



INDUSTRY ANALYTICS

for the City of Philadelphia's Workforce Strategy

November 2017



**Economy
League**

GREATER
PHILADELPHIA

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EXECUTIVE SUMMARY

To support the development of a comprehensive workforce strategy for Philadelphia, the City of Philadelphia engaged the Economy League of Greater Philadelphia to conduct quantitative analysis on employment and wages for a set of target sectors: Healthcare, Retail & Hospitality, Early Childhood Education, Technology Services, Business & Financial Services, Construction & Infrastructure, and Manufacturing & Logistics.

Sector Comparison

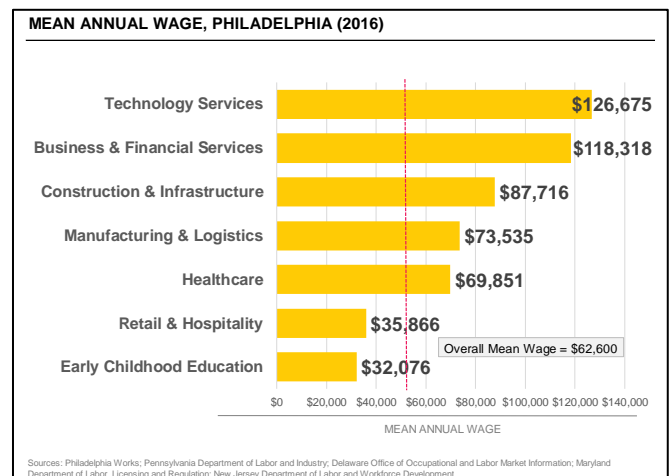
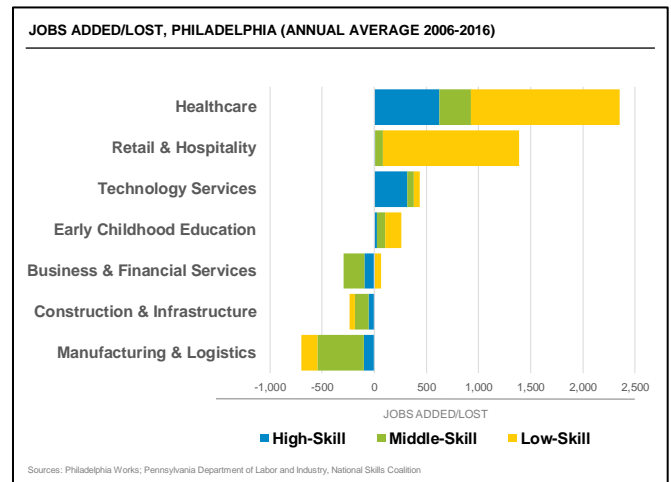
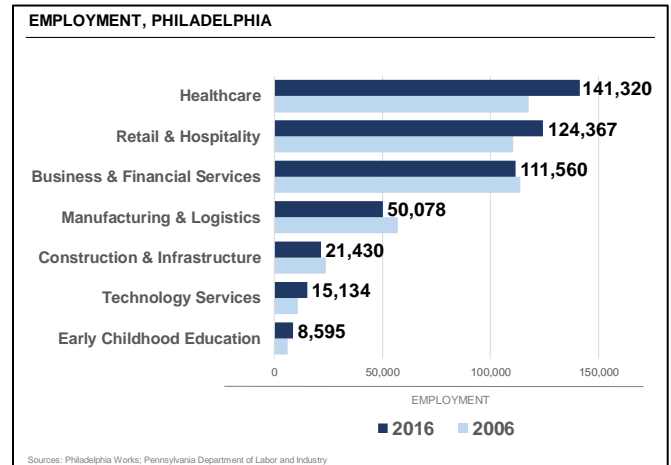
In 2016, the seven target sectors accounted for 472,000 jobs in the city of Philadelphia, or 71% of all jobs. Employment is dominated by the Healthcare, Retail & Hospitality, and Business & Financial Services sectors, each accounting for more than 100,000 jobs.

Employment increased in four of the seven target sectors between 2006 and 2016, led by the Healthcare sector and followed by Retail & Hospitality, Technology Services, and Early Childhood Education. Three sectors—Business & Financial Services, Manufacturing & Logistics and Construction & Infrastructure—experienced net job losses during the past decade, following similar long-term trends at the metro, state, and national levels. Narrowing analysis of labor data to the three years between 2013 and 2016—and thereby avoiding the most direct effects of the recession—reveals more robust growth across all target sectors, including Business & Financial Services, Construction & Infrastructure, and Manufacturing & Logistics.

Going forward, projections indicate that six target sectors should grow through 2024, but at a slower pace than in recent years. Healthcare and Retail & Hospitality—the two largest sectors—are expected to add the most jobs. The Manufacturing & Logistics sector is expected to lose jobs, though the pace of job loss is projected to slow to just 10% of losses experienced over the past decade. Technology Services, Early Childhood Education, Healthcare, and Retail & Hospitality are all expected to grow at a faster rate than overall employment growth in the city.

Average wages in five sectors are higher than the overall average wage for individuals working in the city of Philadelphia, with Technology Services and Business & Financial Services paying the most. Retail & Hospitality and Early Childhood Education are the lowest-paying target sectors, with average compensation levels that are well below the overall average in the city.

The target sectors also vary in the composition of employment and job growth across skill levels. While approximately one-third of Technology Services, Business & Financial Services, Early Childhood Education, and Healthcare jobs are middle-skill, employment growth during the past decade was largely concentrated in low-skill and high-skill jobs. The traditional blue-collar sectors of Manufacturing & Logistics and Construction & Infrastructure still have the highest share of middle-skill jobs among sectors, but more than half of job losses in these sectors over the past decade was concentrated among middle-skill jobs.

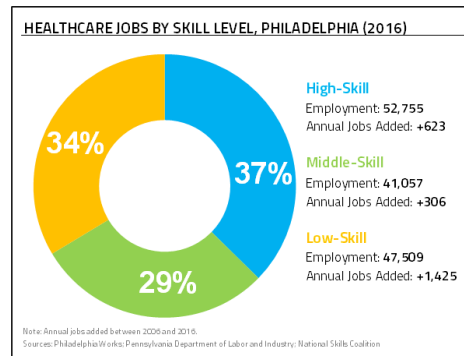


Sector Detail

HEALTHCARE

2016 Employment:	141,320
10-Year Annual Job Growth	↑ 2,353 (2.0%)
3-Year Annual Job Growth	↑ 2,591 (1.9%)
Projected Annual Job Growth	↑ 1,930 (1.4%)
Projected Annual Replacement Openings	2,971

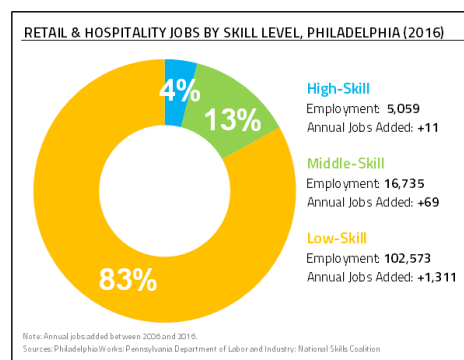
2016 Avg. Wage:	\$69,851
10-Year Real Annual Change	↑ 0.5%
3-Year Real Annual Change	↑ 1.0%



RETAIL & HOSPITALITY

2016 Employment:	124,367
10-Year Annual Job Growth	↑ 1,391 (1.3%)
3-Year Annual Job Growth	↑ 1,923 (1.6%)
Projected Annual Job Growth	↑ 821 (0.7%)
Projected Annual Replacement Openings	4,072

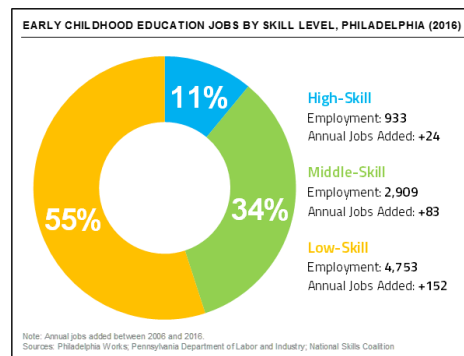
2016 Avg. Wage:	\$35,866
10-Year Real Annual Change	↓ 0.2%
3-Year Real Annual Change	↑ 1.1%



EARLY CHILDHOOD EDUCATION

2016 Employment:	8,595
10-Year Annual Job Growth	↑ 259 (4.3%)
3-Year Annual Job Growth	↑ 234 (3.0%)
Projected Annual Job Growth	↑ 185 (2.2%)
Projected Annual Replacement Openings	179

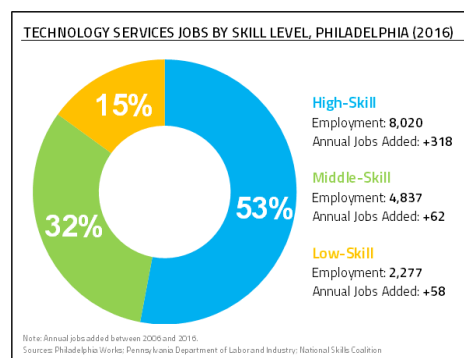
2016 Avg. Wage:	\$32,076
10-Year Real Annual Change	↑ 0.3%
3-Year Real Annual Change	↑ 0.7%



TECHNOLOGY SERVICES

2016 Employment:	15,134
10-Year Annual Job Growth	↑ 438 (4.1%)
3-Year Annual Job Growth	↑ 1,023 (8.5%)
Projected Annual Job Growth	↑ 266 (1.8%)
Projected Annual Replacement Openings	279

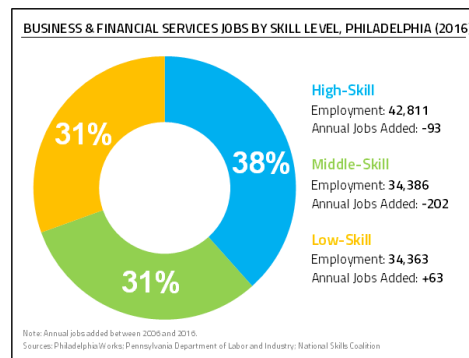
2016 Avg. Wage:	\$126,675
10-Year Real Annual Change	↑ 2.0%
3-Year Real Annual Change	↓ 0.1%



BUSINESS & FINANCIAL SERVICES

2016 Employment:	111,560
10-Year Annual Job Growth	↓ 231 (-0.2%)
3-Year Annual Job Growth	↑ 1,519 (1.4%)
Projected Annual Job Growth	↑ 463 (0.4%)
Projected Annual Replacement Openings	2,301

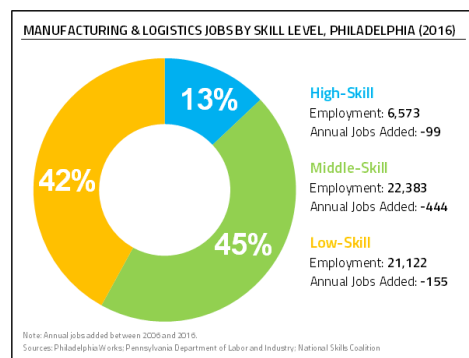
2016 Avg. Wage:	\$118,318
10-Year Real Annual Change	↑ 0.5%
3-Year Real Annual Change	↑ 0.7%



MANUFACTURING & LOGISTICS

2016 Employment:	50,078
10-Year Annual Job Growth	↓ 699 (-1.2%)
3-Year Annual Job Growth	↑ 428 (0.9%)
Projected Annual Job Growth	↓ 72 (-0.1%)
Projected Annual Replacement Openings	1,173

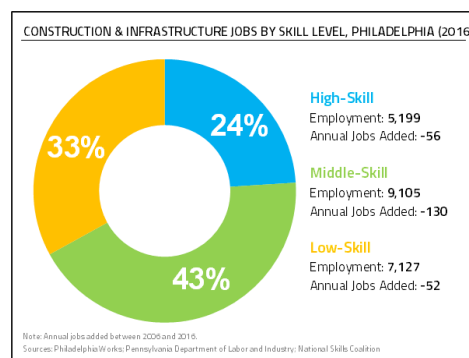
2016 Avg. Wage:	\$73,535
10-Year Real Annual Change	↑ 1.9%
3-Year Real Annual Change	↑ 2.1%



CONSTRUCTION & INFRASTRUCTURE

2016 Employment:	21,430
10-Year Annual Job Growth	↓ 239 (-1.0%)
3-Year Annual Job Growth	↑ 472 (2.4%)
Projected Annual Job Growth	↑ 46 (0.2%)
Projected Annual Replacement Openings	413

2016 Avg. Wage:	\$87,716
10-Year Real Annual Change	↑ 0.4%
3-Year Real Annual Change	↑ 1.5%



Observations & Insights

A strong understanding of labor market trends and projections is essential to crafting an effective citywide workforce development strategy. In Philadelphia, the Kenney administration's emphasis on striking a balance in its workforce development strategy between supporting economic growth and expanding equity of opportunity requires an understanding not only of where the local economy is growing, but where growth also supports entry-level and middle-skill jobs that provide on-ramps for workers to progress along career pathways and earn family-sustaining wages over the long term.

Review of labor data suggests that over the past decade, middle-skill employment has not seen the same gains as low-skill and high-skill jobs in Philadelphia. Despite this overall trend, middle-skill jobs have grown modestly in some sectors, and strong overall growth in sectors that rely on middle-skill workers suggests that there will continue to be opportunities for these individuals. However, the landscape of middle-skill employment is quickly evolving as the broader economy continues to transform. To assist the City in understanding how to calibrate workforce development resources around this shifting landscape,

the Economy League has called out select industries and occupations that labor data analysis reveals to be worthy of further examination for their middle-skill potential.

WITH SCALE, GROWTH, AND JOB OPPORTUNITIES ACROSS SKILL LEVELS, THE HEALTHCARE SECTOR PRESENTS A UNIQUE OPPORTUNITY TO SUPPORT GROWTH WITH EQUITY

As the largest sector by employment in Philadelphia, the Healthcare sector presents a range of opportunities across skill levels. Healthcare added the most jobs of the target sectors over the past decade, including net growth of 3,000 middle skill positions. And looking ahead, the growth of the aging population in our region is likely to drive growth in demand. Together, these factors translate into a relatively stable environment for applying long-term workforce strategies.

While Healthcare has seen growth in middle-skill jobs, the preponderance of job creation in the sector over the past decade was in low-skill, low-paying jobs. The fastest-growing subindustry has been services for the elderly and disabled and the occupations adding the most jobs are personal care aides and home health aides, which together account for 22,000 jobs but pay between \$20,000 and \$22,000 per year. Although pay is low for these two large and growing occupations, the scale of employment in these occupations provides reason to further explore the investment and infrastructure needed to help individuals in these personal care occupations move into middle-skill jobs throughout the Healthcare sector.

SOME SECTORS PRESENT OPPORTUNITIES AT SCALE, BUT FACE LIMITATIONS FOR INTRA-SECTOR CAREER PATHWAYS

The Retail & Hospitality sector and the Business & Financial Services sector employ a significant number of workers and are home to large and growing low-skill occupations that provide opportunity for many Philadelphians. In Retail & Hospitality, though, the low share of jobs that are middle-skill or high-skill can limit prospects for career advancement within that sector. And in Business & Financial Services, the largest and fastest-growing occupation—security guards—is not part of a clear career pathway within that sector. Still, the sheer scale of job growth in low-skill occupations creates an impetus to consider broader, flexible approaches. Low-skill jobs do not necessarily have to be dead-end jobs. More robust partnerships between workforce development groups, labor unions, and model employers in the city could yield more low-skill jobs with higher pay and benefits, coupled with additional training. Furthermore, career pathways do not necessarily have to be confined to a single sector. With supplemental training and education, foundational job experience in hospitality or as a security guard can provide critical skills in communication and problem-solving that employers across sectors seek in employees.

EARLY CHILDHOOD EDUCATION AND TECHNOLOGY SERVICES, WHILE SMALL, ARE FAST-GROWING SECTORS THAT PROVIDE MIDDLE-SKILL OPPORTUNITIES AND BENEFIT FROM CONSIDERABLE SUPPORT AND MOMENTUM.

Early Childhood Education and Technology Services are small yet high-growth fields that stand to benefit further from growing attention and support. Both sectors provide opportunities for middle-skill workers and the number of these opportunities is expected to rise as both sectors continue to grow. What is more, the City's commitment to PHLpreK is likely to result in significantly higher growth and demand for workers in Early Childhood Education than estimated in official projections. Still, average pay in this sector is relatively low and efforts will need to focus on providing support to help workers progress along career pathways into jobs that provide family-sustaining wages.

On the other hand, Tech Services is the focus of much activity and research in the city and region, as the sector has been among the fastest-growing in the city and region over the past decade. Tech Services does support a considerable base of middle-skill jobs, though most job creation in the sector over the past decade has been concentrated at the high end of the skill spectrum. Hiring in tech is often subject to upcredentialing, with many job postings including far more in the way of educational and technical requirements than actually needed to perform the job. To address this, there is opportunity to work with employers and HR professionals to expand recruitment, screening, and hiring practices to allow for the consideration of qualified but non-traditional candidates for middle-skill and high-skill positions.

TRADITIONAL BLUE-COLLAR SECTORS REMAIN STRONG SOURCES OF MIDDLE-SKILL JOBS, BUT FACE HEADWINDS THAT WILL PRESENT CHALLENGES IN ACHIEVING SCALE

Construction & Infrastructure and Manufacturing & Logistics are the only target sectors that support more middle-skill jobs than low-skill or high-skill jobs, and average pay in both sectors is well above the citywide average. But while they remain solid sources of well-paying, middle-skill jobs, both sectors have contracted over the past decade. Employment has rebounded in recent years, though the macroeconomic forces of automation and globalization are expected to continue exhibiting downward pressure on sectoral employment. Despite limited projected growth, replacement openings in these sectors will provide opportunities for new workers to enter the workforce. Furthermore, these sectors have strong and well-structured training infrastructure that may be well positioned to provide targeted support for individuals to take advantage of replacement openings, even as net job growth in these sectors stagnate or decline. And in considering the broader workforce strategy, the existing training infrastructure in these traditional middle-skill sectors may well serve as a model for other sectors.

INTRODUCTION

Background

The City of Philadelphia has engaged the Economy League of Greater Philadelphia to provide targeted research and data analysis to support the development of a comprehensive workforce strategy for Philadelphia.

To enable the City of Philadelphia to adopt a data-informed approach to prioritizing and sequencing sectors, the Economy League conducted quantitative labor analysis on a set of target sectors: Healthcare, Retail & Hospitality, Early Childhood Education, Technology Services, Business & Financial Services, Construction & Infrastructure, and Manufacturing & Logistics.

The Economy League analyzed and interpreted labor data provided by Philadelphia Works, Inc. (PWI) for each of the seven target sectors in Philadelphia to:

- Determine the size of the workforce for each industry in Philadelphia and the Philadelphia MSA;
- Identify employment growth trends within each industry;
- Provide employment growth projections within each industry;
- Understand wages for large and fast-growing occupations within the target industries;
- Identify educational requirements by occupation, and;
- Understand key skills requirements for high-demand occupations.

This report presents findings from this analysis. Following an explanation of study analysis, it presents a brief sector comparison that evaluates the relative size, growth trends and projections, wages, and skill requirements of the seven target sectors in the city of Philadelphia and the Philadelphia metro area. Next, the report presents detailed analysis for each target sector, including examination of the same metrics over time and in comparison with the metro area, state, and nation where appropriate. This section also highlights specific subindustries and occupations that are notable because of their size, growth or decline, as well as their alignment with educational and training requirements associated with low-skill and middle-skill jobs. Finally, the report concludes with a selection of observations and insights on sector characteristics and areas of potential focus for the City's workforce strategy.

Methodology

SECTOR DEFINITIONS

In conjunction with City workforce development staff and PWI, the Economy League established a framework for grouping detailed subindustries (as defined by the North American Industry Classification System, or NAICS) into the seven broad target sectors.

The Economy League began by identifying the top-level, core industries included in each sector. Additional subindustries were selected for inclusion in a sector based on factors such as shared workforce needs and connections to supply-chain or end-product delivery (e.g., building supplies stores were included in Construction & Infrastructure rather than in Retail & Hospitality where they are formally categorized). Industries were grouped according to the type of the work performed at firms within them, and efforts were made to avoid duplication so as to avoid double-counting jobs.

DATA SOURCES

Philadelphia Works provided annual industry employment and wage data for select years between 2006 and 2016; occupational staffing patterns for those industries; annual industry employment projections through 2024; and educational and training

requirements by occupation. The data are collected and adjusted by EMSI, with underlying data coming from the Pennsylvania Department of Labor and Industry; the Delaware Office of Occupational and Labor Market Information; the Maryland Department of Labor, Licensing and Regulation; and the New Jersey Department of Labor and Workforce Development.

CONTEXT FOR PROJECTIONS AND ESTIMATED REPLACEMENT OPENINGS

While the employment projections highlighted in this report provide helpful context for analyzing potential growth within sectors, these official projections (developed at the national level by the Bureau of Labor Statistics and then applied by state-level departments of labor) are largely based on historical trends and broad, macroeconomic assumptions. Beyond the inherent potential margin of error in projecting specific employment levels a decade into the future, projections data also do not account for local policy initiatives. For example, the Early Childhood Education projections for Philadelphia account for historical growth patterns, but would have no way of incorporating expected future employment gains from a program like PHLpreK.

In addition to estimating projected net new jobs—entirely new jobs created or existing jobs lost—the Bureau of Labor Statistics also estimates projected replacement openings for each occupation. That is, the BLS estimates the share of workers in a given occupation who will retire or change occupations during the forecast period. Taken together with projections of net new jobs, replacement opening projections provide a broader estimate of the total number of job openings that could be expected during the projection period. However, the BLS is currently in the midst of updating its replacement rate methodology in an attempt to better reflect evolving patterns of work (e.g. individuals switching jobs and occupations more frequently than in years past). The experimental rates that the BLS has published differ significantly from those under the old method and result in major discrepancies in replacement opening projections. For example, applying these rates to healthcare sector employment in Philadelphia yields a projection of 2,971 replacement openings per year through 2024 under the old method, compared with 12,964 replacement openings per year under the proposed new method.) Because the BLS has not yet released official 2016–2026 projections based on the experimental rates, this analysis presents estimates using the older, established methodology.

ANALYZING JOBS BY SKILL LEVEL

To provide insight in to the composition of employment and job growth by skill level within target sectors, the Economy League adapted a methodological framework utilized by the National Skills Coalition to classify jobs as “high-skill,” “middle-skill,” or “low-skill.” This classification is based on education requirements, work experience requirements, and on-the-job training requirements information provided by the Bureau of Labor Statistics. Each job category is defined as follows in this report:

- **High-skill occupations** require a Bachelor’s degree or higher.
- **Middle-skill occupations** require an Associate degree, postsecondary non-degree award, or some college but no degree; or a high school degree and one of the following: apprenticeship, long-term on-the-job training, moderate-term on-the-job training, or work experience.
- **Low-skill occupations** require less than a high school degree; or a high school degree and no work experience and less than a month of on-the-job training.

EARLY CHILDHOOD EDUCATION DATA

The Early Childhood Education sector—defined here as inclusive of jobs serving 3-year-old and 4-year olds—is unique among target sectors in its narrow specificity, which presented some challenges in data collection.

Because of the way that publicly available education labor data is collected and aggregated, job estimates for subindustries that employ early childhood education workers—elementary and secondary schools; educational support services; and child and youth services—also include jobs that focus on older children. Because it is not possible to disaggregate the data to isolate only early childhood jobs, employment estimates overstate the number of jobs within the Early Childhood Education sector.

To address this issue and create a more accurate estimate of employment specifically focused on early childhood, the Economy League first analyzed publicly available data from the Pennsylvania Department of Education, which publishes detailed employment data on public school teachers and administrators across the state. The database contains a record for each individual, including key details such as their specific occupational assignments and the county where they work. The Economy League filtered the data to isolate Philadelphia County employees who work in 27 job categories that serve students from pre-k through sixth grade (many assignments are only reported as pre-k through 6th grade, so further disaggregation is not possible), which revealed that 53% of Philadelphia County public school employees work in those job categories. City of Philadelphia estimates indicate that 15% of these pre-k through 6th grade employees serve students in pre-k—equivalent to 8% of all Philadelphia County public school employees.

The Economy League then applied this 8% share to the original subindustry data for elementary and secondary schools, educational support services, and child and youth services. Employment data for the child day care services subindustry left intact, as these jobs specifically serve young children. For occupational data in this report, occupations that clearly serve students outside of early childhood were excluded (such as secondary school teachers and middle school teachers); occupations that clearly serve early childhood students (such as pre-school teacher) were left intact; and a factor of 0.08 was applied to other occupations that serve students across age ranges (such as teacher assistants and secretaries).

SECTOR COMPARISON

Size

In 2016, the seven target sectors accounted for 472,000 jobs in the city of Philadelphia, representing 71% of all jobs in the city.

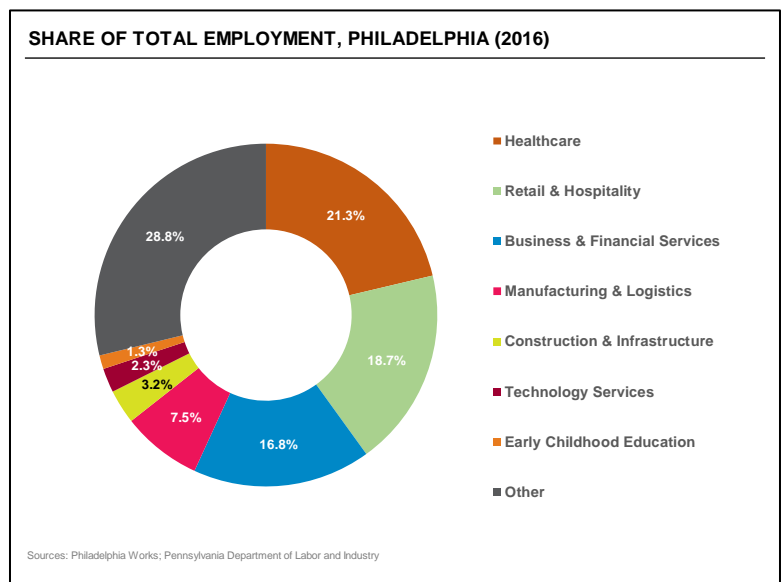
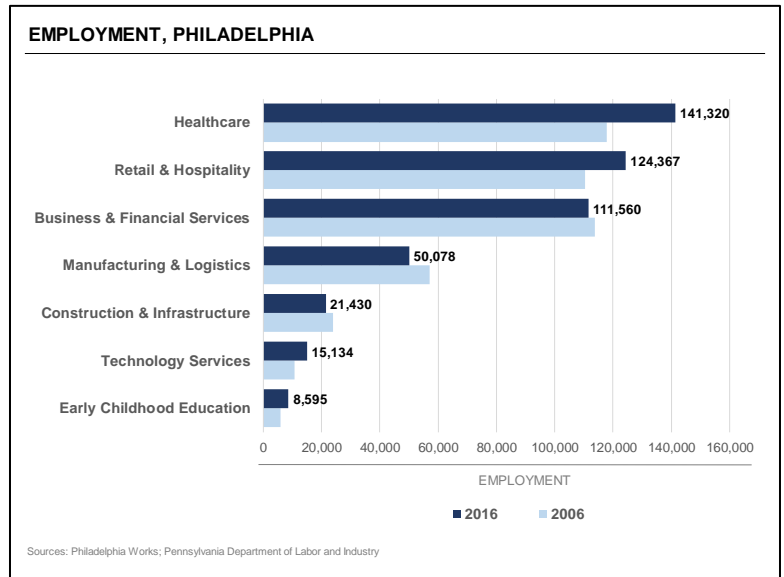
Employment is dominated by the Healthcare, Retail & Hospitality, and Business & Financial Services sectors, which each account for more than 100,000 jobs. Combined employment in these three sectors represents 80% of all jobs in the target sectors. On the other side of the spectrum, three small sectors—Early Childhood Education, Construction & Infrastructure, and Technology Services—account for a combined 45,000 jobs, or 10% of all jobs in the target sectors. Manufacturing & Logistics is the lone mid-sized sector, with 50,000 jobs.

At the metro level, employment in the seven target sectors accounts for a slightly higher share (79%) of overall employment. The relative sizes of these sectors at the metro level vary slightly, with healthcare dropping below Retail & Hospitality and Business & Financial Services to the third-largest sector. Construction & Infrastructure is considerably larger at the metro level than it is in the city, with 175,000 MSA jobs accounting for 6.4% of regional jobs, compared with 3.2% in the city.

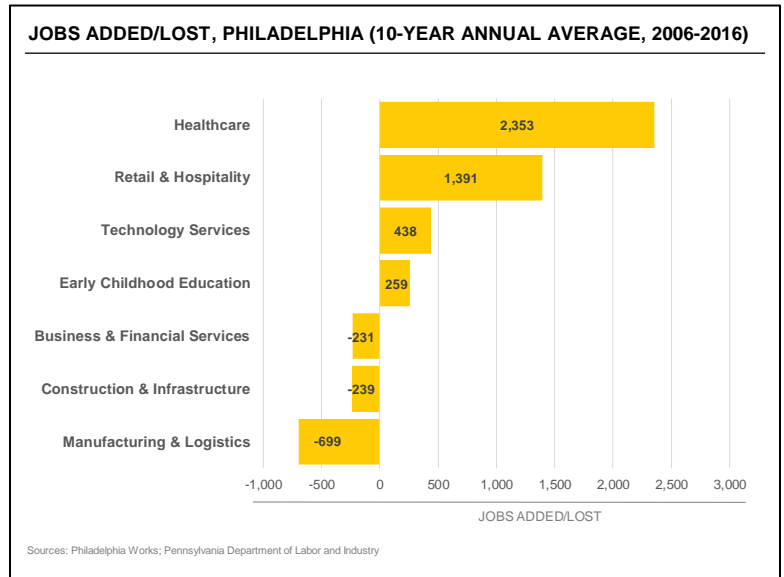
Growth

Philadelphia employment increased in four of the seven target sectors between 2006 and 2016. The Healthcare sector added the most jobs over this period, creating an average of 2,400 new jobs every year. The Retail & Hospitality sector added the second-highest number of jobs during the same period, with an average of 1,400 new jobs each year. The two smallest sectors in size—Technology Services and Early Childhood Education—also grew, adding a combined 700 jobs per year during the past decade. Three sectors—Business & Financial Services, Manufacturing & Logistics and Construction & Infrastructure—experienced net job losses during the past decade, following similar long-term trends at the metro, state, and national levels. For comparison, the annual average of net new jobs added across all of Philadelphia was around 3,000 during the past ten years.

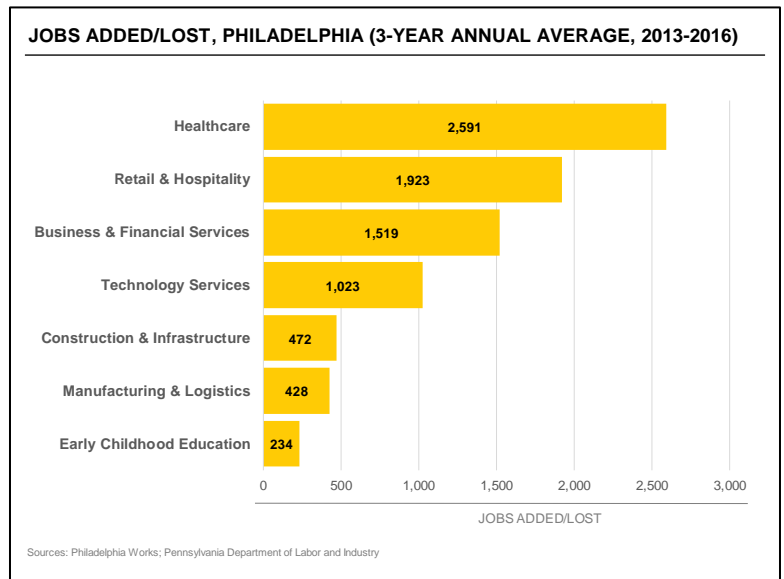
In percentage terms, the Early Childhood Education and Technology Services sectors grew at the fastest pace during the past decade. These sectors expanded at an average annual pace of 4.3% and 4.1%, respectively, far above the annual average growth of 0.5% in the city between 2006 and 2016. Trailing these sectors but still outpacing overall employment growth in the city were Healthcare and Retail & Hospitality, which expanded by an annual average of 2.0% and 1.3%. It is important to note that this period of time encompasses the Great Recession and thereby captures significant job losses during the height of the downturn in 2008–2010 as well as subsequent growth as the economy recovered.



Narrowing analysis of labor data to the three years between 2013 and 2016—and thereby avoiding the most direct effects of the recession—reveals more robust growth across all target sectors. Technology Services saw the greatest change between ten-year and three-year growth trends, with 1,110 jobs created per year between 2013 and 2016 despite being the smallest sector in size. Business & Financial Services rebounded significantly, shifting from net loss over the 10-year period to adding an average of 1,500 jobs per year since 2013. Construction & Infrastructure and Manufacturing & Logistics also added jobs during the past three years, in contrast to net losses experienced for both sectors over the ten-year period. For comparison, the annual average of all net new jobs added in Philadelphia was around 10,000 during the past three years.



During the past three years, Technology Services growth accelerated rapidly, averaging 8.5% annually. Two notable changes in this more recent period, compared with the long-term trends over the past decade, was an acceleration in hiring in Business & Financial Services and Construction & Infrastructure. Both sectors were relatively hard-hit during the recession, but began to rebound in recent years with job growth in both sectors outpacing average annual growth in the city since 2013.



Projections

Going forward, projections indicate that six of the seven target sectors should grow through 2024, but the number of jobs added annually is expected to ease slightly from the figures in recent years. Healthcare and

Retail & Hospitality—the two largest sectors—are expected to lead the way in job creation in the city, followed by Business & Financial Services and Technology Services. Only the Manufacturing & Logistics sector is expected to lose jobs, though the pace of job loss is projected to slow to just 10% of losses experienced over the past decade. Construction & Infrastructure employment is expected to grow slightly, but not nearly at the pace of the past three years.

Through 2024, Technology Services and Early Childhood Education are projected to grow most quickly in percentage terms, although the pace of growth is expected to decelerate from recent years. The relative ranking of target sectors by this measure is projected to resemble historical trends during the past decade. Technology Services, Early Childhood Education, Healthcare, and Retail & Hospitality are all expected to grow at a faster rate than overall employment growth in the city.

In addition to net new job growth, job openings will arise in the target sectors as current workers change careers and retire.¹ Retail & Hospitality, known for substantial turnover, is projected to see the largest number of replacement openings. Beyond Retail & Hospitality, the projected number of replacement openings per sector is largely a function of total employment in the sector. Healthcare is projected to see the second-most replacement openings, followed by Business & Financial Services, Manufacturing & Logistics, and Construction & Infrastructure. While replacement openings add to projected robust net new job

¹ See the methodology section on p. 4 for full context about replacement openings.

creation in sectors like Healthcare, Retail & Hospitality, and Business & Financial Services, they also provide workforce opportunities in sectors projected to contract or grow slowly, such as Manufacturing & Logistics and Construction & Infrastructure.

Wages

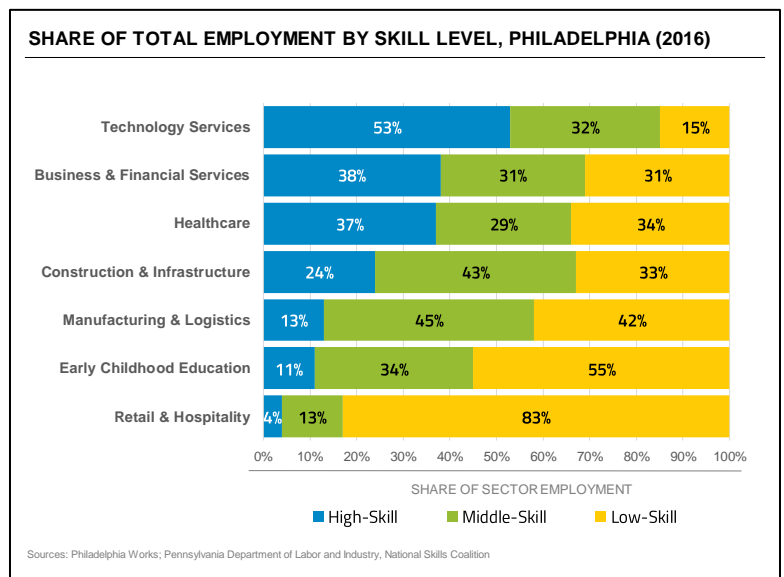
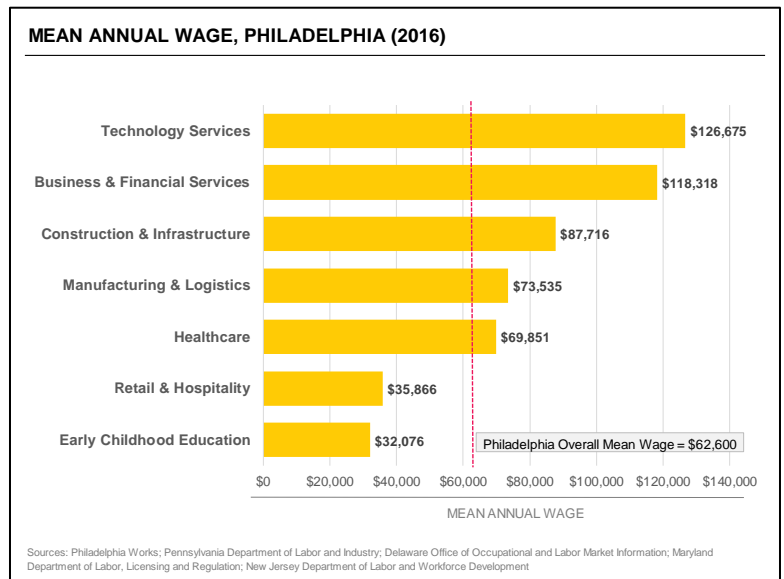
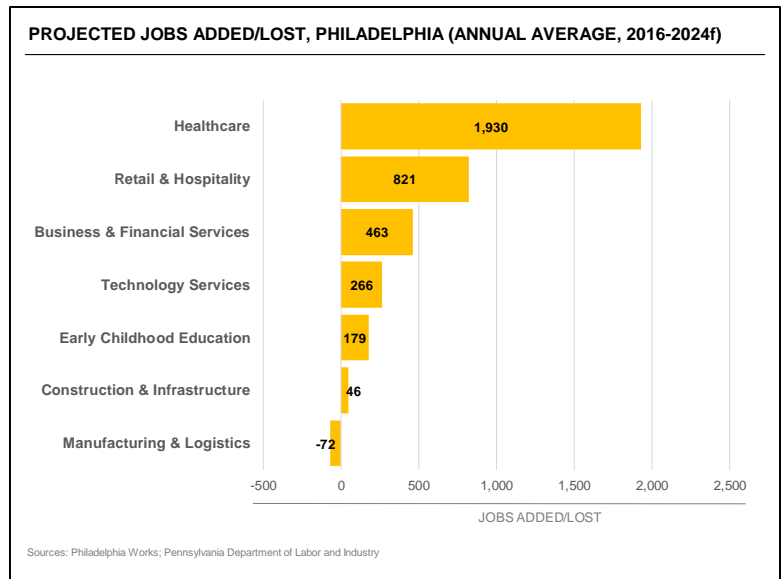
In 2016, the overall mean annual wage for individuals working in Philadelphia was \$62,600, slightly higher than the mean annual wage of \$59,400 at the metro level. On average, five of the seven sectors pay above average wages at both the city and metro levels.

Technology Services jobs pay the most, on average, with a mean annual wage of \$126,700 in the city, followed by Business & Financial Services at \$118,300. After those sectors, there is a drop-off to a second tier of sectors—Healthcare, Manufacturing & Logistics, and Construction & Infrastructure—in which the mean annual wage ranges from approximately \$69,900 to \$87,800. The remaining sectors of Retail & Hospitality and Early Childhood Education are the lowest-paying target sectors, with a mean annual wage of \$35,900 and \$32,100, respectively, both well below the overall average wage for the city.

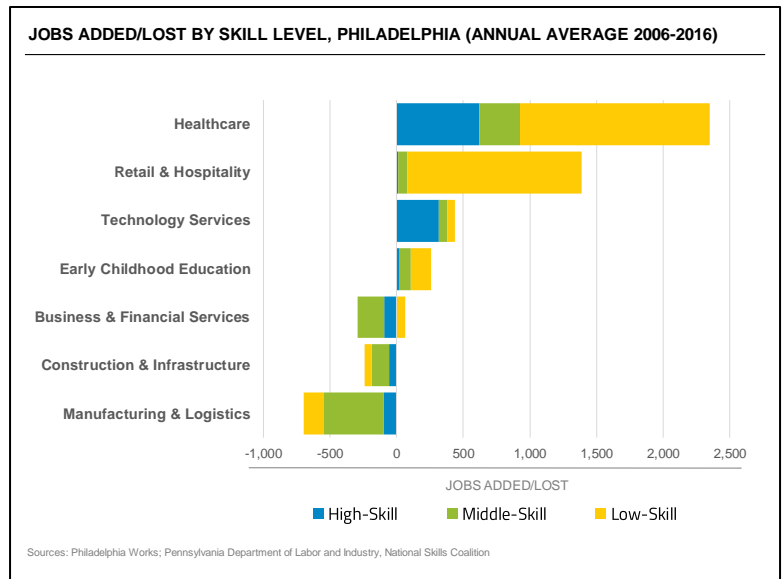
Real wage growth over the past decade has been slow, with the overall average wage for workers in Philadelphia increasing by an annual average of 0.5% between 2006 and 2016. In Philadelphia, wage growth in Business & Financial Services, Technology Services, and Manufacturing & Logistics outpaced the overall growth rate during the past decade, although the remaining target sectors lagged the overall wage growth rate in the city. One sector—Retail & Hospitality—experienced a slight decline in real wages between 2006 and 2016.

Employment by Skill Level

The target sectors also vary in the composition of employment and job growth across skill levels. Traditional blue-collar sectors like Manufacturing & Logistics and Construction & Infrastructure still have the highest share of middle-skill jobs among sectors, with slightly more than 40% of jobs in each sector classified as middle-skill. However, more than half of job losses in these sectors over the past decade was concentrated among middle-skill jobs.



Approximately one-third of the workforces in Technology Services, Business & Financial Services, Early Childhood Education, and Healthcare are employed in middle-skill jobs, but job growth during the past decade was largely concentrated in low-skill and high-skill jobs, rather than middle-skill jobs. Still, in absolute terms, the Healthcare sector added the most middle-skill jobs among target sectors during the past decade. And despite its small size, Early Childhood Education added the second-most middle-skill jobs during the same period. Retail & Hospitality supports the lowest share (13%) of middle-skill jobs among the target sectors.



SECTOR DETAIL

While the top-line comparison of target sectors provides an initial snapshot of trends across the seven sectors, a more detailed analysis of each sector allows for a deeper understanding of trends, challenges, and opportunities within each of the sectors. The following section provides an in-depth look at each target sector with analysis of employment and wages for the sector as a whole, analysis of specific subindustries and occupations within the sector, and further detail on the composition of jobs in each sector by skill level.

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Healthcare

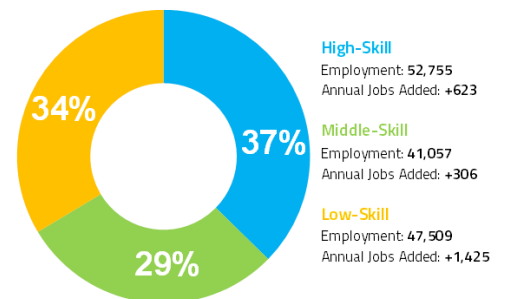
The Healthcare sector—accounting for 21.3% of total employment in Philadelphia—includes core industries such as hospitals, physicians’ offices, home health care services, and nursing care facilities. The sector also includes industries that are part of the supply chain or end-product delivery, such as medical equipment wholesalers, optical goods stores, and health and personal care stores.

With more than 140,000 jobs in Philadelphia, Healthcare is the largest of the target sectors. It also added the most jobs among target sectors in recent years with an annual average of 2,400 new jobs since 2006. At \$70,000, the average annual healthcare salary is more than 12% higher than the average salary in Philadelphia. The sector supports a balanced mix of jobs by skill level, with middle-skill jobs accounting for 29% of all jobs in the sector.

Job growth in the largest subindustry, general hospitals, has been sluggish during the past decade, with the fastest growth in services for the elderly and disabled. With the expansion of the services for the elderly and disabled subindustry, the sector has seen a surge in job growth in several low-skill, low-paying occupations such as personal care aide and home health aide, which together added more than 1,100 jobs annually during the past decade. At the same time, Healthcare also added the most middle-skill jobs among target sectors in recent years, with occupations such as nursing assistants, vocational nurses, and medical assistants experiencing modest growth. The largest occupation—registered nurses—accounts for more than 21,000 jobs in the city and has added more than 200 jobs annually since 2006.

2016 Employment:	141,320
10-Year Annual Job Growth	↑ 2,353 (2.0%)
3-Year Annual Job Growth	↑ 2,591 (1.9%)
Projected Annual Job Growth	↑ 1,930 (1.4%)
Projected Annual Replacement Openings	2,971
2016 Avg. Wage:	\$69,851
10-Year Real Annual Change	↑ 0.5%
3-Year Real Annual Change	↑ 1.0%

HEALTHCARE JOBS BY SKILL LEVEL, PHILADELPHIA (2016)



Note: Annual jobs added between 2006 and 2016.
Sources: PhiladelphiaWorks; Pennsylvania Department of Labor and Industry; National Skills Coalition

NOTABLE SUBINDUSTRY DETAIL

Sub-Industry	2016 Employment	Jobs Added Per Year, 2006-2016	Jobs Added Per Year, 2013-2016	2024 Employment	Jobs Added Per Year, 2016-2024	2016 Avg. Wage	Real % Change Per Year, 2006-2016	Real % Change Per Year, 2013-2016
General Medical and Surgical Hospitals	44,539	125	296	44,918	47	\$85,663	1.4%	2.3%
Services for the Elderly and Persons with Disabilities	18,324	1,305	1,191	21,967	455	\$31,193	0.4%	3.1%
Specialty (except Psychiatric and Substance Abuse) Hospitals	13,209	255	-763	14,575	171	\$92,664	1.5%	4.1%
Offices of Physicians (except Mental Health Specialists)	12,477	130	226	14,412	242	\$128,097	1.8%	0.9%
Home Health Care Services	7,461	341	1,217	12,142	585	\$36,823	-2.0%	-6.1%
Nursing Care Facilities (Skilled Nursing Facilities)	7,298	-57	-88	6,995	-38	\$47,807	0.7%	1.3%
Other Individual and Family Services	6,003	70	248	6,490	61	\$49,075	1.3%	1.5%
Residential Intellectual and Developmental Disability Facilities	4,716	-60	173	5,463	93	\$39,291	0.1%	1.7%
Outpatient Mental Health and Substance Abuse Centers	4,150	81	112	4,559	51	\$49,413	-0.4%	1.0%

NOTABLE OCCUPATIONAL DETAIL

Occupation	2016 Employment	Jobs Added Per Year, 2006-2016	Median Annual Wage	Skill Level	Typical Entry-Level Education	Typical On-the-Job Training
Registered Nurses	21,143	206	\$81,587	High-Skill	Bachelor's degree	None
Personal Care Aides	11,431	629	\$22,054	Low-Skill	No formal educational credential	Short-term on-the-job training
Home Health Aides	10,950	564	\$20,325	Low-Skill	No formal educational credential	Short-term on-the-job training
Nursing Assistants	8,778	53	\$29,213	Middle-Skill	Postsecondary nondegree award	None
Licensed Practical and Licensed Vocational Nurses	3,353	16	\$50,454	Middle-Skill	Postsecondary nondegree award	None
Medical Assistants	3,117	31	\$34,011	Middle-Skill	Postsecondary nondegree award	None
Medical Secretaries	2,980	32	\$37,907	Middle-Skill	High school diploma or equivalent	Moderate-term on-the-job training
Office Clerks, General	2,925	34	\$33,679	Low-Skill	High school diploma or equivalent	Short-term on-the-job training
Social and Human Service Assistants	2,359	52	\$29,687	Low-Skill	High school diploma or equivalent	Short-term on-the-job training

Healthcare: Key Findings

SIZE & GROWTH

- The Healthcare sector is the largest target sector, employing 1 in 5 (21%) workers in Philadelphia.
- Employment is spread relatively evenly across skill levels, but the bulk of new job growth during the past decade was concentrated in low-skill jobs.
- During the past three years, employers in this sector added a total of 7,800 net new jobs, or 2,600 (2.0%) per year.
- This pace of growth in healthcare slightly lagged the metro area and the nation over the past decade, but outpaced growth in the overall Philadelphia economy, in which employment increased by 0.5% during the past decade.
- The concentration of Healthcare employment in the city is high compared with the nation, but declined slightly since 2006.

WAGES

- The mean annual wage for Healthcare jobs in Philadelphia was \$69,900 in 2016—12% higher than the average city wage of \$62,600.
- The average wage for healthcare jobs in Philadelphia is higher than at the metro, state, and national levels.
- Over the past decade, wages increased by an annual average of 0.5%, exceeding metro, state, and national growth rates.
- Wage growth accelerated in Philadelphia in recent years, averaging 1.0% annually between 2013 and 2016.

PROJECTIONS

- Sector employment growth in Philadelphia is projected to average 1.4% annually through 2024, a full percentage point slower than the national average during the forecast period.
- Although the pace of hiring is expected to moderate, projections estimate that approximately 15,400 net new jobs are expected in Philadelphia through 2024—an average of 1,900 jobs per year.
- Annually, an estimated 2,971 replacement openings are projected through 2024.

NOTABLE SUBINDUSTRY DYNAMICS

- **General & Surgical Hospitals** provide nearly one-third of jobs in the sector (44,500), but annual employment growth over the past decade has been sluggish at 0.3% (125 new jobs per year).
- Job growth at **Specialty Hospitals** has been more robust (2.4% per year since 2006, or 255 jobs per year), but the employment base of 13,200 is only 30% of employment at **General & Surgical Hospitals**.
- The fastest growing subindustry is **Services for Elderly & Persons with Disabilities**, which added nearly 1,400 jobs per year during the past decade.
- However, this subindustry has the third-lowest average wage of all healthcare industries at \$31,000 and employment is particularly fragmented, with 18,000 employees spread across 6,000 establishments.
- **Home Health Care Services** added the second most jobs in the sector during the past decade.
- **Nursing Care Facilities** was the only large subindustry to shrink since 2006, losing an average of 57 jobs per year (-0.7%).

NOTABLE OCCUPATIONAL DYNAMICS

- **Personal Care Aides** and **Home Health Aides** are among the largest and fastest-growing occupations in the sector, and while both have low education requirements, wages are also low.
- These two occupations account for 22,000 jobs combined, and employment in both occupations doubled since 2006.
- **Nursing Assistants**, **Vocational Nurses**, and **Medical Assistants** receive higher pay, but there are fewer of these jobs and employment growth has been slower.
- **Registered Nurses** represent the largest occupation in the sector, with 21,000 jobs in 2016—up by 2,000 since 2006.

Retail & Hospitality

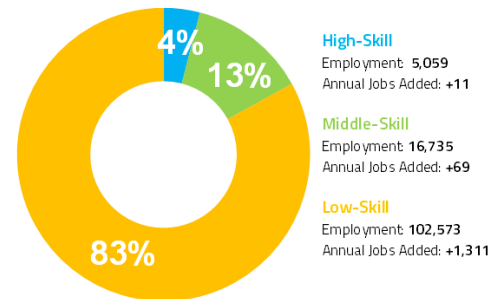
The Retail & Hospitality sector—accounting for 18.7% of total employment in Philadelphia—includes core industries in retail trade, entertainment, and recreation, as well as accommodation and food services. The sector also includes other industries like movie theaters, rental centers, travel agencies, and janitorial services which are not formally categorized among the core industries but share similar workforce needs.

Retail & Hospitality is the second-largest target sector with more than 124,000 jobs in Philadelphia. The sector also added the second-largest number of jobs among target sectors during the past decade, averaging 1,400 per year. Job growth accelerated during the past three years, with an average of 1,900 jobs added annually. While the sector has experienced notable job growth, the average retail and hospitality salary of \$36,000 is the lowest among target sectors. This low average salary is driven by an outsize share of low-skill jobs, which account for 83% of all jobs in the sector. Middle-skill jobs account for just 18% of jobs.

Job growth in the sector has largely been concentrated in hospitality subindustries, with restaurants adding more than 800 jobs annually during the past decade. Growth has been concentrated predominantly in low-skill occupations such as food preparation and serving workers, waiters and waitresses, and restaurant cooks. Supervisor positions account for many of the middle-skill job opportunities in the sector and do offer better pay than the aforementioned low-skill jobs, though there are fewer of these jobs and growth has been slower. On the retail side of the sector, subindustries such as discount department stores and warehouse clubs experienced some growth, but the number of retail sales workers overall declined over the past decade.

2016 Employment:	124,367
10-Year Annual Job Growth	↑ 1,391 (1.3%)
3-Year Annual Job Growth	↑ 1,923 (1.6%)
Projected Annual Job Growth	↑ 821 (0.7%)
Projected Annual Replacement Openings	4,072
2016 Avg. Wage:	\$35,866
10-Year Real Annual Change	↓ 0.2%
3-Year Real Annual Change	↑ 1.1%

RETAIL & HOSPITALITY JOBS BY SKILL LEVEL, PHILADELPHIA (2016)



Note: Annual jobs added between 2006 and 2016.
Sources: PhiladelphiaWorks; Pennsylvania Department of Labor and Industry; National Skills Coalition

NOTABLE SUBINDUSTRY DETAIL

Sub-Industry	2016 Employment	Jobs Added Per Year, 2006-2016	Jobs Added Per Year, 2013-2016	2024 Employment	Jobs Added Per Year, 2016-2024	2016 Avg. Wage	Real % Change Per Year, 2006-2016	Real % Change Per Year, 2013-2016
Full-Service Restaurants	21,864	538	609	24,112	281	\$27,085	0.2%	1.6%
Limited-Service Restaurants	12,842	274	300	13,954	139	\$18,854	0.3%	1.6%
Supermarkets and Other Grocery (except Convenience) Stores	10,098	130	-178	10,377	35	\$30,137	-0.7%	0.2%
Hotels (except Casino Hotels) and Motels	7,241	-83	-81	7,112	-16	\$46,437	0.9%	0.6%
Food Service Contractors	5,191	-85	55	4,427	-96	\$33,157	-0.7%	0.7%
Janitorial Services	4,186	52	-132	4,234	6	\$31,409	0.5%	1.2%
Discount Department Stores	3,684	126	219	4,145	58	\$23,022	-1.7%	-1.2%
Casinos (except Casino Hotels)	1,507	151	104	2,285	97	\$54,977	N/A	2.5%
Warehouse Clubs and Supercenters	1,464	88	127	2,226	95	\$37,964	-1.9%	3.8%

NOTABLE OCCUPATIONAL DETAIL

Occupation	2016 Employment	Jobs Added Per Year, 2006-2016	Median Annual Wage	Skill Level	Typical Entry-Level Education	Typical On-the-Job Training
Combined Food Preparation and Serving Workers	14,990	377	\$18,591	Low-Skill	No formal educational credential	Short-term on-the-job training
Cashiers	14,348	216	\$19,300	Low-Skill	No formal educational credential	Short-term on-the-job training
Retail Salespersons	13,180	-69	\$21,217	Low-Skill	No formal educational credential	Short-term on-the-job training
Waiters and Waitresses	11,010	220	\$20,602	Low-Skill	No formal educational credential	Short-term on-the-job training
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	4,503	48	\$26,105	Low-Skill	No formal educational credential	Short-term on-the-job training
Stock Clerks and Order Fillers	4,295	61	\$21,610	Low-Skill	No formal educational credential	Short-term on-the-job training
Cooks, Restaurant	4,130	102	\$26,339	Low-Skill	No formal educational credential	Moderate-term on-the-job training
Bartenders	3,650	89	\$20,006	Low-Skill	No formal educational credential	Short-term on-the-job training
First-Line Supervisors of Food Preparation and Serving Workers	3,250	71	\$39,392	Middle-Skill	High school diploma or equivalent	None

Retail & Hospitality: Key Findings

SIZE & GROWTH

- The Retail & Hospitality sector is the second-largest target sector in Philadelphia.
- Employment is heavily concentrated in low-skill jobs—accounting for 83% of sector employment—and 94% of job growth during the past decade was concentrated in low-skill jobs.
- Between 2013 and 2016, employers added an average of 1,900 jobs (1.6%) per year for a total of 5,800 net new jobs.
- Annual employment growth during the past decade (1.3%) outpaced growth in the metro area, state, and nation.
- While the concentration of Retail & Hospitality employment in the metro area is roughly on par with the national rate, the concentration in Philadelphia is lower, though it has risen slightly over the past decade.

WAGES

- At \$35,900, the 2016 mean annual wage for Retail & Hospitality jobs in Philadelphia was higher than the average annual wage for this sector at the metro, state, and national levels, though pay has declined over the past decade.
- Over the past decade wages in Philadelphia dropped by an average of 0.2% per year, but wage growth has picked up more recently—rising by 1.1% annually between 2013 and 2016.

PROJECTIONS

- Despite recent gains in job growth, projections anticipate that sector growth will slow considerably through 2024 to an average of 0.6% per year—less than half the annual average of 1.3% seen between 2006 and 2016.
- Still, projections indicate that approximately 6,600 net new Retail & Hospitality jobs will be created through 2024—or 820 jobs annually, on average.
- The sector has a notably high level of churn—projections estimate 4,072 replacement openings per year through 2024.

NOTABLE SUBINDUSTRY DYNAMICS

- **Restaurants** account for 28% of sector employment, with Full-Service and Limited-Service Restaurants supporting 34,700 jobs.
- The **Restaurants** subindustries also added the most jobs in the sector over the past decade, with employment growing by an average of 3%, or 812 net new jobs, per year.
- Most large subindustries expanded during the past decade, with **Casinos**, **Discount Department Stores**, and **Warehouse Clubs** seeing notable growth.
- Select large subindustries, including **Hotels**, **Food Service Contractors**, and **Family Clothing Stores**, experienced notable job loss over the past decade.

NOTABLE OCCUPATIONAL DYNAMICS

- Occupational growth in the Retail & Hospitality sector has occurred largely in **Hospitality** occupations.
- Nearly 10,000 net new jobs for **Food Preparation and Serving Workers**, **Waiters & Waitresses**, **Cashiers**, and **Restaurant Cooks** were added over the past decade. These occupations require minimal training, but pay low median wages of around \$20,000 per year.
- **Supervisor positions** in the food industry pay higher wages and require minimal education, but employment growth for these occupations has been slow, with an average of just 70 new jobs created annually since 2006.
- The number of positions for **Retail Sales Workers** has declined by an average of -0.5%, or 70 jobs per year since 2006. Among the ten largest occupations in this sector, this occupation was the only to see notable job loss over the past decade.

Early Childhood Education²

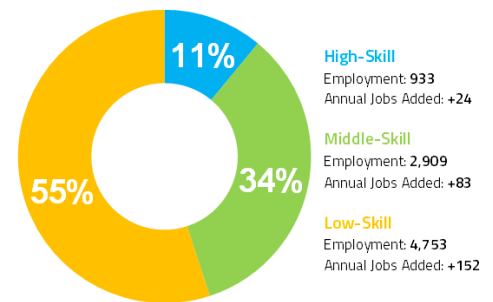
The Early Childhood Education sector—accounting for 1.3% of total employment in Philadelphia—includes core industries such as child day care services, elementary schools, child and youth services, and educational support services. Occupational analysis allows for more targeted understanding of employment in elementary and secondary schools.

The Early Childhood Education sector is the smallest sector in Philadelphia with 8,600 jobs, but has grown quickly during the past decade. The sector added an average of nearly 260 jobs per year since 2006. The pace slowed slightly in recent years as approximately 234 jobs were created annually since 2013. A significant share of job growth has been concentrated in low-skill occupations, but the number of middle skill created in Early Childhood Education during the past decade was still the second most among target sectors. Although it has been one of the fastest-growing sectors, the average wage of \$32,100 is lower than in all target sectors, including Retail & Hospitality.

Child day care services accounted for the vast majority of job growth among early childhood education subindustries. Occupations requiring less than Bachelor's degree, such as childcare workers and teacher assistants, led the sector in job creation, but these occupations also pay the least among early childhood education positions with a median annual salary in the low-\$20,000 range. The number of pre-school teachers, a key middle-skill occupation, increased during the past decade, with a slightly higher median wage of nearly \$29,000 per year.

2016 Employment:	8,595
10-Year Annual Job Growth	↑ 259 (4.3%)
3-Year Annual Job Growth	↑ 234 (3.0%)
Projected Annual Job Growth	↑ 185 (2.2%)
Projected Annual Replacement Openings	179
2016 Avg. Wage:	\$32,076
10-Year Real Annual Change	↑ 0.3%
3-Year Real Annual Change	↑ 0.7%

EARLY CHILDHOOD EDUCATION JOBS BY SKILL LEVEL, PHILADELPHIA (2016)



Note: Annual jobs added between 2006 and 2016.
Sources: Philadelphia Work; Pennsylvania Department of Labor and Industry; National Skills Coalition

NOTABLE SUBINDUSTRY DETAIL

Sub-Industry	2016 Employment	Jobs Added Per Year, 2006-2016	Jobs Added Per Year, 2013-2016	2024 Employment	Jobs Added Per Year, 2016-2024	2016 Avg. Wage	Real % Change Per Year, 2006-2016	Real % Change Per Year, 2013-2016
Child Day Care Services	7,062	219	202	8,401	167	\$28,297	0.4%	0.5%
Elementary Schools*	1,114	35	11	1,235	15	\$46,770	-0.1%	1.0%
Child and Youth Services	253	-1	6	240	-2	\$43,541	0.4%	2.2%
Educational Support Services	167	7	18	202	4	\$76,555	1.7%	-3.0%
Recreational and Vacation Camps (except Campgrounds)	0	N/A	N/A	0	N/A	N/A	N/A	N/A

NOTABLE OCCUPATIONAL DETAIL

Occupation	2016 Employment	Jobs Added Per Year, 2006-2016	Median Annual Wage	Skill Level	Typical Entry-Level Education	Typical On-the-Job Training
Childcare Workers	3,214	107	\$21,029	Low-Skill	High school diploma or equivalent	Short-term on-the-job training
Preschool Teachers, Except Special Education	1,836	53	\$28,740	Middle-Skill	Associate's degree	None
Education Administrators, Preschool and Childcare Center/Program	319	9	\$54,760	High-Skill	Bachelor's degree	None
Teacher Assistants	218	7	\$23,524	Middle-Skill	Some college, no degree	None
Child, Family, and School Social Workers	68	1	\$41,776	High-Skill	Bachelor's degree	None
Special Education Teachers, Preschool	50	2	\$34,279	High Skill	Bachelor's degree	None

² The methodology for this sector differs from other sectors. Please refer to the methodology section on p. 8 for a full discussion, including treatment of elementary school employment.

Early Childhood Education: Key Findings

SIZE & GROWTH

- The Early Childhood Education sector is the smallest target sector in Philadelphia, with approximately 8,600 jobs in 2016.
- Employment is concentrated in low-skill and middle-skill occupations, with such occupations also accounting for the bulk of job growth the past decade.
- During the past decade, sector employment increased by an annual average of 4.3% in Philadelphia—more than double the pace in the metro area, state, and nation. This gap has narrowed in recent years, but growth in Philadelphia between 2013 and 2016 was still relatively high, at an average of 3.0%, or 234 jobs per year.
- The concentration of Early Childhood Education employment in the city is high compared with the national rate and has risen significantly during the past decade.

WAGES

- At \$32,100 in 2016, the mean annual wage for Early Childhood Education jobs in Philadelphia was higher than the mean annual wage for the sector at the metro, state, and national levels and up slightly from a decade ago.
- Still, wage growth in Philadelphia has been slower than in all comparison geographies, increasing by an annual average of just 0.3% since 2006.
- The pace of wage growth in the city did accelerate slightly during the past few years, reaching an annual average of 0.7% between 2013 and 2016.

PROJECTIONS

- Projections anticipate that approximately 1,400 net new jobs will be created through 2024—an average of nearly 185 jobs annually. This projection does not account for ongoing and forthcoming programs and policy initiatives such as PHLpreK.
- The projected 2.2% annual growth rate of Early Childhood Education jobs in the city exceeds projections for the metro, state, and nation.
- The sector is projected to have 179 replacement openings annually through 2024.

NOTABLE SUBINDUSTRY DYNAMICS

- An estimated 82% of all jobs in this sector (7,062) are in **Child Day Care Services** and the number is projected to continue growing, even without accounting for PHLpreK.
- At \$28,300 per year, average industry pay for **Child Day Care Services** is very low.
- Employment in **Elementary Schools**³ has grown by an average of 35 jobs, or 4.5%, per year since 2006.

NOTABLE OCCUPATIONAL DYNAMICS

- With 3,200 positions in 2016, **Childcare Workers** represent the largest occupation in this sector, and employment has grown by 1,000 jobs since 2006.
- Jobs for **Childcare Workers** are available with minimal training, but pay is low, with a median annual wage of \$21,000.
- The number of positions for **Preschool Teachers** in the city has increased by 40% over the past decade, for a total of just over 1,800 jobs in 2016. This occupation requires an Associate degree.
- At \$29,000, the median wage for preschool teachers in Philadelphia is less than half that of elementary school teachers (\$62,000).

³ This includes only a subset of elementary school employment. Please see the methodology on p. 8 for more details.

Technology Services

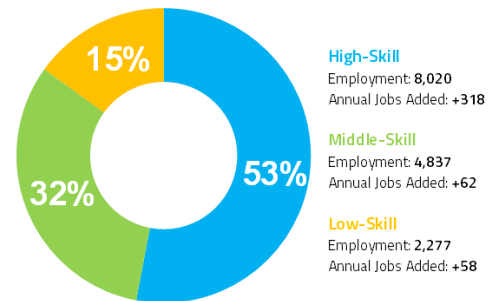
The Technology Services sector—accounting for 2.3% of total employment in Philadelphia—includes a range of core industries in software and hardware services, telecommunications, e-commerce, and biotechnology. The core industries draw from the definition used by CompTIA, the tech industry trade group.

Despite being the smallest of the target sectors in the city—supporting 15,000 jobs—Technology Services has grown faster than all other target sectors over the past decade and added a significant number of jobs. Since 2006, the sector has added an average of more than 400 jobs per year. Job growth accelerated rapidly during the past three years, adding more than 1,000 new jobs annually since 2013. At \$126,000, the average wage in Technology Services is the highest among target sectors and more than double the average wage in Philadelphia. This is driven by a relatively high share of high-skill jobs (53%), though nearly one-third of jobs in the sector are middle-skill jobs.

Job growth has been concentrated in subindustries such as biotechnology, computer systems design, computer programming services, and internet publishing, which collectively added 470 jobs annually during the past decade. Employment in the largest subindustry—wired telecommunications carriers—has declined, as have jobs in accompanying large middle-skill occupations in telecommunications installations and repair. At the occupational level, high-skill occupations such as software developers and systems analysts saw the largest growth, and middle-skill occupations, such as computer support specialists, saw modest growth.

2016 Employment:	15,134
10-Year Annual Job Growth	↑ 438 (4.1%)
3-Year Annual Job Growth	↑ 1,023 (8.5%)
Projected Annual Job Growth	↑ 266 (1.8%)
Projected Annual Replacement Openings	279
2016 Avg. Wage:	\$126,675
10-Year Real Annual Change	↑ 2.0%
3-Year Real Annual Change	↓ 0.1%

TECHNOLOGY SERVICES JOBS BY SKILL LEVEL, PHILADELPHIA (2016)



Note: Annual jobs added between 2006 and 2016.
Sources: Philadelphia Works; Pennsylvania Department of Labor and Industry; National Skills Coalition

NOTABLE SUBINDUSTRY DETAIL

Sub-Industry	2016 Employment	Jobs Added Per Year, 2006-2016	Jobs Added Per Year, 2013-2016	2024 Employment	Jobs Added Per Year, 2016-2024	2016 Avg. Wage	Real % Change Per Year, 2006-2016	Real % Change Per Year, 2013-2016
Wired Telecommunications Carriers	4,456	-27	63	3,850	-76	\$164,054	4.1%	0.0%
Research and Development in Biotechnology	2,993	197	673	4,388	174	\$96,997	1.8%	1.3%
Custom Computer Programming Services	2,027	125	57	2,535	64	\$113,055	-0.4%	1.6%
Computer Systems Design Services	1,389	72	183	1,907	65	\$109,514	0.2%	-3.4%
Internet Publishing and Broadcasting and Web Search Portals	820	73	34	1,051	29	\$120,273	-0.7%	0.2%
Research and Development in the Physical, Engineering, and Life Sciences (except Biotechnology)	601	-73	-135	183	-52	\$127,393	5.5%	10.8%
Electronic Shopping	482	43	-9	763	35	\$99,408	5.9%	6.8%

NOTABLE OCCUPATIONAL DETAIL

Occupation	2016 Employment	Jobs Added Per Year, 2006-2016	Median Annual Wage	Skill Level	Typical Entry-Level Education	Typical On-the-Job Training
Software Developers, Applications	1,063	61	\$101,175	High-Skill	Bachelor's degree	None
Telecommunications Line Installers and Repairers	908	-8	\$64,354	Middle-Skill	High school diploma or equivalent	Long-term on-the-job training
Customer Service Representatives	863	14	\$35,579	Low-Skill	High school diploma or equivalent	Short-term on-the-job training
Telecommunications Equipment Installers and Repairers, Except Line Installers	543	-1	\$59,340	Middle-Skill	Postsecondary nondegree award	Moderate-term on-the-job training
Computer Systems Analysts	541	26	\$86,622	High-Skill	Bachelor's degree	None
Sales Representatives, Services, All Other	527	8	\$59,533	Middle-Skill	High school diploma or equivalent	Moderate-term on-the-job training
Computer User Support Specialists	524	19	\$53,701	Middle-Skill	Some college, no degree	None
Computer Network Support Specialists	257	4	\$61,856	Middle-Skill	Associate's degree	None

Technology Services: Key Findings

SIZE & GROWTH

- The Technology Services sector is the second-smallest target sector in Philadelphia, supporting 15,000 jobs.
- High-skill jobs account for the majority of sector employment, with middle-skill jobs accounting for one-third of employment; however, job growth during the past decade was largely concentrated in high-skill jobs.
- Employment in this sector increased markedly during the past decade, growing by an average of 4.1% per year in Philadelphia—double the national rate.
- During the past three years, the pace of hiring has accelerated quickly in Philadelphia, with average annual job growth of 8.5% since 2013, representing 3,100 net new jobs.
- While employment increased rapidly in the city during the past decade, employment at the metro level was flat.
- The concentration of Technology Services employment in the city is relatively low compared to the national average, but has increased over the past decade.

WAGES

- At \$126,700 in 2016, the mean annual wage for Technology Services jobs in Philadelphia is the highest among target sectors.
- The average tech services wage in the city grew by 20% in real terms over the past decade, though it remains slightly lower than metro area and national averages.
- Wage growth in the sector has stalled in recent years, however, remaining nearly flat in the city between 2013 and 2016.

PROJECTIONS

- The pace of hiring is projected to decelerate through 2024, with the projected 1.8% annual growth rate in Philadelphia matching the national average. This rate is still well above overall employment growth projections in the city.
- Projections indicate that approximately 2,100 net new jobs will be added through 2024—an average of 270 jobs per year.
- The sector is projected to have 279 replacement openings annually through 2024.

NOTABLE SUBINDUSTRY DYNAMICS

- **Wired Telecommunications Carriers** account for nearly 30% of jobs in this sector, though this subindustry has not been a driver of growth.
- The four next-largest industries in the sector—**Biotech R&D**, **Computer Programming Services**, **Computer Systems Design Services**, and **Internet Publishing and Broadcasting**—experienced substantial growth over the past decade, added a combined 4,700 jobs in Philadelphia.
- Employment in **Electronic Shopping**, while small in scale, has expanded rapidly, from 50 jobs in 2006 to 480 jobs in 2016.

NOTABLE OCCUPATIONAL DYNAMICS

- **Software Application Developers**, **Computer Systems Analysts**, and **Computer Programmers** added the most jobs in the sector over the past decade. All are technical computer occupations that formally require a Bachelor's degree.
- **Computer User Support Specialists** and **Customer Service Representatives**—which both require less than a Bachelor's degree and pay above typical wages for jobs of comparable skill levels—also grew over the past decade.
- Other notable occupations that have grown and require less than a Bachelor's degree are **Office Clerks**, **Sales Representatives**, and **Web Developers**.
- **Line and Equipment Installer** jobs—high-paying, middle-skill positions with median annual wages near \$60,000—declined slightly over the past decade, consistent with employment losses in the telecommunications industry.

Business & Financial Services

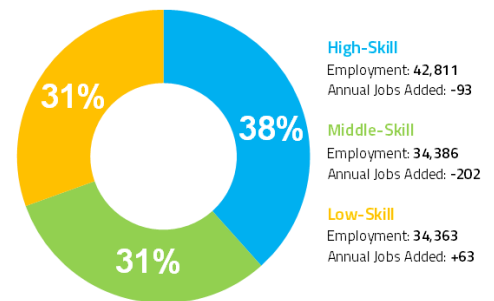
The Business & Financial Services sector—accounting for 16.8% of total employment in Philadelphia—includes core industries in finance and insurance, real estate, professional services, and administrative and support services. The sector also includes some industries that are part of the supply chain, such as office equipment wholesalers and office supplies stores.

The third-largest target sector in the city with 112,000 jobs, Business & Financial Services has seen uneven growth over the past decade. The sector suffered significant adverse effects from the Great Recession, contributing to net job loss between 2006 and 2016. In recent years, however, the sector has rebounded strongly, adding an average of 1,500 jobs every year since 2013. With an average wage of \$118,000, Business & Financial Services is the second highest-paying of the target sectors, and it exhibits a notable balance in diversity of job types, with high-skill jobs accounting for 38% of jobs and middle-skill jobs accounting for 31% of jobs.

Half of sector employment is concentrated in six large industries, and over the past decade, employment in several traditional large anchor subindustries such as commercial banking and law offices declined. The security guards and patrol services subindustry saw the most growth over the past decade, followed by temporary help services and consulting. Middle-skill jobs in this sector were particularly vulnerable during the past decade, as employment in occupations such as tellers, bookkeepers, and paralegals all declined. However, some low-skill occupations such as security guards—which pay slightly more than the typical low-skill, entry-level job—added a significant number of jobs during the past decade.

2016 Employment:	111,560
10-Year Annual Job Growth	↓ 231 (-0.2%)
3-Year Annual Job Growth	↑ 1,519 (1.4%)
Projected Annual Job Growth	↑ 463 (0.4%)
Projected Annual Replacement Openings	2,301
2016 Avg. Wage:	\$118,318
10-Year Real Annual Change	↑ 0.5%
3-Year Real Annual Change	↑ 0.7%

BUSINESS & FINANCIAL SERVICES JOBS BY SKILL LEVEL, PHILADELPHIA (2016)



Note: Annual jobs added between 2006 and 2016.
Sources: PhiladelphiaWorks; Pennsylvania Department of Labor and Industry; National Skills Coalition

NOTABLE SUBINDUSTRY DETAIL

Sub-Industry	2016 Employment	Jobs Added Per Year, 2006-2016	Jobs Added Per Year, 2013-2016	2024 Employment	Jobs Added Per Year, 2016-2024	2016 Avg. Wage	Real % Change Per Year, 2006-2016	Real % Change Per Year, 2013-2016
Offices of Lawyers	16,178	-190	-68	15,617	-70	\$138,389	0.7%	0.9%
Corporate, Subsidiary, and Regional Managing Offices	13,371	124	391	13,972	75	\$192,590	2.7%	0.1%
Temporary Help Services	8,042	154	320	9,131	136	\$39,645	1.4%	3.8%
Security Guards and Patrol Services	7,072	389	198	8,832	220	\$28,182	0.5%	0.3%
Commercial Banking	5,436	-386	-233	3,431	-251	\$108,431	1.8%	4.4%
Direct Health and Medical Insurance Carriers	5,358	-119	130	5,563	26	\$103,551	1.8%	-0.9%
Offices of Certified Public Accountants	4,781	61	132	5,092	39	\$123,560	1.0%	0.9%
Administrative Management and General Management Consulting Services	4,689	166	225	5,853	146	\$158,015	1.6%	0.5%
Direct Property and Casualty Insurance Carriers	3,558	118	13	4,210	82	\$168,717	-1.0%	-1.9%

NOTABLE OCCUPATIONAL DETAIL

Occupation	2016 Employment	Jobs Added Per Year, 2006-2016	Median Annual Wage	Skill Level	Typical Entry-Level Education	Typical On-the-Job Training
Security Guards	6,998	361	\$23,315	Low-Skill	High school diploma or equivalent	Short-term on-the-job training
Lawyers	6,529	-48	\$129,381	High-Skill	Doctoral or professional degree	None
Customer Service Representatives	4,886	-84	\$35,579	Low-Skill	High school diploma or equivalent	Short-term on-the-job training
Office Clerks, General	4,359	-26	\$33,679	Low-Skill	High school diploma or equivalent	Short-term on-the-job training
Accountants and Auditors	4,293	37	\$75,531	High-Skill	Bachelor's degree	None
Legal Secretaries	3,746	-53	\$46,383	Middle-Skill	High school diploma or equivalent	Moderate-term on-the-job training
Paralegals and Legal Assistants	3,214	-22	\$56,151	Middle-Skill	Associate's degree	None
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	3,125	-24	\$37,454	Low-Skill	High school diploma or equivalent	Short-term on-the-job training
Bookkeeping, Accounting, and Auditing Clerks	2,338	-39	\$42,300	Middle-Skill	Some college, no degree	Moderate-term on-the-job training
Tellers	2,078	-130	\$29,705	Low-Skill	High school diploma or equivalent	Short-term on-the-job training

Business & Financial Services: Key Findings

SIZE & GROWTH

- The Business & Financial Services sector is the third-largest target sector in Philadelphia.
- The sector was particularly impacted by the Great Recession, and employment is still not back to 2006 levels.
- Employment is spread relatively evenly across skill levels, but middle-skill jobs accounted for an outsize share of net job losses during the past decade.
- Sector job growth in Philadelphia lagged the metro, state and nation over the past decade.
- Hiring has picked up considerably in recent years, with firms adding an average of 1,500 jobs per year since 2013.
- At an average of 1.4% per year, the pace of hiring in Philadelphia in this sector since 2013 has exceeded metro and state rates, but lagged the national growth rate.
- The relative concentration of Business & Financial Services employment in Philadelphia is slightly higher than the national average, but it has declined over the past decade.

WAGES

- The mean annual wage for Business & Financial Services jobs in Philadelphia was \$118,300 in 2016, up from \$112,300 (2016 dollars) a decade ago and considerably higher than the mean annual wage for the sector at the metro, state, and national levels.
- Over the past decade, wages increased by an annual average of 0.5%, slower than growth in comparison geographies.
- Wage growth picked up slightly in the past three years, but was still slow at 0.7% annually, on average.

PROJECTIONS

- The pace of hiring in Business and Financial Services is projected to decelerate through 2024, with annual growth expected to average 0.8%.
- Projections indicate that approximately 3,700 net new jobs will be added through 2024—or 463 jobs annually, on average.
- The sector is projected to have 2,301 replacement openings annually through 2024.

NOTABLE SUBINDUSTRY DYNAMICS

- The six largest subindustries in Business and Financial Services account for 50% of sector employment—55,000 jobs—and 24 industries in this sector employ at least 1,000 people.
- The **Security Guards & Patrol Services** subindustry added the most jobs over the past decade (389 per year), and growth is projected to continue.
- **Commercial Banking** lost the most jobs in the sector over the past decade (-386 annually) and continued to shed jobs in more recent periods.
- Consistent with national trends, legal employment declined over all periods.

NOTABLE OCCUPATIONAL DYNAMICS

- **Security Guards** represent the largest occupation in this sector, with 7,000 jobs in 2016.
- Employment in this occupation doubled over the past ten years (3,600 new jobs since 2006), but median pay is just \$23,000 per year.
- Most other occupations saw minimal growth over the past decade. **Accountants and Auditors** added the second most positions, but resulted in a total of just 365 new jobs since 2006.
- Other large occupations saw declining employment, including **Customer Service Representatives**, all legal occupations (**Lawyers, Paralegals, Legal Secretaries**), **Bookkeepers**, and **Bank Tellers**.

Manufacturing & Logistics

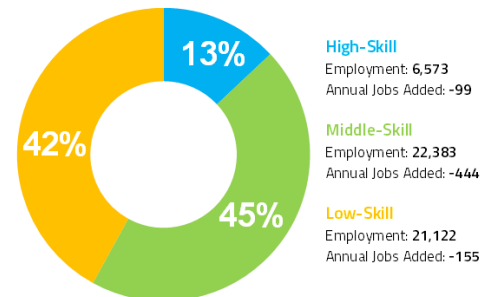
The Manufacturing & Logistics sector—accounting for 7.5% of total employment in Philadelphia—includes core industries in manufacturing, transportation, and distribution. The sector also includes a range of related industries that are part of the supply chain, end-product delivery, or which provide critical support services. Examples include motor vehicles supplies wholesalers, industrial machinery repair, and commercial transportation equipment rental.

Manufacturing & Logistics is the fourth-largest target sector with 50,000 jobs. Jobs in this sector pay well, with an average wage of \$74,000, and 45% of jobs are middle-skill. However, the employment base continued to erode over the past decade as the sector lost an average of nearly 700 jobs per year. Employment rebounded significantly following the recession, with an average of 428 jobs added per year between 2013 and 2016.

Recent growth in the sector has been concentrated largely in logistics subindustries such as air transportation, delivery services, and other ground transportation services. Large occupations with connections to these subindustries, such as stock movers and bus drivers, added jobs during the past decade. In manufacturing, subindustries such as meat processing and petroleum refineries experienced growth in recent years, but this was offset by larger losses in subindustries such as pharmaceutical manufacturing, commercial printing, and commercial bakeries. Sizeable middle-skill manufacturing occupations such as team assemblers and welders shed jobs during the past decade.

2016 Employment:	50,078
10-Year Annual Job Growth	↓ 699 (-1.2%)
3-Year Annual Job Growth	↑ 428 (0.9%)
Projected Annual Job Growth	↓ 72 (-0.1%)
Projected Annual Replacement Openings	1,173
2016 Avg. Wage:	\$73,535
10-Year Real Annual Change	↑ 1.9%
3-Year Real Annual Change	↑ 2.1%

MANUFACTURING & LOGISTICS JOBS BY SKILL LEVEL, PHILADELPHIA (2016)



Note: Annual jobs added between 2006 and 2016.
Sources: PhiladelphiaWorks; Pennsylvania Department of Labor and Industry; National Skills Coalition

NOTABLE SUBINDUSTRY DETAIL

Sub-Industry	2016 Employment	Jobs Added Per Year, 2006-2016	Jobs Added Per Year, 2013-2016	2024 Employment	Jobs Added Per Year, 2016-2024	2016 Avg. Wage	Real % Change Per Year, 2006-2016	Real % Change Per Year, 2013-2016
Scheduled Passenger Air Transportation	9,092	111	110	9,790	87	\$95,701	14.9%	7.2%
General Warehousing and Storage	3,481	35	36	3,592	14	\$50,712	1.6%	5.9%
Couriers and Express Delivery Services	2,173	29	172	2,240	8	\$52,581	-1.0%	-4.4%
Rail transportation	1,737	21	44	1,813	10	\$76,618	0.2%	0.5%
School and Employee Bus Transportation	1,707	85	126	2,193	61	\$27,152	-1.9%	-0.6%
Other Airport Operations	1,307	15	293	1,626	40	\$33,878	1.2%	3.6%
Meat Processing	1,128	25	58	1,285	20	\$59,990	-0.5%	0.7%
Petroleum Refineries	1,127	109	41	1,593	58	\$202,221	21.4%	3.4%
Commercial Bakeries	1,008	-141	-86	295	-89	\$61,664	-0.5%	0.4%
Commercial Printing (except Screen and Books)	966	-116	-70	338	-78	\$78,320	0.5%	2.4%
Pharmaceutical Preparation Manufacturing	593	-49	-108	195	-50	\$107,117	-0.2%	4.2%

NOTABLE OCCUPATIONAL DETAIL

Occupation	2016 Employment	Jobs Added Per Year, 2006-2016	Median Annual Wage	Skill Level	Typical Entry-Level Education	Typical On-the-Job Training
Laborers and Freight, Stock, and Material Movers, Hand	4,968	19	\$28,634	Low-Skill	No formal educational credential	Short-term on-the-job training
Bus Drivers, School or Special Client	1,509	67	\$26,790	Low-Skill	High school diploma or equivalent	Short-term on-the-job training
Flight Attendants	1,280	13	\$42,842	Middle-Skill	High school diploma or equivalent	Moderate-term on-the-job training
Heavy and Tractor-Trailer Truck Drivers	1,212	-21	\$38,458	Middle-Skill	Postsecondary nondegree award	Short-term on-the-job training
Reservation and Transportation Ticket Agents and Travel Clerks	1,189	11	\$33,500	Low-Skill	High school diploma or equivalent	Short-term on-the-job training
Team Assemblers	1,114	-102	\$28,053	Middle-Skill	High school diploma or equivalent	Moderate-term on-the-job training
Light Truck or Delivery Services Drivers	999	5	\$35,549	Low-Skill	High school diploma or equivalent	Short-term on-the-job training
Welders, Cutters, Solderers, and Brazers	418	-41	\$40,086	Middle-Skill	High school diploma or equivalent	Moderate-term on-the-job training

Manufacturing & Logistics: Key Findings

SIZE & GROWTH

- Manufacturing & Logistics supported 50,000 jobs in Philadelphia in 2016, though the sector's employment base shrunk by 12% over the past decade.
- While 45% of employment is concentrated in middle-skill jobs, 64% of job losses in this sector during the past decade were concentrated in middle-skill jobs.
- Sector employment rebounded between 2013 and 2016, adding a total of 1,300 net new jobs as the local economy emerged from the recession.
- Even as employment change turned positive over the past three years, the local pace of employment growth in the sector (0.9% annually) lagged the national rate (1.6%).
- The concentration of Manufacturing & Logistics employment in Philadelphia significantly lags the national rate and has declined over the past decade.

WAGES

- The mean annual wage for Manufacturing & Logistics jobs in Philadelphia was \$73,500 in 2016, up 19% from \$61,900 (2016 dollars) a decade ago.
- Between 2006 and 2016, the average annual wage growth for the sector in Philadelphia (1.9%) outpaced metro, statewide, and national rates.
- Local wage growth over the past decade narrowed the gap between average city and statewide wages within the sector, though wages in Philadelphia still lag metro and national averages.

PROJECTIONS

- Projections indicate that employment levels are expected to decrease slightly through 2024—an annual loss of approximately 72 jobs—but the pace of decline is expected to be significantly slower than during the past decade.
- Through 2024, annual sector employment in Philadelphia, the metro area, and the state is projected to decline by an annual average of 0.1%, while national sector employment is projected to grow by an annual average of 0.4%.
- The sector is projected to have 1,173 replacement openings annually through 2024.

NOTABLE SUBINDUSTRY DYNAMICS

- The largest industries in this sector are all in logistics, and most have added jobs since 2006.
- The 10,400 jobs in **Scheduled Passenger Air Transportation** (the largest subindustry) and **Other Airport Operations** (the sixth-largest subindustry) represent one-fifth of all sector employment.
- The two largest manufacturing industries in the city—**Meat Processing** (+25 jobs per year) and **Petroleum Refineries** (+109 jobs per year)—saw growth over the past decade.
- But other large manufacturing industries shed significant numbers of jobs, including **Commercial Printing**, **Commercial Bakeries**, and **Pharmaceutical Manufacturing**.

NOTABLE OCCUPATIONAL DYNAMICS

- The largest occupations in this sector are also in logistics.
- Among the five largest occupations, all added jobs except **Heavy Truck Drivers**.
- **Laborers and Freight, Stock, and Material Movers** is the largest occupation in this sector, supporting 5,000 jobs.
- The largest job growth was among **Bus Drivers, School or Special Client**, which also has minimal education requirements.
- The largest job losses occurred in manufacturing occupations such as **Team Assemblers** (-102 jobs per year), **Sewing Machine Operators** (-64 jobs per year), and **Welders, Cutters, Solderers, and Brazers** (-41 jobs per year).

Construction & Infrastructure

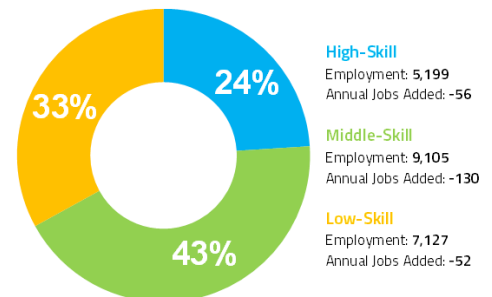
The Construction & Infrastructure sector—accounting for 3.2% of total employment in Philadelphia—includes all traditional construction industries and also includes a range of related industries that are part of the supply chain, end-product delivery, or which provide critical support services for construction and infrastructure work. Examples of additional industries include cement manufacturing, home centers, and architectural and engineering services.

Construction & Infrastructure is the second-smallest target sector in the city, supporting 21,000 jobs. On average, these jobs pay well—at \$87,000 per year, Construction & Infrastructure is the third-highest paying of target sectors. More than two out of five jobs (43%) in the sector are middle-skill. As the sector most directly affected by the collapse of the housing market and the Great Recession, Construction and Infrastructure experienced job loss over the past decade, shedding an average of approximately 240 jobs per year since 2006. Employment has rebounded with the resurgence of development activity in the city, with employers adding an average of just over 470 jobs per year since 2013.

During the past decade, the largest subindustries—plumbing and HVAC contractors, engineering services, and architectural services—all saw job losses, although general contractor subindustries expanded modestly despite the impact of the recession. Employment in the majority of occupations—70% of which are available with less than a Bachelor's degree—declined during this period, with sizeable middle-skill occupations such as plumbers, electricians, carpenters all experiencing net losses. Construction laborers, one of the better paying low-skill occupations across sectors, grew slightly during the past decade.

2016 Employment:	21,430
10-Year Annual Job Growth	↓ 239 (-1.0%)
3-Year Annual Job Growth	↑ 472 (2.4%)
Projected Annual Job Growth	↑ 46 (0.2%)
Projected Annual Replacement Openings	413
2016 Avg. Wage:	\$87,716
10-Year Real Annual Change	↑ 0.4%
3-Year Real Annual Change	↑ 1.5%

CONSTRUCTION & INFRASTRUCTURE JOBS BY SKILL LEVEL, PHILADELPHIA (2016)



Note: Annual jobs added between 2006 and 2016.
Sources: PhiladelphiaWorks; Pennsylvania Department of Labor and Industry; National Skills Coalition

NOTABLE SUBINDUSTRY DETAIL

Sub-Industry	2016 Employment	Jobs Added Per Year, 2006-2016	Jobs Added Per Year, 2013-2016	2024 Employment	Jobs Added Per Year, 2016-2024	2016 Avg. Wage	Real % Change Per Year, 2006-2016	Real % Change Per Year, 2013-2016
Engineering Services	2,922	-4	-110	2,726	-24	\$118,997	1.2%	2.5%
Plumbing, Heating, and Air-Conditioning Contractors	2,335	-41	49	2,352	2	\$97,824	-0.5%	-1.1%
Architectural Services	1,976	-62	89	1,814	-20	\$96,007	-0.3%	1.4%
Commercial and Institutional Building Construction	1,810	35	72	2,070	33	\$125,828	1.1%	4.4%
Home Centers	1,732	17	0	1,850	15	\$34,720	-1.6%	0.8%
Electrical Contractors and Other Wiring Installation Contractors	1,277	-20	47	1,403	16	\$87,089	-0.3%	-1.3%
Residential Remodelers	1,015	23	62	1,351	42	\$53,118	0.5%	3.2%
Highway, Street, and Bridge Construction	802	13	53	1,020	27	\$96,179	0.9%	2.7%
Water and Sewer Line and Related Structures Construction	572	10	39	724	19	\$91,760	0.9%	1.9%

NOTABLE OCCUPATIONAL DETAIL

Occupation	2016 Employment	Jobs Added Per Year, 2006-2016	Median Annual Wage	Skill Level	Typical Entry-Level Education	Typical On-the-Job Training
Construction Laborers	1,807	9	\$34,591	Low-Skill	No formal educational credential	Short-term on-the-job training
Carpenters	1,268	-3	\$53,216	Middle-Skill	High school diploma or equivalent	Apprenticeship
Architects, Except Landscape and Naval	1,062	-18	\$76,131	High-Skill	Bachelor's degree	Internship/residency
Retail Salespersons	1,061	1	\$21,217	Low-Skill	No formal educational credential	Short-term on-the-job training
Plumbers, Pipefitters, and Steamfitters	920	-13	\$64,423	Middle-Skill	High school diploma or equivalent	Apprenticeship
Electricians	868	-11	\$59,568	Middle-Skill	High school diploma or equivalent	Apprenticeship
Office Clerks, General	679	-11	\$33,679	Low-Skill	High school diploma or equivalent	Short-term on-the-job training
First-Line Supervisors of Construction Trades and Extraction Workers	659	-3	\$88,519	Middle-Skill	High school diploma or equivalent	None
Civil Engineers	521	-1	\$81,836	High-Skill	Bachelor's degree	None

Construction & Infrastructure: Key Findings

SIZE & GROWTH

- The Construction & Infrastructure sector is the fifth-largest target sector in Philadelphia, supporting approximately 21,400 jobs in 2016.
- Employment has still not recovered to the 2006 levels, as this sector was among the most directly affected by the housing market collapse and subsequent Great Recession.
- Middle-skill jobs account for a relatively high share of sector employment (43%), but 54% of sector job losses during the past decade were concentrated in middle-skill jobs.
- The decline in Construction & Infrastructure employment over the past decade, averaging -1.0% annually, was slightly less severe in Philadelphia than in the metro area and nation.
- Hiring picked up substantially during the past three years, as firms added a total of 1,400 net new jobs—an average of 472 jobs per year.
- Even as the pace of hiring accelerated in the past three years, sector employment growth in Philadelphia lagged the than the national average by more than a full percentage point.
- Construction & Infrastructure employment in Philadelphia is significantly less concentrated than the national rate; sector concentration at the metro level is closer to the national average.

WAGES

- The mean annual wage for Construction & Infrastructure jobs in Philadelphia was \$87,700 in 2016, up from \$84,000 (2016 dollars) in 2006 and considerably higher than the mean annual wage for the sector at the metro, state, and national levels.
- Over the past decade, however, wage growth in the city was slower than metro, state, and national rates, at an average of 0.4% per year.
- During the past three years, average annual wage growth accelerated to 1.5%, but still lagged metro, state, and national rates.

PROJECTIONS

- Projections anticipate that hiring will slow markedly through 2024, expecting an average of just 46 new jobs per year for a total of 370 net new jobs over the next eight years.
- Employment growth in Philadelphia (0.2% per year) is projected to lag behind metro, state, and national rates through 2024.
- The sector is projected to have 413 replacement openings annually through 2024.

NOTABLE SUBINDUSTRY DYNAMICS

- Large construction subindustries—including **Plumbing & HVAC Contractors**, **Commercial Building Construction**, **Electrical Contractors**, and **Residential Remodelers**—account for 30% of sector employment, or 6,400 jobs.
- **Architectural Services** and **Engineering Services** make up 23% of sector employment (4,900 jobs), but the subindustries collectively lost an annual average of 66 jobs since 2006, and decline is projected to continue.
- **General contractor** industries expanded (+75 jobs per year) over the past decade, despite the impact of the recession.

NOTABLE OCCUPATIONAL DYNAMICS

- Employment in the majority of occupations in this sector declined over the past decade.
- A notable exception was **Construction Laborers**, the largest occupation in this sector (1,800 jobs); although it added only 9 jobs per year during the past decade, it was one of few industries not to contract during that time.
- The majority of occupations and nearly 70% of all jobs in this sector are available with less than a Bachelor's degree.
- With significant employment in middle-skill occupations, wages are typically higher than the citywide overall median wage.

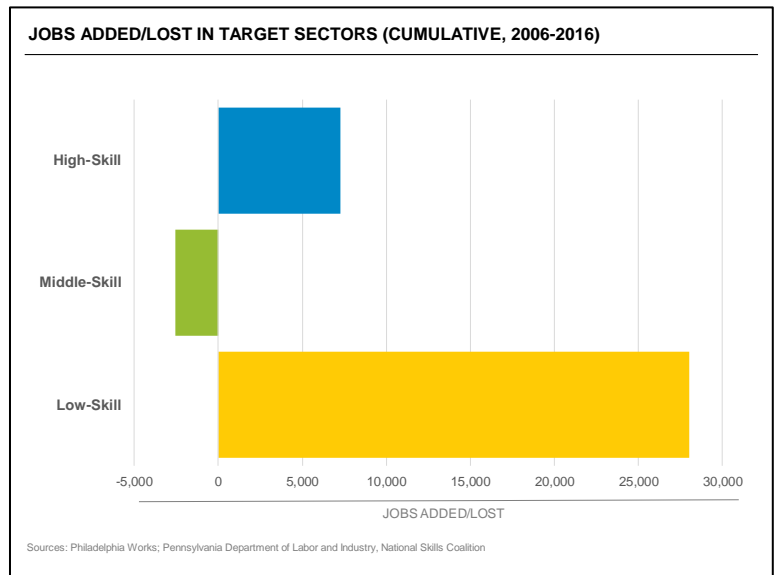
OBSERVATIONS & INSIGHTS

A strong understanding of labor market trends and projections is essential to crafting an effective citywide workforce development strategy. In Philadelphia, the Kenney administration's emphasis on striking a balance in its workforce development strategy between supporting economic growth and expanding equity of opportunity requires an understanding not only of where the local economy is growing, but where growth also supports entry-level and middle-skill jobs that provide on-ramps for workers to progress along career pathways and earn family-sustaining wages over the long term.

At a macro level, reports on the trajectory of middle-skill employment opportunities have demonstrated cause for concern. Studies have shown a long-term decline since the 1970s in the number and share of middle-skill jobs across the United States as technological advancement and globalization have contributed to the general polarization of the workforce around low-skill and high-skill jobs.^{4,5}

Review of labor data suggests that this trend has played out in Philadelphia as well. Job growth within the seven target sectors in the city between 2006 and 2016 was driven entirely by gains in the number of low-skill, low-wage jobs and high-skill positions with extensive educational requirements. The number of middle-skill jobs in these sectors in Philadelphia actually dropped by 2,500 over the past decade. It is worth noting that some of the disparity in growth between low-skill and middle-skill employment during this period may be attributable to differential impacts of the Great Recession. Despite this overall trend, middle-skill jobs have grown modestly in some sectors, and strong overall growth in sectors that rely on middle-skill workers suggests that there will continue to be opportunities for these individuals. However, the landscape of middle-skill employment is quickly evolving as the broader economy continues to transform. This evolution presents both challenges and opportunities from a workforce development perspective, as educational and training requirements change, new occupations emerge, and cross-sector career pathways become increasingly viable.

Following is a discussion of industries and occupations that labor data analysis reveals to be worthy of further examination for their middle-skill potential. This discussion takes into account both growth and overall scale of employment opportunities within industries and occupations, as well as pay, educational requirements, and career pathways opportunities.



LOW-SKILL OCCUPATION ANALYSIS

The scale and growth of employment in several low-skill occupations calls for more detailed analysis of employment opportunities and workforce dynamics for these types of jobs. To provide a preliminary framework for understanding dynamics across low-skill occupations in Philadelphia, the Economy League performed supplemental labor market analysis and conducted several interviews focused on notable occupations with particular scale and growth.

A full presentation and discussion of this supplemental analysis is presented in the appendix on p. 34. While limited in scope, this analysis can serve as one input in illuminating trends and opportunities to consider for future research and workforce development efforts.

⁴ OECD (2017), OECD Employment Outlook 2017 (Summary), OECD Publishing, Paris. <http://dx.doi.org/10.1787/2cbdf59d-en>;

⁵ Holzer, Harry (2015), Job Market Polarization and U.S. Worker Skills: A Tale of Two Middles, The Brookings Institution, Washington, D.C. https://www.brookings.edu/wp-content/uploads/2016/06/polarization_jobs_policy_holzer.pdf

WITH SCALE, GROWTH, AND JOB OPPORTUNITIES ACROSS SKILL LEVELS, THE HEALTHCARE SECTOR PRESENTS A UNIQUE OPPORTUNITY TO SUPPORT GROWTH WITH EQUITY

As the largest sector by employment in Philadelphia, the Healthcare sector presents a range of opportunities across skill levels. Healthcare added the most jobs of the target sectors over the past decade, including net growth of 3,000 middle skill positions.

What is more, Healthcare proved to be a relatively stable sector during the recession. While it is not immune to economic downturns— and is subject to the effects of regulatory uncertainty and changes—healthcare employment is driven more by demographics than cyclical economic conditions. Looking ahead, the growth of the aging population in our region is likely to drive growth in demand. Combined, these factors translate into a relatively stable environment for applying long-term workforce strategies.

While Healthcare has seen growth in middle-skill jobs, the preponderance of job creation in the sector over the past decade was in low-skill, low-paying jobs. The fastest-growing subindustry has been services for the elderly and disabled and the occupations adding the most jobs are personal care aides and home health aides, which together account for 22,000 jobs but pay between \$20,000 and \$22,000 per year.

Although pay is low for these two large and growing occupations, they require little in the way of education or training. And the scale of employment in these occupations provides reason to further explore the investment and infrastructure needed to help individuals in these personal care occupations move into middle-skill jobs throughout the Healthcare sector. Our city and region already benefit from strong Healthcare training infrastructure built around clearly demonstrated career pathways. With employment growth projected to continue, there is opportunity to expand the good work already being done to connect individuals to opportunity both in growing middle-skill jobs as well as low-skill jobs that could serve as on-ramps to career advancement.

SOME SECTORS PRESENT OPPORTUNITIES AT SCALE, BUT FACE LIMITATIONS FOR INTRA-SECTOR CAREER PATHWAYS

The Retail & Hospitality sector and the Business & Financial Services sector employ a significant number of workers and are home to some large and growing low-skill occupations that provide opportunity for many Philadelphians. In Retail & Hospitality, 83% of jobs are low-skill and an even higher share of new job creation in recent years has been concentrated in these low-skill occupations. However, with low-skill jobs accounting for such a high share of sector employment—and a corresponding small share of middle-skill and high-skill jobs within the sector—the prospects for career advancement within the Retail & Hospitality sector are limited. While training can help some individuals advance to managerial positions, the small number of middle-skill jobs in the sector presents some challenges in creating intra-sector career pathways at scale.

A related challenge manifests in the Business & Financial Services sector. During the past decade, the largest absolute job gain was among security guards. Employment in that occupation increased from 3,392 in 2006 to 6,998 in 2016, even as sector-wide employment declined during that span. However, as in Retail & Hospitality, the career pathway for security guards within the Business & Financial Services sector is not entirely clear, and employment has declined in many of the traditional middle-skill jobs in that sector during the past decade.

Still, the sheer scale of job growth in low-skill occupations creates an impetus to consider broader, flexible approaches. Low-skill jobs do not necessarily have to be dead-end jobs. More robust partnerships between workforce development groups, labor unions, and model employers in the city could yield more low-skill jobs with higher pay and benefits, coupled with additional training. Furthermore, career pathways that enable workers to advance from low-skill jobs to middle-skill opportunities do not necessarily have to be confined to a single sector. With supplemental training and education, foundational job experience in hospitality or as a security guard can provide critical skills in communication and problem-solving that employers across sectors seek in employees.

EARLY CHILDHOOD EDUCATION AND TECHNOLOGY SERVICES, WHILE SMALL, ARE FAST-GROWING SECTORS THAT PROVIDE MIDDLE-SKILL OPPORTUNITIES AND BENEFIT FROM CONSIDERABLE SUPPORT AND MOMENTUM.

Early Childhood Education and Technology Services, which combine for nearly 24,000 jobs in Philadelphia, do not provide the same scale of opportunity as Healthcare or Retail & Hospitality, but both are high-growth fields that stand to benefit further from growing attention and support. Both sectors provide opportunities for middle-skill workers—tech supported 4,800 middle-skill jobs in 2016 and early childhood education supported 2,900—and the number of these opportunities is expected to rise as both sectors continue to grow.

What is more, the City's commitment to PHLpreK is likely to result in significantly higher growth and demand for workers in Early Childhood Education than estimated in official projections. And while this will translate into more opportunities for low-skill and middle-skill workers, average pay for childcare workers and preschool teachers is relatively low. Workforce efforts in this sector will need to focus on providing support for these workers to progress along career pathways into jobs that provide family-sustaining wages. As the sector grows, it will be important to better articulate viable career pathways for early childhood workers.

On the other hand, Tech Services is the focus of much activity and research in the city and region, as the sector has been among the fastest-growing in the city and region over the past decade. Tech Services does support a considerable base of middle-skill jobs, but most job creation in the sector over the past decade has been concentrated at the high end of the skill spectrum. As a whole, hiring in tech is often subject to upcredentialing, as many job postings include far more in the way of educational and technical requirements than actually needed to perform the job. To address this, there is opportunity to work with employers and HR professionals to expand recruitment, screening, and hiring practices to allow for the consideration of qualified but non-traditional candidates for middle-skill and high-skill positions. Reducing upcredentialing could help mitigate both the difficulties that tech employers are having filling positions and challenges in connecting more middle-skill workers to well-paying jobs. The City's "City as Model Employer" initiative could be fertile ground for this approach.

TRADITIONAL BLUE-COLLAR SECTORS REMAIN STRONG SOURCES OF MIDDLE-SKILL JOBS, BUT FACE HEADWINDS THAT WILL PRESENT CHALLENGES IN ACHIEVING SCALE

Construction & Infrastructure and Manufacturing & Logistics are the only target sectors that support more middle-skill jobs than low-skill or high-skill jobs, as about 45% of positions in each sector are middle-skill. And average pay in both sectors is well above the citywide average, at \$87,700 for Construction & Infrastructure jobs and \$73,500 for Manufacturing & Logistics jobs.

But while they remain solid sources of well-paying, middle-skill jobs, both sectors have contracted over the past decade. Employment has rebounded in recent years, though the macroeconomic forces of automation and globalization are expected to continue exhibiting downward pressure on sectoral employment. The early effects of automation on manufacturing jobs are already evident and expected to grow, and the full impact on logistics jobs of the growth of autonomous vehicles is not yet fully understood but expected to be significant.

Despite limited projected growth, replacement openings will provide opportunities for new workers to enter the workforce in both sectors. While the Manufacturing & Logistics sector is expected to experience modest job loss through 2024, projections anticipate that the sector could see just over 1,100 replacement openings annually during this period. Nearly half (45%) of these openings are projected to be for middle-skill positions. With a smaller employment base, fewer replacement openings (413 annually) are projected for Construction & Infrastructure. Approximately one-third of these openings are projected to be for middle-skill positions.

Furthermore, these sectors have strong and well-structured training infrastructure that may be well positioned to provide targeted support for individuals to take advantage of replacement openings, even as net job growth in these sectors stagnate or decline. And in considering the broader workforce strategy, the existing training infrastructure in these two traditional middle-skill sectors may well serve as models for other sectors. Apprenticeships, for example, have long been part of the training approach employed for manufacturing and construction jobs, but are still relatively limited in other sectors.

The detailed analysis of labor market data that underpins this report provides a foundation for understanding sector dynamics and workforce opportunities across the city and region. While the analysis reveals high-level employment trends and broad insights into areas of growth within priority sectors, it does not capture the full extent of on-the-ground workforce dynamics in Philadelphia. There are and will continue to be individual examples within these sectors that buck the broad, top-level trends within the sector—whether it a fast-growing manufacturer, a rapidly expanding financial services firm, or a struggling healthcare provider. Ultimately, data analysis is just one of many elements needed to support an informed, effective citywide workforce strategy. Supplemental information and insight from employers, education and training professionals, job seekers, and other key workforce stakeholders will be essential to crafting efficient and effective workforce policy and programming.

APPENDIX: LOW-SKILL OCCUPATION ANALYSIS

Net job growth within the seven target sectors in the city over the past decade was driven predominantly by gains in the number of low-skill jobs. To better understand the occupational dynamics underlying this trend, the Economy League conducted supplemental analysis of notable low-skill occupations in Philadelphia. This supplemental evaluation is based on analysis of occupational labor market data related to wages, total employment, employment growth, projected replacement openings, and potential to connect to career pathways. The Economy League also conducted qualitative analysis for several notable low-skill occupations identified through quantitative analysis—childcare workers, security guards, personal care aides and home health aides. This qualitative analysis took the form of interviews with select local employers focused on critical trends within these occupations and how these occupations connect to career pathways in practice. Insights from these employer interviews are presented at the conclusion of this supplement to provide a glimpse at challenges and opportunities within these occupations.

Quantitative Framework for Assessing Low-Skill Occupations

IDENTIFYING A SUBSET OF LOW-SKILL OCCUPATIONS

The analysis summarized in the preceding report and carried forward here defines low-skill occupations as those that require less than a high school degree; or a high school degree and no work experience and less than a month of on-the-job training. This definition is adapted from a National Skills Coalition methodology and is based on educational requirements, work experience requirements, and on-the-job training requirements information provided by the Bureau of Labor Statistics.

Applying this occupational filter to the City's seven target sectors yields a total of 208 low-skill occupations. To further narrow this set of occupations, the Economy League conducted analysis to identify occupations with scale sufficient for meaningful investigation, as measured by total employment, job growth, or replacement openings.

- 106 of the 208 occupations have fewer than 100 jobs in Philadelphia, and were excluded due to their small size.
- Of the remaining 102 occupations, 63 occupations have between 100 and 999 jobs. In aggregate, total employment in these occupations remained flat between 2006 and 2016, and an average of just 9 replacement openings were projected across these occupations through 2024. Only one occupation added more than 20 jobs per year over the past decade (gaming dealers, which did not exist as an occupation in the city a decade ago) and only four occupations added at least 10 jobs per year. Due to these dynamics, the Economy League excluded these occupations from further analysis.

Applying these filters left a subset of 39 occupations within the target sectors—all low-skill occupations that employ more than 1,000 workers. This subset is small enough to analyze in detail and large enough to include occupations with a wide variety of wage and growth characteristics.

DEVELOPING A LOW-SKILL OCCUPATION MATRIX

To facilitate occupational comparisons, the Economy League developed a summary matrix that highlights key characteristics of the 39 low-skill occupations (see page 36). The matrix sorts occupations by median wage levels and groups them into three subsets:

- “High-wage, low-skill” occupations with a median hourly wage between \$14 and \$19 (11 occupations)
- “Middle-wage, low-skill” occupations with a median hourly wage between \$11 and \$13 (11 occupations)
- “Low-wage, low-skill” occupations with a median hourly wage between \$8 and \$10 (17 occupations)

These wage descriptors are relative—nearly all of these low-skill occupations pay less than the median wage of \$19.61 in Philadelphia—but can help provide some differentiation when considering pay across the subset of low-skill occupations.

The Economy League then evaluated the scale, growth, and replacement needs of occupations within each of these wage groups. The attached matrix presents three columns:

- 2016 employment
- Annual jobs added/lost (2006-2016)
- Projected annual replacement openings (2016-2024)

The 39 occupations vary widely across each of these measures. To simplify analysis and bring clarity to how the occupations compare, the Economy League assigned each occupation values from 1-4 based on the quartile it falls in for each of these measures, and applied a color scale for quick visual comparison of occupations within each measure. The quartiles are divided as follows:

- **2016 Employment**

Quartile 4: Occupations with 8,023 to 15,529 jobs
 Quartile 3: Occupations with 2,459 jobs to 8,022 jobs
 Quartile 2: Occupations with 1,457 to 2,458 jobs
 Quartile 1: Occupations with 1,106 to 1,456 jobs

- **Annual jobs added/lost (2006-2016)**

Quartile 4: Occupations that ADDED between +72 and +626 jobs per year
 Quartile 3: Occupations that ADDED between +16 and +71 jobs per year
 Quartile 2: Occupations that LOST up to -3 jobs or ADDED up to +15 jobs per year
 Quartile 1: Occupations that LOST between -130 jobs and -4 jobs per year

- **Projected annual replacement openings (2016-2024)**

Quartile 4: Occupations projected to have between +143 and +657 replacement openings per year
 Quartile 3: Occupations projected to have between +87 and +142 replacement openings per year
 Quartile 2: Occupations projected to have between +39 and +86 replacement openings per year
 Quartile 1: Occupations projected to have between +16 and +38 replacement openings per year

Finally, the matrix includes a column in which the Economy League highlights notable occupations to further explore career pathways potential. A check mark in this column does not necessarily mean that there is an existing career pathways infrastructure for the given occupation, but instead indicates an initial qualitative assessment by the Economy League—based on scale, growth, projections, and wages—that the occupation warrants further investigation for career pathways potential.

LOW-SKILL OCCUPATION MATRIX

Low-Skill Occupation Matrix - October 2017

Median Hourly Wage Range	Occupation	Predominant Sector	Median Annual Wage	2016 Employment	Annual Jobs Added/Lost (2006-2016)	Projected Annual Replacement Openings (2016-2024)	Explore Career Pathways Potential
"High-wage, low-skill" \$14 - \$19/hour	Industrial Truck and Tractor Operators	Manufacturing & Logistics	\$40,530	1	1	1	
	Interviewers, Except Eligibility and Loan	Business & Financial Services	\$37,560	1	2	1	
	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	Business & Financial Services	\$37,454	3	1	2	
	Customer Service Representatives	Business & Financial Services	\$35,579	4	1	4	✓
	Light Truck or Delivery Services Drivers	Manufacturing & Logistics	\$35,549	2	2	1	✓
	Construction Laborers	Construction & Infrastructure	\$34,591	2	3	2	✓
	Office Clerks, General	Business & Financial Services	\$33,679	4	1	4	
	Reservation and Transportation Ticket Agents and Travel Clerks	Manufacturing & Logistics	\$33,500	1	2	1	
	Shipping, Receiving, and Traffic Clerks	Manufacturing & Logistics	\$33,032	1	1	1	
	Tellers	Business & Financial Services	\$29,705	2	1	2	
"Middle-wage, low-skill" \$11 - \$13/hour	Social and Human Service Assistants	Healthcare	\$29,687	3	3	2	
	Laborers and Freight, Stock, and Material Movers, Hand	Manufacturing & Logistics	\$28,634	4	3	4	✓
	Receptionists and Information Clerks	Healthcare	\$28,525	3	2	3	✓
	Cooks, Institution and Cafeteria	Retail & Hospitality	\$28,401	2	2	2	
	Maids and Housekeeping Cleaners	Retail & Hospitality	\$26,911	3	1	3	
	Bus Drivers, School or Special Client	Manufacturing & Logistics	\$26,790	2	3	1	
	Cooks, Restaurant	Retail & Hospitality	\$26,339	3	4	3	
	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	Retail & Hospitality	\$26,105	3	4	4	
	Counter and Rental Clerks	Retail & Hospitality	\$25,452	1	1	1	
	Taxi Drivers and Chauffeurs	Manufacturing & Logistics	\$23,593	1	3	1	
"Low-wage, low-skill" \$8 - \$10/hour	Security Guards	Business & Financial Services	\$23,315	4	4	3	✓
	Counter Attendants, Cafeteria, Food Concession, and Coffee Shop	Retail & Hospitality	\$23,282	1	2	2	
	Personal Care Aides	Healthcare	\$22,054	4	4	3	✓
	Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	Retail & Hospitality	\$21,863	2	3	3	
	Stock Clerks and Order Fillers	Retail & Hospitality	\$21,610	3	3	4	
	Food Servers, Nonrestaurant	Retail & Hospitality	\$21,347	2	2	2	
	Retail Salespersons	Retail & Hospitality	\$21,217	4	1	4	
	Dishwashers	Retail & Hospitality	\$21,169	2	3	2	
	Childcare Workers	Early Childhood Education	\$21,029	3	4	3	✓
	Ushers, Lobby Attendants, and Ticket Takers	Retail & Hospitality	\$20,747	1	2	2	
"Low-wage, low-skill" \$8 - \$10/hour	Waiters and Waitresses	Retail & Hospitality	\$20,602	4	4	4	
	Food Preparation Workers	Retail & Hospitality	\$20,448	3	3	3	
	Home Health Aides	Healthcare	\$20,325	4	4	4	✓
	Bartenders	Retail & Hospitality	\$20,006	3	4	3	
	Dining Room and Cafeteria Attendants and Bartender Helpers	Retail & Hospitality	\$19,569	2	3	3	
	Cleaners of Vehicles and Equipment	Manufacturing & Logistics	\$19,310	1	2	1	
	Cashiers	Retail & Hospitality	\$19,300	4	4	4	
	Packers and Packers, Hand	Manufacturing & Logistics	\$19,175	1	1	1	
	Combined Food Preparation and Serving Workers, Including Fast Food	Retail & Hospitality	\$18,591	4	4	4	

Quartile	2016 Employment	Annual Jobs Added/Lost	Projected Annual Replacement Openings
4	8,023 to 15,529 jobs	+72 to +626 jobs	+143 to +657 jobs
3	2,459 to 8,022 jobs	+16 to +71 jobs	+87 to +142 jobs
2	1,457 to 2,458 jobs	-3 to +15 jobs	+39 to +86 jobs
1	1,106 to 1,456 jobs	-130 to -4 jobs	+16 to +38 jobs

LEGEND



KEY OBSERVATIONS FROM QUANTITATIVE ANALYSIS

The matrix reveals broad distinctions in size and growth patterns between the “high-wage, low-skill,” “middle-wage, low-skill,” and “low-wage, low-skill” wage groups. Many “high-wage, low-skill” occupations have a small employment base, have grown slowly (or contracted) in recent years, or both. Furthermore, most “high-wage, low-skill” occupations fall in the lower quartiles for projected replacement openings. In contrast, “middle-wage, low-skill” occupations include a higher concentration of large and growing occupations. However, as the color scale makes clear visually on the matrix, the highest concentration of large occupations with the most significant job growth in recent years and projected replacement openings going forward is among “low-wage, low-skill” jobs.

This is an important corollary to the finding from the industry analytics report: not only has an outsize share of job growth in Philadelphia been concentrated in low-skill jobs, but it has largely been concentrated in low-wage, low-skill jobs.

Still, there are select occupations within each group that present some promise from a workforce development perspective. The following discussion presents key characteristics for each wage group and preliminary considerations about potentially promising occupations within those groups.

“High-wage, low-skill” occupations

Wages are close to the citywide median.

With median hourly wages between \$14 and \$19 per hour, annual wages in these occupations range from approximately \$30,000 to \$40,000 per year. Sector representation skews primarily toward Business & Financial Services and Manufacturing & Logistics.

The group is dominated by several small occupations and contracting large occupations.

This group contains the highest number of small occupations among the wage groups—including occupations such as industrial truck and tractor operators, shipping and receiving clerks, and reservation and transportation ticket agents—and these occupations also have had minimal growth and are expected to have few replacement openings. And the larger occupations in this group, such as secretaries, customer service representatives, and office clerks all contracted during the past decade.

Some large occupations are projected to have a notable number of replacement openings.

Customer service representatives and office clerks rank high among low-skill occupations in the number of projected replacement openings. In light of this, and the broad business-related skills developed on the job that could prepare workers for more advanced jobs, these two occupations are worth exploring further. Although smaller, the occupation of construction laborers also presents some promise, as it has experienced some job growth in recent years and because of the existing career pathways infrastructure within the Construction sector.

“Middle-wage, low-skill” occupations

Wages are a step above minimum wage, but well below the citywide median wage.

With median hourly wages between \$11 and \$13 per hour, annual wages in these occupations range from approximately \$23,000 to \$29,000 per year. Most occupations are clustered in Retail & Hospitality and Manufacturing & Logistics, although occupations in Healthcare and Business & Financial Services present workforce development opportunities.

The group contains a mix of large and mid-sized occupations with notable growth and projected replacement openings.

This wage group includes two very large occupations—laborers/freight stock movers and security guards—and both have grown over the past decade and both have among the highest number of projected replacement openings among all low-skill occupations. This wage group also has several mid-sized occupations, such as receptionists, maids and housekeeping cleaners, restaurant cooks, and janitors. The latter two occupations among those mid-sized occupations have added a

significant number of net new jobs during the past decade and are projected to see a significant number of replacement openings going forward.

Several occupations—most notably security guards—present workforce development opportunities at scale.

With the scale of employment, notable growth and high projections of replacement openings, laborers and freight movers is one low-skill occupation to explore further for career pathways potential, particularly with the existing training infrastructure in the Manufacturing & Logistics sector (although the effects of automation will likely serve as a headwind for this occupation going forward.) And despite smaller size and slower growth, receptionist jobs—largely concentrated in the Healthcare sector—could serve as stepping stones to other administrative positions not just in Healthcare, but across sectors.

The most notable scale and growth in this group is the occupation of security guards. Although the career pathways for workers in this industry is not obvious at first glance, the connection to the broader Business & Financial Services sector could present some opportunities for developing career pathways and is worth further discussion with workforce experts and employers.

“Low-wage, low-skill” occupations

Wages are at or near minimum wage.

With median hourly wages between \$8 and \$10 per hour, annual wages in these occupations range from approximately \$18,000 to \$22,000 per year. Retail & Hospitality occupations account for the bulk of occupations in this wage-group, although there are key occupations in the Healthcare and Early Childhood Education sectors.

The group has several of the largest and fastest-growing occupations in the city.

This wage group has several occupations with very large employment bases, such as retail salespersons, waiters and waitresses, combined food preparation and serving workers, and the Healthcare occupations of personal care aides and home health aides. Many of these also experienced the most significant job growth among low-skill occupations during the past decade and have high projections of replacement openings going forward. There are also several mid-sized occupations, such as childcare workers and bartenders, which have grown rapidly in recent years.

Career pathways potential among these occupations is mixed, but worth further exploration because of scale and growth.

While many of these occupations have grown significantly and are a substantial source of replacement openings in the economy, low compensation is an obvious drawback for all of them – but there are some occupations that present opportunities. With the City’s focus on Early Childhood Education, further resource investment could help childcare workers advance within that sector. Other occupations such as personal care aides and home health aides could serve as a gateway to more advanced positions in the large and growing Healthcare sector. These occupations may not have strong existing connections to formal career pathways, but given their scale and the level of growth within the Healthcare sector, it would be prudent to explore ways to help workers in these occupations advance.

For many occupations in this wage group—particularly in Retail & Hospitality—the potential for career pathways at scale is not as clear as in other low-skill occupations. As discussed in the industry analytics report, there may be promise in exploring potential cross-sector pathways that build on the customer service skills and other business-essential skills developed in Retail & Hospitality jobs to position workers for opportunities in more advanced positions within other sectors. The scale of these occupations and the fact they have been a significant source of job growth in the local economy calls for attention to how to help these workers secure family-sustaining wages and stable employment—whether through workforce development efforts or other policy interventions such as the minimum wage and collective bargaining.

Employer Insights into Select Occupations

Several occupations highlighted in the quantitative analysis present opportunities for further exploration. Through a limited set of interviews, the Economy League gathered employer insights about a few notable occupations: childcare workers, security guards, personal care aides and home health aides. These occupations each employ a significant number of people, have grown rapidly during the past decade, and are projected to continue to grow quickly. Furthermore, they provide an opportunity to examine dynamics across diverse sectors in Early Childhood Education, Business & Financial Services, and Healthcare.

Given the limited scope of this supplemental analysis, the themes addressed here are superficial in nature. Time constraints allowed for just one interview for each occupation, and each interview was conducted with a large employer within each occupation to intentionally inject an employer perspective into this analysis. As a result, the discussion should be viewed simply as a sample of trends, challenges and opportunities within these occupations, providing initial insights into topics for further exploration.

CHILDCARE WORKERS

Recruitment and retention of childcare workers is a challenge and a top-of-mind issue.

With annual turnover that can reach 40% for pre-school occupations, recruitment and retention of workers is a significant and persistent challenge for early childhood education employers. The recruitment challenge has become so great that the employer interviewed for this analysis recently created a new human resources position dedicated focused entirely on the issue, to the exclusion of any other human resources functions.

Unlike in other industries, where firms may be able to survive periods with lean staffing, the hyper-focused attention on recruitment in early childhood education is tied to the “ratio-driven” nature of the industry, as customer demand and funding are directly impacted by staffing levels. Stringent minimum requirements for candidates imposed by many multi-site operators of early learning centers can make meeting the desired ratios difficult. Entry-level teacher aide positions require a high school diploma or GED, along with a child development associate (CDA) certificate, and at least one year of experience. However, these entry-level requirements do not permit such workers to watch students alone. As a result, most new hires are assistant teachers, an occupation that provides employers more staffing flexibility but requires individuals to have at least two years of experience in addition to the educational requirements described above.

Workers are extremely sensitive to wage differentials.

Contributing to recruitment and turnover challenges is the sensitivity of childcare workers to small wage differentials. Because of the low pay for childcare workers throughout the industry, the employer interviewed noted that workers will often leave a position for a 50-cent wage increase from another employer. These decisions are not always made with full consideration of the range of benefits and the stability of full-time hours that larger, more sophisticated early learning employers can provide and which may not be as prevalent at smaller, single-site operators.

There are a growing number of career advancement opportunities within ECE, but funding remains a key constraint

Low wages (childcare workers in Philadelphia earn a median wage of \$21,000 per year) and advancement opportunities that offer only modest compensation increases (pre-school teachers earn a median wage of \$28,000 per year) have made it challenging to create sustainable career pathways within early childhood education. The emergence of funding through programs like Pre-K Counts, however, has helped create new advancement opportunities for pre-school teachers within the early childhood education sector. These positions require a bachelor’s degree (compared with an associate degree required for the typical lead teacher) and pay \$35,000–\$45,000 annually. These higher-paying pre-school teaching roles help expand potential career pathways within early learning, but advancement opportunities for early learning workers are more plentiful in elementary education. The transition into elementary education is not seamless, however, as there are significant differences in skills and competencies needed for these two areas of education. And some early learning professionals hesitate to advocate for

worker advancement into elementary education positions, as this pathway can create workforce gaps for early learning providers when talented employees move on to other opportunities.

Employers have a role to play in promoting career advancement through in-house support and apprenticeship programs.

In contrast to most of their smaller, more constrained counterparts, some large early childhood education employers have the ability to support employee training and advancement. The employer interviewed for this analysis pointed to a comprehensive orientation curriculum for new hires, a commitment to promoting from within, as well as an informal process to work with employees who express interest in further educational opportunities. The employer is also exploring developing a mentor program to provide more formal support systems for assistant teachers.

A formalized process to help assistant teachers advance to lead pre-school teacher positions is underway via a new apprentice program involving District 1199C Training & Upgrading Fund and Community College of Philadelphia (CCP). Current assistant teachers with a Child Development Associate credential (CDA) go through the normal application process at CCP, and can use work experience to satisfy credits and obtain an associate degree more quickly. These students receive more targeted supports than they might if pursuing the degree on their own, with supports such as mentors and study groups organized by 1199C. Participating students are guaranteed incremental pay increases throughout the program, while the employer ultimately gets a more seasoned employee who may be more likely to remain with the organization.

SECURITY GUARDS

Security guards serve various roles in many sectors.

With a significant number of jobs in the Business & Financial Services sector, security guards are a mainstay in Center City high-rises. Beyond this sector concentration, security firms serve clients across a range of sectors, such as retail, healthcare, hospitality, chemical/pharmaceuticals, and government services. And while government services clients often require a different cadre of security guard professionals—individuals with public safety and arms training—needs for clients in other sectors predominately require “friendly” customer service skills. The similar nature of these security guard positions outside of government services allows for relatively seamless transitions of employees across sectors, creating a broad web of intra-company advancement opportunities.

Unique job requirements—including background checks, drug tests, and odd hours—result in recruitment challenges for employers.

At the large employer interviewed for this analysis, minimum requirements for entry-level security guard positions are fairly straightforward: a high school diploma or GED, as well as at least one prior job experience. Because of the sensitive nature of these positions, entry requirements also include a drug test and criminal background check, which was reported to be a notable barrier in recruitment. New hires, however, can expect full-time benefits, and average wage of around \$10.50, and, in many cases, full-time hours.

The 24/7 nature of the industry—with odd hours and overnight shifts common for entry level workers—can be a deterrent to potential candidates. It can also be a driver of turnover for new hires. And while the relatively high pay offered by security firms was once a key selling point for the occupation, increased wage competition from retail and service industry employers offering higher minimum wages is diminishing this positive wage differential.

Firms also face some common workforce challenges. It can be difficult to find candidates with the written communication skills needed to produce security reports that are sent to the client – a common responsibility for many security guard jobs. Furthermore, technological advances and the digital literacy gap creates challenges for security firms, as employees are expected to have the basic skills needed to learn and use new security systems software.

There are career advancement opportunities internally with security firms, but cross-sector career pathways seem limited in practice.

The large scale of several security firms generates opportunities for employees to advance internally, and some employers make this an explicit goal. The employer interviewed for this analysis stressed a commitment to promoting from within, reporting that

new hires can be promoted as quickly as six months into the job. And while the firm will hire externally if candidates have the right education or experience, internal promotion does not necessarily require further education beyond the company's internal training resources.

On-the-job training at large security firms can include a wide range of supports. Initial employee orientation provides training in customer relations skills, safety practices, and report writing. Recognizing the deficiency in writing skills in the candidate pool, the employer interviewed for this analysis developed an intensive writing and grammar course for new hires. Additional on-the-job training varies depending on the client, and can involve significant technology training. Employees have access to a comprehensive learning management system, with 500 courses to support employee development across a range of competencies. And as employees progress to a new role in the firm, such as site supervisor, there are tailored training "academies" for each role.

Rapid promotion potential in urban markets like Philadelphia is a function of the both the broad range of sectors and clients and a relatively high turnover rate. Firms can review employee perks and highlight success stories of individuals who have forged a career path at the firm, but turnover remains a key challenge for jobs at this wage level. The primary career pathway for individuals moving on from a security firm is into law enforcement; the opportunities for other cross-sector career pathways appear limited in practice.

PERSONAL CARE AIDES AND HOME HEALTH AIDES

Large employers are positioned to offer competitive compensation, but can face common recruitment barriers.

The employer interviewed for this analysis reported that, as with many other low-skill occupations, candidates must have a high school diploma or GED and must pass a criminal background check. Entry-level aides earn about \$10.50 per hour on average, while individuals with certified nurse aide (CNA) certification can start out near \$12 per hour or higher. And large employers like the one interviewed offer opportunities for full-time work with overtime pay and medical benefits.

However, overtime pay and benefits are not necessarily the industry standard. The home health care industry is more fragmented than most industries, with employment spread across many establishments. This broad distribution of jobs means that there is wide variation in the level of benefits that employers offer to their employees and makes it challenging to implement effective workforce solutions targeted to these occupations.

Large employers are able to provide comprehensive compensation packages, but other barriers for prospective employees—such as childcare and transportation—present challenges. Transportation challenges can be particularly acute as employees are required to travel to client homes, meaning travel often varies by day.

What is more, the variable nature of client needs can make for irregular scheduling demands. As such, employers place a premium on workers who are open to flexible schedules and emergency shifts. Providers adopt different approaches to managing this dynamic. The employer interviewed for this analysis maintains a small group of on-call "floaters" who are paid a higher wage and get paid whether they are called or not. However, the demands of unpredictable scheduling—such as the impact on employees' own childcare needs—can both limit the pool of potential workers and can cause high turnover within this group of employees.

The composition of the home health workforce is unique.

Home health organizations maintain a pool of aides from which consumers (patients) can select, but consumers can also choose to have a friend or family member provide care. This is a unique option not found in most industries, and means that the data on new jobs and replacement openings likely overestimate the true number of job opportunities for new workers who do not personally have a friend or family member that needs care. Still, there are not nearly enough friends and family members to meet the full demand of home health care needs, and employers require a sizable pool of career professionals.

Structured training opportunities are growing but are still limited in scale.

For entry-level aides, the most concrete opportunity to advance within the healthcare industry is to obtain a certified nurse aide (CNA) certificate. CNA-certified individuals can work in more advanced roles within home health care or use the certification to work in inpatient settings, which often means higher pay.

An entry-level aide can pursue additional training to become a certified nurse aide on his or her own time, but apprenticeship programs provide more structured, streamlined opportunities for individuals to advance. The employer interviewed for this analysis recently partnered with District 1199C Training & Upgrading Fund to provide employees working 30 hours or more per week with the opportunity to participate in the apprenticeship program, continuing to work while they attend classroom training. As a new program, the first cohort was small—with four employees—but is expected to grow to about 15 employees for future cohorts.

New regulatory frameworks for care delivery could drive increased demand for home health services.

The upcoming implementation of the Commonwealth's new managed care system—Community Health Choices—is likely to drive increased demand for home health care services in southeastern Pennsylvania. This new managed care system covers adults dually eligible for Medicaid and Medicare and is designed to promote home care rather than care at facilities as a way to both improve quality of life and cut costs. The employer interviewed expects this new system to result in increased demand for home health workers. However, tight margins are likely to remain a constraint for home health organizations, limiting their ability to pay higher wages commensurate with importance of these jobs.