Addressing Emerging Labor Market Challenges in Northeast Maryland with Urgency

JUNE 2020

Sage Policy Group, Inc.
Submitted to:
The Susquehanna Workforce Network

Sage Policy Group, Inc.

Addressing Emerging Labor Market Challenges in Northeast Maryland with Urgency

Executive Summary

When the Susquehanna Workforce Network (SWN) contemplated this project, it is likely that stakeholders were eager to advance strategies to address skills shortages that had emerged in Cecil and Harford counties over time. As of December 2019, prior to the COVID-19 crisis becoming a severe one in the U.S., unemployment in Maryland stood at 3.4 percent. Harford County ended 2019 with a 2.7 percent unemployment rate; Cecil County at 3.2 percent.

With the availability of workers continuing to dissipate, wage growth in America was at a decade-high prior to the pandemic. Job openings were elevated. The clear challenge for SWN and other organizations striving to prepare the workforce for its future was to help people upgrade skills to position them to move further up the rungs of the economic ladder. This also helped to satisfy the needs of employers operating amidst the lengthiest expansion in U.S. economic history – one that appeared to be gaining momentum as 2020 began.

COVID-19 has shattered that dynamic equilibrium. Rather than extending the lengthiest economic expansion in American history, 2020 has turned into an economic catastrophe. While there will be a rapid period of initial recovery from the crisis, complete recovery will prove elusive for years to come.

Accordingly, SWN is faced with a new set of circumstances that looks much like the period associated with 2008-09 and immediately thereafter – a need to quickly connect dislocated people to readily available employment opportunities. This does not mean that efforts to help people move up the economic ladder should be abandoned. Rather, it means that emphasis should now be relatively greater on job placement for those who have been dislocated by the public health crisis.

In support of SWN's mission and the evolving needs of its community, Sage offers 4 recommendations:

- *Recommendation 1: Continue to Expand Credentialing Opportunities*

These credentialing opportunities must be meaningful, which strongly implies that they must be forged in conjunction with businesses operating in in-demand industries. They must also be straightforward to attain by people who are willing to put in the work, are dependable, and are earnestly interested in their own economic betterment. The place to start is with a customer service certification that encompasses an array of industries, including, but not relegated to retail and hospitality. At least some of this content can be delivered online, but to ensure the confidence of employers in this program, there must be face-to-face engagement with students as well.

- *Recommendation 2: Review Rapid Response Guidance & Best Practices*

Sage authored this report during what appears to be the worst of the COVID-19 crisis. While this report is intended to support SWN's strategic needs into the longer-term, there is no way for one to set aside the magnitude of the current crisis and its associated economic shocks and aftershocks.

Accordingly, we recommend that SWN review its own best practices and the best practices of other leading workforce development organizations in quickly connecting dislocated workers to employment opportunities. The goal is to return as quickly as possible to the economic conditions that prevailed during the status quo ex ante – a status quo that lingered through the early days of March 2020.

- *Recommendation 3: Target Industry Clusters*

As in prior reports, Sage has set forth recommendations regarding industries likely to create the most employment opportunities or industries in which the region has a likely competitive advantage. Sage recommends that these industries be prioritized as focus areas:

a. *Logistics*
b. *Healthcare & Retirement Services*
c. *Construction*
d. *Manufacturing, Including 3D Printing*
e. *Information Technology/Cyber*
f. *Hospitality*

- *Recommendation 4: More Potent Messaging for High School Juniors & Seniors*

Based on its analysis, Sage recommends that SWN leadership develop a formal presentation targeted toward high school juniors and seniors focusing on the array of career paths available to them. The goal should be for SWN personnel or hired consultants to present this information at least once to each class. That means speaking to roughly half of the region's high schools each year.

Conclusion

The COVID-19 crisis of 2020 fundamentally altered this report. But for the crisis, this report would likely have looked much more like its 2016 precursor, offering additional ideas to push more people into northeast Maryland's already large middle class.

While Sage has continued to emphasize issues such as credentialing, partnerships with local two-year colleges, engagement with employers, and critical target industries in its workforce development analysis, the greatest need over the near-term involves connecting dislocated workers with available jobs, taking advantage of online training opportunities in the process to help stretch training budgets and expand access.

Addressing a New Set of Labor Market Challenges in Northeast Maryland with Urgency

Table of Contents

List of Exhibits

Introduction

Report Objective

In 2012 and again in 2016, Sage Policy Group, Inc. (Sage) authored workforce development reports on behalf of the Susquehanna Workforce Network (SWN). Those reports were intended to serve as the factual predicate for SWN's strategic endeavors.

The organization's strategy has been shaped heavily by the aftermath of the Great Recession. In February 2010, unemployment in Cecil County reached 10.7 percent, its cyclical apex. The same month, unemployment peaked in Harford County at 8.6 percent. Unemployment would not return to a sub-6 percent level in Harford County until November 2013 and would not achieve that threshold in Cecil County until September 2014. Accordingly, Sage's 2012 report was heavily focused on connecting people to jobs.

By 2016, circumstances had changed – for the better. By mid-2016, unemployment in Harford County had dipped into the mid-4s while it stood at the mid-5s in Cecil County. Steadily, the ongoing economic expansion was chipping away at unemployment, helping to usher forth a robust consumer-led expansion that stood firmly until a global pandemic stopped it in its tracks.

In 2020, the Susquehanna Workforce Network in partnership with the economic development offices of Cecil and Harford counties once again tasked Sage Policy Group with conducting a labor market analysis. This report summarizes our key analytical findings, highlights principal policy considerations, and supplies recommendations for action. Many stakeholders are implicated by this analysis, including employers, jobseekers, nonprofits, government officials, and taxpayers. This report seeks to accomplish objectives similar to prior studies while recognizing the significant shifts in economic conditions that are transpiring in 2020.

Report Organization

Sage has organized the report as follows. Section I discusses the current state of national and regional labor markets, including data regarding industry employment, average business size, wages, and recent drivers of employment growth. Section II details likely future trends and conditions in the local labor market, including by focusing on expanding and emerging employment sectors and skill sets of the future. At this time, it is expected that the early phases of the recovery from the pandemic will be brisk, but that complete economic recovery will prove elusive for several years.

Section III details workforce dynamics, including population growth, workforce participation, educational attainment, and levels of engagement with institutions that help expand human capital. Section IV evaluates the region's economic assets and supplies a SWOT (strengths, weaknesses, opportunities and threats) analysis. Section V supplies our latest recommendations and reviews those emerging from the previous workforce development report in 2016. The report concludes with a statistical appendix.

I. Labor Market and Economic Trends

A. Years of Progress

This section of the report addresses historical and existing economic conditions in the Susquehanna region, including unemployment, industry concentration, wages, and recent growth trends. Unfortunately, what had been an appealing set of labor market circumstances has been undone by a global pandemic spreading throughout the U.S. – one that has shuttered businesses of varying sizes and in many industries, wreaked havoc with the gig economy at a time of mandated social distancing, and left many economic actors unsure about their viability.

While the federal government passed a massive $2.2 trillion stimulus package in late-March 2020, including expanding and rendering more generous unemployment insurance benefits, no stimulus can fully address the economic consequences of COVID-19. That is because the pandemic is a supply shock. While sending checks to Americans may help the payments side of the economy, it does not get people back to work. That is what will be necessary to grow the economy again. Gross domestic product is a measure of output, and output cannot expand in earnest even with sizable transfer payments to industries that can't operate (e.g. airlines, hospitality, retail, etc.).

Still, some things haven't changed. The U.S. Census Bureau continues to define Harford County as being part of the Baltimore-Columbia-Towson, MD metropolitan statistical area. Cecil County is defined as being part of the Philadelphia-Camden-Wilmington metropolitan statistical area and part of the Wilmington, DE-MD-NJ metropolitan division, which includes Cecil County, MD, Salem County, NJ, and New Castle County, DE. Situated between the Baltimore metropolitan area (pop. 2.8 million) and the even larger Philadelphia metropolitan area (6.1 million), the Susquehanna region forms part of one of the nation's densest labor markets.

That said, Cecil and Harford counties are among the more rural jurisdictions of the Philadelphia-Baltimore corridor. Total employment in the Susquehanna region stood at 128,000 in 2019 (Exhibit 1), or 8.1 percent above its 2014 level. Harford County represents nearly three-quarters of Susquehanna employment.

Between 2014 and 2019 employment grew faster in Cecil and Harford counties than statewide. Not only are both jurisdictions heavily influenced by the Baltimore/Washington and Philadelphia metropolitan areas, northeast Maryland is also impacted by the dynamics of New Castle County, home to communities like Wilmington (financial center) and Newark (significant university community).

On December 11th, 2015, the Dow Chemical Company (Dow) and E. I. DuPont de Nemours and Company (DuPont) announced entry into a plan of merger. That merger was completed in 2017, and resulted in significant adjustments at one of Delaware's largest employers. By late-2015, DuPont had announced hundreds of job cuts. Since that time, New Castle County's economy has stabilized, creating additional employment and commercial opportunities for Susquehanna regional stakeholders.

Exhibit 1. Total Employment (NSA), 2014 v. 2019[1]

	Total Employment (Annual Average)		2014 v. 2019	
	2014	2019	Net	%
Maryland	2,552,623	2,698,770	146,147	5.7%
Susquehanna WIA	118,792	128,431	9,639	8.1%
Cecil County, MD	30,643	33,386	2,743	9.0%
Harford County, MD	88,149	95,045	6,896	7.8%
Baltimore County, MD	364,651	380,462	15,811	4.3%
Baltimore City, MD	331,750	344,069	12,319	3.7%
Chester County, PA	240,501	252,844	12,343	5.1%
New Castle County, DE	278,216	293,605	15,389	5.5%

Source: U.S. Bureau of Labor Statistics; Maryland Department of Labor (DOL), Maryland Quarterly Census of Employment and Wages (QCEW) program; Sage. Notes: 1. NSA: Not Seasonally Adjusted.

Exhibit 2 highlights the nature of economic retrenchment and recovery. Job loss in the Susquehanna region was profound during the Great Recession and its initial aftermath. Thereafter, there was a period of sharp job growth, followed by slower, but still consistent growth.

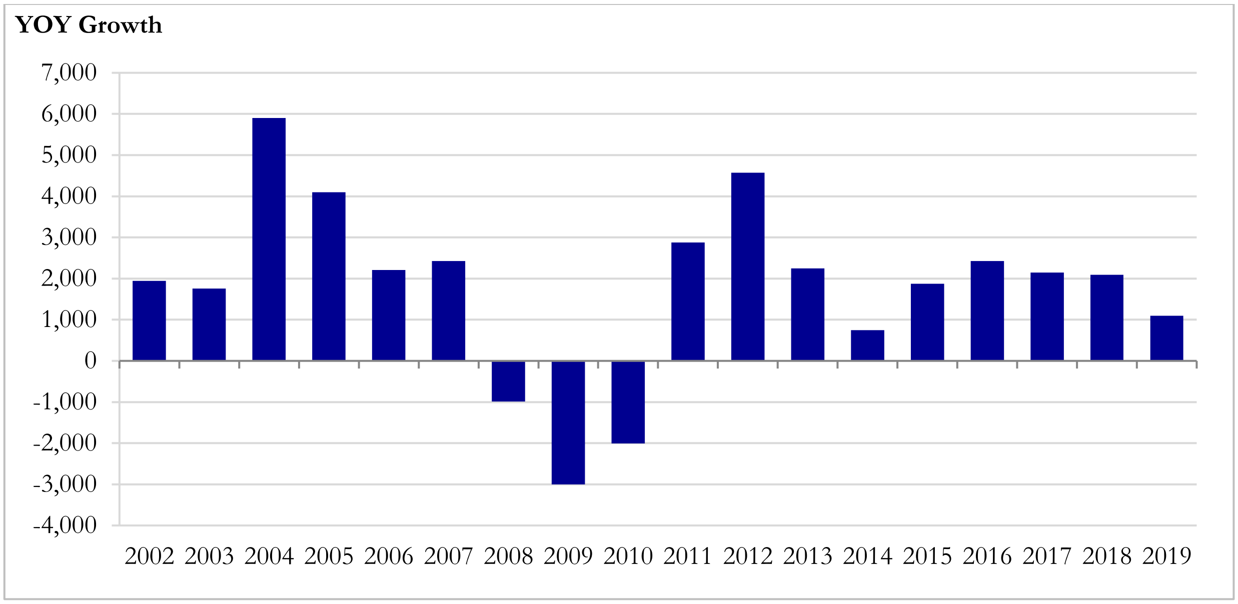
To a certain extent, this is what Sage anticipates with respect to the COVID-19 induced downturn, though the speed of decline and initial recovery will be far sharper. While the pace of recovery from prior pandemics has been rapid initially ("v"- shaped; e.g. H2N2, 1957, US; SARS, 2003, Hong Kong), the period of downturn can leave lingering economic vulnerability. Many storefronts remain empty, frustrating new construction starts, government budgets remain stretched, businesses suffer persistent cashflow issues as they strive to repay accumulated debt, household decision-makers remain skittish, and supply chains remain disrupted.[2]

These dynamics are of major concern to the operations of SWN. While there will be an initial rush of job creation post-pandemic as surviving businesses reclaim many of their former workers, there may be a period of economic stagnation thereafter. In other words, the years to come may prove far more challenging in terms of helping people up the economic ladder than the latter years of the prior decade. This means that *relatively* greater attention will need to be paid to those who have been dislocated from the workforce than had been the case during a period of unusually low unemployment and atypically large volumes of unfilled job openings.

[1] Figures reported by the Bureau of Labor Statistics QCEW and the Maryland QCEW differ slightly, but the difference is negligible.

[2] Local government finances were healthy entering the period of crisis. For instance, Harford County had built its general fund balance to the highest it has ever been.

Exhibit 2. Susquehanna Region Employment Growth (NSA), 2002-2019



Source: U.S. Bureau of Labor Statistics; Maryland Department of Labor (DOL), Maryland Quarterly Census of Employment and Wages (QCEW) program; Sage. Notes: 1. NSA: Not Seasonally Adjusted.

The pace of business formation has been stronger in Harford County than in Cecil County in recent years, though this can be misleading. While the number of enterprises operating in Cecil County has actually declined in recent years, Cecil County has enjoyed significant job growth associated with large employers, including major distributors operating from the Principio Business Park in North East, MD.

Exhibit 3. Number of Business Establishments, 2014 v. 2019

	Total # of Establishments (Annual Average)		2014 v. 2019	
	2014	2019	Net	%
Maryland	167,210	175,796	8,586	5.1%
Susquehanna WIA	7,568	7,882	314	4.1%
Cecil County, MD	1,938	1,927	-11	-0.6%
Harford County, MD	5,630	5,955	325	5.8%
Baltimore County, MD	21,285	21,473	188	0.9%
Baltimore City, MD	13,874	13,861	-13	-0.1%
Chester County, PA	15,005	15,714	709	4.7%
New Castle County, DE	18,300	21,263	2,963	16.2%

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW); Sage.

Between 2014 and 2019, the number of business establishments in Harford County grew by 314, or 4.1 percent. In Cecil County, the number contracted by 11, or 0.6 percent. Business formation has been particularly rapid in New Castle County, DE. Presumably this helps improve employment prospects of Susquehanna residents, especially those in neighboring Cecil County.

Unemployment in the Susquehanna region has fallen significantly in recent years, but remained above the national average in Cecil County as COVID-19 approached. Between 2013 and 2019, unemployment fell from 6.5 percent to 3.4 percent in Harford County and from 7.7 percent to 4.0 percent in Cecil County.

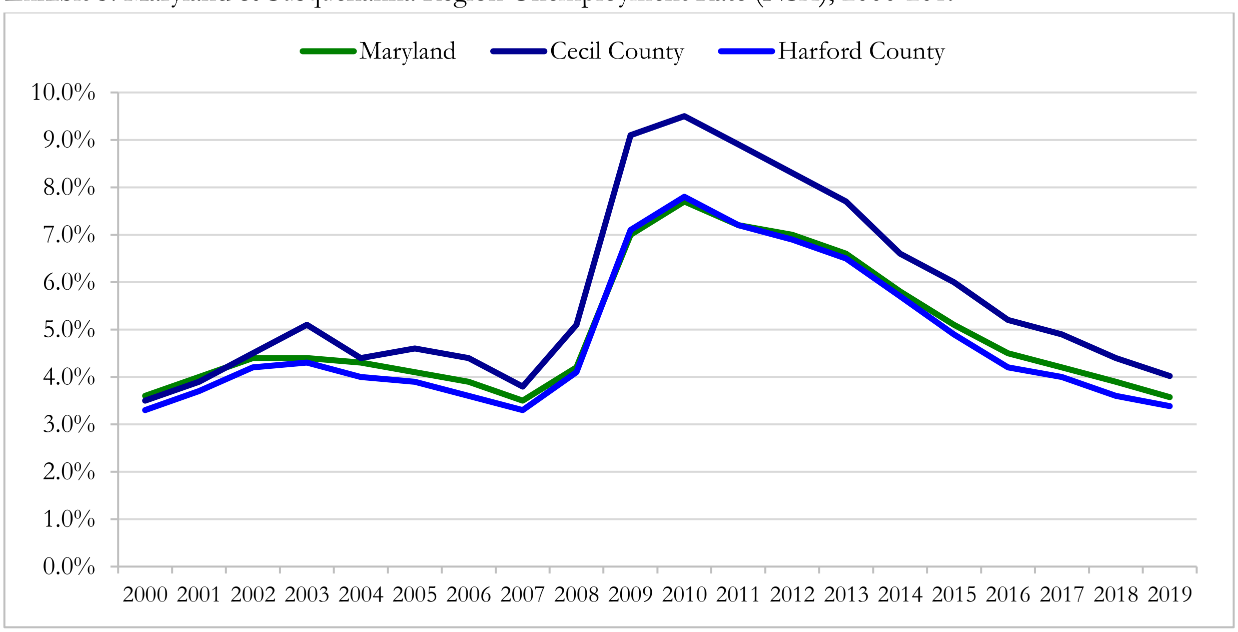
Exhibit 4. Unemployment Rate for U.S. and Select Areas (NSA), Select Years

Area	Unemployment Rate (%)			
	2008	2013	2018	2019
United States (SA)	5.8%	7.4%	3.9%	3.7%
Maryland (SA)	4.3%	6.6%	4.0%	3.6%
Baltimore-Columbia-Towson, MD MSA	4.4%	6.8%	4.0%	3.7%
Harford County, MD	4.1%	6.5%	3.6%	3.4%
Baltimore County, MD	4.4%	6.9%	4.0%	3.7%
Baltimore City, MD	6.5%	9.7%	5.7%	5.1%
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD MSA	5.3%	7.8%	4.2%	3.9%
Cecil County, MD	5.1%	7.7%	4.4%	4.0%
Chester County, PA	3.9%	5.3%	3.2%	3.0%
New Castle County, DE	4.9%	6.5%	3.7%	3.4%

Source: U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics (LAUS) program; Sage.
Notes: 1. SA: Seasonally Adjusted. NSA: Not Seasonally Adjusted. 2. United States unemployment rate figures represent average of the unemployment rate over the 12 months of each year. 3. 2019 figures are preliminary.

As indicated in Exhibit 5, regional unemployment has been sitting at multi-year lows. Based on the number of available job openings nationally and regionally, unemployment was set to fall even further until a global pandemic rapidly undid many years of progress.

Exhibit 5. Maryland & Susquehanna Region Unemployment Rate (NSA), 2000-2019



Source: U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics (LAUS) program; Sage.
Notes: 1. NSA: Not Seasonally Adjusted. 2. 2019 figures are preliminary.

B. Industry Employment

Government represents a significant portion of total employment in the Susquehanna region due in large measure to the presence of Aberdeen Proving Ground (APG) and a bevy of associated government contractors. Federal government accounts for more than 10 percent of total regional employment. Many government contractors are encompassed within the private professional and business services segment, which also accounts for in excess of 10 percent of employment, though this proportion is well below that of the state of Maryland.

Logistics/distribution is another industry of disproportionate import in the Susquehanna region, with the trade, transportation, and utilities industry accounting for more than 22 percent of total employment. This is logical and largely an outgrowth of the region's alignment with I-95, its proximity to major metropolitan areas along the Atlantic seaboard, its relatively lower cost of land per acre relative to more densely populated communities, and the presence of ports in both Baltimore and the Philadelphia region.

Exhibit 6. Susquehanna Region: Employment by Industry, 2018

Industry	Annual Average Employment (Susquehanna Region)	% of Total Employment	
		Susquehanna Region	Maryland
TOTAL EMPLOYMENT	126,819	100.0%	100.0%
Government Sector	26,672	21.0%	18.3%
Federal Government	12,964	**10.2%**	5.4%
State Government	1,108	0.9%	3.7%
Local Government	12,599	9.9%	9.1%
Private Sector (All Industries)	100,146	79.0%	81.7%
Goods-Producing	18,046	14.2%	10.4%
Natural Resources and Mining	1,275	1.0%	0.2%
Construction	7,262	5.7%	6.1%
Manufacturing	9,507	7.5%	4.1%
Service Providing	82,100	64.7%	71.3%
Trade, Transportation, and Utilities	28,466	**22.4%**	**17.3%**
Information	570	0.4%	1.4%
Financial Activities	4,072	3.2%	5.2%
Professional and Business Services	12,874	10.2%	16.9%
Education and Health Services	16,637	13.1%	16.6%
Leisure and Hospitality	15,529	12.2%	10.5%
Other Services	3,947	3.1%	3.5%

Source: Maryland Department of Labor, Licensing and Regulation (DLLR), Maryland Quarterly Census of Employment and Wages (QCEW) program; Sage.

Harford and Cecil counties are located at the outer boundaries of their respective metropolitan areas. Accordingly, many residents commute to the core of these metropolitan areas to participate in the densest proximate labor markets.

Exhibit 7 indicates that approximately 152,000 people living in the Susquehanna region had jobs in 2017, while the region itself was home to just over 102,000 positions. This implies that a large fraction of workers commutes outside the northeast Maryland region for work.

It has long been a goal of local economic development to create higher quality jobs in the Susquehanna region so that more residents would at least have alternatives to lengthy commutes. Perhaps the urgency of this is overstated. While shorter commutes would be most welcome, what may matter more is that residents are well-trained, and therefore have an assortment of available opportunities to them and can determine for themselves whether they prefer jobs at the heart of metropolitan areas or on the periphery.

During the recent upswing in economic activity, scarce human capital induced many employers to expand in places associated with available labor. This had the effect of many employers concentrating their activities in the heart of metropolitan areas. These are the places where newly minted high school and college graduates were likely to congregate as they sought quality of life opportunities associated with densely-populated communities while participating in deep labor markets. One of the manifestations of this is the large-scale construction of high-rise apartment and office buildings in recent years in every major metropolitan area, including in Baltimore and Philadelphia.

In the exhibit below, counts in the home area are typically far larger than in the work area. For instance, as of 2017, Census data indicate that nearly 7,300 residents of the Susquehanna region worked in financial services, but that fewer than 2,700 positions existed in the region. This means that on net approximately 4,600 people commuted out of the region for such jobs, including to financial services providers located in Wilmington, DE (e.g. MBNA) and Baltimore (e.g. T. Rowe Price).

Exhibit 7. Susquehanna Region: Employment by Industry, 2017 (U.S. Census Bureau, On the Map)

Industry	Work Area		Home Area	
	Count	Share	Count	Share
Agriculture, Forestry, Fishing and Hunting	985	1.0%	779	0.5%
Mining, Quarrying, and Oil and Gas Extraction	258	0.3%	171	0.1%
Utilities	117	0.1%	942	0.6%
Construction	7,691	7.5%	11,201	7.3%
Manufacturing	8,764	8.5%	10,095	6.6%
Wholesale Trade	3,731	3.6%	6,533	4.3%
Retail Trade	13,832	13.5%	18,006	11.8%
Transportation and Warehousing	7,011	6.8%	6,511	4.3%
Information	1,209	1.2%	2,538	1.7%
Finance and Insurance	2,663	2.6%	7,299	4.8%
Real Estate and Rental and Leasing	1,026	1.0%	2,336	1.5%
Professional, Scientific, and Technical Services	8,237	8.0%	13,125	8.6%
Management of Companies and Enterprises	271	0.3%	1,489	1.0%
Administrative & Support and Waste Management & Remediation Services	4,485	4.4%	7,902	5.2%
Educational Services	9,847	9.6%	15,018	9.8%
Health Care and Social Assistance	12,900	12.6%	21,129	13.8%
Arts, Entertainment, and Recreation	2,158	2.1%	2,689	1.8%
Accommodation and Food Services	10,248	10.0%	12,346	8.1%
Other Services (excluding Public Administration)	3,648	3.6%	5,325	3.5%
Public Administration	3,529	3.4%	7,388	4.8%
Total	**102,610**	**100.0%**	**152,822**	**100.0%**

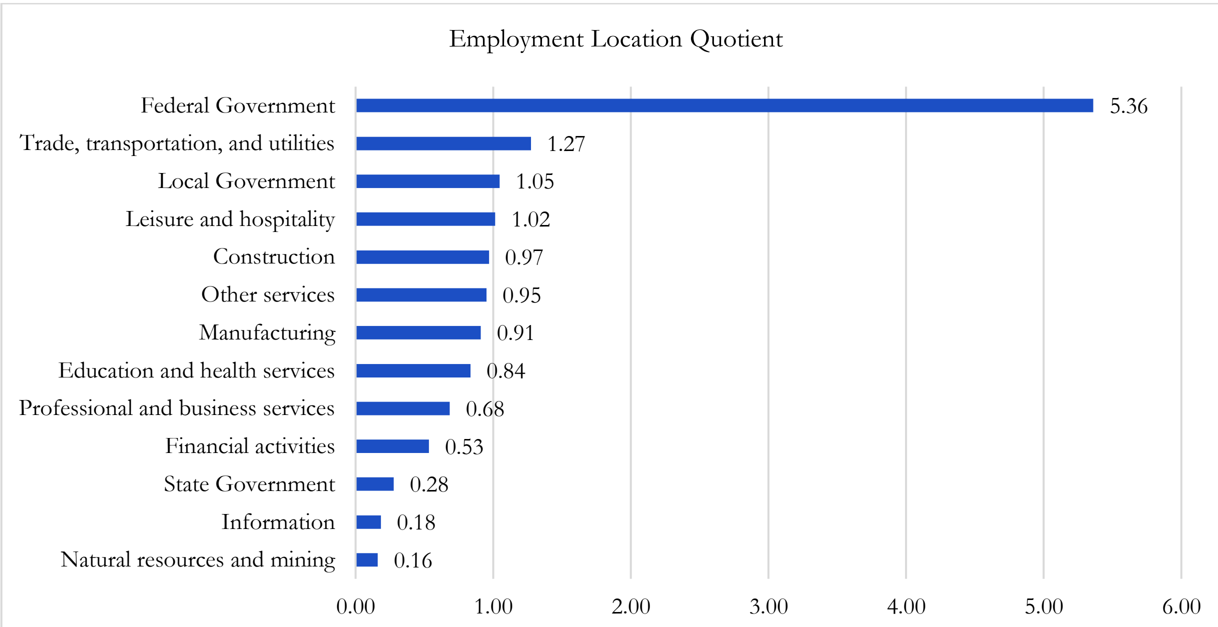
Source: U.S. Census Bureau. Longitudinal-Employer Household Dynamics Program, OnTheMap Application; Sage. Notes: 1. Numbers represent *primary* jobs, not total jobs. Primary Jobs: Public and private-sector jobs, one job per worker. A primary job is the highest paying job for an individual worker. 2. Job figures presented are for the Susquehanna Workforce Investment Area (WIA), which is comprised of Cecil County and Harford County.

Location quotients are useful in highlighting the extent to which certain industries are over-or under-represented in a region. A location quotient above 1.0 indicates that an industry is over-represented in a region vis-à-vis some other region of comparison. The location quotients below compare the Susquehanna region to the nation.

As noted above, federal government employment is highly concentrated in the Susquehanna region, with an employment location quotient of 5.36 (a reading of 1 means that an industry is no more or no less represented in a region than in the comparison area). This means that federal government's share of regional employment is five times the corresponding concentration nationally. In Harford County, home to Aberdeen, the location quotient for federal government is 6.1. Exhibits A3-A4 in the Appendix detail employment and wage location quotients for Cecil and Harford counties separately.

Other industries that are especially concentrated in the Susquehanna region include trade, transportation, and utilities (location quotient of 1.27), local government (1.05), and leisure and hospitality (1.02). At the county level, manufacturing has a particularly high location quotient in Cecil County (1.77) and construction has a high location quotient in Harford County (1.31). For SWN, this reinforces the importance of connecting people to training opportunities for skilled craftspeople, including carpenters, electricians, welders, machinists and mechanics.

Exhibit 8. Susquehanna Region Industry Concentration (Location Quotients), 2019Q4



Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW) program; Sage. Notes: 1. Figures are for private employment except for Federal/State/Local government. 2. Location quotient is the percentage of employment in a given sector relative to the percentage of employment in this sector at the national level. Values above 1.0 reflect a concentration greater than the national average. Values below 1.0 reflect a lesser concentration. For example, Las Vegas will have a location quotient greater than 1 in the Leisure and Hospitality industry because this industry makes up a larger share of the Las Vegas employment total than it does for the country as a whole.

C. Business Size and Classification

The majority of Susquehanna regional private sector businesses can be considered small. Nearly two-thirds of business establishments in the Susquehanna region have fewer than ten employees (73.6%) and just over one-fifth have between 10-49 employees (21.6%). Large employers with 100+ employees represent just 1.9 percent of all business establishments (see Exhibit A2 in the Appendix).

Some of the largest of such large employers are listed in Exhibit 9 below. By far the largest employer in the region is Aberdeen Proving Ground (APG), which employs approximately 21,000 people. That represents roughly 16.5 percent of total regional employment. Many large private employers are in healthcare/medical services, distribution/retail trade, and manufacturing.

A number of the largest private employers in Cecil County are in manufacturing, including Northrop Grumman Innovation Systems (formerly Orbital ATK), Terumo Medical Products, and Terumo Cardiovascular Systems, which is consistent with Cecil County's manufacturing location quotient of

1.72. Helping to meet the human capital needs of these and other manufacturers forms a principal and ongoing objective of SWN. Sage theorizes that the pandemic's impact on already strained and fragmented global supply chains will further induce more manufacturers to produce in the United States rather than in East Asia.

Exhibit 9. Major Private Employers* in the Susquehanna Region

Rank	Company	# Employed	Industry	Product/Service
Cecil County				
1	W. L. Gore & Associates	2,405	Wholesale Trade	Medical Products / R&D
2	Perry Point VA Medical Ctr.**	1,500	Medical Services	Medical Services
3	Union Hospital / Affinity Health System	1,235	Medical Services	Medical Services
4	Amazon	1,100	Transportation & Warehousing	Fulfillment
5	IKEA	580	Retail Trade	Home Furnishings Distrib.
6	Cecil College	565	Educational Services	Higher Education
7	Northrop Grumman Innovation Systems (formerly Orbital ATK)	465	Manufacturing	Propellants, Rocket Motors
8	Terumo Medical Products	340	Manufacturing	Medical Products / R&D
9	Terumo Cardiovascular Systems	270	Manufacturing	Medical Products / R&D
10	Penn National Gaming / Hollywood Casino	265	Arts, Entertainment & Recreation	Casino Gaming
Harford County				
1	Aberdeen Proving Ground**	21,000	Federal Government	Military Installation / R&D
2	University of Maryland Upper Chesapeake Health	3,300	Health Care & Social Assistance	Medical Services
3	Kohl's E-Fulfillment Center	1,200	Distribution/Retail Trade	Consumer Goods
4	Rite Aid Mid-Atlantic Customer Support Center	1,030	Wholesale Trade	Pharmaceuticals, Consumer Goods
5	Harford Community College	1,000	Educational Services	Higher education
6	Frito-Lay	750	Manufacturing/Distribution	Snack Products
7	Jones Junction Auto Group	675	Retail Trade	Car Dealers
8	Gordon Food Service	630	Distribution/Retail Trade	Food Service
9	CACI	500	Professional, Scientific, & Technical Services	IT & Network Solutions
9	Sephora USA	500	Distribution/Retail Trade	Beauty Products

Source: Maryland Department of Commerce; Cecil County Office of Economic Development; Harford County Office of Economic Development (February 2019); Sage. Note: *Excludes post offices, state and local governments; includes public higher education institutions. **Employee counts for federal and military facilities exclude contractors to the extent possible; embedded contractors may be included.

Exhibit 10 supplies data regarding business establishments in the Susquehanna region. The dominant industries in the region include trade, transportation, and utilities (20.4% of total establishments), professional and business services (19.4%), and construction (13.1%).

Though for a time the pandemic will slow construction activity in the Susquehanna region due not only to potential work stoppages, but also higher vacancy rates post-crisis, over the long-term construction will represent a key regional growth industry. The largest American generation, the Millennials, are coming of age. For many years, they have driven regional apartment markets. But now many have entered their 30s and many more are to follow. This will eventually translate into surging demand for suburban residences, especially those associated with high-achievement schools. Moreover, the Susquehanna region's commercial sector continues to expand, and that will continue as businesses seek to take advantage of the area's growing population, spending power, and labor force.

Exhibit 10. Susquehanna Region Business Establishments by Industry, 2019

Industry	# of Establishments	% of Total Establishments
TOTAL ESTABLISHMENTS	7,882	100.0%
Government Sector	*207*	2.6%
Federal Government	80	1.0%
State Government	20	0.3%
Local Government	107	1.4%
Private Sector (All Industries)	*7,675*	97.4%
Goods-Producing	1,349	17.1%
Natural Resources and Mining	80	1.0%
Construction	1,036	13.1%
Manufacturing	232	2.9%
Service Providing	6,328	80.3%
Trade, Transportation, and Utilities	1,610	20.4%
Information	55	0.7%
Financial Activities	692	8.8%
Professional and Business Services	1,533	19.4%
Education and Health Services	944	12.0%
Leisure and Hospitality	787	10.0%
Other Services	709	9.0%

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW); Sage.

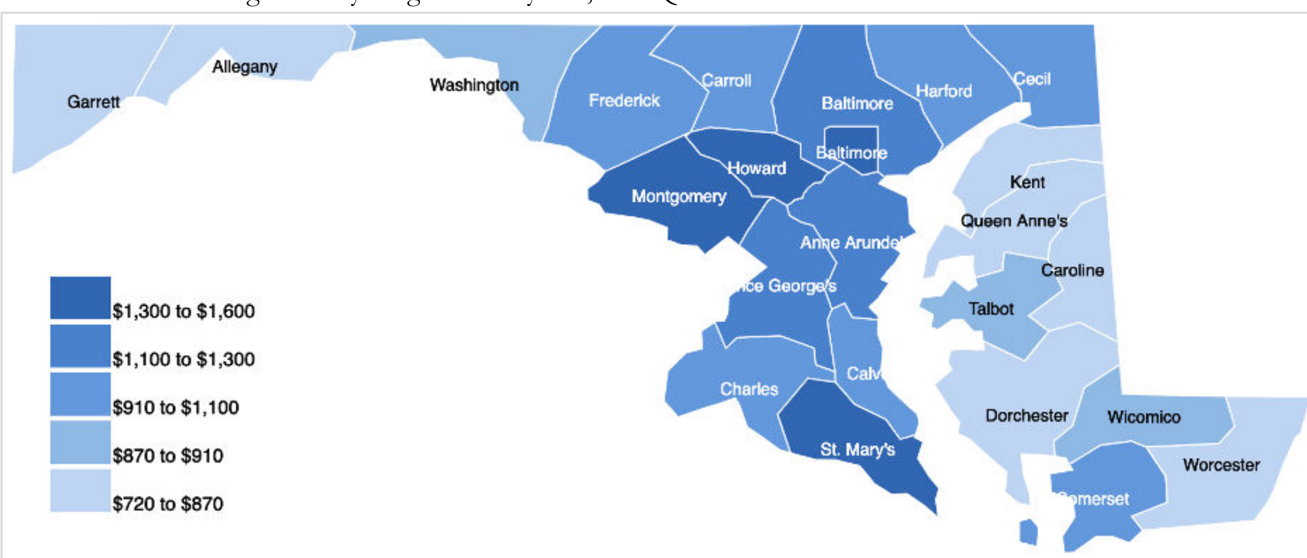
D. Wages by Industry and Occupational Category

Prior to the arrival of the global pandemic that has utterly shattered economic hopes for 2020, unemployment was steadily edging lower even as the number of available job openings ratcheted higher. Recently the combination of low labor force supply and elevated human capital demand helped produce the fastest wage growth in roughly a decade.

Wage growth would have been even more pronounced but for demographic factors. In many occupational categories, one's compensation is a function of one's tenure on the job. People often receive routine annual raises, step increases, and occasional cost of living adjustments. But as more Baby Boomers retire, they take their elevated salaries with them out of the data. These more experienced workers are frequently supplanted by members of Generation Y (the Millennials) and now by members of Generation Z, the youngest members of America's labor force. This has a suppressing impact on wage growth, but if one controls for that demographic factor, one observes significant wage appreciation in recent years.

The average weekly wage in the Susquehanna region is lower than the statewide average. In 2018, the average statewide weekly wage was $1,177 compared to $982 in the Susquehanna region. Exhibit 11 provides detail regarding the fact that wages are highest in the core of the Baltimore-Washington corridor, which helps explain the large net outmigration that occurs each working day from the Susquehanna region. There are also more jobs in absolute terms available in the corridor.

Exhibit 11. Average Weekly Wages in Maryland, 2019Q4



Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW) program, QCEW State and County Map Application; Sage. Note: Average weekly wage among all industries, public and private.

The highest paying employment sectors in the Susquehanna region are federal government, manufacturing, and professional and business services. While wages are slightly higher in Harford County compared to Cecil County, wages in Cecil County have been catching up in recent years. Between 2013 and 2018, the average weekly wage in Cecil County grew by nearly 14 percent compared to growth of less than 10 percent in Harford County, bringing the average weekly wages in the two counties closer. In 2013, the average weekly wage in Cecil County was $92 less than in Harford County. Five years later, the gap had been trimmed to $54 ($934 v. $998). Overall, wages in the Susquehanna region grew by 10.5 percent between 2013 and 2018.

Exhibit 12. Average Weekly Wage by Industry Sector, 2013 vs. 2018

	Susquehanna Region		Cecil County		Harford County	
	2013	2018	2013	2018	2013	2018
Total Employment	$888	$982	$820	$934	$912	$998
Public Sector Total	$1,240	$1,384	$969	$1,185	$1,317	$1,445
Federal Government	$1,620	$1,821	$1,298	$1,601	$1,664	$1,860
State Government	$829	$924	$861	$983	$798	$870
Local Government	$872	$974	$846	$1,002	$883	$962
Private Sector Total	$781	$875	$782	$874	$780	$875
Goods-Producing	$1,111	$1,264	$1,228	$1,427	$1,037	$1,168
Natural resources & mining	$712	$775	$664	$715	$872	$1,003
Construction	$895	$1,088	$764	$999	$923	$1,105
Manufacturing	$1,319	$1,463	$1,462	$1,697	$1,181	$1,252
Service-Providing	$708	$789	$627	$683	$734	$822
Trade, transportation, & utilities	$623	$699	$672	$720	$606	$691
Information	$1,174	$1,155	$1,109	$1,237	$1,202	$1,138
Financial activities	$946	$1,146	$829	$920	$972	$1,179
Professional & business services	$1,162	$1,310	$680	$808	$1,237	$1,382
Education & health services	$809	$881	$781	$856	$819	$890
Leisure and hospitality	$296	$354	$345	$387	$275	$341
Other services	$579	$640	$526	$649	$594	$637

Source: U.S. Bureau of Labor Statistics; Maryland Department of Labor (DOL), Maryland Quarterly Census of Employment and Wages (QCEW) program; Sage.

Some of the fastest wage gains in recent years in the Susquehanna region have been in construction and leisure/hospitality. Wages in construction expanded 21.5 percent between 2013 and 2018, while wages in leisure and hospitality expanded 19.7 percent.

This is in part a reflection of a national trend. In America's consumer-driven expansion, there has been considerable demand for front-line service workers. Accordingly, in recent years, wage growth in percentage terms at the bottom of the wage scale has been more rapid than at the top. For instance, according to data from the Federal Reserve Bank of Atlanta, pay rates for the bottom 25 percent of wage earners was 4.5 percent higher in November 2019 than a year earlier. Wages for the top 25 percent of earners rose 2.9 percent over the same period.[3]

During a period of rapidly expanding stock prices and elevated demand for retirement planning, wages in financial services also expanded rapidly in the Susquehanna region. Over the past five years for which data are available, wages in this high-wage segment expanded 21.1 percent. Exhibit A5 in the Appendix reflects changes in average weekly wages by industry for Cecil and Harford counties and the Susquehanna region as a whole.

E. Recent Employment Growth Trends

While the public sector, including the federal government, represents a significant source of employment in the Susquehanna region, Exhibit 13 indicates that in recent years the private sector has been a more significant source of employment growth. Public sector employment has actually declined in recent years, falling at an average annual rate of 0.3 percent between 2014 and 2019. Private sector employment grew at an average annual rate of 2.1 percent during the same time period, in part a reflection of more rapid economic growth in Cecil County, which has emerged as one of Maryland's leading growth communities.

Exhibit 13. Susquehanna Region Employment by Sector, 2009, 2014, 2019

	Employment			Net Growth		CAGR	
	2009	2014	2019	2009-2019	2014-2019	2009-2019	2014-2019
Total Employment	110,363	118,792	128,431	18,068	9,639	1.5%	1.6%
Public Sector Employment	26,440	27,388	26,954	514	-434	0.2%	-0.3%
Private Sector Employment	83,923	91,404	101,478	17,555	10,074	1.9%	2.1%
Goods-Producing	15,839	16,346	18,679	2,840	2,333	1.7%	2.7%
Service-Producing	68,084	75,058	82,799	14,715	7,741	2.0%	2.0%

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW) program; Sage.

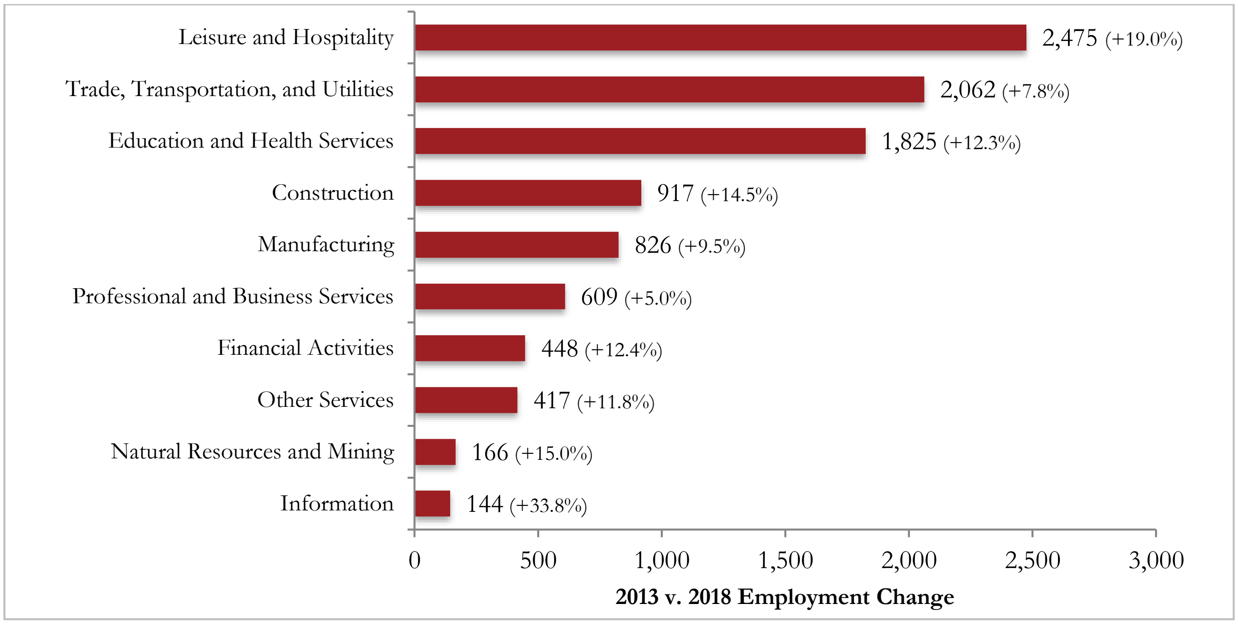
As was the case at the time of Sage's last analysis, private industries with the largest net job growth tend to be closely tied to consumer spending. Leisure and hospitality experienced the largest growth in employment in net terms over a recent five-year period (2013 v. 2018). Trade, transportation, and utilities experienced the second largest net increase in jobs, followed by education and health services.

Employment in the information industry, which had been on the decline at the time of the previous analysis, rebounded between 2013 and 2018, but still represents a very small source of regional employment (0.4%; Exhibit 6). This may seem surprising in the context of the emerging

[3] The Wall Street Journal, "Rank-and-File Workers Get Bigger Raises", by Eric Morath and Jeffrey Sparshott, 12/27/2019. https://www.wsj.com/articles/rank-and-file-workers-get-bigger-raises-11577442600.

information economy, but is really more a function of how enterprises are classified. Many companies that are viewed as "information" are categorized in other segments. Google sells advertising and is accordingly considered a professional services provider. Apple is a manufacturer. Amazon is a distributor. Information includes entities like newspapers, radio stations, and magazines – entities that have often struggled due to competition from the Internet and its ability to effectively, globally, and instantaneously disseminate content.

Exhibit 14. Growth in Susquehanna Region Private Sector Employment by Industry, 2013 v. 2018



Source: Maryland Department of Labor (DOL), Maryland Quarterly Census of Employment and Wages (QCEW); Sage.

There is an obvious connection between rapidly expanding industries and demand for workers. America's consumer-led expansion produced significant demand for workers at area restaurants (classified within leisure and hospitality), at fulfillment centers (classified within trade transportation, and utilities), and in construction. With the population of Americans over the age of 85 growing rapidly along with other elderly age cohorts, demand for healthcare workers has also been on the rise.

Of course, these were the trends that persisted prior to the global pandemic. The demand for leisure and hospitality workers is unlikely to fully rebound quickly. The same is true for construction workers and perhaps many in manufacturing as well.

The implications for SWN are considerable. At least in the near-term, there will be greater demand for services delivered to workers who have been displaced. Perhaps this won't be especially difficult on a per capita basis since many of these workers already have substantial work histories, but there will be thousands of people in need of support. Accordingly, the nature of demand for SWN services may look more like the post-2009 period for the time being than was the case when the economic expansion was proceeding apace.

II. Looking Ahead

This section of the report addresses emerging and in demand industry sectors and occupations nationwide, at the state level, and in the Susquehanna region, and discusses the skills, education, and experience required by those jobs. While the novel coronavirus will upset employment trends over the near-term, there are larger technological and demographic forces that will eventually reestablish many pre-existing patterns.

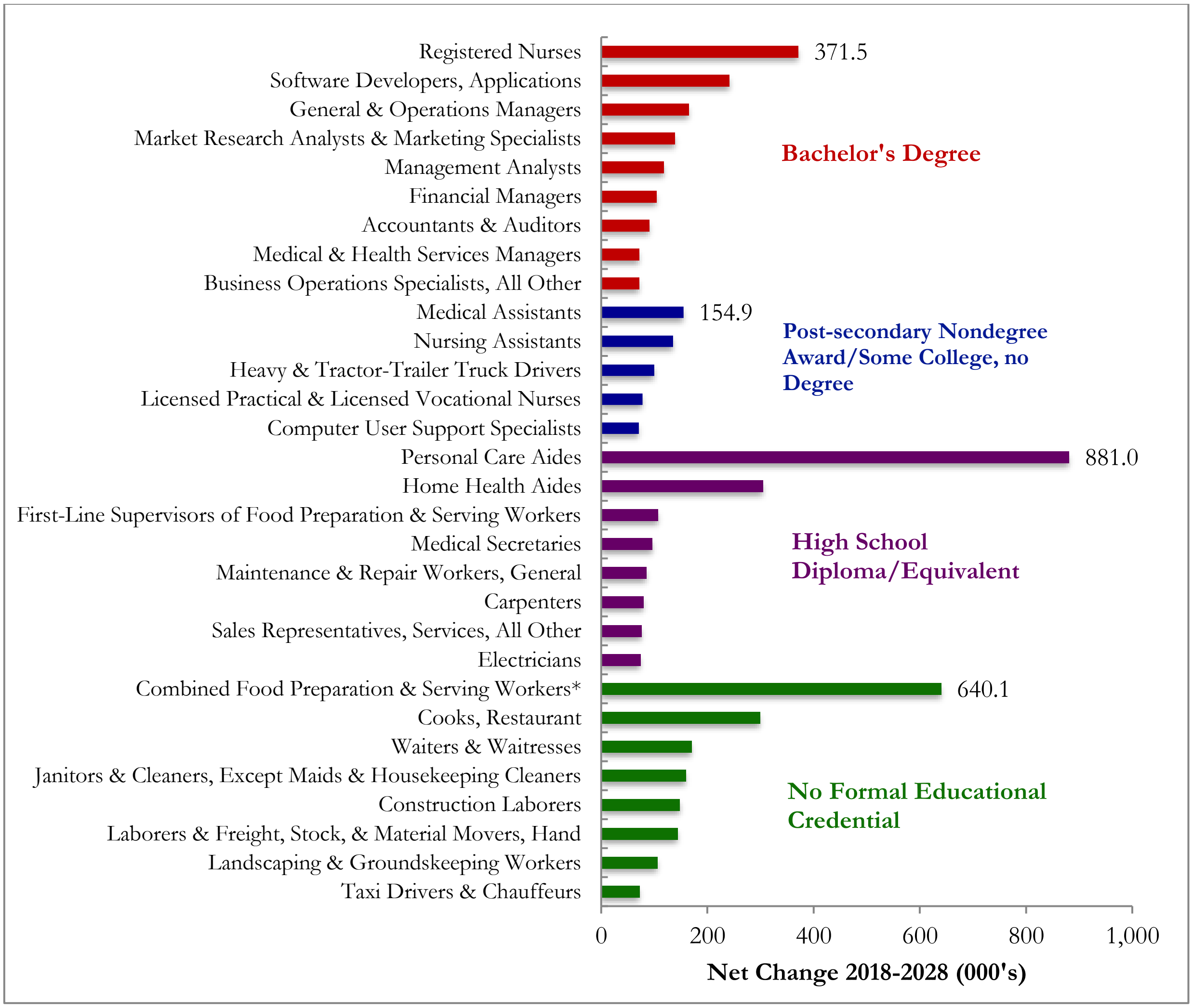
A. Emerging and In-Demand Industry Sectors & Occupations

The U.S. Bureau of Labor Statistics produces national projections for job creation and employment availability for 10 years into the future. These projections are developed annually.

Exhibit 15 presents the 30 occupational categories expected to expand the most between 2018 and 2028, grouped by education level. Among jobs requiring no formal educational credential, rapidly expanding occupations include food service, cleaning, and construction. While many construction occupations require no formal educational attainment, many construction occupations require post-secondary training, including in formal apprenticeship programs.

Occupations requiring a high school diploma or equivalency that are expected to grow the most are overwhelmingly in the category of health/personal care, a reflection of an aging population and expanding health care needs. Similarly, medical assistants and nursing assistants are the occupations expected to grow the most in the context of those requiring some college or post-secondary degree. Among jobs requiring a bachelor's degree, registered nurses and software developers are the occupations expected to grow the most between 2018 and 2028.

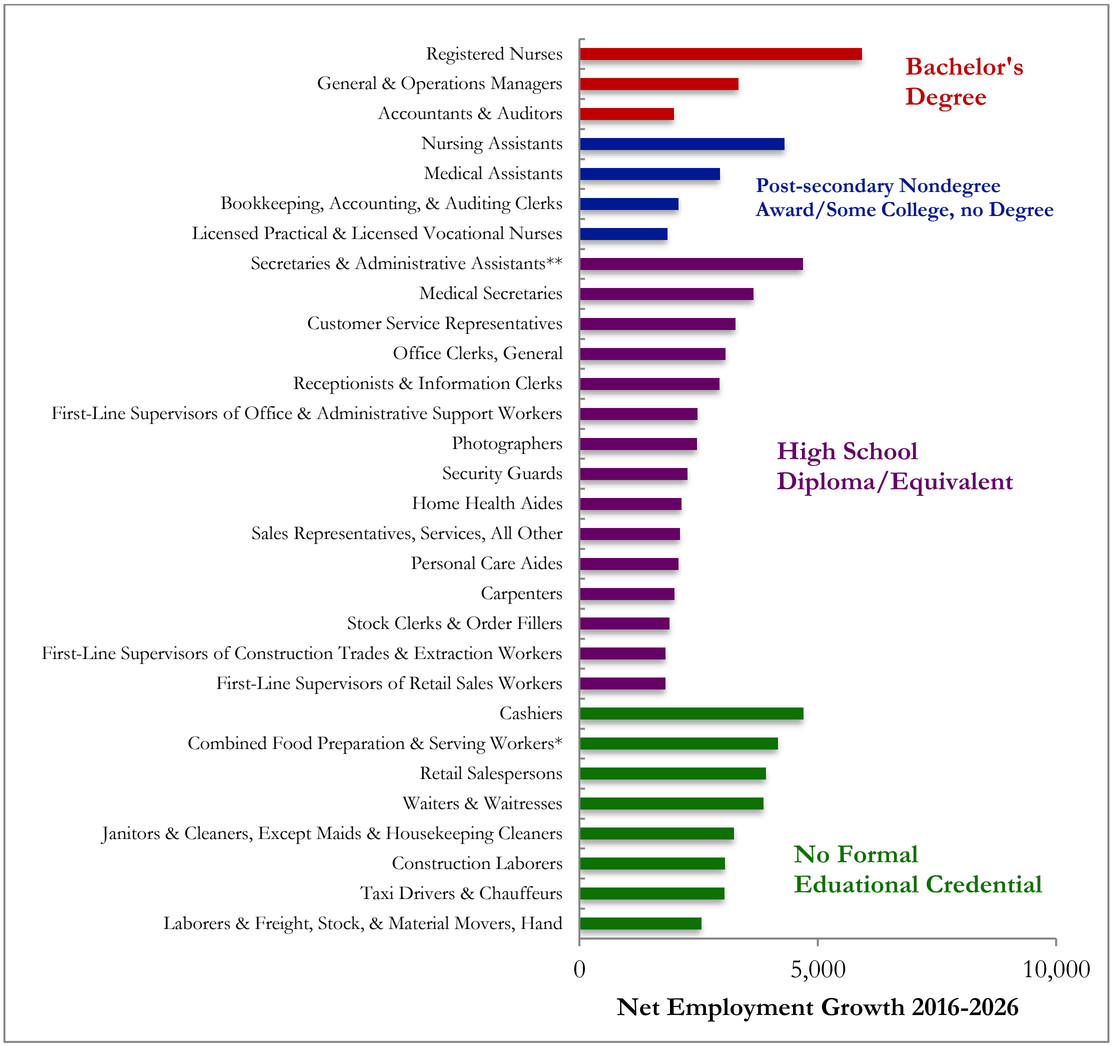
Exhibit 15. Top 30 Occupations With the Most Growth Nationwide, 2018-2028 Projected



Source: U.S. Bureau of Labor Statistics, Employment Projections; Sage. Notes: *Including fast food

The Office of Workforce Information and Performance within Maryland's Department of Labor produces employment projections for Maryland and the state's workforce regions. Occupational forecasts for Maryland generally mimic national trends. Healthcare looms especially large, with demand for registered nurses, nursing assistants, medical assistants, licensed practical nurses, medical secretaries, and home health aides expected to be elevated.

Exhibit 16. Top 30 Fastest-growing Occupations in Maryland, 2016-2026 Projected



Source: U.S. Bureau of Labor Statistics, Employment Projections; Maryland Department of Labor (DOL); Sage.
Notes: *Including fast food. **Except legal, medical, and executive.

Exhibit 17 supplies projections of the top 10 occupations expected to experience the most growth in the Susquehanna region between 2016 and 2026. Many of these occupations require no formal educational credential or only a high school diploma or equivalency.

These are the types of jobs that were initially destroyed in large numbers by the downturn since they involve physical contact/proximity and therefore do not fare well during a period characterized by the need for social distancing. Among these are waiters/waitresses, hairdressers, retail salespeople, food preparation workers, and cooks. These jobs will come back rapidly during the post-pandemic period, but it may take years for there to be complete recovery.

By contrast, jobs in healthcare are likely to dramatically expand vis-à-vis prior expectations. The problem is that moving people dislocated from retail or similarly situated activities is challenging given the differentials in demand for educational attainment. The implication is that SWN will be combating both unemployment and under-employment more aggressively during the years ahead after a period during which the most frustrated economic actors were often expanding employers as opposed to prospective employees.

Exhibit 17. Susquehanna Workforce Region: Top 10 Occupations by Projected Employment Growth, 2016-2026

Rank (Net Growth)	Occupation	Education Level	Total Employment		2016-2026	
			2016	2026 Proj.	Total Growth	Annual % Growth
1	Laborers & Freight, Stock, & Material Movers, Hand	No formal educational credential	3,445	4,156	711	1.9%
2	Waiters & Waitresses	No formal educational credential	3,230	3,701	471	1.4%
3	Hairdressers, Hairstylists, & Cosmetologists	Postsecondary non-degree award	1,440	1,792	352	2.2%
4	Retail Salespersons	No formal educational credential	3,423	3,764	341	1.0%
5	Combined Food Preparation & Serving Workers, Including Fast Food	No formal educational credential	1,443	1,760	317	2.0%
6	Stock Clerks & Order Fillers	High school diploma or equivalent	3,068	3,379	311	1.0%
7	Cooks, Restaurant	No formal educational credential	1,453	1,751	298	1.9%
8	First-Line Supervisors of Retail Sales Workers	High school diploma or equivalent	2,040	2,258	218	1.0%
9	Janitors & Cleaners, Except Maids & Housekeeping Cleaners	No formal educational credential	1,888	2,092	204	1.0%
10	Home Health Aides	High school diploma or equivalent	813	992	179	2.0%

Source: Maryland Department of Labor (DOL); Sage.

According to projections generated prior to the COVID-19 induced downturn, employment in the food services and drinking places segment (a subset of the arts, entertainment and recreation industry) is expected to grow the most on net between 2016 and 2026 in the Susquehanna region. Employment in this industry is expected to grow at an annual average rate of 1.5 percent compared with a rate of 0.8 percent for all regional industries. This is consistent with the data presented in Exhibit 17, which indicates that waiters and waitresses, food preparation and serving workers, and cooks are all among the top 10 occupations expected to grow the most over that time span.

The warehousing and storage industry is also expected to grow significantly, by 2.0 percent annually between 2016 and 2026. This is consistent with the rapidly growing e-commerce industry, which likely will be catalyzed by the pandemic and the growing reliance upon online delivery during the crisis. There will likely be permanent associated impacts as more Americans have become accustomed to using services like Amazon, Grubhub, Instacart, and other online platforms. While educational services is expected to grow at a slower rate in percentage terms, it is the third highest industry in terms of net job growth.

Exhibit 18. Susquehanna Workforce Region: Top 10 Industries by Projected Employment Growth, 2016-2026

Rank (Net Growth)	Industry	Total Employment		2016-2026	
		2016	2026 Proj.	Total Growth	Annual % Growth (CAGR)
1	Food Services & Drinking Places	11,364	13,138	1,774	1.5%
2	Warehousing & Storage	4,845	5,881	1,036	2.0%
3	Educational Services	10,813	11,531	718	0.6%
4	Amusement, Gambling, & Recreation Industries	2,396	2,955	559	2.1%
5	Food Manufacturing	914	1,425	511	4.5%
6	Social Assistance	2,326	2,786	460	1.8%
7	Personal & Laundry Services	1,690	2,109	419	2.2%
8	State Government, Excl. Education & Hospitals	1,114	1,483	369	2.9%
9	Ambulatory Health Care Services	5,180	5,524	344	0.6%
10	Administrative & Support Services	3,734	4,074	340	0.9%

Source: Maryland Department of Labor (DOL); Sage.

B. Job Openings/Evidence of Job Growth and Job Openings

Exhibit 19 shows the number of job openings posted on the Maryland Workforce Exchange in Maryland's 12 workforce regions in 2019. In the Susquehanna workforce region, there were approximately 137 job openings per 1,000 people in 2019. The Baltimore City, Mid-Maryland, and Anne Arundel workforce regions have the largest number of job openings per population, all at in excess of 200 jobs per 1,000 population.

Naturally, the COVID-19 crisis has suspended many of these job openings, but these data are still useful in terms of helping to characterize what the labor market is likely to look like once the crisis is over and recovery has begun in earnest. Population figures presented below reflect estimates for July 2018. Since that time, Baltimore City's population has dipped below 600,000, but the city remains a major employment center.

Exhibit 19. Job Openings by Workforce Region Per 1,000 Population, 2019

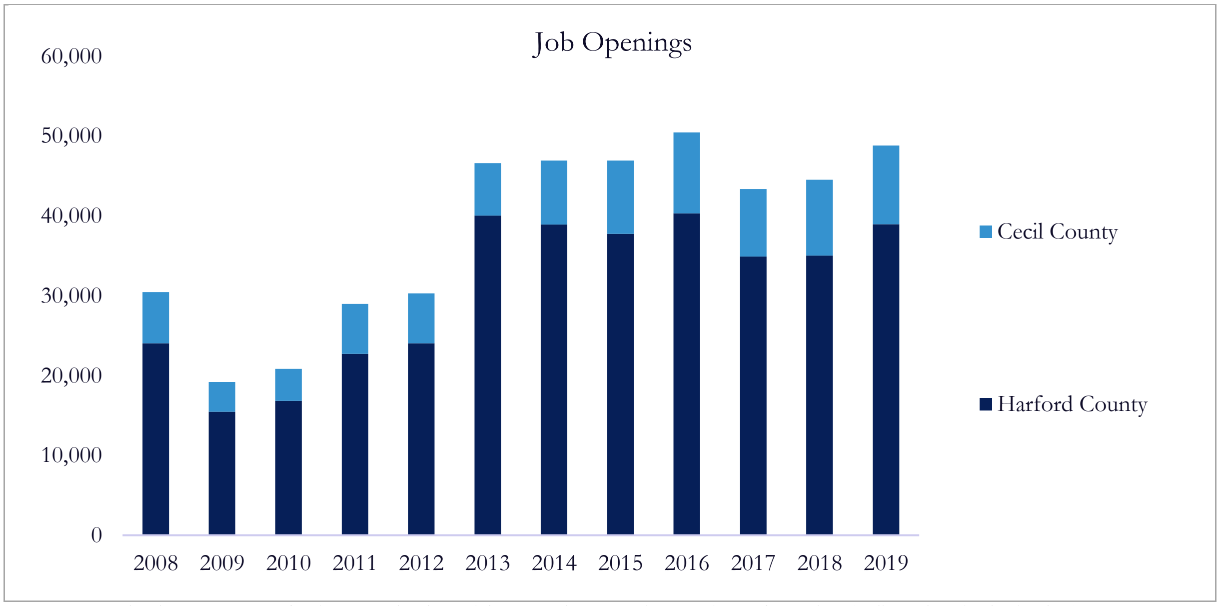
Rank (Jobs/Pop)	**Workforce Region**	**Job Openings (2019)**	**Population (July 1, 2018)**	**Job Openings Per 1,000 Population**
1	Baltimore City	174,528	602,495	289.7
2	Mid-Maryland	109,164	491,625	222.0
3	Anne Arundel	115,497	576,031	200.5
4	Montgomery County	183,921	1,052,567	174.7
5	*Susquehanna*	*48,834*	*356,782*	*136.9*
6	Frederick County	34,880	255,648	136.4
7	Baltimore County	98,215	828,431	118.6
8	Southern Maryland	40,824	366,170	111.5
9	Western Maryland	26,622	251,064	106.0
10	Prince George's County	93,698	909,308	103.0
11	Upper Shore	17,255	171,904	100.4
12	Lower Shore	15,890	180,693	87.9

Source: 1. U.S. Census Bureau, Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2018 (table: PEPANNRES). 2. Maryland Workforce Exchange, Labor Market Information (online advertised jobs data). 3. Sage.
Notes: 1. Job openings figures are Jobs De-duplication Level 2: High level de-duplication of advertised job openings (for statistical analysis). 2. Lower Shore Workforce Region - Comprised of Somerset, Wicomico, and Worcester Counties; Mid-Maryland Workforce Region - Comprised of Carroll and Howard Counties; Susquehanna Workforce Region - Comprised of Cecil and Harford Counties; Southern Maryland Workforce Region - Comprised of Calvert, Charles, and St. Mary's Counties; Upper Shore Workforce Region - Comprised of Caroline, Dorchester, Kent, Queen Anne's, and Talbot Counties; Western Maryland Workforce Region - Comprised of Allegany, Garrett, and Washington Counties.

Exhibit 20 supplies data regarding job openings in the Susquehanna region posted on the Maryland Workforce Exchange from 2008 to 2019. The number of job openings initially peaked in 2016, dipped in 2017, and then began to ascend again. The number of openings in the Susquehanna region surged nearly 9.6 percent in 2019 alone.

Cecil County accounts for approximately 20 percent of job openings in the Susquehanna region (and accounts for about 29 percent of the region's population). Harford County accounts for approximately 80 percent of the region's job openings and 71 percent of the region's population. This means that job openings have been somewhat more concentrated in Harford County than in Cecil County on a per population basis.

Exhibit 20. Job Openings in the Susquehanna Workforce Region, 2008-2019



Source: Maryland Department of Labor-Maryland Workforce Exchange: Labor Market Information (online advertised jobs data); Sage. Notes: 1. Job openings figures are Jobs De-duplication Level 2: High level de-duplication of advertised job openings (for statistical analysis).

In 2019, the industry with the largest number of job openings in the Susquehanna region was professional, scientific, and technical services, with more than 12,000 job openings posted throughout the year. Health care and social assistance and manufacturing also posted large numbers of job openings, followed by administrative and support/waste management services and retail trade. This is all indicative of an increasingly diverse economy that has been offering jobs at every level of the income spectrum. Exhibit 21 provides relevant detail.

Exhibit 21. Susquehanna Region Job Openings by Industry, 2019

Rank	Industry	Job Openings	Rank	Industry	Job Openings
1	Professional, Scientific, and Technical Services	12,083	11	Other Services (except Public Administration)	814
2	Health Care and Social Assistance	5,474	12	Finance and Insurance	549
3	Manufacturing	3,677	13	Construction	459
4	Administrative & Support/ Waste Mgmt. & Remediation Services	3,020	14	Real Estate and Rental and Leasing	232
5	Retail Trade	2,964	15	Information	200
6	Educational Services	1,321	16	Management of Companies and Enterprises	158
7	Wholesale Trade	1,238	17	Mining	154
8	Accommodation and Food Services	1,010	18	Arts, Entertainment, and Recreation	139
9	Public Administration	999	19	Utilities	55
10	Transportation and Warehousing	972	20	Agriculture, Forestry, Fishing and Hunting	47

Source: Maryland Workforce Exchange, Labor Market Information (online advertised jobs data); Sage. Notes: 1. Job openings figures are Jobs De-duplication Level 2: High level de-duplication of advertised job openings (for statistical analysis).

Exhibit 22 shows the top 10 Susquehanna region employers with the most job openings advertised online on the the Maryland Workforce Exchange as of the middle of February 2020. Employers in education and health services, like University of Maryland Upper Chesapeake Health, Harford County Public Schools, and Union Hospital were among the top employers seeking to hire additional staff. Government contractors and professional services companies like CACI International, Booz Allen Hamilton, General Dynamics, and AASKI Technology were also hiring, indicating that many of the jobs on offer were middle- to high-wage.

Exhibit 22. Top 10 Employers Hiring in the Susquehanna Workforce Region
(Employers with Job Openings Advertised Online as of 2/13/2020)

Rank	Employer Name	Job Openings
1	University of Maryland Upper Chesapeake Health	305
2	CACI International Inc	156
3	Harford County Public Schools	152
4	AASKI Technology, Inc.	135
5	ManTech International Corporation	101
6	Booz Allen Hamilton Inc	100
7	UICGS and Bowhead Family of Companies	75
8	General Dynamics Information Technology, Inc.	73
9	Royal Farms	73
10	Union Hospital	73

Source: Maryland Workforce Exchange, Labor Market Information (online advertised jobs data); Sage.
Notes: 1. Job openings figures are Jobs De-duplication Level 2: High level de-duplication of advertised job openings (for statistical analysis).

It is of course not enough to simply have an economy dynamic enough to create job openings. The region needs to either supply workers with the right sets of skills to fill those jobs, or alternatively to recruit workers from other markets to fill those jobs. Because recruiting professional talent has become of such importance, many communities have been focusing on offering quality of life amenities that render recruitment more effective, including investing in main streets, creating and supporting arts & entertainment districts, better funding area schools, and providing incentives to entrepreneurs in the arts. Those activities will remain important going forward.

C. Education and Training Requirements in Demand

The table below provides statistical detail regarding the educational and work experience requirements of job openings in the Susquehanna region posted on the Maryland Workforce Exchange as of mid-February 2020. Unfortunately, many job openings did not specify the desired level of education an ideal candidate should have.

In terms of work experience, the majority of jobs requires 1 to 2 years of experience. Of course this is a snapshot of data at a single point in time, so it may not be reflective of the needs of employers year round and also will not be especially pertinent during a period associated with pandemic and its immediate aftermath.

However as discussed above, many of the fastest growing occupations in the Susquehanna region require only a high school diploma or equivalency, suggesting that 1-2 years might be a reasonable amount of work experience to fill these kinds of positions. That notion will be especially important during the months ahead as many jobseekers face a period of diminished employment opportunities.

Exhibit 23. Susquehanna Region Job Openings by Educational & Work Experience Requirements, in All Industries (as of 2/13/2020)

Minimum Education Level	Job Openings	%
No Minimum Education Requirement	206	3.1%
High School Diploma or Equivalent	379	5.7%
1-2 Years of College or Technical/Vocational School	2	0.0%
Vocational School Certificate	1	0.0%
Associate’s Degree	48	0.7%
Bachelor’s Degree	515	7.7%
Master’s Degree	9	0.1%
Doctorate/Specialized Degree (e.g. MD, DDS)	4	0.1%
Not Specified	5,499	82.5%
Work Experience Requirement	**Job Openings**	**%**
Entry-level	266	4.0%
Less than 1 Year	41	0.6%
1 Year to 2 Years	6,022	90.4%
2 Years to 5 Years	228	3.4%
5 Years to 10 Years	93	1.4%
More than 10 Years	13	0.2%

Source: Maryland Workforce Exchange, Labor Market Information (online advertised jobs data); Sage.
Notes: 1. Job openings figures are Jobs De-duplication Level 2: High level de-duplication of advertised job openings (for statistical analysis).

Exhibit 24 provides data regarding the education level and work experience of candidates in the Susquehanna region with active resumes in the Maryland Workforce Exchange in mid-February 2020. Approximately 36 percent of candidates have a high school diploma or equivalent and around 20 percent have a vocational school certificate or associate's degree. Just over a quarter of candidates have a bachelor's degree and around 15 percent have a master's degree or doctorate/specialized degree.

In terms of work experience, many candidates report having more than 10 years of experience (63%). Relatively few candidates with active resumes had 2 years or less experience, suggesting that many people who have been in the workforce have been using the Exchange to secure better positions. In the near-term, many people are likely to utilize the Exchange to search for replacement work. Such is the nature of periods of economic downturn and its immediate aftermath.

Exhibit 24. Education Level & Work Experience of Available Candidates in the Susquehanna Region Workforce (as of 2/13/2020)

Minimum Education Level	Potential Candidates	%
No Minimum Education Requirement	280	1.9%
High School Diploma or Equivalent	5,307	35.8%
1-2 Years of College or Technical/Vocational School	0	0.0%
Vocational School Certificate	1,530	10.3%
Associate's Degree	1,486	10.0%
Bachelor's Degree	3,845	26.0%
Master's Degree	1,884	12.7%
Doctorate/Specialized Degree (e.g. MD, DDS)	473	3.2%
Not Specified	0	0.0%
Minimum Experience	**Potential Candidates**	**%**
Entry-level	0	0.0%
Less than 1 Year	1,391	8.0%
1 Year to 2 Years	637	3.6%
2 Years to 5 Years	1,752	10.0%
5 Years to 10 Years	2,706	15.5%
More than 10 Years	11,012	62.9%

Source: Maryland Workforce Exchange, Labor Market Information (candidate source: individuals with active resumes in the workforce system); Sage. Notes: 1. Job openings figures are Jobs De-duplication Level 2: High level de-duplication of advertised job openings (for statistical analysis).

Many skills in demand are skills that can be cultivated without formal education or credentials. For example, customer service and basic skills like flexibility, problem solving, and organization were some of the top skills associated with job openings in the Susquehanna region in January 2020. The implication is that securing a job recently has been as much about motivation as about formal credentials or a polished resume. But that is changing as employers will now have greater choice with respect to the candidates they select for employment, meaning that formal credentials are about to become much more important (again).

Exhibit 25. Susquehanna Region Job Openings, Top 10 Job Skill Requirements, in All Industries (as of January 2020)

Rank	Detailed Job Skill	Skill Group	Job Openings Match Count
1	Customer service	Customer Service Skills	1,383
2	Must be flexible	Basic Skills	642
3	Problem solving	Basic Skills	475
4	Organizational skills	Basic Skills	413
5	Decision making	Basic Skills	394
6	Interpersonal skills	Interpersonal Skills	369
7	Work independently	Basic Skills	368
8	Attention to detail	Basic Skills	341
9	Providing information	Administrative Assistant Skills	255
10	Time management	Basic Skills	224

Source: Maryland Workforce Exchange, Labor Market Information (online advertised jobs data); Sage.
Notes: 1. Job openings figures are Jobs De-duplication Level 1: Low level de-duplication of advertised job openings (more jobs).

Exhibit 26 lists the top 10 certification groups listed as requirements on job postings in the Susquehanna region on the Maryland Workforce Exchange in January 2020. Among jobs requiring formal certifications, certifications related to health care are most in demand.

Health/medical services represents a significant source of employment in the region, so this is not surprising. The medical services industry is also associated with high stakes service delivery as well as substantial legal liability should errors occur. Consequently, formal credentials are viewed as particularly important in this context since those who have such credentials have mastered a certain level of pertinent material and have also demonstrated a level of focus and reliability critical to the consistent delivery of care. Given the expectation that health services will become even more important economically during the years ahead, SWN should continue to strive to connect area residents to programs offering formal health services certifications.

Given the presence of a large transportation and warehousing sector in the Susquehanna region, the continued need for commercially licensed drivers is also not especially surprising. Here is another extremely valuable certification – one that will remain valuable as the e-commerce economy continues to expand throughout the nation.

Often, what separates one's ability to enter a mid-level occupation as opposed to an entry-level one is a credential – one formally recognized by industry. One of the types of enterprises emerging in recent years is for-profit colleges, including those delivering online education. One of the things about which SWN leadership and stakeholders should be mindful is the possibility that certain online education is less valuable because employers do not fully recognize the associated credential.

There is another factor to consider. According to the Brookings Institute, online-only student enrollment at for-profit colleges is 80 percent out-of-state for undergraduates. This means that northeast Maryland students who use such services are effectively reducing demand for instruction delivered by local two-year colleges, which not only impacts institutional revenue, but also renders it less likely that demand for certain courses/programs will be substantial enough for those courses/programs to be supported.

What's more, Brookings indicates that because for-profit colleges supply instruction to students from various geographic areas, oversight and accountability for distance education across multiple state lines can be both inadequate and in constant flux, leaving students vulnerable to both substandard educational offerings and accompanying indebtedness. A nascent literature indicates that outcomes for online-only for-profit students are particularly poor in terms of completion and earnings after leaving school.[4]

Exhibit 26. Susquehanna Region Job Openings, Top 10 Advertised Job Certification Requirements, in all Industries (as of January 2020)

Rank	Certification Group	Job Openings Match Count
1	American Heart Association (AHA) CPR & First Aid Certifications	732
2	Nursing Credentials and Certifications	419
3	CompTIA Certifications	137
4	Commercial Driver's License (CDL)	120
5	(ISC) Certifications	96
6	Project Management Institute (PMI) Certifications	39
7	Cisco Associate Certifications	37
8	Social Worker Credentials & Certifications	28
9	Security Professional Education Development (SPeD) Certifications	25
10	American Board for Transplant Certification (ABTC)	20

Source: Maryland Workforce Exchange, Labor Market Information (online advertised jobs data); Sage. Notes: 1. Job openings figures are Jobs De-duplication Level 1: Low level de-duplication of advertised job openings (more jobs).

[4] Brookings Economic Studies, "The Failings of Online For-profit Colleges: Findings from Student Borrower Focus Groups". https://www.brookings.edu/wp-content/uploads/2019/03/The-Failings-of-Online-For-profit-Colleges.pdf.

Additional research indicates that holding constant for various aspects of one's background, those with a bachelor's from public (non-profit) colleges are far more likely to be called for interviews than those who have an online degree from a for-profit college on their resume. According to research published in the *American Economic Review*, "The findings do not support the notion that a for-profit degree is a good investment relative to one from a public institution."[5]

This is not to suggest that online instruction is not effective. Rather, it means that there is substantial doubt among employers regarding what an online degree signals about an individual candidate's capabilities. It is for this reason that Sage recommends that any credentialing program that SWN offers, including in the domain of customer service, supply at least some face-to-face interaction with students.

In any case, broadly, an economy works by combining human and physical capital. Increasingly, this physical capital takes the form of hardware and software. Accordingly, various types of software account for 9 out of 10 of the top tools/technologies associated with job openings in the Susquehanna region posted on the Maryland Workforce Exchange in January 2020.

Undoubtedly, this will remain a feature of American economic life, which means that the mastery of various pieces of software, whether essential office software like Microsoft Office or more exotic platforms such as JavaScript, will remain elevated. These credentials may be of particular value to many jobseekers as the economy begins recovery from the great pandemic of 2020.

Exhibit 27. Susquehanna Region Job Openings, Top 10 Detailed Tools & Technology Requirements, in all Industries (as of January 2020)

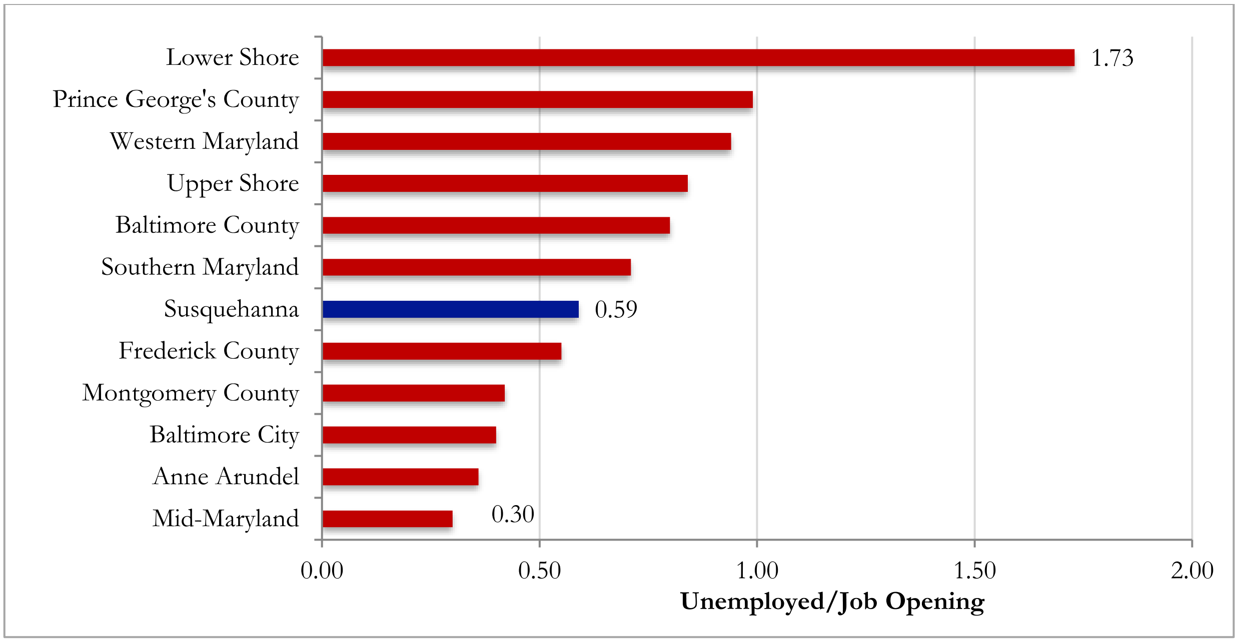
Rank	Detailed Tool/Technology	Tool/Technology Group	Job Openings Match Count
1	Microsoft (MS) Office	Office Suite Software	703
2	Structured query language (SQL)	Database User Interface and Query Software	412
3	JavaScript	Web Platform Development Software	391
4	C#	Object/Component Oriented Dev't Software	381
5	Hypertext markup language (HTML)	Web Platform Development Software	360
6	Linux software	Operating System Software	320
7	Forklift	Forklifts	316
8	Deployment software	Configuration Management Software	274
9	Microsoft PowerPoint	Presentation Software	251
10	Microsoft SQL Server Integration Svs (SSIS)	Enterprise Application Integration Software	242

Source: Maryland Workforce Exchange, Labor Market Information (online advertised jobs data); Sage.
Notes: 1. Job openings figures are Jobs De-duplication Level 1: Low level de-duplication of advertised job openings (more jobs).

[5] Deming, David J., Noam Yuchtman, Amira Abulafi, Claudia Goldin, and Lawrence F. Katz. "The value of postsecondary credentials in the labor market: An experimental study." *American Economic Review* 106, no. 3 (2016): 778-806.

Exhibit 28 indicates that there were 0.59 unemployed people per Maryland Workforce Exchange online job opening in the Susquehanna region at the end of 2019. This means that in absolute terms there were plenty of job openings to go around. The issue is that there were frequent skills mismatches between job openings and the skills embodied by the local labor force. Consequently, from a macroeconomic perspective, much of SWN's purpose lay in closing skills gaps with the knowledge that in a strong economy doing so would translate into predictable economic progress. Such certainties prove elusive during periods of recession and their immediate aftermath.

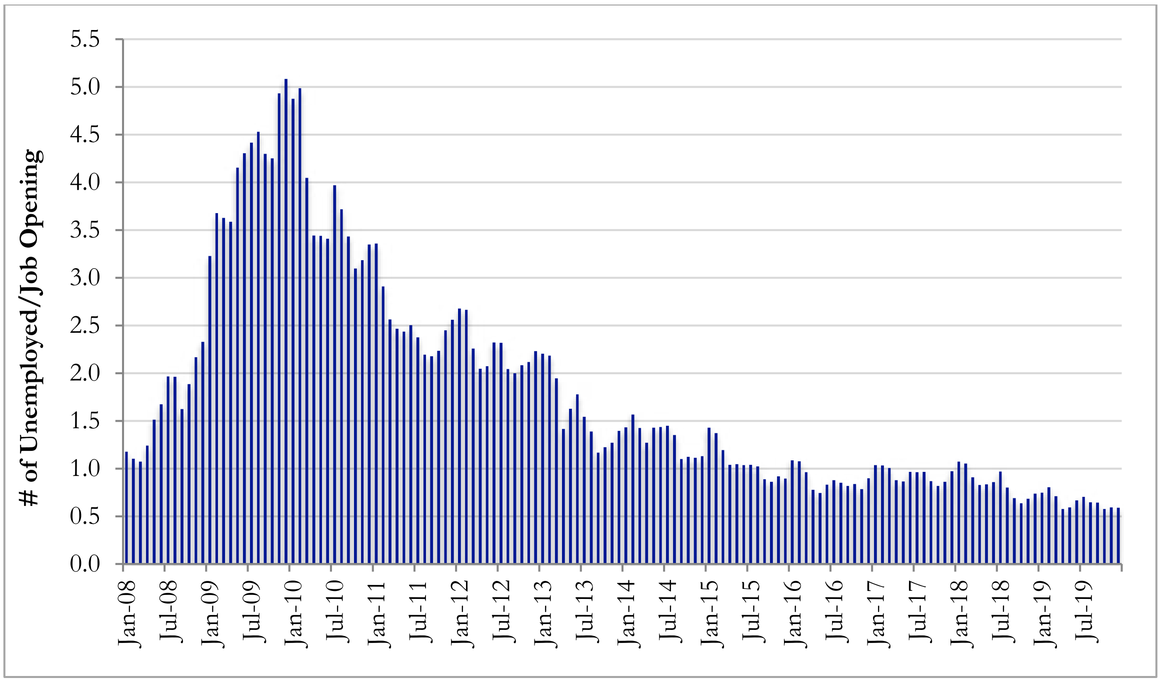
Exhibit 28. Number of Unemployed People divided by Online Job Openings in Maryland by Workforce Region (as of December 2019)



Source: Maryland Workforce Exchange, Labor Market Information (online advertised jobs data); U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics (LAUS) Program; Sage. Notes: 1. Job openings figures are Jobs De-duplication Level 2: High level de-duplication of advertised job openings (for statistical analysis).

The ratio of unemployed persons per job opening has fallen from a peak of more than 5 unemployed people per opening at the height of the last downturn to fewer than 1 unemployed person per opening (Exhibit 29). Again, while the initial period of recovery from the pandemic will be sharp, complete recovery will likely prove elusive for several years as corporate and government balance sheets undergo repair. It was an enviable labor market situation that existed prior to COVID-19's emergence in America, and it will enviable again one day in the future. Exhibit 29 stands for the proposition that recapturing a prior peak in labor demand can take years. Note that it took years after the Great Recession to return to the low levels of unemployment that persisted prior to the global financial crisis.

Exhibit 29. Number of Unemployed People Divided by Number of Online Job Openings in Susquehanna Workforce Region, January 2008-December 2019

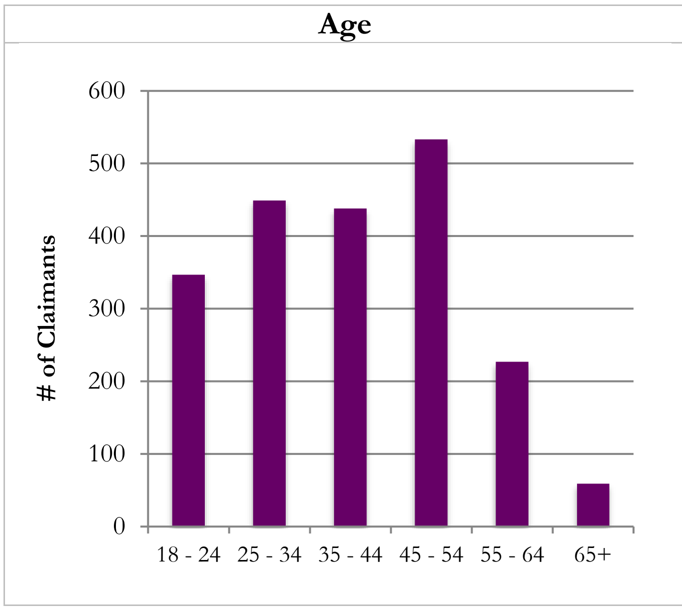


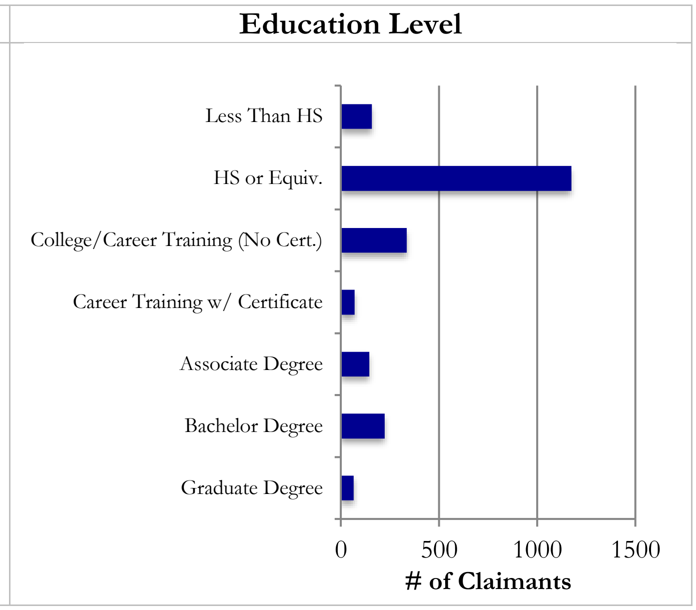
Source: Maryland Workforce Exchange, Labor Market Information (online advertised jobs data); U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics (LAUS) Program; Sage. Notes: 1. Job openings figures are Jobs De-duplication Level 2: High level de-duplication of advertised job openings (for statistical analysis).

Exhibit 30 details characteristics of Susquehanna region residents claiming unemployment insurance benefits in January 2020. More than 40 percent of claimants are between the ages of 25-44 and more than a quarter of claimants are between the ages of 45-54. This generally reflects the age distribution of the population in the Susquehanna region.

Many claimants have only a high school degree or equivalency. For those seeking to reduce unemployment this suggests a number of things. First, even during good economic times, those with less educational attainment are far more likely to suffer bouts of unemployment. Second, while there have been plenty of jobs available for those who have no more than a high school degree, SWN's capacity to connect people to employment opportunities remains of central importance even during periods of thriving economic activity.

Exhibit 30. Characteristics of Unemployment Claimants in the Susquehanna Region (as of January 2020)





Source: Maryland Department of Labor, Licensing and Regulation: Workforce Dashboard; Maryland Unemployment Insurance; Sage.

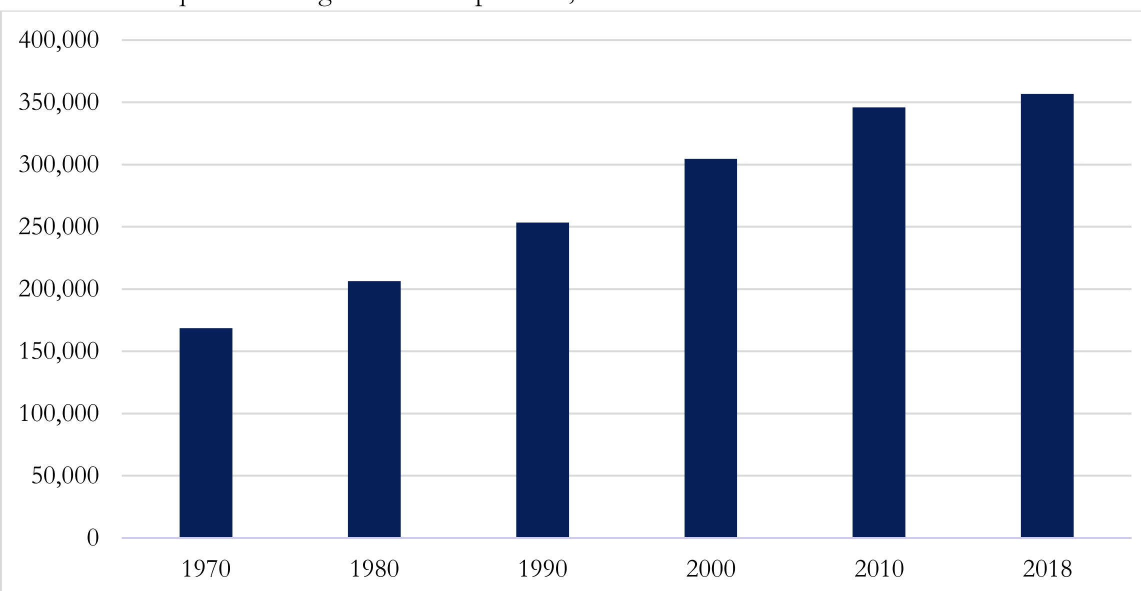
III. Workforce & Human Capital

This section of the report examines conditions in the Susquehanna region's workforce and sources of human capital including population growth, educational attainment, higher education resources, workforce participation, retirement trends, and commuting patterns. Importantly, these broader demographic features will ultimately outweigh the short-term impacts of the novel coronavirus, so they remain critically important.

A. Demographics/Population Growth

The Susquehanna region's population has expanded from just under 170,000 in 1970 to more than 350,000 by 2018. While population has continued to expand over time, the pace of population growth has slowed in recent years, mirroring a national trend. U.S. population expanded by less than half a percentage point in 2019, in part due to slowing of immigration. This represents the third consecutive year of markedly decelerated growth and, according to the St. Louis Branch of the Federal Reserve Bank, might represent the slowest peacetime rate of population growth in the nation's history.[6] This is largely attributable to political, demographic, and cultural forces, including shifting immigration policies and declining birth rates.

Exhibit 31. Susquehanna Region Total Population, 1970-2018



	1970-1980	1980-1990	1990-2000	2000-2010	2010-2018
CAGR (%)	2.0%	2.1%	1.9%	1.3%	0.4%

Source: 1. U.S. Census Bureau, Decennial Census Data; 2018 Population Estimates. 2. Sage.

[6] Federal Reserve Bank of St. Louis, "U.S. Population Growth Slowing to a Crawl", by Bill Emmons, 2/10/2020. https://www.stlouisfed.org/on-the-economy/2020/february/us-population-growth-slowing-crawl.

In the Susquehanna region, population grew at approximately a 2.0 percent annual rate from 1970 to 2000. From 2000 to 2010, growth slowed to a 1.3 percent annual rate, and then declined to 0.4 percent during the following eight years, 2010-2018. This helped to further exacerbate skills/labor shortages, but also meant less competition for available positions.

Exhibit 32 compares population growth in the Susquehanna region to that in proximate areas and to the entire state of Maryland. From 2000 to 2010, the population of the Susquehanna region grew faster than at the state level and in many proximate areas. Growth during that time period was especially brisk in Cecil County, where population expanded by 17.6 percent. Harford County's population expanded by 12.0 percent.

During the ensuing eight years (2010 to 2018), population growth slowed in the Susquehanna region, growing by a total of 3.1 percent compared to statewide growth of 4.7 percent. During this period, it was Harford County that experienced faster growth (3.7%), while Cecil County slowed (1.7%). As noted earlier, this was a reflection of broader demographics, with a smaller Gen X population backfilling homes previously occupied by retiring Baby Boomers and Millennials more likely to move to the core of metropolitan areas.

Exhibit 32. Change in Population in Select Areas, 2000-2010 & 2010-2018

	2000	2010	2018	Total % Change		
				2000-2010	2010-2018	2000-2018
Maryland	5,296,486	5,773,552	6,042,718	9.0%	4.7%	14.1%
Susquehanna Region	304,541	345,934	356,782	13.6%	3.1%	17.2%
Cecil County, MD	85,951	101,108	102,826	17.6%	1.7%	19.6%
Harford County, MD	218,590	244,826	253,956	12.0%	3.7%	16.2%
Baltimore County, MD	754,292	805,029	828,431	6.7%	2.9%	9.8%
Baltimore City, MD	651,154	620,961	602,495	-4.6%	-3.0%	-7.5%
New Castle County, DE	500,265	538,479	559,335	7.6%	3.9%	11.8%
Chester County, PA	433,501	498,886	522,046	15.1%	4.6%	20.4%

Source: 1. U.S. Census Bureau. 2000 Census: DP-1; 2018 Population Estimates: PEPANNRES. 2. Sage.

From April 2010 to July 2018, the natural increase in population (births minus deaths) represented the majority of population growth in the Susquehanna region (at least 65% of total population change). Net migration represented approximately 34 percent of total population change. Most of that net migration occurred in Harford County, which has been a major recipient of population from Baltimore County; a community that has recently been losing population in absolute terms (past two years).

Exhibit 33. Susquehanna Region: Cumulative Estimates of the Components of the Population Change, April 2010-July 2018

	Natural Increase (1)	Net Migration (2)	Total Population Change (3)
Susquehanna Region	7,350	3,762	10,854
Cecil County, MD	1,735	74	1,724
Harford County, MD	5,615	3,688	9,130

Source: U.S. Census Bureau. 2018 Population Estimates: PEPTCOMP; Sage.
Notes: 1. Natural increase equals births minus deaths. 2. Net migration includes international and domestic migration. 3. Total population change includes a residual. This residual represents the change in population that cannot be attributed to any specific demographic component. Due to this, the components of population change do not exactly sum to total population change.

Over time, the population of the Susquehanna region has continued to age. Exhibit 34 breaks down the population of the Susquehanna region by age group in 2000, 2010, and 2018. The group aged 25-44 represented more than 31 percent of the region's population in 2000. By 2018, fewer than 25 percent of the population fell within this age group. By contrast, the share of the population aged 65 and older grew from just over 10 percent in 2000 to more than 16 percent by 2018. Like much of the nation, the region is growing older, which is also consistent with elevated utilization of health services and the need for additional healthcare workers.

Exhibit 34. Population of Susquehanna Region by Age Group, 2000, 2010, 2018

Age Group	2000	% of Total Pop.	2010	% of Total Pop.	2018	% of Total Pop.
<15	71,057	23.3%	70,064	20.3%	64,957	18.2%
15-24	34,870	11.5%	44,541	12.9%	43,651	12.2%
25-44	95,784	31.5%	88,172	25.5%	88,175	24.7%
45-64	71,675	23.5%	100,718	29.1%	102,685	28.8%
65+	31,155	10.2%	42,439	12.3%	57,314	16.1%
Total Population	304,541	100.0%	345,934	100.0%	356,782	100.0%

Source: 1. U.S. Census Bureau. 2000 Census: DP-1; 2018 Population Estimates: PEPAGESEX. 2. Sage.

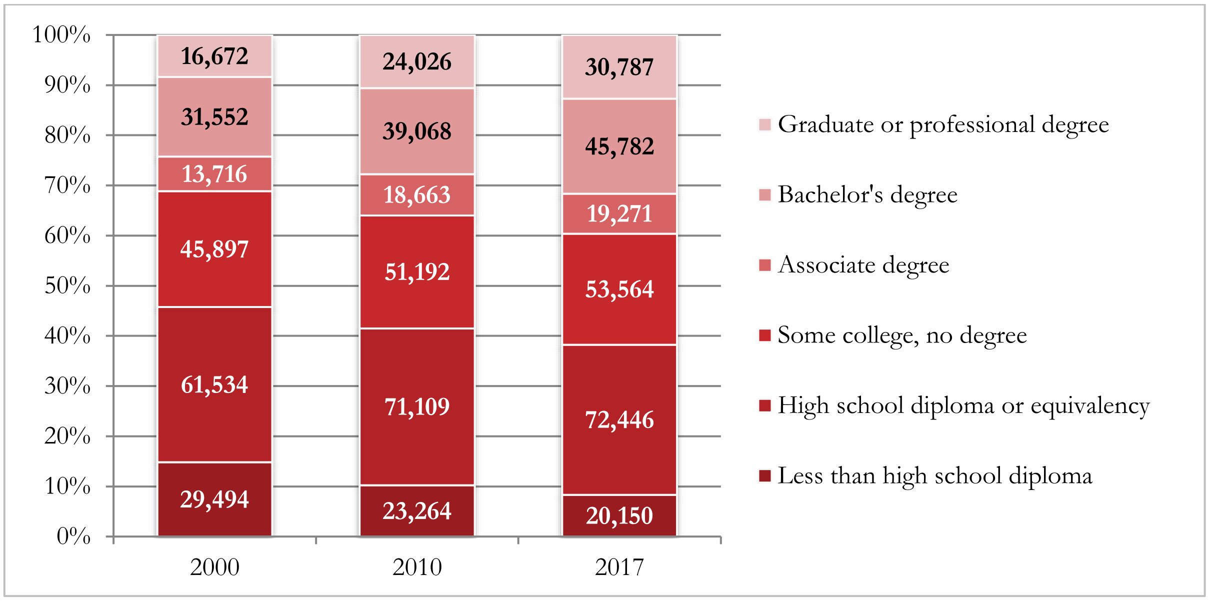
B. Educational Attainment in the Susquehanna Region

Educational attainment of Susquehanna residents has been on the rise. The population with less than a high school degree has continued to shrink in recent years, from almost 15 percent of the population in 2000 to just over 10 percent in 2010 and a bit above 8 percent by 2017. The share of the population with a bachelor's degree or higher grew from just over 24 percent in 2000 to nearly 28 percent by 2010 to nearly 32 percent by 2017.

This trend was observable in the last Sage report. While this represents an important source of credentialing, college degrees hardly represent a guarantee of economic stability/success. A recent study from the Federal Reserve Bank of New York indicated that the unemployment rate for young college graduates exceeds that of the general population and that approximately 41 percent of recent college graduates are underemployed insofar as they are working in jobs that do not require a college degree.

In December 2019, unemployment for individuals aged 22 to 27 with a bachelor's degree or higher was 3.9 percent, a bit higher than the 3.6 percent unemployment rate for all workers between the ages of 16 and 65. However, it was less than the 6.5 percent unemployment rate for those 22-27 years old lacking a 4-year degree. Moreover, the unemployment rate for all college graduates up to the age of 65 was just 2.2 percent.[7]

Exhibit 35. Susquehanna Region: Population Aged 25+ by Educational Attainment, 2000, 2010, 2017

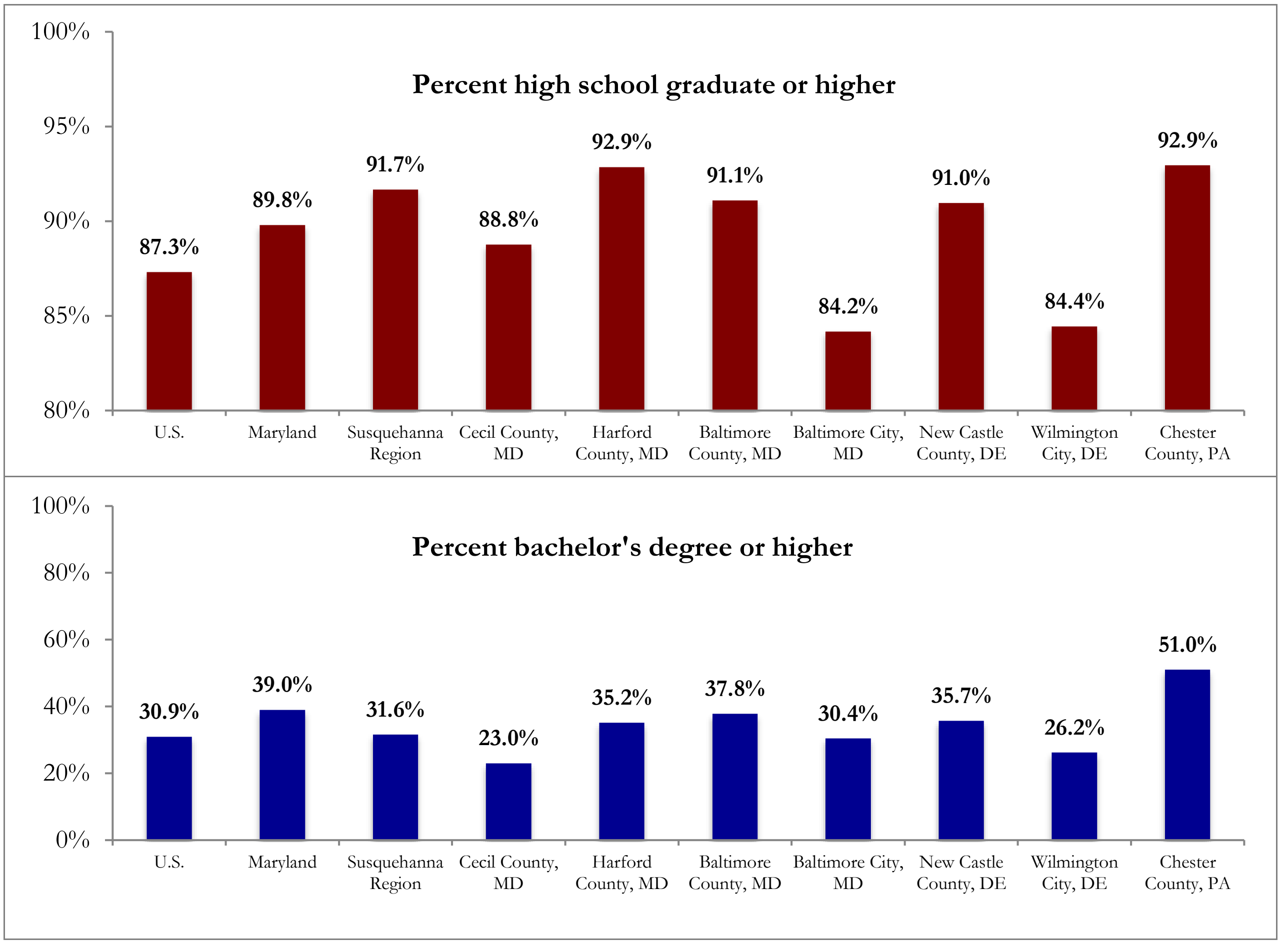


Source: 1. U.S. Census Bureau. 2000 Census: DP-2; 2006-2010 American Community Survey 5-Year Estimates: DP02; 2013-2017 American Community Survey 5-year estimates: DP02. 2. Sage.

While the overall level of education has increased over time, Exhibit 36 indicates that compared to many similar communities, a smaller share of Susquehanna region residents holds a bachelor's degree or other higher educational degree. This is due primarily to Cecil County, where the proportion of people ages 25 and older with a bachelor's degree or higher (23.0%) is well below the Maryland and national shares of 39.0 and 30.9 percent, respectively. Given the impact of COVID-19 on front-line service workers, this strongly suggests that unemployment and underemployment will climb faster in Cecil County than in Harford County, where the proportion of residents with a bachelor's degree or higher is meaningfully above the national average (35.2%). Exhibit 37 details the share of Susquehanna regional population with specific education levels and juxtaposes regional figures with figures associated with proximate communities.

[7] Redden, Elizabeth. "41% of Recent Grads Work in Jobs Not Requiring a Degree", Inside Higher Ed, 2/18/2020. https://www.insidehighered.com/quicktakes/2020/02/18/41-recent-grads-work-jobs-not-requiring-degree.

Exhibit 36. Percentage of Population 25 years+ by Select Levels of Educational Attainment, 2017



Source: U.S. Census Bureau, American Community Survey 5-year estimates: DP02; Sage.

Exhibit 37. Percentage of Population 25 years and over by Educational Attainment, 2017

	Maryland	Cecil County, MD	Harford County, MD	Baltimore County, MD	Baltimore City, MD	New Castle County, DE	Wilmington City, DE*	Chester County, PA
Population 25+	**4,095,427**	**69,969**	**172,031**	**573,263**	**425,235**	**377,959**	**48,303**	**347,586**
Less than HS diploma	10.2%	11.2%	7.1%	8.9%	15.8%	9.0%	15.6%	7.1%
HS diploma or equivalency	25.1%	36.9%	27.1%	26.6%	29.7%	29.7%	36.4%	22.0%
Some college, no degree	19.2%	21.6%	22.4%	19.6%	19.3%	18.7%	17.0%	13.8%
Associate degree	6.5%	7.3%	8.2%	7.0%	4.7%	6.9%	4.9%	6.1%
Bachelor's degree	21.0%	13.8%	21.0%	21.9%	15.9%	20.6%	14.8%	30.4%
Graduate/professional degree	18.0%	9.2%	14.1%	15.9%	14.5%	15.1%	11.4%	20.6%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
High school graduate or higher	*89.8%*	*88.8%*	*92.9%*	*91.1%*	*84.2%*	*91.0%*	*84.4%*	*92.9%*
Bachelor's degree or higher	*39.0%*	*23.0%*	*35.2%*	*37.8%*	*30.4%*	*35.7%*	*26.2%*	*51.0%*

Source: U.S. Census Bureau, American Community Survey 5-year estimates: DP02; Sage. Note: *New Castle County, DE figures include Wilmington City, DE.

C. Higher Educational Opportunities in the Susquehanna Region

Exhibit 38 supplies data characterizing high school students in 2019 in Cecil and Harford counties as well as in the core of the Baltimore region and in Maryland. As indicated, both Cecil and Harford counties are associated with graduation rates above the statewide average, with Cecil County reporting an especially elevated level of graduation despite a relatively high chronic absenteeism rate.

For its part, Harford County's students are associated with high SAT and ACT scores, perhaps due in part to a significant fraction of people/parents who work at Aberdeen Proving Ground and who have scientific backgrounds and elevated levels of educational attainment. Accordingly, in Harford County, a large percentage of high school graduates enrolled in college within 12 months of graduation (77%). In Cecil County, approximately 56 percent of graduates enrolled in college within 12 months of graduation, well below the statewide average of 66.5 percent.

Exhibit 38. Educational Indicators for High School Students, 2019

	Maryland	Cecil County	Harford County	Baltimore County	Baltimore City
High school enrollment	261,552	4,568	11,372	32,150	20,653
Attendance rate	91.1%	90.8%	93.5%	91.1%	77.1%
Chronic absenteeism rate	28.1%	35.9%	20.7%	31.0%	60.8%
Dropout rate (class of 2019)*	8.4%	4.7%	5.7%	8.8%	15.9%
Graduation rate (class of 2019)*	86.9%	93.3%	90.2%	87.6%	70.3%
Mean SAT score [out of 1600]	1,049	983	1,109	992	867
Mean ACT score [out of 36]	22	22	24	23	18
Mean AP score per exam, all subjects [out of 5]	3.13	2.49	2.92	3.15	2.06
% of HS graduates enrolled in college within 12 months of graduation (class of 2018)	66.5%	55.6%	76.7%	66.4%	49.9%

Source: Maryland State Department of Education, 2019 Maryland Report Card; Sage. Note: * 4-year adjusted rate.

Data from the Maryland Higher Education Commission indicate that in Fall 2018, there were approximately 13,600 Susquehanna residents enrolled as undergraduates in Maryland colleges. Approximately 52 percent of those students attended college full-time and 48 percent attended college part-time. There were approximately 1,600 Susquehanna residents enrolled in graduate schools in Maryland, 29 percent of whom were full-time and 71 percent of whom were part-time.

The majority of undergraduate Susquehanna residents were enrolled at public two-year colleges (57.3%) and public four-year colleges (38.0%). Among Susquehanna residents enrolled in graduate programs, roughly 67 percent were enrolled at public four-year colleges and 32 percent were enrolled at independent four-year colleges. Exhibits A11-A12 in the Appendix supply additional statistical detail regarding college enrollment among residents of Cecil and Harford counties, including enrollment among undergraduates and graduates, full-or-part time status, and enrollment at two- or four-year schools.

Exhibit 39 reveals that Harford Community College (HCC), Towson University, Cecil College, and University of Maryland, College Park are the most intensely attended institutions of higher education for Susquehanna residents. These institutions are in the top four schools in terms of enrollment of Susquehanna region residents, both in terms of new full-time freshman students and all undergraduates. Exhibits A13-A14 in the Appendix supply additional statistical detail regarding the top colleges for enrollment among residents of Cecil and Harford counties. Unsurprisingly, among Cecil County residents, Cecil College was the top school for enrollment, while among Harford County residents, Harford Community College was the top school for enrollment.

Exhibit 39. Susquehanna Region Residents: Fall 2018 College Enrollment, Top 10 Schools

New Full-Time Freshmen			Total Undergraduates		
Rank	**College**	**Fall 2018 Enrollment**	**Rank**	**College**	**Fall 2018 Enrollment**
1	Harford Community College	716	1	Harford Community College	5,228
2	Cecil College	197	2	Towson University	2,020
3	Univ. of MD, College Park	177	3	Cecil College	2,015
4	Towson University	159	4	Univ. of MD, College Park	853
5	Salisbury University	87	5	Univ. of MD University College	735
6	Univ. of MD, Baltimore County	71	6	Salisbury University	481
7	Stevenson University	39	7	Community College of Balt. County	473
8	Community College of Balt. County	33	8	Univ. of MD, Baltimore County	419
9	Univ. of MD Eastern Shore	25	9	Stevenson University	247
10	St. Mary's College of Maryland	24	10	Frostburg State University	174

Source: Maryland Higher Education Commission, May 2019. "Enrollment by Place of Residence"; Sage.

Exhibits 40-41 detail the top programs that students graduate from at each school. At Cecil College, the number one lower division certificate awarded to 2019 graduates was visual communications, followed by practical nursing and music performance. In terms of associate degrees, general studies, nursing, and management were the degrees most awarded in 2019 at Cecil College.

Exhibit 40. Cecil College Graduates by Program, 2019

	Number	% of Total
LOWER DIVISION CERTIFICATES		
Visual Communications	35	36.8%
Practical Nursing	18	18.9%
Music Performance	17	17.9%
Art	2	2.1%
Theatre	7	7.4%
Accounting	5	5.3%
Government Contracting	5	5.3%
Audio Technology	1	1.1%
Business & Commerce Technology	1	1.1%
Supply Chain Management	1	1.1%
Transportation & Logistics	1	1.1%
Cybersecurity	1	1.1%
Equine Studies	1	1.1%
Total	*95*	*100.0%*
ASSOCIATE DEGREES: TOP 10 PROGRAMS		
General Studies	79	22.3%
Nursing	37	10.4%
Management	26	7.3%
Accounting	18	5.1%
Visual Communications	16	4.5%
Physical Therapist Assistant	15	4.2%
Engineering	14	3.9%
Arts & Sciences Transfer	14	3.9%
Music	13	3.7%
Social Work	10	2.8%
Mathematics	10	2.8%
All Other	103	29.0%
Total	*355*	*100.0%*

Source: Maryland Higher Education Commission, February 2020. "Trends In Degrees and Certificates by Program, Maryland Higher Education Institutions 2006-2019"; Sage.

At HCC, the number one lower division certificate awarded to 2019 graduates was cyber defense, followed by computer-aided design and drafting and then accounting. Of course many community college students do not necessarily earn a degree at community college, but instead transfer to a 4-year university to complete a bachelor's degree. At HCC, transfers are exceedingly common. Indeed, general studies transfer, arts and sciences transfer, and business administration transfer were the top three associate degree programs among graduates in 2019. Associate degrees in nursing were the fourth program with the most graduates, representing almost 13 percent of 2019 associate degree program graduates at HCC.

Exhibit 41. Harford Community College Graduates by Program, 2019

	Number	% of Total
LOWER DIVISION CERTIFICATES		
Cyber Defense	23	31.1%
Computer-Aided Design & Drafting	11	14.9%
Accounting	9	12.2%
Medical Assisting	7	9.5%
Information Assurance & Cybersecurity	6	8.1%
Computer Information Systems	4	5.4%
Medical Office Assistant	3	4.1%
Paralegal Studies	3	4.1%
CPA Exam Qualification	2	2.7%
Marketing	2	2.7%
Administrative Office Certificate	2	2.7%
Photography	2	2.7%
Total	*74*	*100.0%*
ASSOCIATE DEGREES: TOP 10 PROGRAMS		
General Studies Transfer	206	22.8%
Arts & Sciences Transfer	195	21.5%
Business Administration Transfer	129	14.3%
Nursing	115	12.7%
Art & Design	38	4.2%
Information Assurance and Cybersecurity	36	4.0%
Computer Information Systems	32	3.5%
Medical Assisting	22	2.4%
Business Management	20	2.2%
Engineering Transfer	17	1.9%
All Other	95	10.5%
Total	*905*	*100.0%*

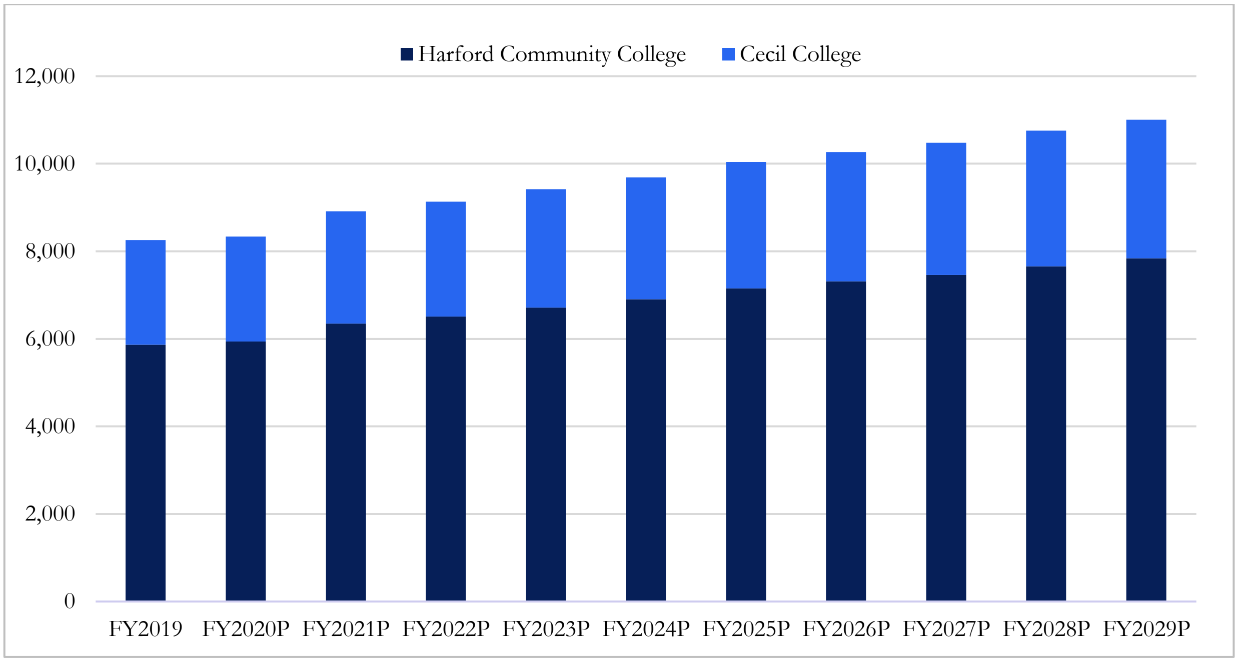
Source: Maryland Higher Education Commission, February 2020. "Trends In Degrees and Certificates by Program, Maryland Higher Education Institutions 2006-2019"; Sage.

Overall, 36.2 percent of HCC's entering class of 2014 and 12.3 percent of Cecil College's entering class of 2014 transferred to a four-year college in 2018. This represents a massive difference in the educational profiles of young residents in the Susquehanna region, with Harford Community College attendees much more likely to major in subjects associated with significant job openings (e.g. cyber-security) and more likely to attain a 4-year degree or higher. Exhibits A15 and A16 in the Appendix provide detail regarding the places to which Susquehanna residents transfer, with A16 offering historical data regarding graduation and transfer rates.

Enrollment projections supplied by the Maryland Higher Education Commission indicate that enrollment at the Susquehanna region's two community colleges is expected to expand by more than 2,700 students between FY2019 and FY2029. That equates to a total increase in enrollment of 33 percent, or a 2.9 percent average annual growth rate. That is significant and quite positive from the perspective of credentialing and future job growth and stability.

Exhibit 42 presents projected enrollment at Cecil College and HCC through FY2029. The growth rate for enrollment at the two schools is expected to be about the same over the next ten years, with enrollment at both schools growing at an average annual rate of 2.9 percent.

Exhibit 42. Projected Enrollment at Susquehanna Region Community Colleges, FY2019-FY2029



Source: Maryland Higher Education Commission, June 2019. "Enrollment Projections 2019 – 2028 Maryland Public Colleges and Universities"; Sage.

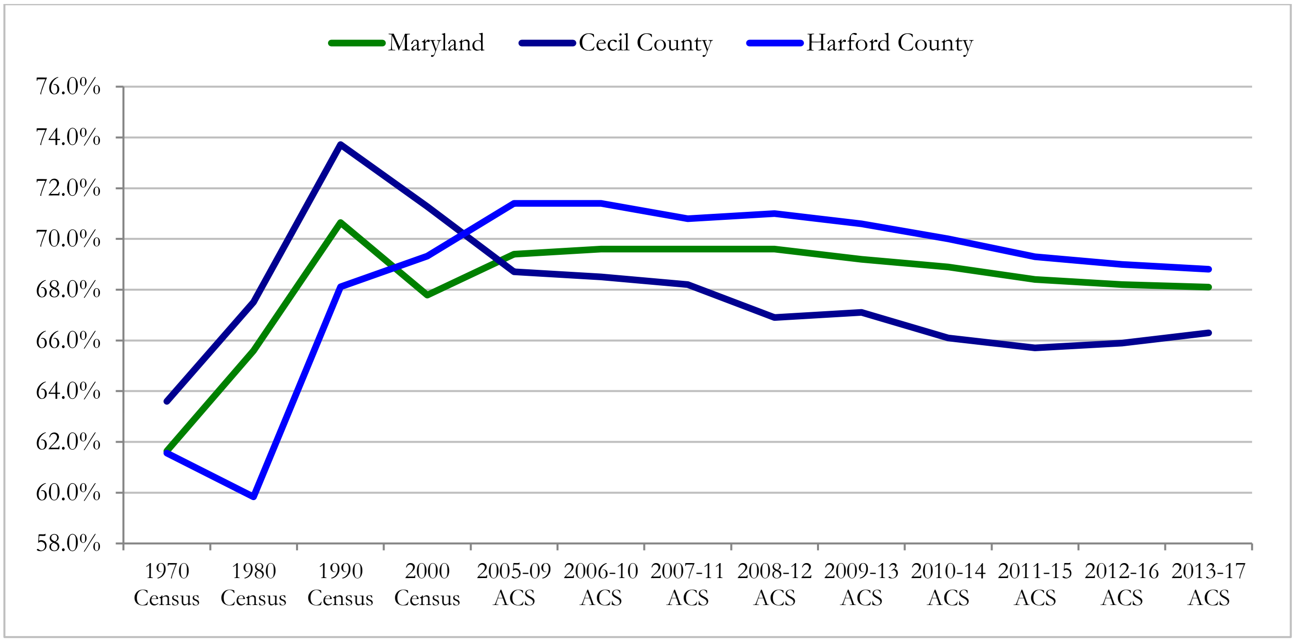
Once upon a time, University Center (UC) of Northeastern Maryland offered a variety of programs of study through its university partners, including LaSalle University, Notre Dame of Maryland University, the University of Delaware, and Wilmington University.[8] But that facility has been vacated for approximately two years. While UC offered many courses from many regional universities in the past, it never fulfilled its ambitious institutional objectives.[9]

[8] Harford Community College. *University Center Partnerships*. https://www.harford.edu/about/HCC-Partnerships.aspx.
[9] Allan Vought, "Changes planned at Aberdeen's University Center", The Baltimore Sun, 5/14/2018. https://www.baltimoresun.com/maryland/harford/aegis/ph-ag-university-center-changes-20180427-story.html.

D. Workforce Participation & Workforce Demographics

Exhibit 43 reflects historic labor force participation rates in Maryland and the Susquehanna region as measured by the U.S. Census Bureau. Labor force participation has been trending lower in Maryland and the Susquehanna region over time. Some of this decline is due to the aging of the population, with more regional residents heading into retirement. The uptick in Cecil County labor force participation in recent years for which data are available is highly encouraging.

Exhibit 43. Maryland & Susquehanna Region: Historic Labor Force Participation Rates



Source: 1. Maryland Department of Planning, 2. U.S. Census Bureau, American Community Survey 5-year estimates: S2301. 3. Sage.

Ages 20-64 can be considered the sweet spot for the working age population, though the most common age for retirement is in the range of 61-62 despite the fact that retirement is often associated with the age of 65. In any case, Exhibit 44 indicates that for workers in the 20-64 age group, the labor force participation rate in the Susquehanna region is similar or even slightly higher than that observed in similarly-situated communities and across Maryland.

In 2017, the labor force participation rate approached 81 percent in Cecil County and 84 percent in Harford County. The male labor force participation rate was higher in both Cecil (85.6%) and Harford (87.4%) counties than the statewide average (85.0%) that year. Statewide, the gap between male and female labor force participation was 6.8 percent in 2017. In Cecil County, the corresponding gap was 9.4 percent. In Harford County, it was 7.5 percent. Harford County's female labor force participation rate was higher than the statewide average in 2017, the same was not true in Cecil County.

Exhibit 44. Labor Force Participation Rate by Gender, Population Ages 20-64, 2017

	Total	Male	Female
Maryland	81.5%	85.0%	78.2%
Susquehanna Region	82.8%	86.9%	78.8%
Cecil County, MD	80.8%	85.6%	76.2%
Harford County, MD	83.6%	87.4%	79.9%
Baltimore County, MD	81.6%	84.8%	78.6%
Baltimore City, MD	73.5%	74.2%	72.8%
New Castle County, DE	73.4%	76.8%	70.1%
Wilmington City, DE*	64.5%	66.2%	62.7%
Chester County, PA	82.4%	89.3%	75.6%

Source: U.S. Census Bureau, American Community Survey 1-year estimates: C23001; Sage. Note: *New Castle County, DE figures include Wilmington City, DE.

Within the Susquehanna region, there is some variation in labor force participation among different age groups in the two counties. For instance, for younger age groups (16-19 and 20-24), the labor force participation rate is higher in Cecil County than in Harford County. This is perfectly predictable since a higher fraction of Harford County graduates goes onto post-secondary education, with many pursuing 4-year degrees.

This is significant for a number of reasons, including for SWN operations. This means that while SWN serves one region, it actually serves two rather different economies, with Harford County more intensely white collar in orientation and with higher educational attainment, and Cecil County more blue-collar in orientation. Given the pandemic-induced economic downturn and the structure of these two rather different economies, the prediction based on history is that labor market dislocation will be more substantial in Cecil County.

Exhibit 45. Labor Force Participation Rates by Age Group in the Susquehanna Region, 2017

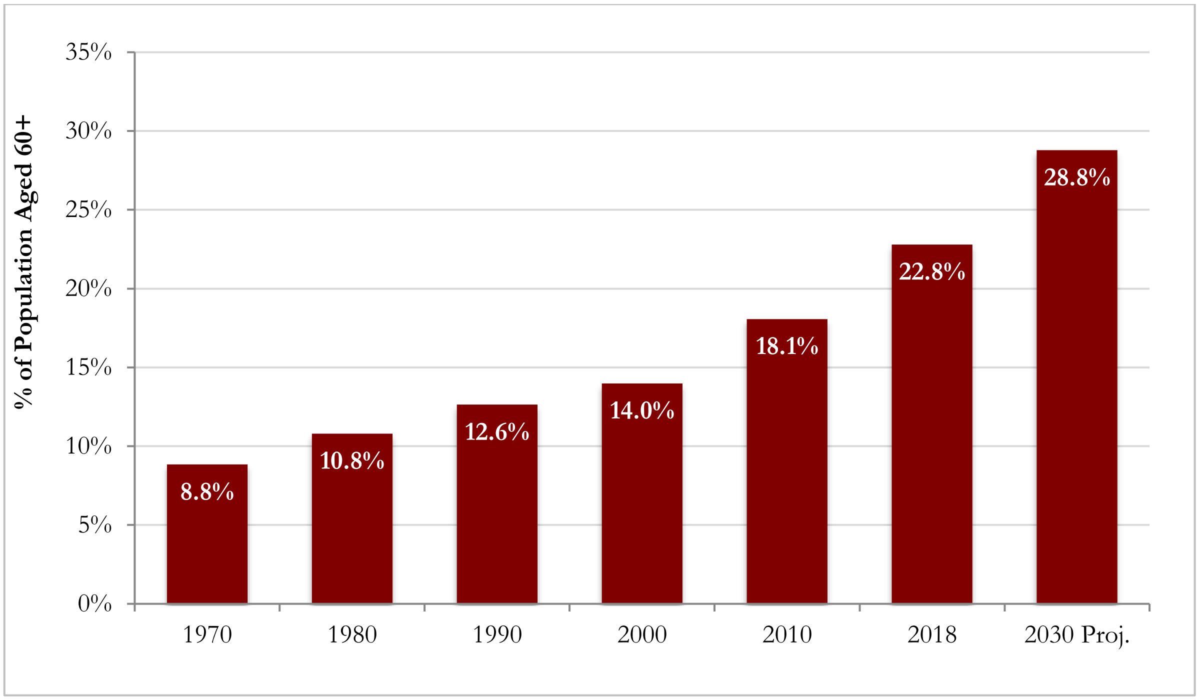
Age Group	Susquehanna Region	Cecil County	Harford County
16 to 19 years	48.9%	53.2%	47.0%
20 to 24 years	81.0%	82.3%	80.4%
25 to 44 years	89.7%	87.3%	90.7%
45 to 54 years	83.2%	81.6%	83.8%
55 to 64 years	71.5%	68.2%	72.8%
65 to 74 years	26.0%	22.8%	27.3%
75 years and over	7.0%	13.8%	4.4%

Source: U.S. Census Bureau, American Community Survey 1-year estimates: C23001; Sage.

E. Retirement Trends

The population aged 60 and over represented approximately 23 percent of total Susquehanna regional population in 2018. By 2030, that age group is projected to account for nearly 29 percent of the population (Exhibit 46). Put in different terms, between 2018 and 2030, the total population in the Susquehanna region is expected to grow by 9.7 percent, while the population aged 60 and over is expected to grow by 38.5 percent (Exhibit A28 supplies additional statistical detail in the Appendix).

Exhibit 46. Susquehanna Region: Share of Total Population Aged 60 and Over, 1970-2030 Projected



Source: 1. U.S. Census Bureau. Decennial Census Data; 2018 Population Estimates. 2. Maryland Department of Planning, Population Projections, prepared January 2018. 3. Sage.

More pervasive retirement can create job opportunities for younger workers as older, experienced workers retire, leaving positions open and as demand for healthcare and leisure services expands. To understand the nature of occupational demand going forward, it is therefore important to examine the industries in which older employees are most common.

Exhibit 47 details employment among workers aged 55 and older by industry. In absolute terms, retail trade, healthcare and social assistance, manufacturing, educational services, and professional, scientific and technical services employ the most Susquehanna residents ages 55+.

As a share of total industry employment, real estate/rental/leasing is associated with the largest concentration of older employees (36.9% of total employment), followed by finance and insurance (34.3% of total employment). However, these two industries are relatively small in terms of regional employment totals. In all but two industries listed in Exhibit 47 (accommodation and food services and arts/entertainment/recreation), employees ages 55+ account for at least 25 percent of the total industry employment in the Susquehanna region. Accommodation and food services and arts/entertainment/recreation are heavily associated with entry-level positions.

Exhibit 47. Susquehanna Region Employees Aged 55+ by Industry, 2019Q2

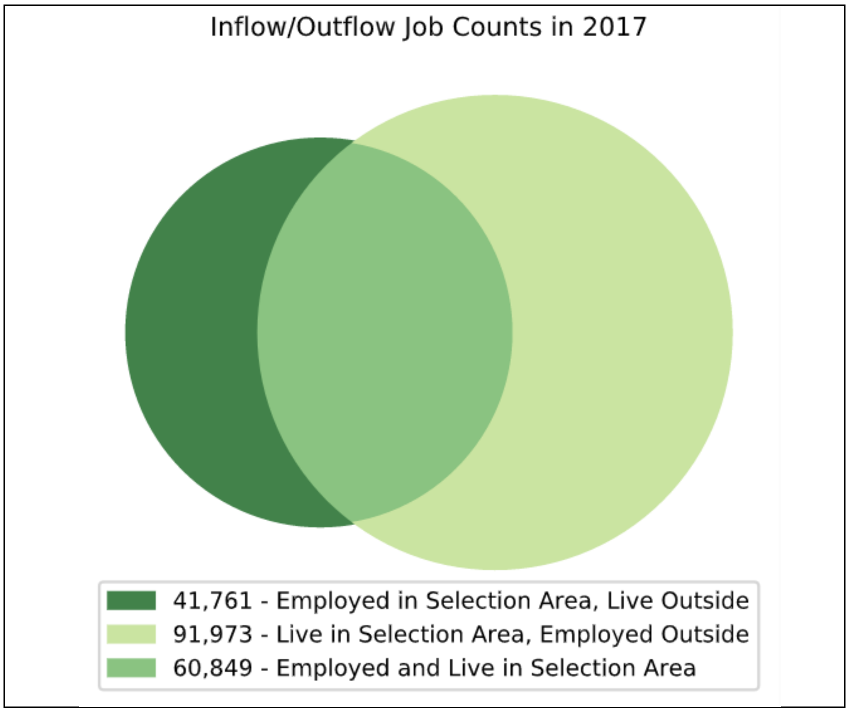
Industry	# of Employees Aged 55+	% of Total Industry Employment	Industry	# of Employees Aged 55+	% of Total Industry Employment
Retail Trade	3,452	25.5%	Administrative/Support & Waste Management & Remediation Services	973	26.4%
Health Care and Social Assistance	3,434	25.6%	Other Services (except Public Administration)	923	26.8%
Manufacturing	2,754	29.5%	Finance and Insurance	899	34.3%
Educational Services	2,595	27.7%	Arts, Entertainment, and Recreation	516	22.2%
Professional, Scientific, and Technical Services	2,153	25.2%	Agriculture, Forestry, Fishing and Hunting	330	32.4%
Construction	1,744	25.7%	Information	318	32.9%
Transportation and Warehousing	1,641	27.3%	Real Estate and Rental and Leasing	316	36.9%
Accommodation and Food Services	1,371	14.2%	Mining, Quarrying, and Oil and Gas Extraction	76	29.7%
Public Administration	1,163	31.6%	Management of Companies and Enterprises	74	32.2%
Wholesale Trade	999	27.2%	Utilities	46	25.1%
			Total	**25,779**	**25.9%**

Source: U.S. Census Bureau, Longitudinal Employer-Household Dynamics (LEHD) program, Quarterly Workforce Indicators (QWI) Explorer application; Sage. Note: figures shown are the number of stable jobs, i.e., the number of jobs that are held on both the first and last day of the quarter with the same employer. This is often, but not necessarily, the same as being employed for a full quarter (e.g., an on-call substitute teacher may have earnings in each of three consecutive quarters, but intermittently).

F. Commuting Patterns/Labor Shed

Exhibit 48 presents data from the U.S. Census Bureau characterizing employment inflow/outflow in the Susquehanna region. The larger circle pertains to the number of employed Susquehanna region residents who leave the region for work. The smaller, darker green circle represents the number of people who commute from beyond the region to work in Susquehanna. The overlapping area represents the population that both lives and works in the Susquehanna region. Exhibit A1 in the Appendix supplies a map of where employment is concentrated in the Susquehanna region.

Exhibit 48. Susquehanna Region Employment Inflow/Outflow, 2017



Source: U.S. Census Bureau. Longitudinal-Employer Household Dynamics Program, OnTheMap Application; Sage. Notes: 1. Numbers represent *primary* jobs, not total jobs. Primary Jobs: Public and private-sector jobs, one job per worker. A primary job is the highest paying job for an individual worker.

Exhibit 49 further disaggregates the inflow/outflow of employment in the Susquehanna region and indicates that the Susquehanna region is a net exporter of employees. This is not surprising given its proximity to large job markets like Baltimore, Washington, Philadelphia, and Wilmington.

Of the approximately 152,000 employed Susquehanna residents, 60 percent work outside of the Susquehanna region (91,973). The other 40 percent of employed residents both live and work in the Susquehanna region (60,849). This means that of the approximately 102,000 jobs in the Susquehanna region, 60 percent are filled by residents (60,849) and 40 percent are filled by workers from outside the region (41,761). Many of these employees likely work at Aberdeen Proving Ground, a destination for many high-wage, highly-educated workers. Exhibits A21-A23 in the Appendix provide inflow/outflow details for Cecil and Harford counties separately.

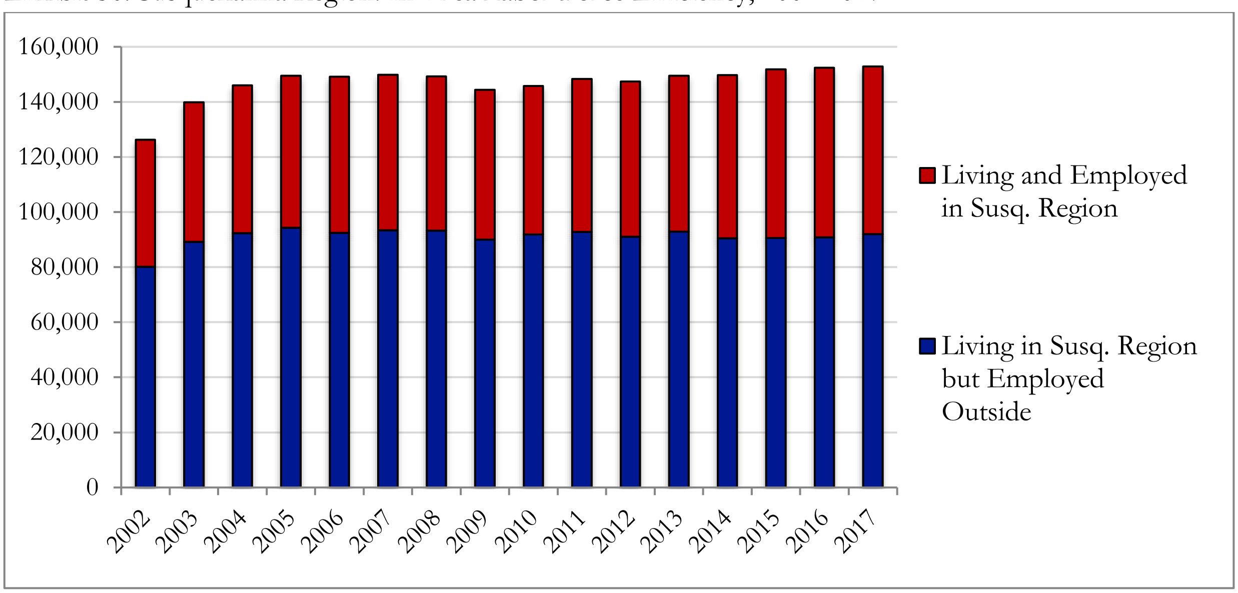
Exhibit 49. Susquehanna Region: Labor Market Details, 2017

Area Labor Market Size (Primary Jobs)	Count	Share
Employed in Susquehanna Region	102,610	100.0%
Living in Susquehanna Region	152,822	148.9%
Net job inflow	-50,212	-
In-Area Labor Force Efficiency		
Living in Susquehanna Region	152,822	100.0%
Living and employed in Susquehanna Region	60,849	39.8%
Living in Susquehanna Region but employed outside the region	91,973	60.2%
In-Area Employment Efficiency		
Employed in Susquehanna Region	102,610	100.0%
Living and employed in Susquehanna Region	60,849	59.3%
Employed in Susquehanna Region but living outside the region	41,761	40.7%

Source: U.S. Census Bureau. Longitudinal-Employer Household Dynamics Program, OnTheMap Application; Sage.
Notes: 1. Numbers represent *primary* jobs, not total jobs.

Exhibit 50 presents the Susquehanna region's in-area labor force efficiency over time. Labor force efficiency is a measure of how many people who live in a region and who are employed also work in that region. As indicated, the ratio has been relatively steady over time. The fact that there are so many people living in the Susquehanna region, but working outside its boundaries implies terribly lengthy commutes in many instances.

Exhibit 50. Susquehanna Region: In-Area Labor Force Efficiency, 2002-2017



Source: U.S. Census Bureau. Longitudinal-Employer Household Dynamics Program, OnTheMap Application; Sage.
Notes: 1. Numbers represent *primary* jobs, not total jobs.

The lengthy commutes exist for a reason. Residents who commute to jobs outside of the region often earn higher wages. More than 61 percent of residents who work outside the region earn more than $3,333 per month (56,167/91,973), compared to 42 percent of residents who work inside the region (25,921/60,849). Exhibit 51 supplies relevant statistical detail.

Exhibit 51. Susquehanna Region: Employment Inflow/Outflow, Characteristics of Workers, 2017

	Susquehanna Jobs Filled by Residents	Susquehanna Jobs Filled by Outside Workers	Susquehanna Residents Working Outside the Region
Number of Workers	*60,849*	*41,761*	*91,973*
Age			
Age 29 or younger	15,437	11,260	19,468
Age 30 to 54	30,233	21,412	49,704
Age 55 or older	15,179	9,089	22,801
Earnings			
$1,250 per month or less	13,567	8,696	13,069
$1,251 to $3,333 per month	21,361	13,428	22,737
More than $3,333 per month	25,921	19,637	56,167
Industry Class			
Goods Producing	9,722	7,976	12,524
Trade, Transportation, and Utilities	12,203	12,488	19,789
All Other Services	38,924	21,297	59,660

Source: U.S. Census Bureau. Longitudinal-Employer Household Dynamics Program, OnTheMap Application; Sage.
Notes: 1. Numbers represent *primary* jobs, not total jobs.

Exhibit 52 supplies information regarding where Susquehanna residents are employed and where Susquehanna workers live. Nearly 30 percent of employed Susquehanna residents work in Harford County and another 20 percent work in Baltimore County. Approximately 10 percent of residents work in Baltimore City and another 10 percent in Cecil County.

With respect to nonresidents commuting to the region for work, Baltimore County is the top source of workers (10.8% of Susquehanna workers are from Baltimore County), followed by New Castle County (4.8%) and Baltimore City (3.5%). U.S. Census Bureau data indicate that the average commute time for Susquehanna region residents is between 29-32 minutes (Exhibit A24 supplies pertinent additional detail in the Appendix).

Exhibit 52. Working/Living Destinations/Locations, 2017

Where SWN Residents are Employed			Where SWN Workers Live		
	Count	Share		Count	Share
Total Workers	**152,822**	**100.0%**	**Total Workers**	**102,610**	**100.0%**
Counties			**Counties**		
1 Harford County	45,530	29.8%	1 Harford County	42,597	41.5%
2 Baltimore County	30,536	20.0%	2 Cecil County	18,252	17.8%
3 Baltimore city	16,432	10.8%	3 Baltimore County	11,095	10.8%
4 Cecil County	15,319	10.0%	4 New Castle County, DE	4,974	4.8%
5 New Castle County, DE	11,373	7.4%	5 Baltimore city	3,547	3.5%
All Other Locations	33,632	22.0%	All Other Locations	22,145	21.6%
Places			**Places**		
1 Baltimore city	16,432	10.8%	1 Bel Air South CDP	7,768	7.6%
2 Bel Air town	9,105	6.0%	2 Bel Air North CDP	5,475	5.3%
3 Towson CDP	5,166	3.4%	3 Edgewood CDP	3,649	3.6%
4 Elkton town	4,497	2.9%	4 Baltimore city	3,547	3.5%
5 Bel Air South CDP	4,389	2.9%	5 Aberdeen city	3,173	3.1%
All Other Locations	113,233	74.1%	All Other Locations	78,998	77.0%

Source: U.S. Census Bureau. OnTheMap Application. Longitudinal-Employer Household Dynamics Program; Sage.
Notes: 1. Numbers represent *primary* jobs, not total jobs. 2. CDP: Census designated place.

G. Significant Downsizing/Contractions

At this moment, it is difficult to know the complete impact of the novel coronavirus pandemic. Accordingly, much of this section is devoted to speculation.

As of this writing, initial unemployment claims in Maryland have skyrocketed. During the week ended February 29th, 2020, 2,626 Marylanders filed for unemployment insurance. By the week ending March 21st, that number had surged to nearly 42,000.[10]

According to the Maryland Department of Commerce, the initial set of layoffs was highly concentrated among categories such as retail trade and hospitality – segments that support many entry-level and near entry-level positions.[11] As the crisis persists, layoffs will begin implicating many other segments, including middle-wage earners such as contractual public school bus drivers, realtors, construction workers, and manufacturing positions, among others.

Once the supply shock is over, many of these jobs will return immediately, but some will not. That said, there are likely some permanent implications associated with the emergence of COVID-19, including additional investment in building the nation's health response infrastructure, an accelerating shift to U.S.-based manufacturing, a much softer construction market, and even greater support for the online economy, including a greater propensity toward teleworking.

---

[10] U.S. Department of Labor, Employment & Training Administration. Unemployment Insurance Weekly Claims Reports.

[11] Based on conversation between Department of Commerce and Sage economist Anirban Basu, Chair of the Maryland Economic Development Commission.

IV. Economic Assets, Advantages and Opportunities

A. SWOT Analysis

The following diagram categorizes identified strengths, weaknesses, opportunities, and threats for Susquehanna region labor market stakeholders.

STRENGTHS	WEAKNESSES
♦ Location between two major metropolitan areas (Phila. & Wash./Balt.) supplies one of world's deepest, highest-wage labor markets; ♦ Low cost of living relative to balance of metropolitan areas; ♦ Alignment with I-95 fuels logistics, e-commerce; ♦ Federal government's presence (APG) supports massive foundation for high-tech activities; ♦ Elevated quality of life in North East, Havre de Grace, and other Susquehanna communities; ♦ Plentiful recreational activities to support leisure and hospitality; ♦ Arrival of Great Wolf Lodge will generate significantly more visitors to Cecil County; ♦ Principio Business Park serves as economic engine; ♦ Large number of cyber graduates from Harford Community College.	♦ Lack of a 4-year higher education institution rooted in the region; ♦ Unmet expectations at University Center; ♦ Difficulty recruiting workers given competition with Baltimore, Philadelphia, D.C. and other more urban communities that can disproportionately attract workers from Generations Y and Z; ♦ Lengthy commutes to cores of metropolitan areas; ♦ Few options for public transit to and from nearby job centers; ♦ Credential mismatch, with many residents lacking educational credentials necessary to access technical occupations, including cyber; ♦ Inadequate public infrastructure in many communities, stifling economic growth and creation of new employment opportunities.
OPPORTUNITIES	**THREATS**
♦ Bulked up apprenticeship programs in the skilled trades, including for welders, carpenters, machinists, and mechanics; ♦ Investment in 2-year colleges, with specific focus on cyber, the skilled trades, healthcare, and enterprise management; ♦ Accelerated creation of net new job openings due to retirement even in the context of soft economic growth; ♦ Junction between healthcare records management and cyber; ♦ Investments in areas around APG to support higher quality of life and accelerate business formation; ♦ More intense marketing around leisure and hospitality in light of arrival of Great Wolf Lodge; ♦ Continued growth of agri-business; ♦ Expected influx of younger households.	♦ Severe COVID-19 induced recession followed by initial period of recovery, and then years of malaise as companies and households cope with accumulated debt; ♦ Disappearance of jobs in logistics, manufacturing, construction, and other industries due to automation, including in the form of robotics, 3D printing, driverless vehicles, drones, and artificial intelligence; ♦ Ongoing retirement of highly-skilled Baby Boomers, and movement of some of this population to the South; ♦ Low labor force engagement among younger people, especially men; ♦ Opioid epidemic; ♦ Emerging anti-business attitudes nationally; ♦ Base realignment that removes positions and missions from APG at some point in the future; ♦ Federal debt crisis.

- Strengths

Northeast Maryland's inclusion and proximity to several major metropolitan areas along with the alignment of I-95 creates massive opportunities for market connectivity. The presence of APG further supports connections to the worlds of high-tech and federal government contracting, creating opportunities for highly technical professionals within the region.

The emergence of Principio Business Park as a major employment center in Cecil County stands for the proposition that investment in infrastructure, whether by public or private entities, is able to trigger large-scale commerce growth in northeast Maryland. The arrival of Amazon, Lidl, and Great Wolf Lodge is evidence that many major corporate entities have recognized the potential of the region to proficiently serve large markets.

- Weaknesses

The lack of a 4-year degree granting institution stands out as the region's primary economic weakness. University Center (UC) was intended to address this by providing a platform through which regional colleges and universities could offer instruction and degrees to area residents, but UC has utterly failed to fulfill its mission to date.

There are also many area residents who lack more than a high school degree. That was not especially problematic as unemployment recently attained a 50-year low nationally and fell to just 3.3 percent in Maryland. However, with economic conditions now far weaker, many of these arguably under-credentialled residents may suffer substantial periods of unemployment and under-employment.

- Opportunities

In order to meet the prospective talent shortfalls of the future, the region must focus upon: 1) human capital development; and 2) human capital attraction. Human capital development will require the continued expansion of activities at Harford Community College and Cecil College, which serve as the foundations of higher education in northeast Maryland. There also needs to be expansion of critical apprenticeship programs, including via partnerships with membership organizations like Associated Builders & Contractors and Maryland Association of Manufacturers.

Human capital attraction requires investing in quality of life. Certain northeast Maryland communities can be characterized as offering massive appeal, including Bel Air, Havre de Grace and North East, MD. Other communities, like Port Deposit, Aberdeen, and Edgewood, offer substantial potential for improved appeal, thereby supporting greater and more successful recruitment of talent into the region.

- Threats

There are at least three threats that stand out as representing serious sources of concern for policymakers and other stakeholders in northeast Maryland. These include: 1) dislocations due to technology; 2) the future of federal government activities; and 3) a regional brain drain.

Presently, jobs in logistics related to the e-commerce revolution, a revolution that has likely gathered additional momentum due to the novel coronavirus, are supplying significant numbers of opportunities for jobseekers. The gig economy has also created substantial opportunity, including for drivers who serve as contractors to the likes of Lyft and Uber. However, as technology continues to progress, including in the form of robotics, 3D printing, driverless vehicles, drones, and artificial intelligence, many jobs, including high-wage positions, may be permanently dislocated.

The region's large federal agency and government contracting segments can be viewed as helping to countervail some of the dislocation caused by the diffusion of human-replacing technologies, but with the federal government having amassed a debt of $23.5 trillion prior to the novel coronavirus crisis, and with federal budget deficits surging, at some point the nation may face a debt crisis. At that point, support for federal installations like Aberdeen Proving Ground and for federal contractors may fade. The installation at Aberdeen benefitted from prior rounds of base realignment, but positive outcomes going forward are not assured.

Even during a period of what is likely to be softer economic growth during the years ahead as economic actors wrestle with the aftermath of the COVID-19 crisis, finding skilled talent will continue to prove challenging. At a time of economic uncertainty, many younger Americans may choose to begin their careers in larger metropolitan areas, home to the deepest labor markets and places where the cost of living is likely to become less challenging than during the peak of the now ended economic expansion.

At the same time, Baby Boomers have begun to retire in large numbers, and while the tumult experienced in financial markets recently may induce some near-retirees to postpone retirement, retirement will be inevitable nonetheless. As a result, the Susquehanna region may face a brain drain during the years ahead, rendering SWN's ongoing work all the more important.

V. Recommendations

A. A Brief Review of Sage's 2016 Recommendations

During a period of persistent economic growth and significant opportunity for upward mobility, Sage's 2016 recommendations related to credentialing. Observing that many young people or dislocated workers lack two years or more necessary to acquire a credential from Cecil College or Harford Community College, Sage recommended that workforce development be retooled to better emphasize short-term certificate programs that last one year or less and are industry developed and recognized. Specifically, Sage recommended that two types of credentialing programs be developed:

- *Susquehanna Regional Certificate Programs in Construction and Primary Healthcare* (the goal is to credential within a year): Sage recommended that programs similar to the Entry Level Manufacturing Training Program be developed for construction and primary healthcare.

- *Susquehanna Workforce Network Customer Service Certification* (the goal is to credential within 3-6 months): Sage recommended the development and implementation of a customer service certification. Compared to the certification in Customer Service and Sales offered by The National Retail Foundation, the envisioned SWN certification would be a bit broader and encompass more than retail.[12]

These recommendations were/are consistent with the SWN's Workforce Innovation & Opportunity Act (WIOA) Local Workforce Plan for the 2016-2020 period, which identified the ongoing expansion of credentialing opportunities as a key local workforce challenge/opportunity. SWN had already stated its desire and intent to expand training initiatives to other in-demand industries and occupations: "SWN plans to expand incumbent worker training initiatives to other demand industries by utilizing up to 20% of its WIOA Adult and Dislocated Worker resources. OJT [on-the-job training] is an effective training strategy and continues to be offered through the local EARN Initiative as well as through WIOA resources."[13]

Consistent with the notion of on-demand and efficient credentialing, SWN maintains a pre-apprenticeship construction training program in partnership with Harford Community College. The

[12] National Retail Federation (NRF). "Customer Service and Sales". https://nrf.com/career-center/certifications-and-training/customer-service-and-sales-certification.

[13] Susquehanna Workforce Network, Inc. "Workforce Innovation & Opportunity Act (WIOA) Local Workforce Plan For Cecil and Harford Counties, 2016 – 2020". p. 48.

training program lasts 5 weeks and focuses on the following basic trades: electrical, carpentry, plumbing, and HVAC (basic refrigeration).[14]

Sage reiterates its 2016 recommendation regarding the creation of an efficiently-delivered customer service certification program that serves retail, hotel, and a variety of other segments. While Cecil College offers an online program oriented around retail training[15], SWN's program should be: 1) quicker to complete; 2) far more affordable; and 3) focused on far more than the generation of retail sales.

B. Sage's 2020 Recommendations

- *Recommendation 1: Continue to Expand Credentialing Opportunities*

Sage expects the initial phase of economic recovery from the pandemic to be rapid, though complete recovery will likely take years. While there will need to be greater relative focus on job placement as opposed to advancement, it is still the case that credentials matter.

Accordingly, we continue to recommend that SWN support the maintenance and development of credentialing opportunities in three segments: manufacturing, primary/preventative care, and skilled construction trades. While there are credentialing opportunities available at two-years colleges and elsewhere, what is needed now are also quicker-hitting alternatives that connect people to opportunities on a more timely basis.

These credentialing opportunities must be meaningful, which strongly implies that they must be forged in conjunction with businesses operating in in-demand industries. They must also be straightforward to attain by people who are willing to put in the work, are dependable, and are earnestly interested in their own economic betterment.

Online instruction is perfectly permissible, but any SWN-sponsored credentialing opportunity should also embody opportunities for in-person engagement. This is especially true in the domain of customer service, which embodies skills that can only be refined in conventional social settings. That said, online instruction will help stretch constrained training budgets as well as extend programmatic access to many individuals (while denying it to others – for instance those lacking reliable Internet connections, at-home devices).

[14] SWN, Pre-Apprenticeship Construction Training. http://www.swnetwork.org/images/Pre-ApprenticeshipConstuction071519.jpg.
[15] Cecil College, Retail Customer Service Skills Training. https://careertraining.ed2go.com/cecil/training-programs/retail-customer-service-skills-training.

- *Recommendation 2: Review Rapid Response Guidance & Best Practices*

With the COVID-19 pandemic ravaging economies globally, nationally, and regionally, progress going forward means revisiting the past. After the Great Recession, a period associated with elevated unemployment, there was an enormous need to reconnect dislocated workers to employment.

As the economic expansion persisted and an excess of workers transitioned inexorably to a dearth of workers and skill sets, new opportunities to enter the middle class emerged. The key to upward mobility became a combination of motivation and credentialing, with many human resource professionals insisting on college degrees and other credentials even for positions that largely required no more than a commitment to understanding organizational missions and promoting them through high quality service provision. As unemployment marched toward multi-decade lows nationally and locally, some organizations diminished their requirements for formal credentialing, creating even more opportunities for individuals and their households to move further up the rungs of the socioeconomic ladder.

Sage authored this report during what appears to be the worst of the COVID-19 crisis. While this report is intended to support SWN's strategic needs into the longer-term, there is no way for one to set aside the magnitude of the current crisis and its associated economic shocks and aftershocks. We anticipate incredibly high unemployment, considerable enterprise failure, shattered state and local government budgets, unpaid mortgages, unpaid rents, repossessed vehicles and all that accompanies economic collapse, even if the event triggering that collapse turns out to be short-lived.

Accordingly, we recommend that SWN review its own best practices and the best practices of other leading workforce development organizations in connecting dislocated workers to employment opportunities. The goal is to return as quickly as possible to the economic conditions that prevailed during the status quo ex ante – a status quo that lingered through the early days of March 2020.

The concept of quickly moving people back to work is nothing new. As described by the U.S. Department of Labor (DOL), rapid response "encompasses the strategies and activities necessary to plan for and respond as quickly as possible following an announcement or notification of a permanent closure or mass layoff, a mass job dislocation resulting from a natural or other disaster, or the filing of a Trade Adjustment Assistance (TAA) petition."[16]

[16] U.S. Department of Labor, Training and Employment Guidance Letter No. 19-16. https://wdr.doleta.gov/directives/attach/TEGL/TEGL_19-16.pdf.

Rapid response is a pro-active, flexible, and business-focused strategy designed to respond to plant closings and layoffs by quickly coordinating services and providing immediate aid to companies and affected workers. Rapid response teams work with employers and employees to swiftly maximize public and private resources to minimize disruptions associated with job loss.[17]

As part of its WIOA Local Workforce Plan, SWN is required to outline how it will coordinate workforce development activities carried out in the Local Area with statewide rapid response activities. Sage suggests that SWN review its rapid response plans and resources along with U.S. Department of Labor[18] and Maryland DLLR[19] guidance regarding rapid response. Rapid response activities will be necessary to assist businesses and workers suffering from the economic effects of COVID-19.

According to the U.S. Department of Labor, a successful Rapid Response system must include:

> *Informational and direct reemployment services for workers*, including but not limited to: information and support for filing unemployment insurance claims; information about the Trade Adjustment Assistance (TAA) program; information on the impacts of layoff on health coverage or other benefits; information on and referral to career services; reemployment-focused workshops and services; and training;
>
> *Delivery of solutions to address the needs of businesses in transition*, provided across the business lifecycle (expansion and contraction), including comprehensive business engagement and layoff aversion strategies and activities designed to prevent or minimize the duration of unemployment;
>
> *Convening, brokering, and facilitating the connections, networks and partners* to ensure the ability to provide assistance to dislocated workers and their families such as home heating assistance, legal aid, and financial advice; and
>
> *Strategic planning, data gathering, and analysis* designed to anticipate, prepare for, and manage economic change.[20]

A 2016 OECD publication focused on re-employment prospects of displaced workers in the U.S. highlighted layoff aversion and rapid response as policies that should be utilized. Among the

[17] U.S. Department of Labor, Rapid Response Services. https://www.dol.gov/agencies/eta/layoffs.
[18] U.S. Department of Labor, Training and Employment Guidance Letter No. 19-16. https://wdr.doleta.gov/directives/attach/TEGL/TEGL_19-16.pdf.
[19] Maryland DLLR, POLICY ISSUANCE 2018-05, Rapid Response. https://www.dllr.state.md.us/employment/mpi/mpi5-18.pdf.
[20] U.S. Department of Labor, Training and Employment Guidance Letter No. 19-16. https://wdr.doleta.gov/directives/attach/TEGL/TEGL_19-16.pdf.

report's key policy recommendations were to make layoff-aversion programs more widely known among employers, to expand layoff aversion programs beyond the manufacturing and agricultural sectors, and to harvest the full potential of rapid response services to facilitate quick job-to-job transitions following a layoff.[21]

In the longer term, the focus will return to broader training and credentialing efforts, but in the short term SWN should prepare to reach out to employees and employers impacted by the coronavirus crisis, including by educating employees and employers about state and federal assistance programs.

The National Rapid Response Workgroup outlines a set of "Quality Rapid Response Principles":

> *Timeliness:* The Sooner the Better (and Before is Best)
> *Layoff Aversion:* Preventing, or Minimizing the Duration of, Unemployment
> *Partnerships:* Develop Relationships Necessary to Deliver Solutions
> *Leverage Resources:* Know Where the Money is and How to Put it to Effective Use
> *Convenience:* When You're Needed, You're There… Wherever, Whenever and Whatever
> *Seamless Service Delivery:* Deliver Solutions – Show Customer Results, Not Processes
> *Consistent & Accurate Information:* Know Your Stuff and How to Explain it to Customers
> *Customer Choice:* Meet Customer Needs – Provide What They Want, Not What's Available Now
> *Measures of Success:* Measurable Goals Enhance Continuous Improvement and Outreach Effectiveness
> *Active Promotion:* Tell Your Story and Share Your Successes!
> *Innovation:* As the Economy Evolves, You Must Keep Pace[22]

Successful longer term efforts to support dislocated workers can be informed by the experiences of other local programs. For example, researchers with the North Carolina Rural Economic Development Center and the Corporation for Enterprise Development studied 16 programs that have enjoyed success in assisting displaced workers and enhancing worker skills. Several key features related to success include: 1) creating first-source hiring agreements in which business incentives associated with state and local projects are tied to the consideration of referrals from

[21] OECD (2016), "Back to Work: United States: Improving the Re-employment Prospects of Displaced Workers", OECD Publishing, Paris. https://read.oecd-ilibrary.org/employment/back-to-work-united-states_9789264266513-en.
[22] "The Practitioner's Guide to Rapid Response", developed by the National Rapid Response Workgroup with support from the U.S. Department of Labor Employment & Training Administration. https://virginiacareerworks.com/wp-content/uploads/Practitioners-Guide-to-Rapid-Response-2015-1.pdf.

employment centers; 2) providing fast, intensive training for jobs with openings; and 3) providing long-term job training based on employer needs and growing fields.[23,24]

Research published by the Upjohn Institute reviewed results from several employment programs that have attempted to address worker displacement. Available evidence suggests that six goals should be pursued: 1) a continuous connection between unemployment compensation recipients and reemployment services, 2) skill training more closely connected to employer requirements and opportunities, 3) earnings transition schemes to help workers adjust to major declines in lifetime earnings patterns, 4) efforts to maintain and strengthen employer/employee relationships, 5) more expansive information channels to employees and communities regarding impending employment disruptions, and, for most of these programs, 6) targeting guided by net impact principles ensuring the best return on public investment.[25]

During a discussion with the study team, members of SWN's board pointed out the need to consider issues such a mental health as people are credentialed and returned to work. The COVID-19 crisis has been a period of enormous stress for many households, and that stress will continue post-crisis as many households deal with unpaid bills and unmet expectations. Thus, it is not necessarily enough to merely connect people to jobs – in some cases, it may be necessary to counsel as well.

Rather than serving as recommendations, the discussion immediately above serves as some examples of thoughtful considerations that SWN should apply as it implements its tactics and strategies. Again, if there is one term that should be at the forefront of SWN thought during the months/years ahead, it is "rapid action".

---

[23] Schweke, B., & Lambe, W. (2006). Back on Track: 16 Promising Practices to Help Dislocated Workers, Businesses and Communities. Raleigh, NC: North Carolina Rural Economic Development Center. http://stage.nelp.org/wp-content/uploads/2015/03/Back-on-Track_091906_061849.pdf.

[24] Heidkamp, Maria, and William Mabe. *The great recession and serving dislocated workers with disabilities: Perspectives from one-stop career centers and rapid response coordinators*. NTAR Leadership Center, 2011. https://www.dol.gov/odep/pdf/ntar-great-recession-report.pdf.

[25] O'Leary, Christopher J. "Policies for displaced workers: An American perspective." (2010). https://research.upjohn.org/cgi/viewcontent.cgi?article=1187&context=up_workingpapers.

- *Recommendation 3: Target Industry Clusters*

As in prior reports, Sage has set forth recommendations regarding industries likely to create the most employment opportunities or industries in which the region has a likely competitive advantage. Sage recommends that these industries be prioritized as focus areas. Incredibly, despite the massive changes in economic performance and in the structure of the economy, our recommended list has shifted little over time. We view that as a good sign that our recommendations regarding industry clusters neatly align with the long-lived competitive advantages and history of the region.

a. *Logistics*

Includes supply chain management, fulfillment center operations, and vehicle maintenance, including an emerging focus on driverless vehicles and electric vehicles.

b. *Healthcare & Retirement Services*

Includes medical centers like hospitals, free-standing medical facilities, clinics, assisted living centers, continuing care retirement communities, and nursing homes.

c. *Construction*

Includes residential, commercial, and heavy highway/infrastructure-related construction.

d. *Manufacturing, Including 3D Printing*

Includes a focus on facility maintenance, welding, machinists, robotics, supply chain management, and negotiations with vendors and customers.

e. *Information Technology/Cyber*

Encompasses cyber-security, familiarity with various programming languages, communications, and organizational management.

f. *Hospitality*

Encompasses restaurants, retail, hotel and attraction management.

That said, we offer a note of caution. While enormous effort must be undertaken to reconnect people to employment opportunities, there is a set of emerging technologies that threaten to displace workers.

- *Recommendation 4: More Potent Messaging for High School Juniors & Seniors*

Based on its analysis, Sage recommends that SWN leadership develop a formal presentation targeted toward high school juniors and seniors focusing on the array of career paths available to them. The presentation should focus on:

1) Helping young people understand that what matters most is to identify their passions;
2) Helping young people understand that everyone is different, and there is no unique path to success in life;
3) Helping young people understand that if one is to pursue their passions, there are things that need to be done, whether in the form of higher education, completion of an apprenticeship program, or the development of a business plan;
4) Helping young people understand that based on available data, there are certain occupations in which there will be a deficit of trained workers, and that these occupations along with others should be considered if they align with one's passions.

Sage recommends that this presentation involve a PowerPoint or some other mechanism that allows for efficient delivery of information and also serves as a leave-behind resource for school administrators and educators. The optimal presentation will likely be in the range of 30 minutes, leaving ample time during the typical class session for introductions, questions, and answers.

The goal should be for SWN personnel or hired consultants to present this material to high school juniors and seniors, with the goal of presenting this information at least once to each class. That means speaking to roughly half of the 15 area public high schools (10 in Harford County, 5 in Cecil County) each year as well as to private academies as deemed appropriate.

Conclusion

The COVID-19 crisis of 2020 fundamentally altered this report. But for the crisis, this report would likely have looked much more like its 2016 precursor, offering additional ideas to push more people into northeast Maryland's already large middle class.

While Sage has continued to emphasize issues such as credentialing, partnerships with local two-year colleges, engagement with employers, and critical target industries, the greatest need over the near-term involves connecting dislocated workers with available jobs. The objective over the next few years is to attempt to return as quickly as possible to the status quo ex-ante that prevailed when COVID-19 seemed so far away.

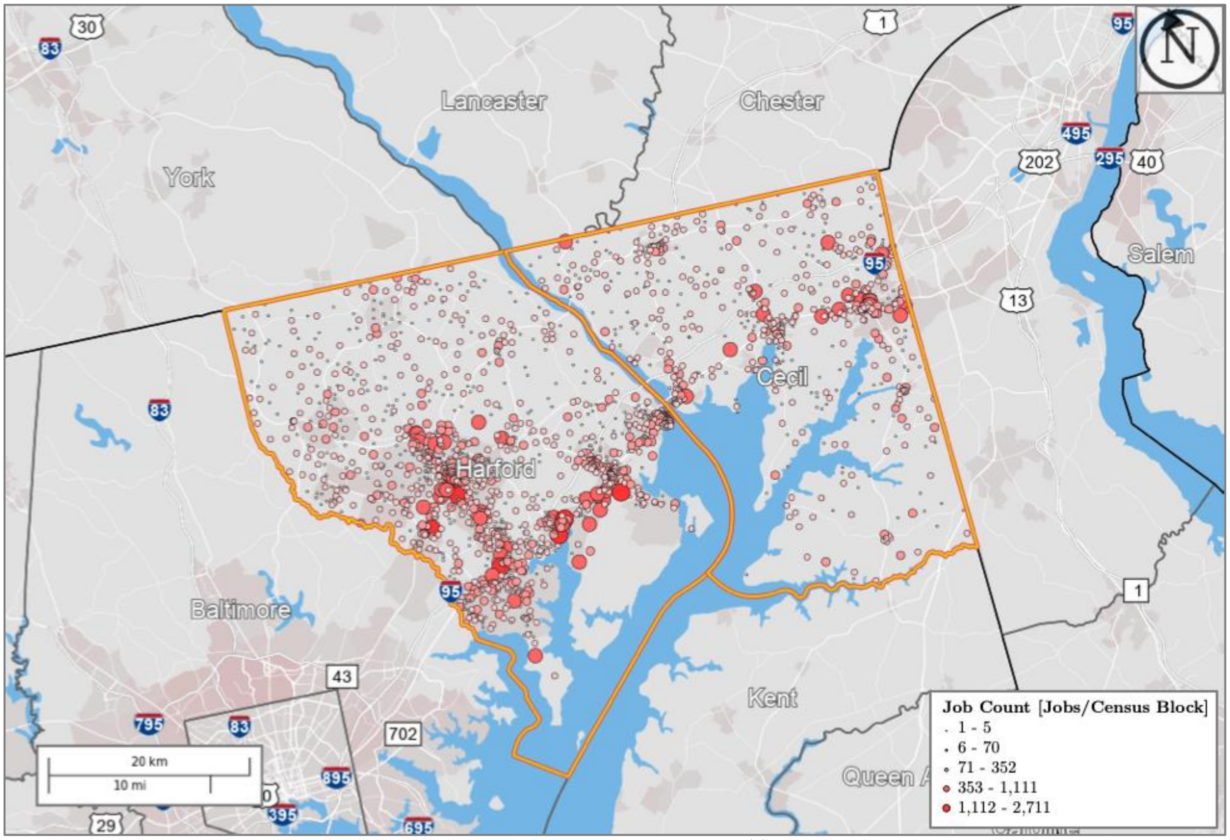
This requires SWN to adjust course in the near-term towards a greater relative emphasis on job placement as opposed to career advancement. Best practices emerging during and after the Great Recession should be implemented, including those related to the concept of rapid response.

Presumably, over the longer run, SWN's focus will return more forcefully to broader training and credentialing efforts. That said, Sage recommends that quick-hitting credentialing efforts remain a major source of focus during the years to come, including one focused on customer service training encompassing a broad array of industries. While a certain level of online training is permissible, SWN-sponsored credentialing offerings should also supply opportunities for in-person engagement, including in the domain of customer service.

Data Appendix

Employment Trends

Exhibit A1. Susquehanna Region: Counts and Density of Primary Jobs in Work Selection Area, 2017



Source: U.S. Census Bureau. Longitudinal-Employer Household Dynamics Program, OnTheMap Application; Sage. Notes: 1. Numbers represent *primary* jobs, not total jobs. Primary Jobs: Public and private-sector jobs, one job per worker. A primary job is the highest paying job for an individual worker.

Business Size

Exhibit A2. Susquehanna Region, Private Sector Establishments by Size, 2016

Establishment Size	# of Establishments			% of Total Establishments
	Cecil County	Harford County	Total SWN Region	
Micro (0-9 employees)	1,326	4,003	5,329	73.6%
Small (10-49 employees)	359	1,208	1,567	21.6%
Medium (50-99 employees)	40	169	209	2.9%
Large (100-499 employees)	30	95	125	1.7%
Largest (500+ employees)	6	5	11	0.2%
Total	1,761	5,480	7,241	100.0%

Source: U.S. Census Bureau, County Business patterns; Sage.

Employment: Industry Trends

Exhibit A3. Cecil County Industry Concentration (Location Quotients), 2019Q4

Industry	Employment Location Quotient	# of Establish-ments	Average Weekly Wage	Wage Location Quotient
Federal Government	3.25	30	1802	4.01
Manufacturing	1.77	80	$1,509	2.28
Trade, transportation, and utilities	1.34	437	$804	1.36
Local Government	1.29	43	$996	1.48
Leisure and hospitality	1.08	238	$430	1.08
Other services	0.88	187	$694	0.90
Education and health services	0.79	221	$923	0.83
State Government	0.51	10	$1,067	0.53
Financial activities	0.29	141	1117	0.20
Professional and business services	0.29	277	$915	0.20
Information	0.14	12	$1,161	0.08
Natural resources and mining	ND	ND	ND	ND
Construction	ND	ND	ND	ND

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW) program; Sage. Notes: 1. ND: No data. 2. Figures are for private employment except for Federal/State/Local government. 3. Location quotient is the percentage of employment in a given sector relative to the percentage of employment in this sector at the national level. Values above 1.0 reflect a concentration greater than the national average. Values below 1.0 reflect a lesser concentration. For example, Las Vegas will have a location quotient greater than 1 in the Leisure and Hospitality industry because this industry makes up a larger share of the Las Vegas employment total than it does for the country as a whole.

Exhibit A4. Harford County Industry Concentration (Location Quotients), 2019Q3

Industry	Employment Location Quotient	# of Establish-ments	Average Weekly Wage	Wage Location Quotient
Federal Government	6.10	50	$1,875	7.32
Construction	1.31	821	$1,310	1.38
Trade, transportation, and utilities	1.25	1,176	$762	1.08
Leisure and hospitality	0.99	546	$364	0.78
Other services	0.98	522	$707	0.95
Local Government	0.96	64	$1,076	1.10
Education and health services	0.85	733	$922	0.82
Professional and business services	0.82	1,253	$1,577	0.89
Financial activities	0.62	551	$1,175	0.42
Manufacturing	0.61	151	$1,287	0.62
Natural resources and mining	0.22	32	$1,065	0.21
Information	0.20	42	$1,299	0.12
State Government	0.20	10	$950	0.17

Source & Notes: See above (Exhibit A3).

Wage Growth

Exhibit A5. Changes in Average Weekly Wage by Industry Sector, 2013 v. 2018

	Susquehanna Region		Cecil County		Harford County	
	Net Chg.	% Chg.	Net Chg.	% Chg.	Net Chg.	% Chg.
Total Employment	$93	10.5%	$114	13.9%	$86	9.4%
Public Sector Total	$144	11.6%	$216	22.3%	$128	9.7%
Federal Government	$202	12.4%	$303	23.3%	$196	11.8%
State Government	$95	11.5%	$122	14.2%	$72	9.0%
Local Government	$102	11.8%	$156	18.4%	$79	8.9%
Private Sector Total	$94	12.1%	$92	11.8%	$95	12.2%
Goods-Producing	$153	13.8%	$199	16.2%	$131	12.6%
Natural resources & mining	$64	8.9%	$51	7.7%	$131	15.0%
Construction	$193	21.5%	$235	30.8%	$182	19.7%
Manufacturing	$144	10.9%	$235	16.1%	$71	6.0%
Service-Providing	$81	11.4%	$56	8.9%	$88	12.0%
Trade, transportation, & utilities	$76	12.2%	$48	7.1%	$85	14.0%
Information	-$20	-1.7%	$128	11.5%	-$64	-5.3%
Financial activities	$200	21.1%	$91	11.0%	$207	21.3%
Professional & business services	$148	12.7%	$128	18.8%	$145	11.7%
Education & health services	$73	9.0%	$75	9.6%	$71	8.7%
Leisure and hospitality	$58	19.7%	$42	12.2%	$66	24.0%
Other services	$61	10.6%	$123	23.4%	$43	7.2%

Source: U.S. Bureau of Labor Statistics; Maryland Department of Labor (DOL), Maryland Quarterly Census of Employment and Wages (QCEW) program; Sage.

Employment: Occupation Trends

Exhibit A6. Susquehanna Region Job Openings and Seekers by Occupation Group (as 2/13/2020)

Occupation Group (Ranked by # of Openings)	Job Openings	Candidates	Candidates Per Job Opening
Computer and Mathematical Occupations	969	1,357	1.40
Healthcare Practitioners and Technical Occupations	618	523	0.85
Architecture and Engineering Occupations	449	389	0.87
Food Preparation and Serving Related Occupations	414	561	1.36
Office and Administrative Support Occupations	398	3,850	9.67
Management Occupations	310	2,812	9.07
Sales and Related Occupations	284	1,082	3.81
Transportation and Material Moving Occupations	251	1,336	5.32
Business and Financial Operations Occupations	217	1,132	5.22
Production Occupations	174	539	3.10
Education, Training, and Library Occupations	164	357	2.18
Installation, Maintenance, and Repair Occupations	145	607	4.19
Arts, Design, Entertainment, Sports, and Media Occ	122	531	4.35
Healthcare Support Occupations	102	734	7.20
Protective Service Occupations	102	427	4.19
Building & Grounds Cleaning & Maintenance Occup.	86	351	4.08
Personal Care and Service Occupations	80	255	3.19
Life, Physical, and Social Science Occupations	61	290	4.75
Community and Social Services Occupations	41	408	9.95
Construction and Extraction Occupations	30	751	25.03
Farming, Fishing, and Forestry Occupations	13	37	2.85
Military Specific Occupations	11	29	2.64
Legal Occupations	4	142	35.50

Source: Maryland Workforce Exchange, Labor Market Information (online advertised jobs data); Sage. Notes: 1. Job openings figures are Jobs De-duplication Level 2: High level de-duplication of advertised job openings (for statistical analysis).

Exhibit A7. Projected Employment Growth in Susquehanna Region by Major Occupation Group, 2016-2026

Occ Code	Occupation Title	Total Employment		2016-2026	
		2016	2026 Proj.	Total Growth	Annual % Growth
11-0000	Management Occupations	6,741	7,192	451	0.6%
13-0000	Business and Financial Operations Occupations	7,234	7,460	226	0.3%
15-0000	Computer and Mathematical Occupations	4,349	4,462	113	0.3%
17-0000	Architecture and Engineering Occupations	5,503	5,497	-6	0.0%
19-0000	Life, Physical, and Social Science Occupations	1,864	1,913	49	0.3%
21-0000	Community and Social Service Occupations	1,655	1,935	280	1.6%
23-0000	Legal Occupations	658	677	19	0.3%
25-0000	Education, Training, and Library Occupations	8,360	8,975	615	0.7%
27-0000	Arts, Design, Entertainment, Sports, and Media Occupations	1,413	1,445	32	0.2%
29-0000	Healthcare Practitioners and Technical Occupations	7,483	7,835	352	0.5%
31-0000	Healthcare Support Occupations	3,227	3,588	361	1.1%
33-0000	Protective Service Occupations	2,168	2,385	217	1.0%
35-0000	Food Preparation and Serving Related Occupations	11,821	13,638	1,817	1.4%
37-0000	Building and Grounds Cleaning and Maintenance Occupations	4,197	4,615	418	1.0%
39-0000	Personal Care and Service Occupations	5,319	6,461	1,142	2.0%
41-0000	Sales and Related Occupations	14,634	15,693	1,059	0.7%
43-0000	Office and Administrative Support Occupations	15,977	16,330	353	0.2%
45-0000	Farming, Fishing, and Forestry Occupations	634	672	38	0.6%
47-0000	Construction and Extraction Occupations	6,838	7,450	612	0.9%
49-0000	Installation, Maintenance, and Repair Occupations	5,829	6,333	504	0.8%
51-0000	Production Occupations	5,426	5,705	279	0.5%
53-0000	Transportation and Material Moving Occupations	9,574	10,941	1,367	1.3%

Source: U.S. Bureau of Labor Statistics, Employment Projections; Maryland Department of Labor (DOL); Sage. Note: Net employment growth (not including replacements).

Exhibit A8. Fastest-growing Occupations in the Susquehanna Region, 2016-2026: Top 10 Occupations by Educational Level Requirement

High School Degree or Less			Some College/Associates /Postsecondary Non-degree Award		
Rank	**Occupation**	**2016-2026 Emp. Growth**	**Rank**	**Occupation**	**2016-2026 Emp. Growth**
1	Laborers and Freight, Stock, and Material Movers, Hand	711	1	Hairdressers, Hairstylists, and Cosmetologists	352
2	Waiters and Waitresses	471	2	Heavy and Tractor-Trailer Truck Drivers	126
3	Retail Salespersons	341	3	Nursing Assistants	109
4	Combined Food Preparation and Serving Workers, Including Fast Food	317	4	Preschool Teachers, Except Special Education	78
5	Stock Clerks and Order Fillers	311	5	Teacher Assistants	66
6	Cooks, Restaurant	298	6	Medical Assistants	54
7	First-Line Supervisors of Retail Sales Workers	218	7	Automotive Service Technicians and Mechanics	39
8	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	204	8	Heating, Air Conditioning, and Refrigeration Mechanics & Installers	30
9	Home Health Aides	179	9	Licensed Practical and Licensed Vocational Nurses	15
10	Personal Care Aides	171	10	Computer Network Support Specialists	12
Bachelor's Degree			**Graduate/Doctoral/Professional Degree**		
Rank	**Occupation**	**2016-2026 Emp. Growth**	**Rank**	**Occupation**	**2016-2026 Emp. Growth**
1	General and Operations Managers	155	1	Nurse Practitioners	38
2	Registered Nurses	138	2	Physical Therapists	28
3	Elementary School Teachers, Except Special Education	110	3	Mental Health Counselors	24
4	Operations Research Analysts	62	4	Judicial Law Clerks	23
5	Child, Family, and School Social Workers	54	5	Marriage and Family Therapists	19
6	Industrial Engineers	46	6	Physician Assistants	17
7	Software Developers, Applications	43	6	Occupational Therapists	17
8	Managers, All Other	34	8	Education Administrators, Elementary and Secondary School	11
9	Construction Managers	33	8	Healthcare Social Workers	11
10	Medical and Health Services Managers	31	10	Pharmacists	10

Source: U.S. Bureau of Labor Statistics, Employment Projections; Maryland Department of Labor (DOL); Sage. Note: Net employment growth (not including replacements).

Educational Attainment

Exhibit A9. Highest Level of Educational Attainment of Susquehanna Region Residents, Age 25 and over

	2010	2017	2010 v. 2017	
			Net	%
Population 25 years and over	*227,322*	*242,000*	*14,678*	*6.5%*
Less than high school diploma	23,264	20,150	*-3,114*	*-13.4%*
High school diploma or equivalency	71,109	72,446	*1,337*	*1.9%*
Some college, no degree	51,192	53,564	*2,372*	*4.6%*
Associate degree	18,663	19,271	*608*	*3.3%*
Bachelor's degree	39,068	45,782	*6,714*	*17.2%*
Graduate or professional degree	24,026	30,787	*6,761*	*28.1%*
High school graduate or higher	*204,058*	*221,850*	*17,792*	*8.7%*
Bachelor's degree or higher	*63,094*	*76,569*	*13,475*	*21.4%*

Source: 1. U.S. Census Bureau. 2006-2010 American Community Survey 5-Year Estimates: DP02; 2013-2017 American Community Survey 5-year estimates: DP02. 2. Sage.

Exhibit A10. Select Minimum Level of Educational Attainment by Age Group, 2017

	Maryland	Cecil County, MD	Harford County, MD	Baltimore County, MD	Baltimore City, MD	New Castle County, DE	Wilmington City, DE*	Chester County, PA
Population 18 to 24 years	553,039	8,609	21,063	76,349	64,660	55,087	6,596	47,098
% HS graduate or higher	88.7%	85.2%	90.7%	91.1%	84.8%	87.3%	80.1%	88.6%
% Bachelor's degree or higher	13.3%	9.3%	11.9%	12.9%	12.8%	11.8%	10.2%	15.8%
Population 25 to 44 years	1,595,603	25,112	61,305	215,513	190,481	148,613	21,402	122,271
% HS graduate or higher	90.7%	91.5%	94.6%	92.9%	88.5%	90.9%	85.1%	92.5%
% Bachelor's degree or higher	42.8%	27.1%	41.5%	42.3%	40.3%	40.3%	29.0%	56.7%
Population 45 to 64 years	1,650,639	30,109	73,358	224,313	155,489	150,348	17,495	148,268
% HS graduate or higher	91.4%	90.1%	94.5%	92.5%	84.5%	92.8%	86.4%	94.8%
% Bachelor's degree or higher	38.6%	22.2%	35.0%	37.2%	23.2%	34.9%	24.5%	52.0%

Source: U.S. Census Bureau, American Community Survey 5-year estimates: S1501. Note: *New Castle County, DE figures include Wilmington City, DE.

Exhibit A11. Cecil County Residents: Fall 2018 College Enrollment by Type of Institution

	New FT Freshmen	Undergraduate		Graduate		Total Under-graduate	Total Graduate	Grand Total
		FT	PT	FT	PT			
Public 2-Year	204	679	1,377	-	-	2,056	-	2,056
Public 4-Year	106	661	173	72	77	834	149	983
Independent 2-Year	-	-	2	-	-	2	-	2
Independent 4-Year	32	105	11	7	49	116	56	172
Public Total	*310*	*1,340*	*1,550*	*72*	*77*	*2,890*	*149*	*3,039*
Independent Total	*32*	*105*	*13*	*7*	*49*	*118*	*56*	*174*
Grand Total	**342**	**1,445**	**1,563**	**79**	**126**	**3,008**	**205**	**3,213**

Source: Maryland Higher Education Commission, May 2019. "Enrollment by Place of Residence"; Sage. Notes: FT: Full-time | PT: Part-time

Exhibit A12. Harford County Residents: Fall 2018 College Enrollment by Type of Institution

	New FT Freshmen	Undergraduate		Graduate		Total Under-graduate	Total Graduate	Grand Total
		FT	PT	FT	PT			
Public 2-Year	750	1,835	3,921	-	-	5,756	-	5,756
Public 4-Year	510	3,335	1009	335	622	4,344	957	5,301
Independent 2-Year	5	7	3	-	-	10	-	10
Independent 4-Year	106	424	96	66	412	520	478	998
Public Total	1,260	5,170	4,930	335	622	10,100	957	11,057
Independent Total	111	431	99	66	412	530	478	1,008
Grand Total	**1,371**	**5,601**	**5,029**	**401**	**1,034**	**10,630**	**1,435**	**12,065**

Source: Maryland Higher Education Commission, May 2019. "Enrollment by Place of Residence"; Sage. Notes: FT: Full-time | PT: Part-time

Exhibit A13. Cecil County Residents: Fall 2018 College Enrollment: Top 10 Schools

New Full-Time Freshmen			Total Undergraduates		
Rank	College	Fall 2018 Enrollment	Rank	College	Fall 2018 Enrollment
1	Cecil College	193	1	Cecil College	1,945
2	Towson University	28	2	Towson University	240
3	Univ. of MD, College Park	27	3	Univ. of MD University College	152
4	Salisbury University	22	4	Univ. of MD, College Park	141
5	Frostburg State University	9	5	Salisbury University	135
6	Univ. of MD, Baltimore County	8	6	Harford Community College	66
7	McDaniel College	7	7	Frostburg State University	61
8	Morgan State University	6	8	Univ. of MD, Baltimore County	45
8	Stevenson University	6	9	Stevenson University	36
10	Harford Community College	5	10	Community College of Balt. County	30

Source: Maryland Higher Education Commission, May 2019. "Enrollment by Place of Residence"; Sage.

Exhibit A14. Harford County Residents: Fall 2018 College Enrollment: Top 10 Schools

New Full-Time Freshmen			Total Undergraduates		
Rank	College	Fall 2018 Enrollment	Rank	College	Fall 2018 Enrollment
1	Harford Community College	711	1	Harford Community College	5,162
2	Univ. of MD, College Park	150	2	Towson University	1,780
3	Towson University	131	3	Univ. of MD, College Park	712
4	Salisbury University	65	4	Univ. of MD University College	583
5	Univ. of MD, Baltimore County	63	5	Community College of Balt. County	443
6	Stevenson University	33	6	Univ. of MD, Baltimore County	374
7	Community College of Balt. County	30	7	Salisbury University	346
8	Univ. of MD Eastern Shore	24	8	Stevenson University	211
9	St. Mary's College of Maryland	21	9	Frostburg State University	113
10	Morgan State University	20	10	Morgan State University	103

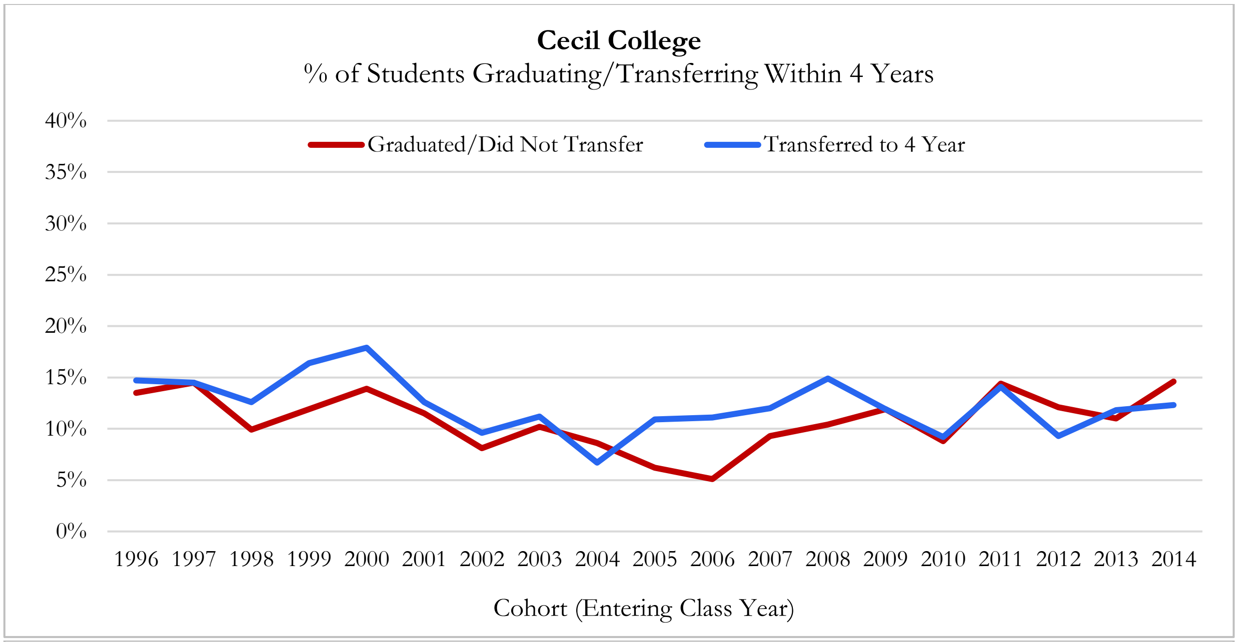
Source: Maryland Higher Education Commission, May 2019. "Enrollment by Place of Residence"; Sage.

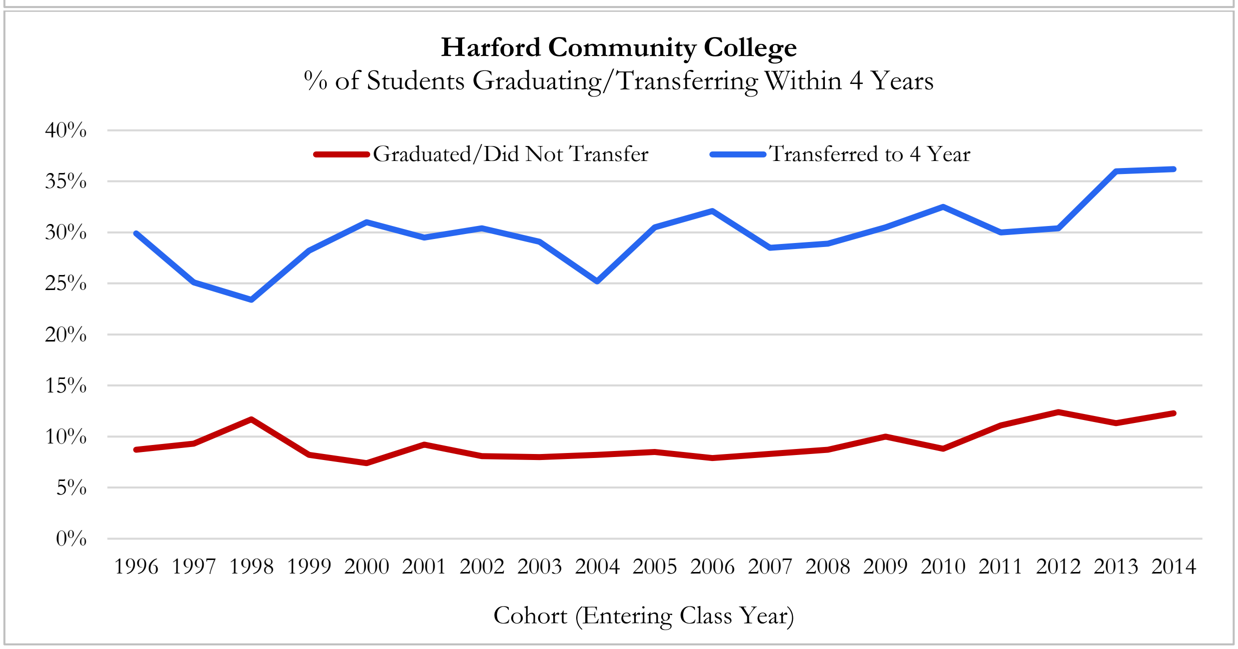
Exhibit A15. Susquehanna Region Colleges: Number of Community College Students Transferring to Public 4-Year Institutions

	Cecil College	Harford Community College	Statewide
4-Year Graduation/Transfer Rates, Entering Class of 2014			
Transferred	12.3%	36.2%	28.0%
Graduated	14.6%	12.3%	10.9%
Combined	26.9%	48.5%	38.8%
Community College Students Transferring to Public 4-Year Institutions in Fall 2018			
Institution			
BSU	2	8	320
CSU	2	1	149
FSU	14	7	465
SU	24	44	794
TU	42	374	2,357
UB	0	20	315
UMB	2	6	207
UMBC	7	39	1,153
UMCP	16	56	2,100
UMES	1	14	131
UMUC	22	57	1,627
MSU	2	11	264
SMC	2	4	113
Total	*136*	*641*	*9,995*

Source: Maryland Higher Education Commission, 2019 Data Book; Sage.

Exhibit A16. Trends in Graduation and Transfer Rates for Susquehanna Region Community Colleges





Source: Maryland Higher Education Commission, "Retention, Graduation, and Transfer Rates at Maryland Community Colleges", June 2019; Sage.

Employment Status and Worker Characteristics

Exhibit A17. Employment Status of Workers, 2017

	Maryland	Cecil County, MD	Harford County, MD	Baltimore County, MD	Baltimore City, MD	New Castle County, DE	Wilmington City, DE*	Chester County, PA
Population 16 years+	4,800,851	81,142	200,369	670,033	502,594	447,504	56,133	408,926
In labor force	3,267,069	53,797	137,924	446,069	309,185	288,209	33,579	281,673
Civilian labor force	3,239,167	53,741	136,253	445,373	308,703	287,732	33,550	281,419
Employed	3,040,792	50,620	129,108	420,974	277,954	269,164	30,393	267,812
Unemployed	198,375	3,121	7,145	24,399	30,749	18,568	3,157	13,607
Armed forces	27,902	56	1,671	696	482	477	29	254
Not in labor force	1,533,782	27,345	62,445	223,964	193,409	159,295	22,554	127,253

Source: U.S. Census Bureau, American Community Survey 5-year estimates: DP03; Sage. Note: *New Castle County, DE figures include Wilmington City, DE.

Exhibit A18. Susquehanna Region Jobs by Worker Characteristics, 2017

	Work Area		Home Area	
	Count	Share	Count	Share
Sex				
Male	51,812	50.5%	76,890	50.3%
Female	50,798	49.5%	75,932	49.7%
Age				
Age 29 or younger	26,697	26.0%	34,905	22.8%
Age 30 to 54	51,645	50.3%	79,937	52.3%
Age 55 or older	24,268	23.7%	37,980	24.9%
Race				
White	81,880	79.8%	127,754	83.6%
Black or African American	15,487	15.1%	18,424	12.1%
American Indian or Alaska Native	324	0.3%	420	0.3%
Asian	3,166	3.1%	3,772	2.5%
Native Hawaiian or Other Pacific Islander	90	0.1%	121	0.1%
Two or More Race Groups	1,663	1.6%	2,331	1.5%
Ethnicity				
Not Hispanic or Latino	97,760	95.3%	147,232	96.3%
Hispanic or Latino	4,850	4.7%	5,590	3.7%
Educational Attainment				
Less than high school	8,692	8.5%	11,775	7.7%
High school or equivalent, no college	22,132	21.6%	31,694	20.7%
Some college or Associate degree	23,829	23.2%	36,724	24.0%
Bachelor's degree or advanced degree	21,260	20.7%	37,724	24.7%
N/A (1)	26,697	26.0%	34,905	22.8%
Earnings				
$1,250 per month or less	22,263	21.7%	26,636	17.4%
$1,251 to $3,333 per month	34,789	33.9%	44,098	28.9%
More than $3,333 per month	45,558	44.4%	82,088	53.7%

Source: U.S. Census Bureau. Longitudinal-Employer Household Dynamics Program, OnTheMap Application; Sage. Notes: 1. Educational attainment not available (workers aged 29 or younger). 2. Numbers represent *primary* jobs, not total jobs. Primary Jobs: Public and private-sector jobs, one job per worker. A primary job is the highest paying job for an individual worker.

Industry and Occupation of Employment

Exhibit A19. Percentage of Employed 16 years and over by Occupation, 2017

Occupation	Maryland	Cecil County, MD	Harford County, MD	Baltimore County, MD	Baltimore City, MD	New Castle County, DE	Wilmington City, DE*	Chester County, PA
Management, business, science, & arts	45.3%	35.2%	43.3%	43.4%	42.1%	43.9%	37.3%	49.7%
Service	17.2%	16.3%	15.2%	16.6%	20.7%	17.0%	25.3%	13.7%
Sales & office	21.8%	21.5%	24.5%	24.4%	21.8%	23.4%	24.2%	21.9%
Natural resources, const., & maintenance	7.8%	12.9%	7.9%	7.0%	5.3%	7.1%	5.1%	7.3%
Production, transportation, & material moving	8.0%	14.1%	9.1%	8.6%	10.0%	8.7%	8.2%	7.4%
Total	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*

Source: U.S. Census Bureau, American Community Survey 5-year estimates: DP03; Sage. Note: *New Castle County, DE figures include Wilmington City, DE.

Exhibit A20. Percentage of Employed 16 years and over by Industry, 2017

Industry	Maryland	Cecil County, MD	Harford County, MD	Baltimore County, MD	Baltimore City, MD	New Castle County, DE	Wilmington City, DE*	Chester County, PA
Agriculture, forestry, fishing & hunting, and mining	0.5%	1.2%	0.5%	0.3%	0.2%	0.5%	0.5%	2.7%
Construction	6.7%	9.2%	6.8%	5.8%	4.4%	5.3%	3.4%	5.4%
Manufacturing	4.5%	8.8%	6.4%	5.3%	4.5%	7.9%	5.4%	11.4%
Wholesale trade	1.9%	2.1%	2.7%	2.3%	1.8%	1.8%	1.2%	3.1%
Retail trade	9.6%	11.4%	12.3%	10.7%	9.1%	11.0%	12.2%	10.0%
Transportation & warehousing, and utilities	4.5%	7.0%	4.4%	4.8%	5.7%	5.2%	4.3%	3.5%
Information	2.1%	1.6%	1.5%	1.9%	1.9%	1.6%	1.1%	2.3%
Financial activities (1)	6.2%	6.7%	6.6%	7.8%	5.6%	12.6%	11.1%	10.0%
Professional services (2)	15.4%	10.4%	13.0%	12.8%	12.5%	11.6%	13.4%	15.3%
Educational services; health care & social assistance	23.8%	22.6%	23.6%	27.3%	31.9%	25.8%	27.4%	22.5%
Leisure, hospitality (3)	8.4%	7.9%	6.8%	8.1%	8.9%	8.6%	10.5%	7.6%
Other services (4)	5.4%	4.1%	5.1%	4.7%	4.9%	4.0%	4.2%	3.9%
Public administration	11.0%	7.0%	10.3%	8.1%	8.4%	4.1%	5.3%	2.3%
Total	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*

Source: U.S. Census Bureau, American Community Survey 5-year estimates: DP03; Sage. Notes: 1. Finance and insurance, and real estate and rental and leasing. 2. Professional, scientific, and management, and administrative and waste management services. 3. Arts, entertainment, and recreation, and accommodation and food services. 4. Other services, except public administration. *New Castle County, DE figures include Wilmington City, DE.

Commuting Patterns

Exhibit A21. Inflow/Outflow Labor Market Details for Select Areas, 2017

Area Labor Market Size (Primary Jobs)	Maryland	Cecil County, MD	Harford County, MD	Baltimore County, MD	Baltimore City, MD	New Castle County, DE	Wilmington City, DE*	Chester County, PA
Employed in Area	2,310,194	26,775	75,835	349,258	312,062	275,214	50,137	237,665
Living in Area	2,456,165	42,443	110,379	366,776	226,419	245,626	29,277	236,561
Net Job Inflow	-145,971	-15,668	-34,544	-17,518	85,643	29,588	20,860	1104
In-Area Labor Force Efficiency (%)								
Living in Area	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Living and Employed in Area	82.9%	31.1%	36.7%	40.6%	45.5%	75.0%	23.8%	44.6%
Living in Area but Employed Outside the Area	17.1%	68.9%	63.3%	59.4%	54.5%	25.0%	76.2%	55.4%
In-Area Employment Efficiency (%)								
Employed in Area	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Living and Employed in Area	88.2%	49.3%	53.4%	42.7%	33.0%	66.9%	13.9%	44.4%
Employed in Area but Living Outside the Area	11.8%	50.7%	46.6%	57.3%	67.0%	33.1%	86.1%	55.6%

Source: U.S. Census Bureau. Longitudinal-Employer Household Dynamics Program, OnTheMap Application; Sage.
Notes: 1. Numbers represent *primary* jobs, not total jobs. Primary Jobs: Public and private-sector jobs, one job per worker. A primary job is the highest paying job for an individual worker. *New Castle County, DE figures include Wilmington City, DE.

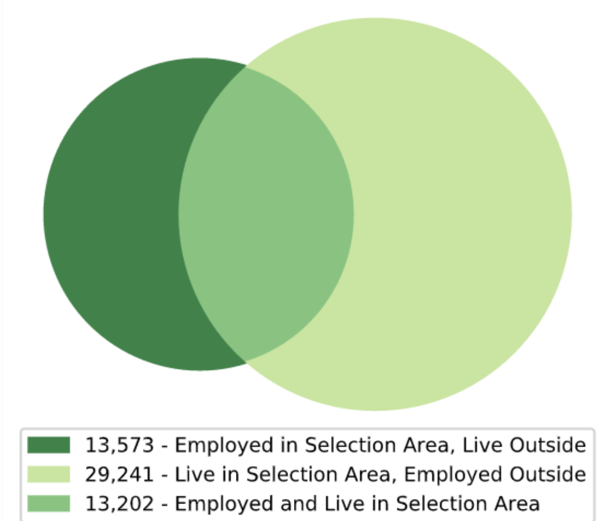
Exhibit A22. Inflow/Outflow Labor Market Details for Cecil County & Harford County, 2017

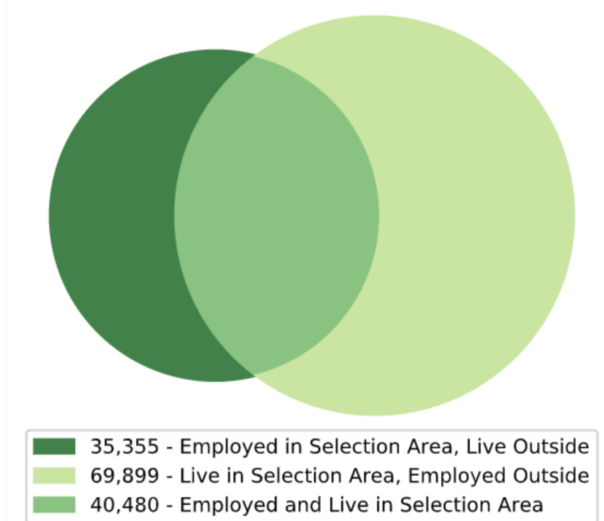
Area Labor Market Size (Primary Jobs)	Cecil County		Harford County	
	Count	Share	Count	Share
Employed in Area	26,775	100.0%	75,835	100.0%
Living in Area	42,443	158.5%	110,379	145.6%
Net Job Inflow	-15,668	-	-34,544	-
In-Area Labor Force Efficiency				
Living in Area	42,443	100.0%	110,379	100.0%
Living and Employed in Area	13,202	31.1%	40,480	36.7%
Living in Area but Employed Outside the Area	29,241	68.9%	69,899	63.3%
In-Area Employment Efficiency				
Employed in Area	26,775	100.0%	75,835	100.0%
Living and Employed in Area	13,202	49.3%	40,480	53.4%
Employed in Area but Living Outside the Area	13,573	50.7%	35,355	46.6%

Source: U.S. Census Bureau. Longitudinal-Employer Household Dynamics Program, OnTheMap Application; Sage.
Notes: 1. Numbers represent *primary* jobs, not total jobs.

Exhibit A23. Cecil County & Harford County Employment Inflow/Outflow, 2017

Cecil County	Harford County





Source: U.S. Census Bureau. Longitudinal-Employer Household Dynamics Program, OnTheMap Application; Sage. Notes: 1. Numbers represent *primary* jobs, not total jobs.

Exhibit A24. Average Travel Time to Work in Select Areas, 2017

Area	Average Travel Time to Work (Minutes)
Maryland	32.7
Baltimore-Columbia-Towson, MD MSA	30.8
Harford County, MD	32.1
Baltimore County, MD	29.5
Baltimore City, MD	30.7
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD MSA	29.5
Cecil County, MD	29.3
New Castle County, DE	25.7
Wilmington city, DE*	22.0
Chester County, PA	27.9
Washington-Arlington-Alexandria, DC-VA-MD-WV MSA	34.6

Source: U.S. Census Bureau, American Community Survey 5-year estimates: DP03; Sage.
Note: *New Castle County, DE figures include Wilmington City, DE.

Exhibit A25. Cecil County: Resident/Worker Locations, 2017

Where Cecil County Residents are Employed			Where Cecil County Workers Live		
	Count	Share		Count	Share
Total Workers	**42,443**	**100.0%**	**Total Workers**	**26,775**	**100.0%**
Counties			**Counties**		
1 Cecil County	13,202	31.1%	1 Cecil County	13,202	49.3%
2 New Castle County, DE	10,557	24.9%	2 New Castle County, DE	4,235	15.8%
3 Harford County	5,050	11.9%	3 Harford County	2,117	7.9%
4 Baltimore County	2,734	6.4%	4 Chester County, PA	1,198	4.5%
5 Baltimore city	1,531	3.6%	5 Baltimore County	827	3.1%
All Other Locations	9,369	22.1%	All Other Locations	5,196	19.4%
Places			**Places**		
1 Elkton town	4,010	9.4%	1 Elkton town	1,750	6.5%
2 Baltimore city	1,531	3.6%	2 North East town	500	1.9%
3 Newark city, DE	1,409	3.3%	3 Rising Sun town	385	1.4%
4 Wilmington city, DE	1,144	2.7%	4 Perryville town	325	1.2%
5 North East town	741	1.7%	5 Newark city, DE	319	1.2%
All Other Locations	33,608	79.2%	All Other Locations	23,496	87.8%

Source: U.S. Census Bureau. OnTheMap Application. Longitudinal-Employer Household Dynamics Program; Sage.
Notes: 1. Numbers represent *primary* jobs, not total jobs. 2. CDP: Census designated place.

Exhibit A26. Harford County: Resident/Worker Locations, 2017

Where Harford County Residents are Employed			Where Harford County Workers Live		
	Count	Share		Count	Share
Total Workers	**110,379**	**100.0%**	**Total Workers**	**75,835**	**100.0%**
Counties			**Counties**		
1 Harford County	40,480	36.7%	1 Harford County	40,480	53.4%
2 Baltimore County	27,802	25.2%	2 Baltimore County	10,268	13.5%
3 Baltimore city	14,901	13.5%	3 Cecil County	5,050	6.7%
4 Anne Arundel County	5,438	4.9%	4 Baltimore city	3,237	4.3%
5 Howard County	3,511	3.2%	5 York County, PA	2,571	3.4%
All Other Locations	18,247	16.5%	All Other Locations	14,229	18.8%
Places			**Places**		
1 Baltimore city	14,901	13.5%	1 Bel Air South CDP	7,456	9.8%
2 Bel Air town	8,376	7.6%	2 Bel Air North CDP	5,293	7.0%
3 Towson CDP	4,764	4.3%	3 Edgewood CDP	3,456	4.6%
4 Bel Air South CDP	4,086	3.7%	4 Baltimore city	3,237	4.3%
5 Cockeysville CDP	3,547	3.2%	5 Aberdeen city	2,895	3.8%
All Other Locations	74,705	67.7%	All Other Locations	53,498	70.5%

Source: U.S. Census Bureau. OnTheMap Application. Longitudinal-Employer Household Dynamics Program; Sage.
Notes: 1. Numbers represent *primary* jobs, not total jobs. 2. CDP: Census designated place.

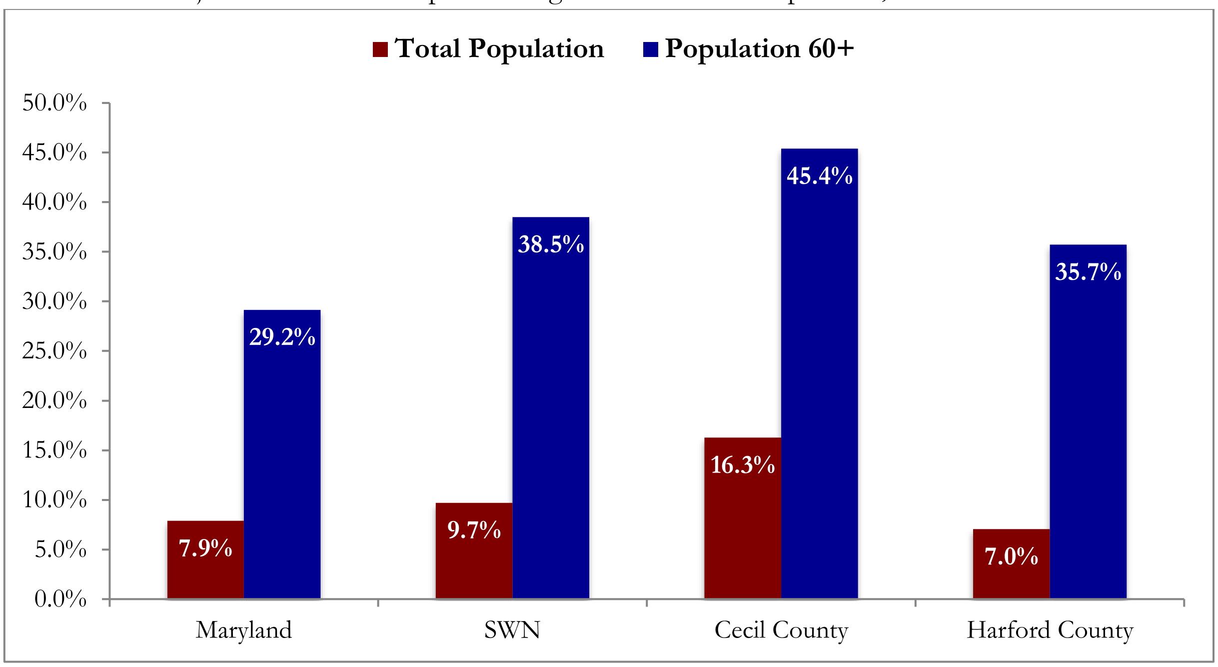
Retirement Trends

Exhibit A27. Labor Force Participation among Senior Population in Susquehanna Region, 2017

	Susquehanna Region	Cecil County	Harford County
Population 65 years +	**55,283**	**15,610**	**39,673**
In labor force	10,263	3,046	7,217
Labor force participation rate	18.6%	19.5%	18.2%
Employed	10,023	2,841	7,182
Unemployed	240	205	35
Unemployment Rate	2.3%	6.7%	0.5%

Source: U.S. Census Bureau, American Community Survey 1-year estimates: C23001; Sage.

Exhibit A28. Projected Growth in Population Aged 60+ vs. Total Population, 2018-2030



Source: Maryland Department of Planning, Population Projections, prepared January 2018; Sage.