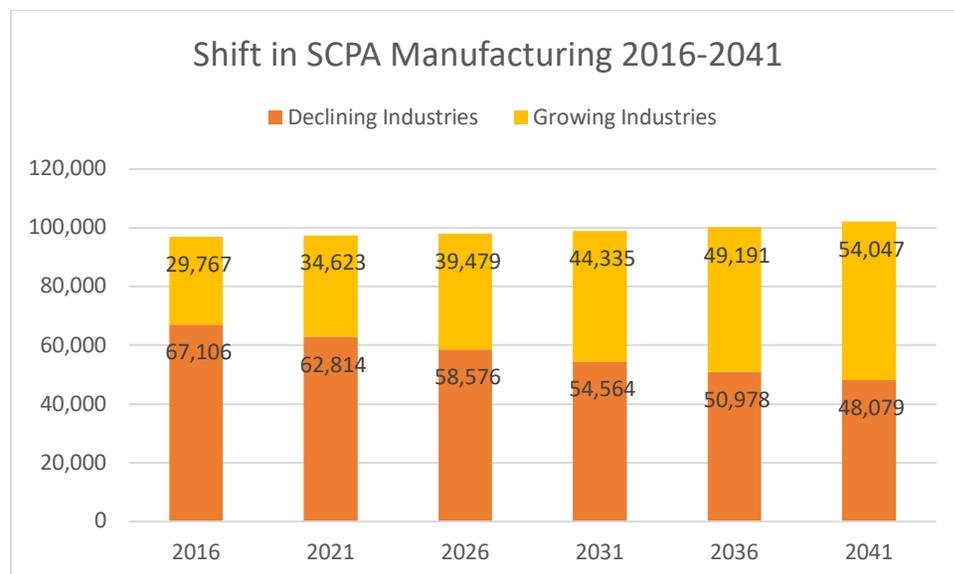
With a larger share of older workers, the region has a more immediate issue in replacing these workers, and it doesn't have as much bench depth of experienced, middle-aged workers to replace them. The region will also have a constraint on the long-term pipeline of younger workers – and because this is a national phenomenon, it will be difficult to recruit those workers from other regions.

Trends in Regional Manufacturing Employment

What industries are driving growth?

The industries driving growth in the region have been slowly transitioning. Overall manufacturing is growing with a projected net gain of 5,200 jobs from 2016 to 2041 where the declining industries are expected to shed 19,000 jobs compared to a gain of 24,200 in the growing industries. The industry projections are based on regional and national trends, as well as the demographics of the regional workforce. After five to ten years, the level of confidence in these projections decreases dramatically, as technology changes, market shifts and the cumulative effect of business cycles will shift the projections. The long-run projections provide a potential scenario for the future and indicate how it may impact the infrastructure and investment decisions being made now.

Figure 7



Source: U.S. Bureau of Labor Statistics; Projections by Fourth Economy

Note: In order to get the most recent data available, the time periods for the population data is lagged by one year in favor of using the most recent employment data available. More recent population data is available, but the data on the age of the workers by county is slow to be released. Data for 2015 is the most recent, therefore the age projections run from 2015 to 2040 and the jobs 2016 to 2041.

In the short-term, this shift may have important implications for training programs and providers. For some occupations the skills required for production workers and mechanics may translate from one industry to another, but they may also require training on different machines or production processes. It will be crucial to ensure that providers are making this transition and connecting with the growing firms and industries who may not have the connections and experience of interacting with the workforce system.

Nine industries are growing in the region, projected to add 24,280 jobs by 2041. Wood product manufacturing will add the largest number of jobs, followed by plastics and rubber. There may be some workers in the declining industries that translate their skills into these new industries, but it is more likely that training will be required to learn the equipment and processes in these growing industries.

Figure 8: Employment by Industry 2016-2041

Industry	2016	2021	2031	2041	Change 2016-2041
321 Wood product manufacturing	4,077	5,577	8,577	11,577	7,500
326 Plastics and rubber products manufacturing	6,888	8,071	10,437	12,803	5,915
327 Nonmetallic mineral product manufacturing	3,506	4,173	5,507	6,841	3,335
312 Beverage and tobacco product manufacturing	996	1,474	2,430	3,386	2,390
325 Chemical manufacturing	2,999	3,413	4,241	5,069	2,070
336 Transportation equipment manufacturing	5,353	5,714	6,436	7,158	1,805
331 Primary metal manufacturing	5,532	5,744	6,168	6,592	1,060
313 Textile mills	304	326	370	414	110
316 Leather and allied product manufacturing	112	131	169	207	95
All Growing Industries	29,767	34,623	44,335	54,047	24,280

Source: U.S. Bureau of Labor Statistics; Projections by Fourth Economy

Twelve industries will decline between 2016 and 2041, a loss of more than 19,000 jobs. Despite these declines, the region will experience a net gain of more than 5,200 jobs from 2016 to 2041. Even though manufacturing may grow overall in the region, there are two industries that could lose all employment in the region over the next 25 years. Electrical equipment and appliance manufacturing is on a trajectory to have zero employees in the region by 2041. This industry is declining in the United States, but declining more rapidly in the region. Apparel manufacturing could disappear from the region by 2031.

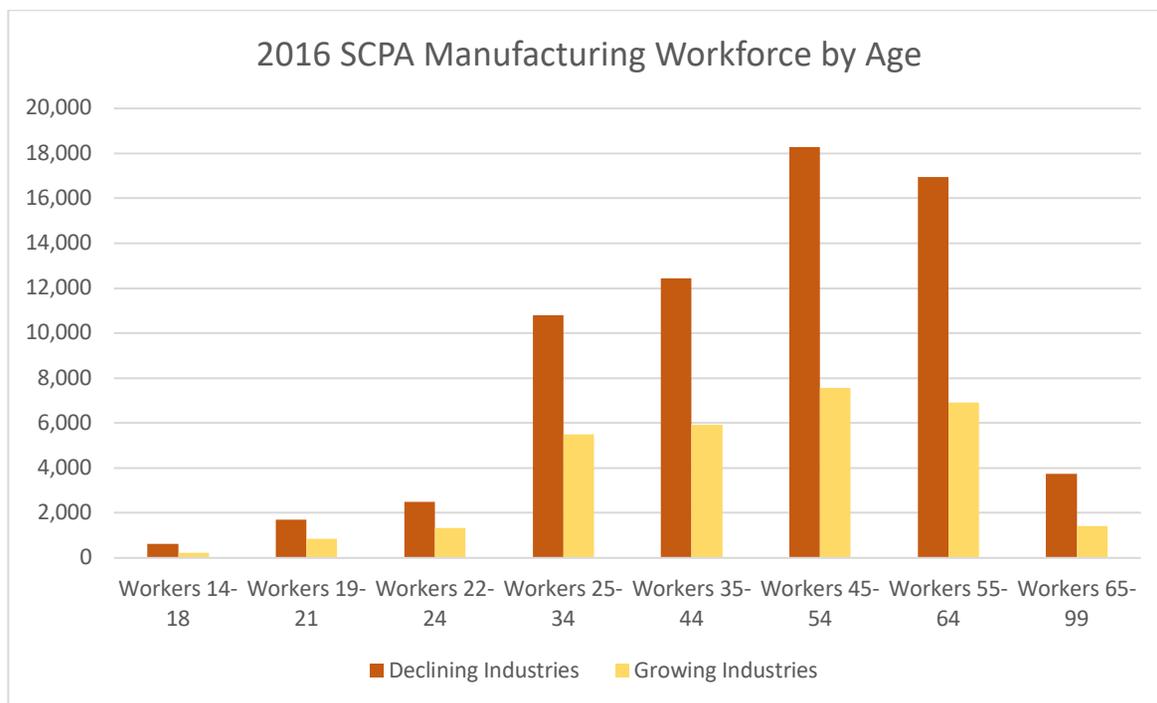
Figure 9: Employment Declines by Industry 2016-2041

Industry	2016	2021	2031	2041	Change 2016-2041
335 Electrical equipment and appliance mfg.	4,026	2,913	687	-	(4,026)
323 Printing and related support activities	7,527	6,725	5,121	3,517	(4,010)
334 Computer and electronic product manufacturing	2,837	2,305	1,241	177	(2,660)
333 Machinery manufacturing	7,613	7,140	6,194	5,248	(2,365)
337 Furniture and related product manufacturing	3,194	2,806	2,030	1,254	(1,940)
332 Fabricated metal product manufacturing	12,248	11,916	11,252	10,588	(1,660)
339 Miscellaneous manufacturing	3,812	3,510	2,906	2,302	(1,510)
315 Apparel manufacturing	506	226	-	-	(506)
322 Paper manufacturing	3,909	3,852	3,738	3,624	(285)
324 Petroleum and coal products manufacturing	383	376	362	348	(35)
314 Textile product mills	235	230	220	210	(25)
311 Food manufacturing	20,816	20,815	20,813	20,811	(5)
All Declining Industries	67,106	62,814	54,564	48,079	(19,027)

Source: U.S. Bureau of Labor Statistics; Projections by Fourth Economy

Note: Industries in red are those that could lose all employment in the region over the next 25 years

Figure 10



There is very little difference in the age structure of the growing industries compared to the declining industries, but in terms of raw numbers there are more workers in every age group that work in declining industries. These workers may be able to shift to new jobs in the growing industries where the occupational requirements and skills translate more easily.

The next section profiles some of the largest growing and declining sectors and identifies the critical occupations for those sectors.

Growing Industries with Hiring Needs

The following is the set of industries that are growing and their estimated hiring needs based on net job growth and the replacement of retiring workers. This does not include all of the hiring that is needed to replace workers that quit or are dismissed. As such it is a conservative net estimate of the labor needs of these industries. The growth estimates are based on the projected net employment while the retirements are estimated based on the age of the workforce and the declines in labor force participation for older workers. The estimates below include only the hiring (growth and replacement) needs through 2026 and what that means in annual terms.

Figure 11: Growing Industries and Hiring Needs 2016 to 2026 in the SCPA Region

Growing Industries with Hiring Needs	NAICS Code	Percent Workers 55+	Annual Wages	Annual Hiring	Total Hiring to 2026
Wood product manufacturing	321	24%	\$42,401	348	3,477
Plastics and rubber products manufacturing	326	25%	\$55,335	306	3,064
Nonmetallic mineral product manufacturing	327	28%	\$57,493	174	1,738
Transportation equipment manufacturing	336	32%	\$56,570	140	1,401
Primary metal manufacturing	331	32%	\$59,813	114	1,136
Chemical manufacturing	325	26%	\$67,329	113	1,128
Beverage and tobacco product manufacturing	312	14%	\$32,386	103	1,026
Textile mills	313	47%	\$47,434	10	104
Leather and allied product manufacturing	316	37%	\$27,357	7	66
Group Averages or Subtotals		28%	\$55,126	1,314	13,139

Note: Wages in red are below the regional average wage of \$46,605 for the SCPA Region.

Profiles for two sample industries in this category with the highest expected hiring to 2026 are provided below:

Wood Product Manufacturing

Industries in the Wood Product Manufacturing subsector manufacture wood products, such as lumber, plywood, veneers, wood containers, wood flooring, wood trusses, manufactured homes (i.e., mobile homes), and prefabricated wood buildings. The production processes of the Wood Product Manufacturing subsector include sawing, planing, shaping, laminating, and assembling of wood products starting from logs that are cut into bolts, or lumber that then may be further cut, or shaped by lathes or other shaping tools. The lumber or other transformed wood shapes may also be subsequently planed or smoothed, and assembled into finished products, such as wood containers. The Wood Product Manufacturing subsector includes establishments that make wood products from logs and bolts that are sawed and shaped, and establishments that purchase sawed lumber and make wood products. With the exception of sawmills and wood preservation establishments, the establishments are grouped into industries mainly based on the specific products manufactured. (BLS [Industries at a Glance](#))

Figure 12: Major Occupations for Wood Product Manufacturing

Major Occupations	Regional Employment, 2016	Median Age	Mean Regional Wages	Estimated Replacement to 2026
Cabinetmakers and bench carpenters	860	49.2	\$35,833	88
Carpenters	4,200	42.4	\$41,843	198
First-Line Supervisors of Production and Operating Workers	3,310	46.3	\$58,160	1,070
Machine feeders and offbearers	750	35.6	\$29,480	131
Sawing machine setters, operators, and tenders, wood	230	49.2	\$32,700	345
Team assemblers	6,100	40.9	\$31,823	799
Woodworking machine setters, operators, and tenders, except sawing	820	49.2	\$31,030	410

Source: BLS Occupational Employment and Wage Estimates.

Note: Wages in red are below the regional average wage of \$46,605 for the SCPA Region.

The replacement needs for major occupations are identified in the far right column in the table above. Regional employment in wood products is projected to grow despite a projected decline in the nation. U.S. Employment in wood product manufacturing is projected to decline by 2 percent from 2016 to 2026, although wood kitchen cabinet and countertop manufacturing will grow by 1 percent. Given these conditions, it is important to monitor how long the region can continue to capture an increasing share of a declining industry. The following industry drivers indicate what may or may not be factors that are influenced by local or external conditions.

Industry Drivers

- Demand for wood products depends on housing construction (external)
- Need efficient operations (local)
- Risk due to fluctuations in lumber prices (external)

Plastics and Rubber

Industries in the Plastics and Rubber Products Manufacturing subsector make goods by processing plastics materials and raw rubber. The core technology employed by establishments in this subsector is that of plastics or rubber product production. Plastics and rubber are combined in the same subsector because plastics are increasingly being used as a substitute for rubber; however the subsector is generally restricted to the production of products made of just one material, either solely plastics or rubber. (BLS [Industries at a Glance](#))

Figure 13: Major Occupations for Plastics and Rubber

Major Occupations	Regional Employment, 2016	Median Age	Mean Regional Wages	Estimated Replacement to 2026
Extruding and drawing machine setters, operators, and tenders, metal and plastic	490	39	\$36,610	186
Extruding, forming, pressing, and compacting machine setters, operators, and tenders	190	39	\$38,780	428
First-Line Supervisors of Production and Operating Workers	3,310	46.3	\$58,160	1,070
Inspectors, testers, sorters, samplers, and weighers	2,950	44	\$35,363	741
Molding, coremaking, and casting machine setters, operators, and tenders, metal and plastic	840	48.3	\$35,043	352
Packers and packagers, hand	4,110	35.1	\$27,160	233
Team assemblers	6,100	40.9	\$31,823	799

Source: BLS Occupational Employment and Wage Estimates.

Note: Wages in red are below the regional average wage of \$46,605 for the SCPA Region.

The replacement needs for major occupations are identified in the far-right column in the table above. U.S. Employment in plastics is projected to decline by 7.7 percent from 2016 to 2026. The Lancaster region and Pennsylvania are experiencing renewed interest in plastics manufacturing as downstream industry from natural gas reserves and processing in the state. This industry is driven by several factors that are beyond local control, unless the region develops niches for materials or end-use that insulate it from external trends. One example would be the development of plastics linked to the agricultural and food processing sectors in the region.

Industry Drivers

- Demand depends on the overall health of the economy (external)
- Industry is fragmented with hundreds of niches, determined by material type, manufacturing process, and end-use (local)
- Volatile prices for inputs, primarily higher prices for oil and natural gas can limit the supply for manufacturing (external)

Declining Industries with Hiring Needs

The following is the set of industries that are declining, but still have hiring needs based primarily on the replacement of retiring workers. This does not include all of the hiring that is needed to replace workers that quit or are dismissed. The estimates below include only the hiring (growth and replacement) needs through 2026 and what that means in annual terms.

Figure 14: Declining Industries and Hiring Needs 2016 to 2026

Declining Industries with Hiring Needs	NAICS Code	Percent Workers 55+	Annual Wages	Annual Hiring	Total Hiring to 2026
Food manufacturing	311	28%	\$50,713	242	2,421
Fabricated metal product manufacturing	332	32%	\$56,199	101	1,015
Paper manufacturing	322	31%	\$67,884	32	325
Machinery manufacturing	333	33%	\$61,227	12	116
Petroleum and coal products manufacturing	324	29%	\$76,964	4	38
Textile product mills	314	36%	\$37,640	3	30
Group Averages or Subtotals		30%	\$55,610	394	3,945

Note: Wages in red are below the regional average wage of \$46,605 for the SCPA Region.

Food Manufacturing

Industries in the Food Manufacturing subsector transform livestock and agricultural products into products for intermediate or final consumption. The industry groups are distinguished by the raw materials (generally of animal or vegetable origin) processed into food products. The food products manufactured in these establishments are typically sold to wholesalers or retailers for distribution to consumers, but establishments primarily engaged in retailing bakery and candy products made on the premises not for immediate consumption are included. (BLS [Industries at a Glance](#))

Figure 15: Major Occupations in Food Manufacturing

Major Occupations	Regional Employment, 2016	Median Age	Mean Regional Wages	Estimated Replacement to 2026
Bakers	1,070	39.1	\$25,483	724
First-Line supervisors of production and operating workers	3,310	46.3	\$58,160	126
Food batchmakers	1,530	35.4	\$31,447	81
Packaging and filling machine operators and tenders	1,970	40.8	\$33,200	1

Source: BLS Occupational Employment and Wage Estimates.

Note: Wages in red are below the regional average wage of \$46,605 for the SCPA Region.

The replacement needs for major occupations are identified in the far-right column in the table above. The projections for U.S. Employment in food manufacturing vary greatly by the food manufacturing subsector. Other Food Manufacturing (snacks, spices, syrups and seasonings) is expected to grow by 4.8 percent and dairy is expected to grow less than 1 percent from 2016 to 2026. In food manufacturing, the consolidation of the industry has been driving employment decreases even while revenues are growing. The rise of locally sourced foods and changes in consumer preferences may also be a factor in that consumers are choosing foods with little or no processing.

Industry Drivers

- Prices for food and ingredients are volatile due to unpredictable weather (external)
- Hard to pass price increases to consumers (external)
- Consolidation in grocery and restaurants has consolidated buying power in fewer dominant firms (external)

Declining Industries with Transition Needs

The following is the set of industries that are declining, and where the declines exceed the number of retiring workers. These industries may still be hiring to replace workers that quit or are dismissed. Overall, these industries are expected to have a net loss of jobs, therefore the estimates below represent how many workers will need to find work in other industries by 2026 and what that means in annual terms.

Figure 16

Declining Industries with Transition Needs	NAICS Code	Percent Workers 55+	Annual Wages	Annual Transition	Total Transition to 2026
Miscellaneous manufacturing	339	29%	\$55,987	(12)	(116)
Furniture and related product manufacturing	337	29%	\$42,474	(34)	(343)
Apparel manufacturing	315	42%	\$41,083	(41)	(407)
Computer and electronic product manufacturing	334	37%	\$61,425	(60)	(602)
Printing and related support activities	323	32%	\$50,622	(64)	(642)
Electrical equipment and appliance mfg.	335	35%	\$61,353	(167)	(1,667)
Group Averages or Subtotals		32%	\$53,519	(378)	(3,776)

Note: Wages in red are below the regional average wage of \$46,605 for the SCPA Region.

Printing & Related Support Activities

Industries in the Printing and Related Support Activities subsector print products, such as newspapers, books, labels, business cards, stationery, business forms, and other materials, and perform support activities, such as data imaging, platemaking services, and bookbinding. The support activities included here are an integral part of the printing industry, and a product (a printing plate, a bound book, or a computer disk or file) that is an integral part of the printing industry is almost always provided by these operations. (BLS [Industries at a Glance](#))

Figure 17: Major Occupations in Printing & Related Industries

Major Occupations	Regional Employment, 2016	Median Age	Mean Regional Wages	Estimated Replacement to 2026
Printing Press Operators	1,390	45.4	\$37,453	(109)
Office and Administrative Support Occupations	70,810	42.8	\$34,817	941
Print Binding and Finishing Workers	1,220	45.4	\$31,460	(60)

Source: BLS Occupational Employment and Wage Estimates.

Note: Wages in red are below the regional average wage of \$46,605 for the SCPA Region.

The replacement needs for major occupations are identified in the far-right column in the table above. The Printing Press Operators and Print Binding and Finishing Workers are most in need of transition assistance. The office and administrative workers should be able to transition to other industries. U.S. Employment in printing is projected to decline by 16.4 percent from 2016 to 2026. This industry faces many external challenges from automation and alternative technologies. Local businesses can build a niche by being responsive to the short cycle times of customers.

Industry Drivers

- Automation (external)
- Competition from online and in-house printing (external)
- Depends on overall business activity and consumer spending (external)
- Customers want quick turn-around – short cycle times (local)

Electrical Equipment, Appliance, and Component Manufacturing

Industries in the Electrical Equipment, Appliance, and Component Manufacturing subsector manufacture products that generate, distribute and use electrical power. Electric Lighting Equipment Manufacturing establishments produce electric lamp bulbs, lighting fixtures, and parts. Household Appliance Manufacturing establishments make both small and major electrical appliances and parts. Electrical Equipment Manufacturing establishments make goods, such as electric motors, generators, transformers, and switchgear apparatus. Other Electrical Equipment and Component Manufacturing establishments make devices for storing electrical power (e.g., batteries), for transmitting electricity (e.g., insulated wire), and wiring devices (e.g., electrical outlets, fuse boxes, and light switches). (BLS [Industries at a Glance](#))

Figure 18: Major Occupations in Electrical Equipment, etc.

Major Occupations	Regional Employment, 2016	Median Age	Mean Regional Wages	Estimated Replacement to 2026
Coil winders, tapers, and finishers	70	46	\$27,340	(27)
Cutting, punching, and press machine setters, operators, and tenders, metal and plastic	1,150	40.9	\$37,580	168
Electrical and electronic equipment assemblers	700	46	\$30,695	(242)
First-Line Supervisors of Production and Operating Workers	3,310	46.3	\$58,160	1,070
Inspectors, testers, sorters, samplers, and weighers	2,950	44	\$35,363	741
Team assemblers	6,100	40.9	\$31,823	799

Source: BLS Occupational Employment and Wage Estimates.

Note: Wages in red are below the regional average wage of \$46,605 for the SCPA Region.

The replacement needs for major occupations are identified in the far-right column in the table above. Several occupations in this industry show replacement needs where these occupations can transition to other industries (not replacement needs in this industry). This industry is projected to decline in the U.S. by 7.6 percent from 2016-2026. The majority of factors driving this industry are external factors beyond local control, however local businesses can compete on technology expertise and efficiency.

Industry Drivers

- Demand is driven by construction, industrial production (external)
- Need technological expertise, efficient operations (local)
- Volatility of raw materials prices in steel, copper, lead, and plastics (external)
- Low-cost imports compete for market share (external)

Occupational Transitions

Figure 19 reveals the occupations in the declining industries that could be transitioned to fill the needs of the growing industries. For Production Occupations, the growing industries could absorb all 1,931 production workers from the declining industries, and they will still need to find more than 7,000 additional workers to fill their expected hiring and replacement needs by 2026. At the other end of the spectrum, the growing industries could potentially fill nearly all their needs for computer and math occupations by hiring the workers from the declining industries.

Figure 19: Occupation Groups for Declining and Growing Industries



Occupation Groups	Wages	Declining Industries	Growing Industries	Grand Total
Production Occupations	\$36,593	-1,931	8,945	7,014
Transportation and Material Moving Occupations	\$33,853	-193	2,205	2,011
Office and Administrative Support Occupations	\$34,817	-426	1,367	941
Installation, Maintenance, and Repair Occupations	\$45,240	-109	1,032	923
Management Occupations	\$106,127	-249	784	535
Sales and Related Occupations	\$35,530	-145	573	428
Construction and Extraction Occupations	\$45,070	-22	383	362
Business and Financial Operations Occupations	\$65,170	-165	460	295
Architecture and Engineering Occupations	\$70,877	-322	547	225
Food Preparation and Serving Related Occupations	\$22,117	0	133	132
Farming, Fishing, and Forestry Occupations	\$30,790	0	115	115
Building and Grounds Cleaning and Maintenance Occupations	\$26,893	-13	105	92
Protective Service Occupations	\$44,267	-2	23	22
Computer and Mathematical Occupations	\$70,097	-128	137	9
Arts, Design, Entertainment, Sports, and Media Occupations	\$43,420	-58	61	3

Regardless of industry, there are many occupations in manufacturing that tend to have more older workers. Figure 20 shows the oldest occupations, represented by the occupations with the highest median age. Many of these occupations pay well above the regional average wage, although there are seven that pay below the regional average wage of \$46,605. The workers in the declining industries may be able to transition to fill the needs of the growing industries, but there is no guarantee that they would be willing or able to make that transition. The greatest needs are for supervisors (1,070) and repair workers (757).

Figure 20: Oldest Occupations in Manufacturing with Regional Replacement Needs

Occupation	Median age	Wages	Declining Industries	Growing Industries	Total Replacement to 2026
Managers					
Industrial production managers	48.4	\$106,227	-71	366	295
Purchasing managers	48.1	\$107,040	-16	37	21
Transportation, storage, and distribution managers	43.7	\$110,375	-5	39	34
Mechanics and Repair					
Industrial and refractory machinery mechanics	46.4	\$60,557	-13	53	40
Precision instrument and equipment repairers	46.5	\$59,280	-1	1	0
Other installation, maintenance, and repair workers	43.1	\$34,143	-84	841	757
Production occupations					
First-line supervisors of production and operating workers	46.3	\$58,160	-254	1,324	1,070
Inspectors, testers, sorters, samplers, and weighers	44.0	\$35,363	-181	922	741
Machinists	48.3	\$42,047	-77	473	396
Chemical processing machine setters, operators, and tenders	47.3	\$41,525	0	203	202
Computer control programmers and operators	44.0	\$70,097	-28	134	106
Tool and die makers	51.7	\$48,983	-24	119	95
Cabinetmakers and bench carpenters	49.2	\$35,833	-122	210	88
Food processing workers, all other	43.5	\$21,417	0	39	39
Stationary engineers and boiler operators	49.9	\$51,990	0	35	35
Metal workers and plastic workers, all other	42.6	\$32,740	-2	19	16
Water and wastewater treatment plant and system operators	46.4	\$49,243	-1	11	9

Note: Occupations needing more than 100 workers by 2026 in blue.

There are also three occupations with older workers where the occupation does not have a counterpart in the growing industries. These workers will need some transition or retraining. Fortunately, there are few occupations in this category and the total number of workers impacted is about 700 total from 2016 to 2026, or about 70 per year. Given that the region includes five counties, the workforce system should have the capacity to manage these transition needs.

Figure 21: Oldest Occupations with Transition or Retraining Needs

Occupation	Wages	Median age	Declining Industries	Growing Industries	Total Replacement to 2026
Production occupations					
Printing press operators	\$37,453	45.4	-144	35	-109
Electrical, electronics, and electromechanical assemblers	\$90,160	46.0	-331	28	-303
Sewing machine operators	\$24,520	45.8	-358	54	-304

The State of Manufacturing in our Counties

Lancaster has added the most manufacturing jobs between 2011 and 2016, with more than 1,000 jobs added over that period. Cumberland and Dauphin also grew by more than 500 jobs each. Manufacturing employment declined by more than 450 jobs in Lebanon, and more than 1,100 jobs in York. There is little cause for concern if these job losses represent issues specific to a few individual businesses, rather than wider conditions. Lancaster and York have the most manufacturing jobs among the counties in the region; but their employment trends are diverging with 1,047 jobs gained in Lancaster from 2011 to 2016, versus the loss of 1,130 jobs in York.

Manufacturing Employment and Change by County, 2011-2016

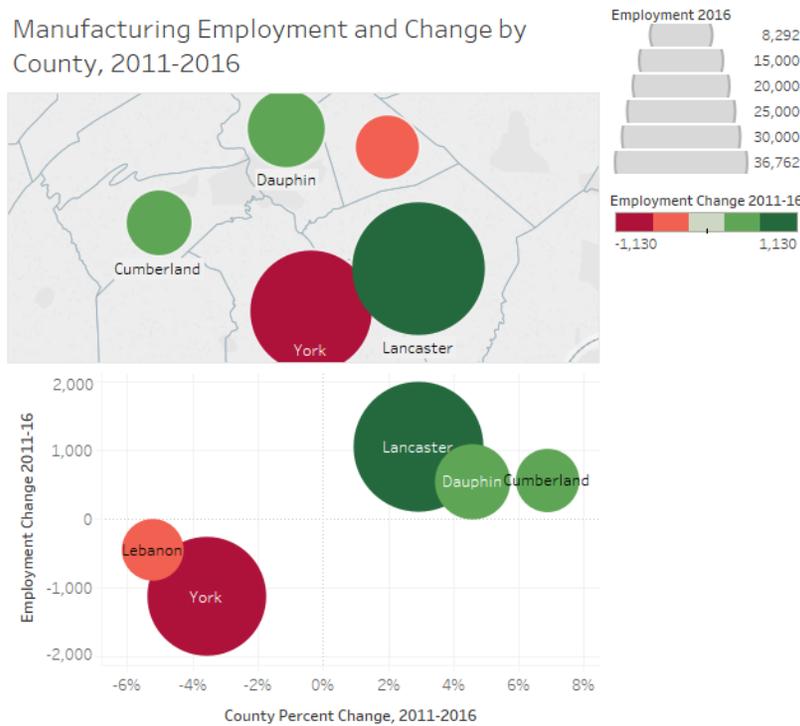


Figure 22: Manufacturing Employment by County

	2011	2016	Change 2011-2016
Cumberland	8,162	8,724	562
Dauphin	11,803	12,346	543
Lancaster	35,715	36,762	1,047
Lebanon	8,749	8,291	(458)
York	31,880	30,750	(1,130)
SCPA Region	96,309	96,874	565

Source: U.S. Bureau of Labor Statistics.

With a few exceptions, the gains and losses in county level manufacturing reflects the distribution of growing and declining industries. A few of the counties experienced some job loss in these growing industries. Lebanon and York Counties have added jobs in the industries growing in the region, but even within these growth industries there are gains and losses within individual counties.

Figure 23: Employment Change 2011-2016 by County for Growing Industries

	Cumberland	Dauphin	Lancaster	Lebanon	York	SCPA Region
Wood product manufacturing	86	24	1,161	217	12	1,500
Plastics and rubber products manufacturing	143	284	594	46	116	1,183
Nonmetallic mineral product manufacturing	79	76	266	-40	286	667
Beverage and tobacco product manufacturing	-25	194	156	39	114	478
Chemical manufacturing	-5	1	-46	-46	509	413
Transportation equipment manufacturing	27	141	0	42	151	361
Primary metal manufacturing	-64	368	-14	-34	-44	212
Textile mills	0	33	-6	5	-9	23
Leather and allied product manufacturing		-6	14		11	19

Source: U.S. Bureau of Labor Statistics. Note: Numbers in red indicate job losses.

There is also a mixed picture of growth and decline at the county level for the industries that have lost jobs in the region between 2011 and 2016, however the county level job gains are generally small except for the addition of 548 food manufacturing jobs in Cumberland, 324 jobs in fabricated metal in Lancaster and 212 jobs in Lebanon for machinery manufacturing.

Figure 24: Employment Change 2011-2016 by County for Declining Industries

	Cumberland	Dauphin	Lancaster	Lebanon	York	SCPA Region
Food manufacturing	548	-17	-188	-127	-217	-1
Textile product mills	-1	3	3	-5	-5	-5
Petroleum and coal products manufacturing	4	5	9	-43	19	-6
Paper manufacturing	34		80	0	-171	-57
Apparel manufacturing	21	-27	-11	-21	-242	-280
Miscellaneous manufacturing	-106	51	-78	25	-194	-302
Fabricated metal product manufacturing	-167	67	324	37	-593	-332
Furniture and related product manufacturing	103	-10	-331	-25	-125	-388
Machinery manufacturing	12	-54	212	-124	-519	-473
Computer and electronic product manufacturing	-147	-14	-199	0	-172	-532
Printing and related support activities	14	-75	-709	-13	-19	-802
Electrical equipment and appliance mfg.	6	-500	-191	-391	-38	-1,114

Source: U.S. Bureau of Labor Statistics. Note: Numbers in red indicate job losses.

The job loss in Lebanon and York counties were driven by the losses of these declining industries, but each of these counties also have employment in the growing industries.

Conclusion

The critical issues for regional action are whether the SCPA region has the right mix of workers and commercial and industries buildings and land to accommodate growing industries and how to transition the workers and spaces from declining industries to new opportunities. These local losses may be tied to the conditions affecting a few specific businesses and may not represent a regional concern that requires action. However, the overall trends in manufacturing should be monitored to ensure that each county has the tools and resources to retain and attract a healthy mix of jobs.