CONNECTING TO PROMISING CAREERS

Middle-Skill Jobs in the Lower Hudson Valley

A Collaboration of Education, Business, and Government

Sponsored by

NEW SKILLS AT WORK
JPMorgan Chase & Co.
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Connecting to Promising Careers: Middle-Skill Jobs in the Lower Hudson Valley is the product of a committed group of collaborators dedicated to supporting a strong workforce and a vibrant regional economy. Westchester Community College deeply appreciates the work of all of its partners in producing this report. We thank JPMorgan Chase & Co. for their generous support and, in particular, Michael Haberman, for having included our region in the New Skills at Work (NSAW) initiative that has provided funding to cities and regions across the globe to identify careers in high demand, middle-skill occupations, and the educational programs required to support them.

The New York City Labor Market Information Service (NYCLMIS) served as our expert research and report development team. Our deep appreciation to Lesley Hirsch, Ronnie Kauder, and Pamela Hoberman for joining us as engaged partners on this project.

We would like to express our appreciation to our Lower Hudson Valley Stakeholder Collaborative—representatives from education, business, and government. The success of this report relies on the insights and feedback that they have shared throughout the research and writing process. The names of their organizations appear below:

1199SEIU Training and Upgrading Fund  •  Business Council of Westchester  •  Dutchess Community College  •  Hudson Valley Economic Development Corporation  •  New York State Department of Labor  •  Putnam Workforce Partnership  •  Putnam County Economic Development Corporation  •  Putnam Northern Westchester BOCES  •  Rockland BOCES  •  Rockland Community College  •  Southern Westchester BOCES  •  SUNY Westchester Educational Opportunity Center-WCC  •  Westchester County Association  •  Westchester County Office of Economic Development  •  Westchester/Putnam Workforce Development Board  •  White Plains Education and Training Center  •  Workforce Development Board of Rockland County  •  City of Yonkers Office of Workforce Development

The Division of Workforce Development and Community Education at Westchester Community College is proud to have led this initiative. With our partners, we stand poised to use key findings and recommendations from this report as the foundation for future collaboration in support of preparing our workforce for middle-skill career opportunities.

At JPMorgan Chase, we believe we have a fundamental responsibility to help our clients and our communities navigate a complex global economy and address their economic and social challenges. We use our strength, global reach, expertise, relationships, and access to capital to make a positive impact in cities around the world. JPMorgan Chase and its Foundation focus on helping address major economic and social challenges by driving more inclusive economic growth. We are making long-term commitments to workforce readiness, growing small businesses, improving consumer financial health and supporting strong urban economies, because these efforts are good for our communities and for our company.

In 2015, the firm and its Foundation gave more than $200 million to thousands of nonprofit organizations across 47 U.S. states, the District of Columbia, and 43 countries. More than 47,000 employees provided 310,000 hours of volunteer service in local communities around the globe.

Westchester Community College serves as the largest provider of post-secondary training and education in the three county Lower Hudson Valley region. Our mission is to provide accessible, high quality and affordable education to meet the needs of our diverse community. We are committed to student success, academic excellence, workforce development economic development and lifelong learning.

The New York City Labor Market Information Service (NYCLMIS) at the City University of New York Graduate Center is the go-to resource for action-oriented intelligence about the labor market. We provide timely and accurate information about the labor market to help educators, workforce professionals, economic development organizations, and philanthropies make data-driven decisions that will help their students, customers, and constituencies. We are dedicated to academic-quality rigor, close collaboration with our clients, advancing the skills of the workforce, and contributing to a healthy economy.
At JPMorgan Chase & Co., promoting economic inclusion and opportunity is one of our top priorities. However, every day we hear from our business clients—firms of all sizes, in every sector of the economy across the globe—about the challenges they face finding workers with the right skills for a range of jobs.

In particular, they are struggling to fill middle-skill jobs—jobs that require a high school diploma and some postsecondary education and training, but not a bachelor’s degree. In the U.S., these technical jobs in fields such as healthcare, technology, construction and manufacturing make up close to half the jobs in the economy.

Middle-skill jobs pay wages that make families economically self-sufficient and are the entry point for career pathways in growing economic sectors. As one of the world’s largest financial services firms, we believe that our understanding of this challenge, our philanthropic resources and our ability to connect stakeholders can contribute to solutions that will boost business productivity and create opportunities for job seekers. To help address this issue we launched New Skills at Work, a $250 million, five-year global initiative to help shape the roadmap for a future in which economic opportunity would be more widely shared.

Our strategy is grounded in the recognition that building the bridge between jobs and training starts with data. We have released skills gap research in markets across the country, and supported partners to do their own local research, like this report that details labor market data across the Hudson Valley. With a clearer picture of the jobs employers are struggling to fill, we can focus on solutions.

Because we operate in more than 60 countries around the world, we’re taking a global approach, developing workforce partnerships in countries that share some core characteristics. We also are working with employers in industry sectors to ensure that they communicate what skills they need. We are partnering with education and training providers to design programs that teach these skills and prepare students for the workplace. Finally, we are building connections between demand and supply to ensure that job seekers can see what middle-skill jobs are in demand and know where they can go to get the skills these jobs require.

Closing the skills gap will benefit everyone, and so we are excited to partner with local leaders, educators, and nonprofits to help address this crucial issue.

Michael Haberman
Northeast Region Executive
JPMorgan Chase Global Philanthropy

JPMorgan Chase & Co.
Middle-skill jobs—those jobs requiring more than a high school diploma but less than a bachelor’s degree—will account for almost half of all the job openings in New York State between now and 2022. Preparing individuals with the education, training, and workplace competencies necessary to ensure a qualified pipeline of employees to fill these middle-skill positions is part of the community college mission. Westchester Community College is pleased to lead a collaborative group of regional stakeholders in the New Skills at Work in the Lower Hudson Valley initiative.

Responding to the workforce needs of regional employers and supporting a diverse labor force in skills training and general education requires a network of interested and committed partners. The success of our initiative lies in the collective impact of regional workforce agencies, business associations, employers, and educational institutions. Working in collaboration with New York City Labor Market Information Service at the CUNY Graduate Center, our research partner, these stakeholders informed the research that serves as the backbone of our report.

Together we are poised to identify in-demand employment skills, develop focused training and education programs, and award credentials that are aligned with employer needs. The goal of this collective effort is to ensure a sustainable pipeline of employees for business partners, appropriate jobs for the diverse residents of our counties, and fuel for the economy of the Lower Hudson Valley.

We acknowledge and thank JPMorgan Chase & Co. for its vision and the funding that it has provided for this report for cities and regions to create alignment between regional training programs and in-demand occupational clusters. A special thank you to all of our education and workforce partners for their commitment to this project. The New Skills initiative has brought focus to our regional discussions and a springboard for on-going, collaborative work in the future.

I am confident that the report findings and the collaborative framework developed during this project will contribute to the economic development of the Lower Hudson Valley. We look forward to the outcomes of this work and to sustaining these efforts.

Dr. Belinda S. Miles
President
Westchester Community College
About New Skills at Work
In 2015, JPMorgan Chase & Co. awarded a grant under its New Skills at Work global initiative to Westchester Community College to form an advisory group and undertake demand-driven research and collaborative planning for the Lower Hudson Valley region. The ultimate goal of this process is to better connect residents to promising middle-skill opportunities and contribute to the economic vitality of the region.

Why middle-skill jobs?
Middle-skill jobs typically require more than a high school diploma but less than a bachelor’s degree. Good middle-skill jobs are a gateway that can lead people out of lower paying jobs into fields with better pay and prospects.

In order to access these jobs, people need education and training that is truly aligned with what employers say they need, now and in the future. Jobs that might once have required a high school education are becoming more sophisticated and now require higher-level skills, including communication and customer service, presentation, analytic, and computer skills. In practically every field, these higher-level skills and at least an associate degree are essential to advancing into management positions.

Why the Lower Hudson Valley?
The Lower Hudson Valley, comprised of Westchester, Rockland, and Putnam counties, has 1.4 million residents and a robust, diversified economy with more than half a million jobs. It feeds and is fed by the economies of New York City, Connecticut, New Jersey, and the Hudson Valley. It has a diverse population with tremendous capacity and potential.

Nonetheless, more can be done to leverage the talents of all segments of the population to make the economy function even better. The population is aging. One in five residents is bilingual, including most of the Hispanic and Asian populations. Still, some Hispanic and Asian residents do not speak English fluently. Sensitivity to cultural diversity and multilingualism are key ingredients in providing good service and care in many industries that are central to the regional economy.

Why now?
In order for the Lower Hudson Valley to continue to thrive, local employers must be able to rely on talent drawn from the workforce in the region. The education and workforce community must work collaboratively with industry to align the skills of the workforce with the needs of the workplace. Residents will directly benefit from increased earnings and better career potential, regional businesses will be able to find qualified candidates more easily, and the Lower Hudson Valley as a whole will experience greater economic participation and prosperity.

The stakeholder group convened for this initiative exhibited a high level of engagement and a spirit of cooperation to coordinate programs in a way that supports both students and employers. The stakeholders are well positioned to increase the capabilities of the workforce in keeping with the future demands of local employers and industries.

Promising middle-skill fields
New Skills at Work in the Lower Hudson Valley involved an extensive research process that included analysis of past, present, and projected occupational and industry demand; review of existing educational and workforce programming; and exploration of employers’ current hiring practices and challenges. In the end, three middle-skill occupational areas were selected for additional study: Health Information Management, Tech Support, and Hospitality Management. These fields include jobs that pay well, are in-demand and are projected to continue to grow, have opportunities for career advancement over time, and may not have an adequate supply of qualified candidates.

See Appendix A for a detailed description of the research methodology.
Health Information Management

Accounting for nearly one in seven jobs,\(^2\) health care is the largest economic sector in the Lower Hudson Valley. With an aging population and structural changes in health care delivery, this sector will continue to grow. As health care providers increasingly rely on electronic health records and related information systems, and as New York State and the federal government expand reporting requirements, demand for health information management personnel is also expected to increase.

There is work to be done to better align programs with the contours of employer demand. To help students and job seekers qualify for these jobs, stakeholders should:

- **Recognize that medical billing and coding are becoming distinct functions and jobs within health care.** Course offerings and programs should reflect this distinction.

- **Wherever possible, offer courses that lead to the certifications and credentials with known value to the industry.** Industry-preferred credentials, such as those offered by AHIMA and AAPC,\(^3\) are essential to landing entry-level work as a coder and helping workers compete for higher-level jobs in health information management.

- **Help students get hands-on experience.** Practical experience is highly marketable, but difficult to achieve in the classroom. Efforts must be made to find vehicles for this type of experience.

- **Consider offering an associate degree program accredited by CAHIIM\(^4\) that leads to AHIMA’s highly marketable Registered Health Information Technician (RHIT) credential.** Apart from an online program offered by a private university, there are no associate degree programs accredited by CAHIIM leading to the RHIT credential in the Lower Hudson Valley.

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**HEALTH INFORMATION MANAGEMENT CAREER PATHS**

<table>
<thead>
<tr>
<th>Position</th>
<th>Salary</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRG Validator</td>
<td>$65K</td>
<td>bachelor's preferred + 2–4 years more experience</td>
</tr>
<tr>
<td>Coding Supervisor</td>
<td>$57K</td>
<td>bachelor's preferred + 1–2 years more experience</td>
</tr>
<tr>
<td>Inpatient Coder</td>
<td>$40K</td>
<td>associate/RHIT preferred + 1–2 years more experience</td>
</tr>
<tr>
<td>Outpatient/Emergency Department Coder</td>
<td>$40K</td>
<td>associate/RHIT preferred + CCA or CPC</td>
</tr>
<tr>
<td>Patient Registrar</td>
<td>$34K</td>
<td>associate/RHIT preferred + 1–2 years more experience</td>
</tr>
<tr>
<td>HIM Clerk</td>
<td>$35K</td>
<td>associate/RHIT preferred + more experience</td>
</tr>
<tr>
<td>HIM Manager</td>
<td>$51K</td>
<td>bachelor's/RHIA preferred + 2–3 years more experience</td>
</tr>
<tr>
<td>HIM Supervisor</td>
<td>$50K</td>
<td>+ 1–2 years more experience</td>
</tr>
<tr>
<td>Manager of Specialized Cancer Programs</td>
<td>$65K</td>
<td>+ associate + CTR</td>
</tr>
<tr>
<td>Medical Records Analyst</td>
<td>$42K</td>
<td>associate/RHIT preferred + 1–2 years more experience</td>
</tr>
<tr>
<td>Cancer Registrar</td>
<td>$48K</td>
<td>+ associate + CTR</td>
</tr>
<tr>
<td>Birth Registrar</td>
<td>$32K</td>
<td>+ 1–2 years more experience</td>
</tr>
<tr>
<td>Medical Secretary</td>
<td>$31K</td>
<td>+ 1–2 years more experience</td>
</tr>
</tbody>
</table>

**CAREERS IN CODING**

- Patient Registrar
- HIM Clerk
- Medical Records Analyst
- Cancer Registrar
- Birth Registrar
- Medical Secretary

**CAREERS IN HIM OPERATIONS OR MANAGING MEDICAL RECORDS**

- Coding Supervisor
- HIM Manager
- HIM Supervisor
- Manager of Specialized Cancer Programs
- Cancer Registrar
- Birth Registrar

**IN A HOSPITAL (PATHS 1 & 2)**

- DRG Validator
- Coding Supervisor
- Inpatient Coder
- Outpatient/Emergency Department Coder
- Patient Registrar
- HIM Clerk

**OUTPATIENT/LONG-TERM CARE**

- DRG Validator
- Coding Supervisor
- Inpatient Coder
- Outpatient/Emergency Department Coder
- Patient Registrar

Pay figures reflect median wages, which were supplied by Payscale.com and represent self-reported earnings in Westchester County, New York.

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\(^2\) New York State Department of Labor Quarterly Census of Employment and Wages, 2014.

\(^3\) AHIMA is the American Health Information Management Association. AAPC is American Academy of Professional Coders.

\(^4\) CAHIIM is the Commission on Accreditation for Health Informatics and Information Management Education.
Tech Support jobs were selected for attention because they pay well, are projected to increase and typically require a middle-skill level of education. These jobs demand a combination of technical and interpersonal skills that employers are having difficulty finding. Plus, with more education and experience, tech support workers can pursue promising career pathways in several technology disciplines.

To help students and job seekers qualify for these jobs, stakeholders should:

- Offer programs that lead to an industry-recognized technical certification, such as the vendor-neutral CompTIA A+ or Network + certification, both of which give candidates an advantage in securing employment. Some of the programs being offered did not lead to any certifications or credentials.

- Include hands-on experience in their courses. All employers look for people with more than “textbook” knowledge. Students should have practice actually troubleshooting hardware and software issues.

- Find a way to teach more than the technical skills, and give students practice working with computer users to resolve their computer issues. Getting a job, keeping it, and advancing into a career often hinge on good communication and interpersonal skills.

- Incorporate the fundamental principles of computing into entry-level courses to help prepare students for career advancement beyond tech support.

- Encourage people in entry-level tech support jobs to continue their education for an associate, and then a bachelor’s degree, both of which will enhance their career prospects.

Pay figures reflect median wages, which were supplied by Payscale.com and represent self-reported earnings in Westchester County, New York.
Hospitality Management

The leisure and hospitality sector is a substantial and growing part of the Lower Hudson Valley economy. Over the last 10 years, this sector grew at a faster rate and added more jobs than any other part of the regional economy. Within the last four years, job growth has been especially robust. Looking forward, this momentum is expected to continue.

People who work in this field provide a range of services to customers and guests. With more education and experience, middle-skill jobs offer pathways into management and other higher-skilled positions. Many hospitality businesses actively invest in their employees and promote from within.

To help students and job seekers qualify for these jobs, stakeholders should:

- **Consider broadening culinary and food service administration programs to cover the larger hospitality field**, which would position students for management work in all types of hospitality businesses, such as restaurants, full and limited service hotels, country clubs, casinos, fitness centers, and amusement areas.

- **Focus on developing customer service and teamwork skills as well as the more technical business skills**, such as accounting, business planning, and sales.

- **Include an internship or experiential learning component** to any hospitality program. This will give students the work experience that employers prefer.

- **Seek opportunities to partner with employers or industry associations to upgrade their current workforces.** Hospitality employers are selective and many want to promote from within. In order to qualify for these opportunities, their employees may need to first develop additional skills or receive more education.

### HOSPITALITY MANAGEMENT CAREER PATHS

<table>
<thead>
<tr>
<th>Position</th>
<th>Salary</th>
<th>Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executive Chef</td>
<td>$51K</td>
<td>+ 2-3 more years experience</td>
</tr>
<tr>
<td>Executive Sous Chef</td>
<td>$44K</td>
<td>+ 1-2 more years experience</td>
</tr>
<tr>
<td>Sous Chef</td>
<td>$41K</td>
<td>+ associate, + 1-2 more years experience</td>
</tr>
<tr>
<td>Cook</td>
<td>$26K</td>
<td></td>
</tr>
<tr>
<td>Server</td>
<td>$19K</td>
<td></td>
</tr>
<tr>
<td>Guest Service Agent</td>
<td>$28K</td>
<td></td>
</tr>
<tr>
<td>Maintenance Technician</td>
<td>$35K</td>
<td></td>
</tr>
<tr>
<td>Hotel Operations Director</td>
<td>$71K</td>
<td>+ bachelor’s, + 1-2 more years experience</td>
</tr>
<tr>
<td>Hotel Operations Manager</td>
<td>$47K</td>
<td>+ associate, + 2-4 more years experience</td>
</tr>
<tr>
<td>Front Office Manager</td>
<td>$37K</td>
<td>+ associate, + 3-6 more years experience</td>
</tr>
<tr>
<td>Hotel Engineering Manager</td>
<td>$49K</td>
<td>+ license, + 2-3 more years experience</td>
</tr>
<tr>
<td>Executive Sous Chef</td>
<td>$45K</td>
<td>+ associate, + 2-4 more years experience</td>
</tr>
<tr>
<td>Assistant Restaurant Mgr</td>
<td>$38K</td>
<td>+ some college, + 2-4 more years experience</td>
</tr>
<tr>
<td>Restaurant Manager</td>
<td>$38K</td>
<td>+ associate, + 2-4 more years experience</td>
</tr>
<tr>
<td>Director of Hotel Engineering</td>
<td>$51K</td>
<td>+ 3-4 more years experience</td>
</tr>
<tr>
<td>Cook</td>
<td>$26K</td>
<td></td>
</tr>
<tr>
<td>Server</td>
<td>$19K</td>
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<tr>
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<td>Maintenance Technician</td>
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<tr>
<td>Hotel Operations Manager</td>
<td>$47K</td>
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<tr>
<td>Front Office Manager</td>
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<td>+ associate, + 3-6 more years experience</td>
</tr>
<tr>
<td>Hotel Engineering Manager</td>
<td>$49K</td>
<td>+ license, + 2-3 more years experience</td>
</tr>
</tbody>
</table>

Pay figures reflect median wages, as reported by New York State Department of Labor for the Hudson Valley, where available. Otherwise, the data was supplied by Payscale.com and represents self-reported earnings in Westchester County, New York.
General recommendations and next steps
The stage is set for the partners and stakeholders to continue the important work initiated with this New Skills at Work project. Stakeholders should:

- **Keep abreast of industry trends and practices in all of the occupations and industries for which students and job seekers are being prepared.** There are tremendous benefits to keeping current with emerging business trends and employer practices. This information should be used to keep course and program offerings up to date and aligned with industry needs and standards.

- **Create or take advantage of industry-education partnerships especially in health care, IT, and hospitality.** A closer relationship with employers and industry organizations can lead to more work-based learning opportunities, internships, and other types of support from the business community.

- **Coordinate educational offerings regionally to avoid overcapacity in some areas and under-capacity in others, and improve the articulation from one level of training and education to the next.**

- **Prepare bilingual staff for service industries.** In industries such as health care and hospitality, there is a growing need for bilingual staff. As the Lower Hudson Valley resident population continues to diversify, the workforce must be able to understand and meet patient and customer needs.

- **Infuse interpersonal skills into offerings across disciplines.** Across all industries, employers mentioned the importance of good interpersonal skills, which are valued for almost every job. Good interpersonal skills also include cultural sensitivity. Teaching these skills could take the form of contextualized learning, simulated work environments, practice in real work situations, or other approaches.

- **Be creative in engaging students to continue their education, even after they start working.** This involves thoughtful strategies for outreach, especially to those that may be underrepresented in higher education. Additional career planning and counseling is needed, as is a greater emphasis on contextualized and experiential learning that will prepare students for the workplaces they would like to enter or progress in.

The findings in this report underscore the fact that more education yields better employment and career prospects. Increasingly, a bachelor’s degree is becoming the standard for advancement across the labor market. Educators and workforce practitioners at all levels should make it convenient for working adults to continue their education and they should use instructional techniques and practices that energize students.

- **Maintain the stakeholder group** convened for this initiative.

New Skills at Work in the Lower Hudson Valley not only provides a blueprint for strengthening middle-skill opportunities in selected occupations, but it also offers a platform for continued collaboration among education, business, and government representatives who have shared interests in strengthening regional employment pipelines.
New Skills at Work is a five-year $250 million global initiative by JPMorgan Chase & Co. to help areas build demand-driven workforce systems that prepare youth and adults for careers in high-demand, middle-skill occupations. Middle-skill jobs require more than a high school diploma but less than a bachelor’s degree. Demand-driven education and workforce development systems enable local residents to develop the skills employers need and make it easier for employers to find qualified candidates. In 2015, JPMorgan Chase & Co. awarded a grant to Westchester Community College to form a stakeholder group and undertake research and collaborative planning for the Lower Hudson Valley region of New York State.

Geography
New York’s Lower Hudson Valley includes Westchester, Rockland and Putnam counties and covers more than 800 square miles. The region is located directly north of New York City, and the Hudson River runs through it. With Rockland County to the west of the Hudson River and Westchester and Putnam counties to the east, the two sides are connected by the Tappan Zee Bridge.

The region has multiple faces: cities that have and have not been revitalized, wealthy and middle-income suburbs, and the corporate I-287 corridor. Recent economic development is concentrated in the region’s major cities. Heavy investment in these urban centers has spurred a rise in mixed-use properties that are attracting new residents, including some in the millennial generation, who appreciate the close proximity to jobs, transit, dining, and recreation. To address the aging population of the area, there have been a number of projects geared to retirees and senior living, which allow older residents to “age in place” near their families. The biggest construction project in the region at present is the replacement of the Tappan Zee Bridge. It is a massive, multi-year undertaking that will improve mobility for people and freight in and out of the area.

Population
The Lower Hudson Valley is home to 1.4 million residents, 969,460 of whom live in Westchester County, 323,950 in Rockland County, and 100,100 in Putnam County. It is an increasingly diverse population, with the shares of Asian and Hispanic residents rising faster than other segments of the population.1 Between 2010 and 2014, the Asian population grew by 11 percent and the Hispanic population grew by nine percent, while the overall population of the area rose by less than three percent. These gains are mostly driven by immigrants from countries in Southeast and South Asia, and the Caribbean, Central and South America. As of 2014, more than one in five residents of the Lower Hudson Valley was bilingual, including most of the Hispanic and Asian populations. Also, 20 percent of the Hispanic population and 10 percent of the Asian population do not speak English fluently.

The population of the region is also aging, with a rising share of residents ages 60 and older. From 2010 to 2014, the number of residents 60 years of age or older grew more than any other age demographic in each of the three counties. (See Appendix C for detailed information on overall age demographics, ethnic/racial demographics, major countries of origin for the immigrant population, and language ability.)

Figure 1: Composition of the Lower Hudson Valley employed population, 2014

Source: NYCLMIS analysis of Census Bureau, American Community Survey Public Use Microdata Sample, 2014.
The Lower Hudson Valley workforce is slightly more diverse than that of both New York State and the Nation. Figure 1 captures this diversity. Between 2010 and 2014: Hispanics and Asians were the fastest growing groups of employed residents 16 years of age or older.

As Figure 2 (above) indicates, these groups have different educational profiles. For residents ages 25 or older, Asians and Pacific Islanders have the highest levels of education, followed by the White population. The distribution for residents who are Black or Hispanic is different. For these two groups, the most common education level is a high school diploma or less, at 43 percent and 54 percent respectively.

The differences in education levels are worth noting because the likelihood of being employed increases with more education. As Figure 3 illustrates, 51 percent of residents with a high school diploma or less were employed, compared to 66 percent of those with a middle-skill education and 74 percent of those with a bachelor’s degree or more. This pattern closely resembles that of New York State as a whole. Groups with less education are more vulnerable in the labor market and less able to secure middle-skill jobs if they do not seek out further education.

Both the range in education levels among the different groups and the recognition of the importance of educational attainment in the labor market may explain the student profile at the local community colleges. At Westchester Community College, Rockland Community College and Dutchess Community College, the proportions of both Hispanic and Black students are higher than their respective shares of populations of those counties.² For example, at Westchester Community College, Hispanics make up 33 percent of the credit-bearing students at the college, compared to 24 percent of the county’s population. At Rockland Community College, Blacks represent 20 percent of the student population compared to 12 percent of the residents of the county. These are the two groups with the greatest need for more education to help secure middle-skill jobs and beyond.

Figure 2: Educational attainment of Lower Hudson Valley residents by race/ethnicity, 2014

<table>
<thead>
<tr>
<th></th>
<th>Black</th>
<th>Hispanic</th>
<th>Asians and PI</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>High School or Less</td>
<td>43%</td>
<td>54%</td>
<td>20%</td>
<td>26%</td>
</tr>
<tr>
<td>Associate or Some College</td>
<td>31%</td>
<td>22%</td>
<td>15%</td>
<td>21%</td>
</tr>
<tr>
<td>Bachelor’s or Greater</td>
<td>26%</td>
<td>24%</td>
<td>65%</td>
<td>53%</td>
</tr>
</tbody>
</table>

Note: All data calculated for persons 25 years of age or older. Source: NYCLMIS analysis of Census Bureau, American Community Survey Public Use Microdata Sample, 2014.

Figure 3: Likelihood of employment for Lower Hudson Valley residents by education level, 2014

Note: All data calculated for persons 25 years of age or older. Source: NYCLMIS analysis of Census Bureau, American Community Survey Public Use Microdata Sample, 2014.

² This information was derived from the most recent student diversity data available on the websites of all three community colleges (2012 for Dutchess, 2013 for Rockland and 2015 for Westchester), and the United States Census Bureau’s Quick Facts for Westchester, Rockland, and Dutchess counties, 2014.
Commuting patterns

People in the Lower Hudson Valley and surrounding areas routinely travel from one area to another for work. As Figure 4 (above) illustrates, these commuting patterns offer a more expansive view of the labor markets that both feed into the Lower Hudson Valley and draw from it. Local education and training institutions are, in effect, preparing people for jobs both in the Lower Hudson Valley itself and in adjacent areas, especially New York City.

Public transportation is good along certain routes, especially for travelers into New York City. There are some limitations in the east-west corridors where area residents increasingly depend on driving and carpooling to get to work. Still, many depend on bus travel to get around, which makes access to education and some jobs challenging.

Economy

The Lower Hudson Valley has a diversified, robust economy with 554,000 jobs. It is an economic powerhouse and a vital part of the metropolitan area and state economies. Westchester is the largest of the three counties in population, labor force, and employment, followed by Rockland and then Putnam counties.

The fortunes of all three counties rise and fall together, with the economy of New York City playing a major role. As Figure 5 on unemployment rates over the last ten years illustrates, the three counties respond to business cycles at the same time and with similar magnitude.
Sectors

The Lower Hudson Valley economy is dominated by six sectors—Health Care and Social Assistance; Retail Trade; Educational Services; Leisure and Hospitality; Professional, Scientific, and Technical Services; and Construction. As shown in Figure 6 (above), these six sectors account for more than three in five jobs in the region.

The Health Care industry continues to flourish. Local experts described health care as being “on a tear” and “on fire,” and said that its major institutions were “gobbling or being gobbled up” by large health care systems, referring to the increasing consolidation within the industry. The structure of health care delivery is changing, with more services being offered on an outpatient basis, more home health care, and larger multi-faceted health care systems that include hospitals and other types of service providers. Some New York City-based health care systems are expanding northward. Much of the projected growth in health care employment is related to the aging population. As baby boomers grow older, they are expected to comprise a greater proportion of the total Hudson Valley population, with those 65 and older growing from 14 percent of the Hudson Valley population in 2010 to 19 percent in 2040.3

Figure 6: Share of Lower Hudson Valley jobs by sector, 2014

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Care &amp; Social Assistance</td>
<td>89,991</td>
<td>11,218</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>64,025</td>
<td>3,483</td>
</tr>
<tr>
<td>Leisure and Hospitality</td>
<td>41,862</td>
<td>11,467</td>
</tr>
<tr>
<td>Professional Scientific &amp; Technical Services</td>
<td>30,811</td>
<td>1,563</td>
</tr>
<tr>
<td>Construction</td>
<td>31,663</td>
<td>480</td>
</tr>
<tr>
<td>Administrative &amp; Support Service</td>
<td>28,754</td>
<td>1,205</td>
</tr>
<tr>
<td>Other Services</td>
<td>24,704</td>
<td>2,606</td>
</tr>
<tr>
<td>Management of Companies</td>
<td>10,000</td>
<td>483</td>
</tr>
</tbody>
</table>


“Other Services” is a catchall category that includes different types of services. In the Lower Hudson Valley, the largest segments are “Religious, Grantmaking, Civic, Professional & Similar,” and “Personal & Laundry.” Others include “Repair & Maintenance” and “Private Households.”
From 2004 to 2014, the two sectors that added the most jobs in each of the three counties were Leisure and Hospitality, and Health Care and Social Assistance. As shown in Figure 7, these two sectors accounted for 22,705 new jobs, or more than two-thirds of all jobs added in the three-county area. Both sectors displayed resiliency over a 10-year period, and neither experienced net job loss during the most recent recession period. The New York State Department of Labor (NYSDOL) predicts these same sectors will continue to enjoy substantial growth through 2022.4

As a percentage of total jobs, Leisure and Hospitality grew the fastest, by far, of any sector from 2004 to 2014. The sector added 11,487 jobs, a 27 percent increase from 2004 levels. Growth in this sector accelerated after 2010, especially in Westchester County, and has been driven by favorable economic trends and changing consumer preferences. Jobs in Leisure and Hospitality are largely concentrated within restaurants and other food service businesses. Employment in hotels has also risen over the last few years, particularly in Rockland County. Economic development in neighboring counties also has positive implications for the Lower Hudson Valley labor force. Industry experts pointed to new developments, such as the large casino resort underway in nearby Sullivan County (the Catskills) that is expected to draw labor from the Lower Hudson Valley.

New Skills at Work in the Lower Hudson Valley
In 2015, JPMorgan Chase & Co. awarded a New Skills at Work grant to the State University of New York Westchester Community College (WCC) to form a stakeholder advisory group and undertake demand-driven research and collaborative planning for the Lower Hudson Valley region.

In keeping with the middle-skill focus of the Initiative, the goals for the Lower Hudson Valley region were to:

- **Identify three well-paying, high-demand, middle-skill occupational areas with career advancement opportunities for which the supply of qualified candidates may not be sufficient to meet regional demand;**
- **Recommend ways that the region can enhance its capacity to prepare people for employment and advancement in these occupational areas; and**
- **Facilitate collaboration among the region’s key stakeholders to shape the research and recommendations, and to implement an action plan.**

**To achieve these goals, the Initiative was:**

**Collaborative** An actively engaged stakeholder group from the entire region guided the Initiative every step of the way. They evaluated promising middle-skill occupations, identified training and education programs that prepare people for these occupations, offered their own expertise on the fields selected, and recommended industry experts for interviews. Most importantly, the stakeholders are committed to working together to enhance the pipeline of qualified middle-skill candidates.

**Data-driven** On behalf of the stakeholders, the New York City Labor Market Information Service (NYCLMIS) at the City University of New York Graduate Center analyzed multiple sources of traditional and real-time labor market data and also assembled information on the existing supply of training and education in and near the region. The key data sources and process for selecting the three focus occupational areas are described in detail in Appendix A: Methodology.

**Informed by Local Experts** Building on the data-driven labor market analysis, the NYCLMIS and project partners spoke with experts in every field considered for greater study and attention. This included employers, trade organizations, education, and workforce development programs in selected occupational areas, and organized labor.

**Selecting Middle-Skill Fields**
The focus on middle-skill jobs is purposeful. In this 21st century economy, more than a high school education is generally needed to earn a decent wage and get ahead. A bachelor’s degree may not be practical or desirable for everyone in the short-term, so some postsecondary education offers the best opportunity for many people.

Between 11 and 18 percent of the jobs located in the Hudson Valley typically require a middle-skill level of education.5 Of those jobs, more than eight out of ten (85%) pay at or above the regional average for entry-level wages.

The process used to select middle-skill occupational areas to focus on was extensive and included analysis of past, present, and projected occupational and industry demand; review of existing educational and workforce programming; and exploration of employers’ current hiring practices and challenges.

Specifically, the researchers:6

- Identified occupations typically filled by someone with more than a high school diploma or its equivalent but less than a bachelor’s degree;
- Narrowed this list to include only occupations that are projected to grow and have an entry-level wage greater than or equal to $22,340, the average entry-level wage in the region;

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5 Occupational data are only available for the Hudson Valley, a seven-county area that includes the Lower Hudson Valley region.

6 A more detailed research methodology is described in Appendix A.
Further targeted the list to include only those occupations that met or exceeded a minimum number of projected annual openings; identified occupations for which preparation and career advancement are commonly supported by education and workforce programs; and examined the nature and extent of education and workforce programs already available to meet employers’ needs.

The three high-demand, middle-skill occupational areas selected were:

- Health Information Management
- Tech Support
- Hospitality Management

As noted earlier, health care is large and growing. At the same time, there is a lot of activity already in place to meet the demand, especially in clinical occupations. The non-clinical Health Information Management area became the undisputed choice. It is large enough to warrant attention, and there is some room for improvement in the alignment of programs with current industry demand. Tech Support emerged as a growing field that crosses virtually every industry and, unlike some other tech occupations, is in the middle-skill range. Lastly, Leisure and Hospitality is the fastest growing sector in the area and it offers many opportunities for advancement, especially into supervisory and management positions for which a middle-skill education is almost always required.

For all three occupational areas, the NYCLMIS conducted further in-depth research using multiple methods, including interviews with industry experts and employers and review of trade literature to answer the following questions:

- What, if any, challenges do employers have finding qualified candidates?
- What are the knowledge, skills and abilities needed to obtain employment?
- What are the typical career advancement pathways?

In addition to the areas selected, there are several other promising middle-skill fields that present worthwhile opportunities and have value in the Lower Hudson Valley labor market. These are detailed in Appendix D: Additional Middle-Skill Fields for Consideration.
EMR System

Personal Information
Social Information
Insurance
Diagnosis
Treatment
Medical History
Healthcare Calendar
Schedule
Appointment
Opportunities in Health Information Management

Why Health Information Management?
Accounting for nearly one in seven jobs,1 health care has an undeniably strong presence in the Lower Hudson Valley. It is both vast and expanding. In fact, health care jobs are projected to grow by 25 percent through 2022.2 While many disciplines within health care present middle-skill opportunities, health information management (HIM) jobs best satisfy the criteria for New Skills at Work.

Hiring demand is strong and appears to have outpaced the supply of workforce and educational programming. The field continues to grow as health care providers increasingly rely on Electronic Health Records (EHR) and related information systems, and as New York State and the federal government expand reporting requirements.

What is Health Information Management?
People who work in this field manage the data produced over the course of providing health care. Specifically, they:

- Collect, organize, store, retrieve and analyze health information
- Keep information private and secure
- Ensure data quality
- Use patient data for billing and revenue management
- Make sure that information is available in the right place and at the right time to support health and health care, in a new trend known as “Information Governance”

This field has jobs at all levels, from entry-level administrative jobs in health care that can lead to jobs in health information management or revenue management all the way to high-level jobs directing health information departments, performing sophisticated health analytics, and making sure that information is trustworthy and actionable. There are also many jobs in the middle. This is a field where experience is essential to getting ahead.

Where are the health information management jobs?
Entry-level administrative jobs in health care are in hospitals, clinics, doctors’ and dentists’ offices, health insurance companies, and government offices. These entry-level jobs can lead to jobs in health information management (HIM), medical office management or revenue management.

Most jobs in HIM that are mid-level and higher are in hospitals and with health information vendors, but they can also be found in other health care settings.

What do employers want?
Entry-level administrative jobs in health care, which can lead to jobs in health information management, require at least a high school diploma or its equivalent. Employers prefer:

- Customer service experience
- Strong written and verbal communication skills
- Knowledge of medical terminology
- Knowledge of third-party billing
- Excellent organizational skills
- Clerical skills
- Competency with document imaging (scanning), word processing, spreadsheet, database, scheduling, communications and presentation applications

Acknowledging the diversity of the region, some employers want people who are bilingual English/Spanish or English/Mandarin/Cantonese.

While there are many job openings for entry-level administrative jobs in health care, employers are reasonably selective in hiring. They are most concerned with customer service skills. Some workers in this field have backgrounds in hospitality where they have demonstrated their interpersonal skills.

At the middle level, people begin to specialize in either HIM operations or coding, or they may move into jobs outside the HIM department, such as revenue cycle management or other functions.

These jobs often require an industry-recognized credential or an associate degree. Although this varies with the exact job, employers often prefer:

- Knowledge of medical terminology, and ICD-9/10, CPT-4, Encoder

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1 New York State Department of Labor Quarterly Census of Employment and Wages, 2014.
HEALTH INFORMATION MANAGEMENT JOBS

<table>
<thead>
<tr>
<th>Title</th>
<th>Min. Education</th>
<th>Certification</th>
<th>Yrs of Experience</th>
<th>Median Salary*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Secretary</td>
<td>HS + Trng</td>
<td>None</td>
<td>0–1</td>
<td>31K</td>
</tr>
<tr>
<td>Health Information Management (HIM) Clerk</td>
<td>HS + Trng</td>
<td>None</td>
<td>0–1</td>
<td>35K</td>
</tr>
<tr>
<td>Birth Registrar</td>
<td>HS + Trng</td>
<td>None</td>
<td>0–1</td>
<td>32K</td>
</tr>
<tr>
<td>Patient Registrar</td>
<td>HS + Trng</td>
<td>None</td>
<td>0–1</td>
<td>34K</td>
</tr>
<tr>
<td>Medical Biller</td>
<td>HS + Trng</td>
<td>None</td>
<td>0–1</td>
<td>37K</td>
</tr>
<tr>
<td>Release of Information Specialist</td>
<td>HS + Trng</td>
<td>None</td>
<td>1–2</td>
<td>29K</td>
</tr>
<tr>
<td>Outpatient Coder</td>
<td>HS + Trng</td>
<td>CCA or CPC required</td>
<td>1–2</td>
<td>40K</td>
</tr>
<tr>
<td>Billing Coordinator</td>
<td>Assoc. preferred</td>
<td>None</td>
<td>2–3</td>
<td>42K</td>
</tr>
<tr>
<td>Medical Records Analyst</td>
<td>Assoc.</td>
<td>RHIT preferred</td>
<td>1–2</td>
<td>42K</td>
</tr>
<tr>
<td>Inpatient Coder</td>
<td>HS + Trng or Assoc.</td>
<td>CCS required</td>
<td>2–3</td>
<td>46K</td>
</tr>
<tr>
<td>Cancer Registrar</td>
<td>Assoc.</td>
<td>CTR required</td>
<td>2–3</td>
<td>48K</td>
</tr>
<tr>
<td>HIM Supervisor</td>
<td>Assoc.</td>
<td>RHIT/RHIA preferred</td>
<td>2–3</td>
<td>50K</td>
</tr>
<tr>
<td>HIM Manager</td>
<td>Assoc.</td>
<td>RHIT/RHIA preferred</td>
<td>3–5</td>
<td>51K</td>
</tr>
<tr>
<td>Coding Supervisor</td>
<td>HS + Trng</td>
<td>CCS</td>
<td>2–5</td>
<td>57K</td>
</tr>
<tr>
<td>Manager of Specialized Cancer Programs</td>
<td>Assoc.</td>
<td>CTR required</td>
<td>3–5</td>
<td>65K</td>
</tr>
<tr>
<td>Coding Compliance Specialist/DRG Validator</td>
<td>Bachelor's</td>
<td>CCS</td>
<td>3–8</td>
<td>65K</td>
</tr>
<tr>
<td>Clinical Documentation Improvement Specialist</td>
<td>Bachelor's</td>
<td>CCS or CDIP, sometimes RN</td>
<td>3–5</td>
<td>75K</td>
</tr>
</tbody>
</table>

HEALTH INFORMATION CERTIFICATIONS

Coding: The American Health Information Management Association (AHIMA)’s Certified Coding Associate (CCA) and AAPC (formerly known as American Academy of Professional Coders)’s Certified Professional Coder (CPC) are entry-level certifications and are helpful in getting a job in a doctor’s office, outpatient facility, or hospital Emergency Department. AHIMA’s Certified Coding Specialist (CCS) is a more demanding certification that is needed to be an inpatient coder in a hospital. This is considered the “gold standard” coding credential.

Health Information Management:
- AHIMA’s Registered Health Information Technician (RHIT) is required for most mid-to-high level jobs. It requires an associate degree from a program that is accredited by the Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM) and passing an exam.
- AHIMA’s Registered Health Information Administrator (RHIA) is required for most high-level jobs. It requires a bachelor’s degree from a CAHIIM-accredited program and passing an exam.
- AHIMA’s has a Clinical Documentation Improvement Practitioner (CDIP) certification that has experience and education requirements.
- The Association of Clinical Documentation Improvement Specialists (ACDIS) has a Certified Clinical Documentation Specialist (CCDS) Credential, which has education and experience requirements.

**Certified Tumor Registrar**
This credential is awarded by the National Cancer Registrars Association. It requires both an associate degree and experience. The amount of experience needed depends on the associate degree major.

Clinical Documentation:
- The Association of Clinical Documentation Improvement Specialists (ACDIS) has a Certified Clinical Documentation Specialist (CCDS) Credential, which has education and experience requirements.

*Median salary was supplied by Payscale.com and represents self-reported earnings in Westchester County, New York.

- Knowledge of payer guidelines, including insurance carrier billing requirements and federal Medicare/Medicaid billing guidelines
- Knowledge of HIPAA
- Some familiarity with accounting programs such as QuickBooks and Excel
- Knowledge of anatomy, physiology, and disease processes
- Excellent written and verbal communication skills
- Strong analytical skills
- Experience with Electronic Health Records (EHR) and/or billing systems
- One to two years of relevant experience

While a number of educational institutions offer programs called “medical billing and coding,” it is important to note that within the field, medical billing or coding are distinct functions. Some educational institutions are beginning to revamp their offerings to reflect this change in the field.

Experts emphasize that a certification recognized and valued in the industry is essential to landing entry-level work as a coder. The main certifications mentioned were AHIMA’s CCA and AAPC’s CPC for outpatient or Emergency Department coding jobs and AHIMA’s CCS for inpatient coding positions. A school certificate of completion is not enough. Cancer Registrars must have an associate degree and be Certified Tumor Registrars.

Practical experience also makes candidates highly marketable, and this is often challenging to achieve in the
classroom given the strict privacy laws governing medical information. To address this issue, AHIMA has developed VLab (Virtual Lab), an Internet-based simulated work environment that colleges can subscribe to.

**Middle- to high-skill** jobs in the field usually require either an associate degree or a bachelor’s degree and two or more years of experience. Employers strongly prefer an industry-recognized certification such as AHIMA’s RHIT (associate level) or RHIA (bachelor’s level). Depending on the exact job, employers often want:

- Extensive experience with Electronic Health Records, Encoder software and hospital billing systems
- Knowledge of health information privacy laws (i.e., HIPAA) and state regulations
- Good interpersonal, written, and verbal skills
- Excellent problem-solving and analytical skills
- Ability to work independently and maintain relationships with personnel at all levels within and outside of the organization
- Supervisory skills

It is important to note that there is a demand for people with the RHIT credential, but there is no classroom-based accredited associate degree program in the Lower Hudson Valley that leads to it. The nearest program is at CUNY’s Borough of Manhattan Community College in New York City. Several private universities also offer RHIT programs online.

**Health Information Career Paths**

**Careers in Coding** Coders grow more valuable to employers as they gain expertise, especially in complex coding environments. Coding must be accurate in order for health care providers to secure payment for their services. This career path progresses from simple to complex coding jobs, and then to other types of review, supervisory, and compliance positions.

**Careers in HIM Operations, or managing medical records.** These jobs do not involve coding, but do require knowledge of how health data is maintained and used. The RHIT certification is generally required for advancement to supervisory and management positions.

**Outside the HIM Department or outside a health care service provider** These may include careers related to billing and revenue management, jobs with an outside contractor (such as those that handle release of information), jobs with a health information vendor, jobs in data analytics, and others.

**HEALTH INFORMATION MANAGEMENT CAREER PATHS**

Pay figures reflect median wages, which were supplied by Payscale.com and represent self-reported earnings in Westchester County, New York.
Opportunities in Tech Support

Why Tech Support?
Information Technology, or IT for short, is everywhere and so are the jobs that support it. For some businesses, IT is their focus. For others, it helps them operate. Within IT, tech support is a large and growing field. The New York State Department of Labor predicts a growth rate of 12 percent for tech support jobs.1 Within the last year alone, there were more than 700 Lower Hudson Valley tech support positions advertised online.

Because IT jobs generally pay well, are in-demand and are expected to grow, they are often the focus of public and private investment. Educational demands for IT jobs are typically high, with most requiring at least a bachelor’s degree. Tech support jobs were selected for attention in this initiative because they are accessible to people who have a middle-skill level of education. These jobs require a combination of skills and knowledge that can be hard for employers to find. With more education and experience, tech support professionals can plug into promising technology career pathways.

What is Tech Support?
People who work in tech support help computer users. This can mean setting up and maintaining computers and other devices, installing software, troubleshooting user problems with email, software or lost files, or making sure servers and networks are operating optimally. Tech support people answer questions and solve problems. They maintain records of everything they do so that they and others can learn from solved problems and remedial actions taken.

Tech support is constantly being challenged by technological advancements. No longer are people working only on desktop computers. In a trend known as “BYOD” (for bring-your-own-device), people are taking their own laptops, tablets, phones and other devices to work or school. They want free, wireless connectivity in order to use these devices. Tech support workers must master these mobile devices, their operating systems, and the applications that run on them. As devices proliferate, so do the risks with cyber-security, which require a new set of skills for tech support workers. They must constantly keep up-to-date and learn new skills.

Jobs in tech support vary from employer to employer, influenced by factors such as firm size, the nature of the help desk or desktop support function, and the arrangements used for providing tech support. A tech support job in a smaller firm might offer a broader range of tasks, while a highly structured tech support function within a larger firm might offer greater advancement opportunity. Many companies contract out the routine aspects of the tech support function, sometimes to off-shore locations, while others handle all tech support in-house. Sometimes the function is split between an outside vendor and in-house IT staff.

Usually, the tech support function is tiered. In Tier 1, someone typically takes the initial inquiry and addresses relatively simple hardware, software, or network issues. If the Tier 1 analyst cannot address the problem, he or she will escalate it to Tier 2.2 Tier 2 and Tier 3 analysts usually resolve more complex system and application problems, identify trends in tech support requests, and come up with preventive solutions through research. Industry experts interviewed in connection with this research also mentioned Tier 0 tech support, or self-service. This often takes the form of online resources, such as how to reset a password, or having “frequently asked questions” to facilitate self-help by users. As users become more sophisticated, more tech support issues are moved to Tier 0.

Help desk jobs normally involve telephone or online requests, and assistance is provided using these or other vehicles, such as remote-control tools. “Desktop support” can be remote, but it often involves in-person, face-to-face assistance. Many employers use very generic job titles, especially at the entry level (such as IT Support Specialist/Technician/Assistant), which can connote either help desk or desktop support or some combination of the two.

Where are the tech support jobs?
Tech support positions are distributed widely across a range of industries where computer systems are used. Top industries include computer systems design and

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1 New York State Department of Labor Long-Term Occupational Employment Projections for the Hudson Valley Region, 2012-2022, Computer User Support Specialist.

In addition to the required technical skills, employers are required by some, but not all, employers. basic technical competence, such as CompTIA’s A+, are skills are more important.” Certifications that demonstrate “Google aside, most companies don’t care about degrees; are a given” for all tech support jobs. Another opined, training. One employer noted that, “the technical skills of a high school diploma or its equivalent and technical tech support jobs generally require a minimum Entry-level What do employers want? Entry-level tech support jobs generally require a minimum of a high school diploma or its equivalent and technical training. One employer noted that, “the technical skills are a given” for all tech support jobs. Another opined, “Google aside, most companies don’t care about degrees; skills are more important.” Certifications that demonstrate basic technical competence, such as CompTIA’s A+, are required by some, but not all, employers.

In addition to the required technical skills, employers are looking for people who have:

- Customer service experience
- Good communication skills
- Ability to think through problems and search for solutions
- Positive attitude and eagerness to learn new things
- Hands-on experience
- Patience and an ability to explain things in a non-technical way

Employers report growing difficulty finding people with the right communication skills, including telephone, interpersonal, and customer support skills. Because users who experience problems with their computers or other devices are often upset, it is critical for tech support workers to calm them and instill confidence. As one employer said, “the stereotypical techie won’t work.” Even though it is called “tech support,” this is a “people” field, best suited to people with technical skills who get satisfaction from helping others.

Employers also said that tech support staff must have a good sense of what they can handle themselves and when to refer an issue to someone with greater or specialized technical knowledge. It can be counterproductive, if not disastrous, for a tech support worker to try to handle a matter beyond his or her level of knowledge or skill.

In every case, employers train new hires on the job and arrange for them to learn additional skills through in-
opportunities in tech support

Mid-level jobs are often promotional from entry-level jobs and require a greater depth of knowledge. At this level, employers prefer additional education, especially an associate degree. Many also seek certifications such as Network+, CCNA or CCNP, or MCSA.

Some of these jobs include supervisory responsibilities and more detailed knowledge, on both the technical and project management sides. Sometimes, tech support workers begin to specialize, for example, into network/server support or workstation/desktop support. If the help desk function is contracted out, some people might specialize within a particular industry.

In addition to the education and certification preferences, employers like to see:

- At least two years of work experience in the field
- Some supervisory experience
- A demonstration that the individual has the skills to perform the next level job

Most employers provide ongoing training, which can be hands-on, online or offsite. These opportunities are great for those who want to stay current with changes in technology and constantly learn new things to progress in their career.

Mid-to High-level tech support jobs typically require a bachelor's degree and at least five years of work experience, although it is possible to be internally promoted into these jobs by substituting experience for more education.

Additional certifications required for mid to high level jobs include CCNA or CCNP. Some employers may require the interdisciplinary Project Management Professional (PMP) certification.

Tech Support Career Paths

In most cases, people in tech support stay within tech support and do not move into other areas of IT. They may progress into more sophisticated technical areas or into management or may become business analysts. While some people may branch out into web or software development, these pathways are not typical.

3 This assessment is based on interviews with tech support managers in the Lower Hudson Valley and in New York City, and on proprietary information from PayScale.com provided to the New York City Labor Market Information Service by Monster Government Solutions. The information from PayScale.com is based on self-reported information from surveys completed by individuals who have worked in tech support positions in the New York City Metropolitan area.

Pay figures reflect median wages, which were supplied by Payscale.com and represent self-reported earnings in Westchester County, New York.
Opportunities in Hospitality Management

Why Hospitality Management?
Leisure and hospitality is a substantial and growing part of the Lower Hudson Valley economy. Over the last 10 years, this sector grew at a faster rate and added more jobs than any other part of the local economy. Within the last four years, job growth has been especially robust. Looking forward, the New York State Department of Labor predicts that rapid job growth will continue in the Hudson Valley’s leisure and hospitality sector into 2022.

Leisure and hospitality includes restaurants, hotels, resorts, casinos, country clubs, and other types of amusement and recreation businesses. It caters to residents as well as visitors. The sector is also evolving. Restaurants are serving healthier and locally sourced foods. Microbreweries are adding tasting rooms and restaurants. The accommodation industry is trending toward smaller, limited-service hotels, although there is a large, casino development underway in Sullivan County that will surely draw on the neighboring labor force.

By its nature, this field is both labor-intensive and local. Some of the entry-level jobs do not require education beyond a high school diploma, but there are also many middle-skill jobs that demand further education and training. These middle-skill jobs offer pathways into management and other higher-skilled positions. Many hospitality businesses actively invest in their employees and promote from within.

What is Hospitality Management?
People who work in this field provide a range of services. They prepare food, serve meals, clean rooms, repair fixtures, and otherwise provide support to leisure and hospitality businesses. With more education and experience, they can become supervisors, managers, consultants, and other management professionals.

The name of the game in hospitality is customer service. These businesses depend on customer satisfaction, and they seek employees at every level with an understanding of how to achieve it.

Where are the jobs in leisure and hospitality?
Among the industries included in this sector, restaurants and other food service businesses support the most jobs by far. Restaurant staffing is largely divided between the customer-facing “front-of-the-house” dining area and the “back-of-the-house” kitchen and food preparation area.

Hotels are another large part of this sector, and they have a similar staffing structure, with customer-facing jobs at the front desk and concierge areas, and housekeeping and maintenance jobs largely out of public view. Full-service hotels are large establishments that offer a variety of services for their guests, including restaurants and bars, room service, retail shops on the premises, and fitness centers. They often have banquet rooms and ballrooms to accommodate business meetings and other social gatherings. With this range of services, there are more jobs at every level, and there is more specialization.

Limited-service hotels typically do not have on-site restaurants or most other amenities. They usually offer continental breakfasts, Internet access, and sometimes, unattended game rooms or fitness rooms. Fewer staff are needed to carry out these smaller operations and workers often wear more than one hat. As one industry expert said, staff are expected to be a “Jack of all trades.” The day-to-day responsibilities of managers may be more varied. Over the past few years, new hotel development in the Lower Hudson Valley has trended towards limited-service.

Front desk/concierge service is a common function among most businesses in the hospitality field. Beyond restaurants and hotels, variations on this can be found in country clubs, amusement parks, resorts, and casinos—all of which have a strong presence in the Lower Hudson Valley. There are also concierges outside hospitality, in luxury residences and health care facilities, for example.

In all types of businesses in this field, there are also sales, communication, marketing, and event planning jobs.

What do employers want?
Much of the entry-level work in this field requires little more than a positive attitude, basic language skills, punctuality, and an ability to take direction. A high school diploma is preferred, but not strictly required at this level. Food safety and sanitation certification is often necessary for kitchen work. Even at the most entry level, strong customer service skills are essential for any position that interacts with customers.
LEISURE AND HOSPITALITY JOBS

<table>
<thead>
<tr>
<th>Tier</th>
<th>Title</th>
<th>Typical Education</th>
<th>Certification/License</th>
<th>Yrs of Experience</th>
<th>Median Salary*</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>Food Server**</td>
<td>HS</td>
<td>Alcohol Awareness</td>
<td>0–1</td>
<td>19K</td>
</tr>
<tr>
<td></td>
<td>Cook, Prep or Line**</td>
<td>HS + training</td>
<td>ServSafe</td>
<td>0–1</td>
<td>26K</td>
</tr>
<tr>
<td></td>
<td>Guest Service Agent**</td>
<td>Some college</td>
<td></td>
<td>0–1</td>
<td>28K</td>
</tr>
<tr>
<td></td>
<td>Maintenance Technician**</td>
<td>HS + Technical Training</td>
<td></td>
<td>0–1</td>
<td>35K</td>
</tr>
<tr>
<td></td>
<td>Front Desk Manager</td>
<td>Associate</td>
<td></td>
<td>2–4</td>
<td>35K</td>
</tr>
<tr>
<td></td>
<td>Assistant Restaurant Manager</td>
<td>Some college</td>
<td></td>
<td>2–4</td>
<td>38K</td>
</tr>
<tr>
<td>Two</td>
<td>Sous Chef</td>
<td>Associate</td>
<td>ServSafe</td>
<td>2–5</td>
<td>42K</td>
</tr>
<tr>
<td></td>
<td>Hotel Engineering Manager</td>
<td>Some college or technical training</td>
<td>Stationary engineer; fire safety director</td>
<td>2–5</td>
<td>49K</td>
</tr>
<tr>
<td></td>
<td>Housekeeping Manager**</td>
<td>HS + OJT</td>
<td></td>
<td>2–5</td>
<td>52K</td>
</tr>
<tr>
<td>Three</td>
<td>Director, Sales &amp; Marketing</td>
<td>Associate</td>
<td></td>
<td>3–6</td>
<td>44K</td>
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<tr>
<td></td>
<td>Executive Sous Chef</td>
<td>Associate</td>
<td>ServSafe</td>
<td>4–7</td>
<td>44K</td>
</tr>
<tr>
<td></td>
<td>Restaurant Manager</td>
<td>Associate</td>
<td></td>
<td>4–8</td>
<td>45K</td>
</tr>
<tr>
<td></td>
<td>Hotel Operations Manager</td>
<td>Associate</td>
<td></td>
<td>4–7</td>
<td>47K</td>
</tr>
<tr>
<td></td>
<td>Director of Hotel Engineering</td>
<td>Associate or technical training</td>
<td>Stationary engineer; fire safety director license</td>
<td>5–7</td>
<td>51K</td>
</tr>
<tr>
<td></td>
<td>Executive Chef</td>
<td>Associate</td>
<td>ServSafe</td>
<td>5–10</td>
<td>51K</td>
</tr>
</tbody>
</table>

**Hospitality Certifications** In this field, the certifications largely concern restaurant workers. Food safety certification is heavily preferred, if not required, for nearly every position in the kitchen. This even includes restaurant positions that may not directly handle food. The National Restaurant Association offers three different types of ServSafe® training certifications: one for managers, one for employees, and one for serving alcohol.

**TIPS** (Training for Intervention ProcedureS) Alcohol Certification offers education and training for the responsible service, sale, and consumption of alcohol. Beyond restaurants, there are certain disciplines that may require licensure or certification in order to operate. For example, hotel engineering management positions could require a Stationary Engineer License, which authorizes workers to operate high-pressure boilers. People in this line of work do not need a professional engineering background (e.g., a 4-year engineering degree). Rather, candidates must have several years of experience in the relevant trade, an engineering certificate or a similar combination of relevant education and experience. Education and experience requirements based on the advertised preferences of major hotel and restaurant brands.

**Median salary was supplied by PayScale.com and represents self-reported earnings in Westchester County, New York.**

**Median salary for these titles is based on Occupational Employment Statistics for the entire Hudson Valley.**

This field was selected for attention because it also has many jobs that typically require education or training beyond a high school diploma. While it is possible to advance from an entry-level position into a supervisory one with additional experience alone, typically, employers prefer more formal education and training for middle skill jobs.

The first tier of middle skill jobs in hospitality includes:

- Guest Service Agent
- Hotel Maintenance Technician
- Prep or Line Cook
- Food Server

Employers may seek candidates with job-specific training for some of these jobs (cook, maintenance) while prioritizing those with customer service experience for others. In many cases, especially in hotels, people in customer-facing jobs have some college education.

Given the importance of customer service in this sector, many employers also mentioned the following interpersonal skills:

- **Strong communication skills, both verbal and written**
- **Good listening skills**
- **Teamwork skills**
- **Problem-solving skills**

While all employers offer some degree of on-the-job training, the employers interviewed in connection with this research emphasized that they do not want to teach basic interpersonal skills. They are willing to enhance these skills and teach technical skills. They expect candidates, especially those who are career-minded, to come equipped with those “softer” skills. Employers report difficulty finding this kind of talent.
The second tier of middle skill jobs includes such jobs as:
- Front Desk Manager
- Sous Chef
- Assistant Restaurant Manager
- Housekeeping Manager
- Hotel Engineering Manager

In these positions, responsibilities may include managing schedules, training and supervising staff, handling customer complaints and inquiries, managing inventory, and keeping facilities in good condition. The nature and scope of responsibilities depends on the size, type, and structure of the business.

For all of these jobs, employers require a few years of experience and additional training, certifications, or academic credentials. For example, hotels will normally require their engineering managers to hold a Stationary Engineer License. For other management positions, an associate degree is preferred. Employers interviewed in the course of this research believe that higher education gives people the communication skills, the subject matter expertise, and the professionalism to take on management responsibilities, which go beyond supervising workers.

The rising influence of social media and customer ratings websites underscores the need for a management team with the skills to promote strong organizational performance across metrics.

With additional years of experience and more education, people can progress into a third tier of middle skill positions, such as:
- Executive Sous Chef
- Restaurant Manager
- Hotel Operations Manager
- Director of Hotel Engineering
- Sales and Marketing Director

Managerial positions are responsible for overall business management, like promoting profitability, setting initiatives, overseeing purchasing, and managing budgets and resources. This level of responsibility will often require at least an associate degree from a related program.

With more experience and usually a bachelor’s degree, people can move into higher-level jobs in the sector, such as General Manager.

**HOSPITALITY MANAGEMENT CAREER PATHS**

In addition to advancement within restaurant or hotel operations, people starting out in these customer-facing roles can also move into sales, marketing, communications, and other management support operations.

Pay figures reflect median wages, as reported by New York State Department of Labor for the Hudson Valley, where available. Otherwise, the data was supplied by Payscale.com and represents self-reported earnings in Westchester County, New York.
The Lower Hudson Valley stakeholders demonstrate a spirit of cooperation in advancing the economic vitality of the area and the capabilities of the workforce. Educational institutions and workforce providers strive to keep current with the labor market and have a good understanding of economic trends. Industry groups, economic development organizations, and employers of all types work with the education community to align the skills of the workforce with the needs of the workplace. The recommendations here are intended to further improve the alignment between industry demand and the supply of qualified candidates.

There is work to be done in each targeted occupational area. There are also some common themes and general recommendations. Each of these is covered below.

Occupation-Specific Recommendations

Health Information Management

As the health care sector grows, the delivery of health care changes, and electronic health records and other computer systems are increasingly utilized, demand for health information management personnel, which is already strong, is expected to grow.

To help students and jobs seekers qualify for these jobs, stakeholders should:

- **Make sure that programs that prepare people for entry-level administrative jobs in health care cover the basics that employers say they want.** These include computer applications and communication skills but also a comfort level with electronic health records systems and good customer service skills. These entry-level jobs have similar knowledge and skill requirements but can lead in a number of different directions, from medical office management to billing to health information management.

- **Recognize that medical billing and coding are becoming distinct functions and jobs within health care, a point echoed by each interviewed expert.** Medical billers typically work in departments concerned with revenue, while coders can work in the health information management or other departments. Educational institutions should review their course offerings and either specialize in one or the other, or have concentrations in each within a larger degree-bearing program.

- **Keep courses current and updated to include the latest coding systems** (e.g. ICD-10) and commonly used billing software. Versions of these systems are upgraded every few years with profound effects on the management of health information.

- **Wherever possible, offer courses that lead to the certifications and credentials with known value to the industry.** For example, in medical coding and health information management, the only credentials mentioned by industry experts or listed in online job ads were those associated with AHIMA and AAPC.1 An industry-preferred credential is essential to landing entry-level work as a coder and it helps workers compete for higher-level jobs in health information management.

- **Consider offering an associate degree program accredited by CAHIIM2 and leading to AHIMA’s Registered Health Information Technician (RHIT) credential.** Apart from an online program offered by a private university, there are no programs in the Lower Hudson Valley that offer this. The RHIT is an increasingly in-demand credential.

- **Help students get hands-on experience.** Practical experience is highly marketable, but difficult to achieve in the classroom. This lack of experience helps explain why some positions are so hard to fill. One industry expert suggested a “boot camp” for coding, where students can practice with de-identified medical records. Another option is AHIMA’s VLab (Virtual Lab), an Internet-based simulated work environment that colleges can subscribe to.

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1 AHIMA is the American Health Information Management Association. AAPC is American Academy of Professional Coders.

2 CAHIIM is the Commission on Accreditation for Health Informatics and Information Management Education
Tech Support
Tech support is a large and growing field within IT. The New York State Department of Labor predicts a growth rate of 12 percent for these jobs in the Hudson Valley. Over the last year, there were more than 700 Lower Hudson Valley tech support positions advertised online. Even though there are a number of credit and non-credit programs, including online programs, that prepare people for work in this field, employers still report difficulty finding people with the combination of technical and customer service skills that they seek.

To help students and jobs seekers qualify for these jobs, stakeholders should:

- Offer programs that lead to an industry-recognized certification, such as the vendor-neutral CompTIA A+ or Network+ certification, both of which give candidates an advantage in securing employment. Several of the programs currently being offered in the region did not lead to any certifications or credentials.

- Include hands-on experience. All employers were looking for people who had hands-on experience. This could be a particular issue for online programs and it is not clear whether they include sufficient, if any, lab time. If they do not, there is great need to offer students this essential experience.

- Find a way to teach customer service as well as technical skills, and give students practice working with users to resolve their computer issues. Getting a job, keeping it, and advancing into a career often hinge on good communication and interpersonal skills. Uniformly, employers said that they are looking for people who already have these customer service skills. In this field, sensitivity to diversity among computer users is also necessary.

- Encourage people in entry-level tech support jobs to continue their education for an associate, and then a bachelor’s degree, both of which will enhance their career prospects. While people with a high school diploma and some technical training can secure entry-level jobs in tech support, they will need more education to advance within tech support and move into other related areas, such as those that combine tech support with business skills (e.g. business analyst).

- Consider offering the fundamental principles of computing in entry-level courses to help prepare students for career advancement beyond tech support.

Hospitality Management
Leisure and hospitality is a growing part of the Lower Hudson Valley economy. The largest area by far within leisure and hospitality is the restaurant and food service business, followed by hotels. Both industries have grown and changed over the last ten years and offer many good middle-skill jobs for people who enjoy this type of work. There is a consensus among the employers interviewed that an associate degree is needed in order to advance into management positions within hospitality. For higher level positions, a bachelor’s degree is preferred.

To help students and job seekers qualify for these jobs, stakeholders should:

- Consider broadening their programs to cover the larger hospitality field, which would position students for management work in all types of hospitality businesses, such as restaurants, full and limited service hotels, country clubs, casinos, fitness centers, and amusement areas. There are a number of associate degree programs in Culinary Arts right now, and some include Management or Food Service Administration, but none with the scope and structure these results suggest are needed.

- Focus on developing customer service and teamwork skills as well as the more technical business skills, such as accounting, business planning, or sales. Any hospitality program should also include an internship or experiential learning component.

- Seek opportunities with employers or industry associations to upgrade their current workforces. Industry experts pointed out that hospitality employers are selective in choosing employees at all levels, and they want to promote from within, but some employees need to develop additional skills or education, whether these are English language skills, other types of communication skills, or more technical skills.
General Recommendations
In addition to the occupation-specific recommendations, there were several themes that were common to more than one field. These implicitly recognize the diversity of the population of the Lower Hudson Valley, the importance of interpersonal skills in the workplace, and the greater opportunities available to people with higher education. It is also important to continue the type of research and collaborative stakeholder effort undertaken in this New Skills at Work project.

Stakeholders should:

- **Keep abreast of industry trends and practices in all of the occupations and industries for which students and job seekers are being prepared.** There are tremendous benefits to keeping current with emerging business trends and employer practices. Not only did the data reviewed for this project show patterns of growth and contraction, but every single interview with an industry expert revealed new practices and business trends that are harbingers of the future. For example, as employer sourcing practices evolve, those responsible for helping students and job seekers secure employment must understand and adapt.

- **Continually update the labor market information summarized in this report.** This information should be used to keep course and program offerings aligned with employer demand and industry needs and standards.

- **Create or take advantage of industry-education partnerships, especially in health care, IT, and hospitality.** The community colleges and training providers should work together to develop and expand relationships with industry, with a focus on identifying opportunities for work-based learning, internships, and other types of support from the business community.

- **Coordinate educational offerings regionally to avoid overcapacity in some areas and under-capacity in others, and improve the articulation from one level of training and education to the next.**

- **Prepare bilingual staff for service industries.** In industries such as health care and hospitality, there is a growing need for bilingual personnel. Health care generally serves the surrounding community, and a number of Hispanic and Asian residents speak only a language other than English. In hospitality, the customer base is increasingly diverse. As the Lower Hudson Valley resident population continues to diversify, the workforce must be able to understand and meet patient and customer needs.

- **Infuse interpersonal skills and practical experience into offerings across disciplines.** Across all industries, employers reiterated the value of good interpersonal skills, including cultural sensitivity, for almost every job. They also mentioned the importance of hands-on experience. As the community colleges and training providers revisit their curricula and course offerings to align further with industry needs, they should find a way to incorporate interpersonal skills and practical experience into their offerings. Teaching these skills could take the form of contextualized learning, simulated work environments, practice in real work situations, or other approaches.

- **Be creative in engaging students to continue their education, even after they start working.** The Lower Hudson Valley has a diverse population with tremendous capacity and potential. Although the area has a highly educated population on average, this high level of education is not uniform across all racial and ethnic groups. All providers of education and training should engage in thoughtful strategies for outreach, especially to those that may be underrepresented in higher education. Some educational institutions in the Lower Hudson Valley are already quite adept at outreach, but this needs to be done well across the board. More can be done to leverage the talents of all segments of the population to make the economy function even better.

The findings in this report underscore the fact that more education yields better employment and career prospects. Increasingly, a bachelor’s degree is becoming the standard for advancement across the labor market. Educators and workforce practitioners should make it convenient for working adults to continue their education, and they should use instructional techniques and practices that engage students.

- **Most importantly, maintain the stakeholder group convened for this initiative.**

Conclusion
New Skills at Work in the Lower Hudson Valley not only provides a blueprint for strengthening middle-skill opportunities in select occupations, but it also offers a platform for continued collaboration among education, business, and government representatives who have shared interests in strengthening local talent pipelines. The high level of cooperation and involvement on display among the stakeholders suggests a collective will to pursue these and other recommendations well after the Initiative comes to a formal close.
Appendix A: Methodology

This report focuses on promising opportunities in Health Information Management, Tech Support, and Hospitality Management in New York State’s Lower Hudson Valley. For the level of educational attainment, these fields support jobs that pay well, are in-demand, and for which the supply of qualified candidates may not be sufficient to meet local demand. In all of these fields, there are opportunities for career advancement over time.

This selection is the product of a careful, step-by-step research approach. The process began with the identification of high-demand occupations and industries, followed by an assessment of the supply of education and workforce programs that prepare candidates, and then a comparison of the demand- and supply-side findings. The process continued with in-depth, qualitative research activities that both validated and supplemented the findings. Below, is a detailed account of the methodology, including intermediate findings. All data sources are detailed in the footnotes.

Identifying high-demand occupations and industries

There are more than 500 unique occupations based in the Hudson Valley. Measures of past, present, and projected demand, educational requirements, and pay were examined to determine which hold the most promise for middle-skill employment.

- Of the universe of occupations, 110 were identified as middle-skill. For these occupations, a middle-skill education is either the most commonly held among workers or typically required to enter.
- Of the 110 occupations, 79 were projected to grow from 2012-2022.

- Of the 79 projected to grow, 59 had an annual average of 20 or more openings each year.
- Of the 59 projected to grow with at least 20 projected annual openings, 53 met or exceeded the regional average entry wage of $22,340.

To ensure a complete picture of employment opportunities in the region, industry data were also analyzed. There are more than 200 discrete industries in the Lower Hudson Valley.

- 103 industries support at least 1,000 jobs.
- 86 also belong to subsectors that project employment growth between 2012 and 2022.
- Within this selection, there were 10 industries that ranked among the top 25 of both employment and projected growth.

The industry analysis confirmed the selection of occupations identified through the occupational analysis. This selection was refined and validated by:

- Evaluating alternative indicators of demand using online job posting analytics (e.g., ad volume and estimated hiring difficulty);
- Reviewing relevant third-party labor market analyses and economic development reports; and
- Considering opportunities for career advancement.

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1 Occupations are based on the Standard Occupational Classification (SOC) system. The most approximate geography available in the New York State Department of Labor’s (NYSDOL) Occupational Employment Statistics was the Hudson Valley Region. In addition to the Lower Hudson Valley counties of Putnam, Rockland, and Westchester, these estimates include Dutchess, Orange, Sullivan, and Ulster counties.


5 NYSDOL, Occupational Employment Statistics current through the first quarter of 2015.

6 Industries are based on the North American Industry Classification System (NAICS). NYSDOL Quarterly Census of Employment and Wages, 2004 through 2014. Industry employment and wage data are available at the county level.


8 Staffing Patterns supplied by NYSDOL and current as of September 17, 2015.

9 WANTED Analytics,™ a proprietary job posting analytics product. This software scrapes the web daily for online job postings, codes ad content into data elements, and stores this information in a database for analysis.
Ten occupations emerged from this analysis, spanning the broad fields of Health Care, Technology and Hospitality:

Health Care
- Medical Assistants
- Dental Assistants
- Radiologic Technologists/Diagnostic Medical Sonographers
- Medical Records and Health Information Technicians
- Occupational Therapy Assistants
- Physical Therapist Assistants

Technology
- Computer User Support Specialists
- Web Developers

Hospitality
- Chefs and Cooks
- Food Service Managers/Hospitality Managers

Assessing the supply of qualified candidates
Another critical component to the New Skills at Work approach involves identifying those high-demand, middle-skill occupations where regional training and education capacity is in need of greater investment and refinement. To that end, the project team scanned the Lower Hudson Valley and surrounding counties for postsecondary programs that prepare students for employment in the selected fields and assessed the classroom capacity of each to meet current and projected demand.

Using publically available data, NYCLMIS linked educational programs with occupations and with this information, identified relevant offerings within the region. Findings were supplemented by a review of online course catalogues and feedback from educational experts. Wherever available, program completion counts were used to assess training capacity. When completion counts were not available, class size was used as a proxy. The 10 high-demand occupations were then sorted into three categories of supply: high, moderate, and low. Consideration was also given to the opportunities for gaining industry-preferred credentials, exposure to learning that represents current industry standards, and the availability of hands-on, practical experience.

With this information, all 10 occupations were grouped into a matrix of relative demand and supply. For the estimated demand, programs preparing individuals to become Cooks, Medical Assistants, Radiologic Technologists and Diagnostic Medical Sonographers were in relatively high supply. Programs preparing individuals to become Dental Assistants, Physical Therapist Assistants, Occupational Therapy Assistants and Web Developers were in moderate or adequate supply. The remaining occupations identified as requiring additional or upgraded capacity were selected for more detailed research under this Initiative: Health Information Management, Tech Support, and Hospitality Management.

Validating findings through industry and regional expert interviews
Upon selecting these fields, more than 18 industry and economic experts based in the Lower Hudson Valley were interviewed for insights into employment challenges and opportunities. These informants and their affiliations are listed in Appendix B.

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10 In addition to the three Lower Hudson Valley counties (Westchester, Rockland, Putnam), NYCLMIS included Orange and Dutchess counties, and the Bronx in New York State, and Fairfield and Litchfield counties in Connecticut.

11 Data sources included the United States Department of Education National Center for Education Statistics (NCES), Integrated Postsecondary Education Data System customized data files (IPEDS) and the New York State Eligible Training Provider List (ETPL). IPEDS includes information from every college, university, and technical and vocational institution that participates in the federal student financial aid program. The ETPL includes all job-training programs in New York State eligible for support by Workforce Innovation and Opportunity Act (WIOA) funds.

12 Classification of Instructional Programs/Standard Occupational Classification (CIP/SOC) crosswalk provided by NCES.

13 Information on industry-recognized credentials was obtained from the BLS’s Occupational Outlook Handbook, O*NET Online, New York State Education Department Office of Professions, trade publications, accrediting organizations, and analysis real-time labor market information, and further validated by expert review.
Appendix B: Regional Experts Consulted

The project partners would like to thank the following industry and economic experts for sharing their valuable time, expertise, and insights about industry trends and middle-skill jobs in their respective areas. They helped to strengthen and deepen the findings and recommendations in this report.

Amy Allen, Vice President, Westchester County Association

Robert W. Amler, Dean, School of Health Sciences and Practice; and Vice President of Government Relations, New York Medical College


Sue Clark-Kendrick, Director Health Information Management, Phelps Memorial Hospital

Diane Cohen, Director, Health Information Management, Schervier Nursing Care Center

Daniel Conte, General Manager, Westchester Marriott Hotel

Lynette DeBellis, Assistant Professor of Nursing, Chairperson, Department of Nursing, Westchester Community College

Dani DeMatteis, Project Manager, Jobs Waiting, Westchester County Association

David DeSanti, General Manager, Central Energy Services, Consolidated Edison of New York Inc.

Edward Farkas, Senior Associate Dean for Clinical Affairs and Chairman of the Department of Dentistry, New York Medical College

Marsha Gordon, President & CEO, Business Council of Westchester

Laurence P. Gottlieb, President & CEO, Hudson Valley Economic Development Corporation

Peter Herrero, Founder and General Manager, NY Hospitality Group

Marc Huestis, Senior Vice President, Gas Operations, Consolidated Edison of New York, Inc.

Norman Jacknis, Senior Fellow, Intelligent Community Forum, Senior Fellow, National Association of Counties

Sara Lawrence, Associate Director, 1199SEIU League Training and Upgrading Fund

Philip McGrath, Curriculum Chair, Culinary Arts and Hospitality Management, Westchester Community College

Laurie Miller McNeill, Director of Institutional Advancement, Westchester Community College

Johny Nelson, Labor Market Analyst, Hudson Valley Region, New York State Department of Labor

Bonnie Reyna, Program Manager, Education Department, 1199SEIU League Training and Upgrading Fund

Anthony Scordino, Vice President Information Technology, Westchester Community College

John Watkins, Curriculum Chair, Cybersecurity Program, Computer Information Technologies, Westchester Community College
Appendix C: Lower Hudson Valley Population Detail

Figure 1: Lower Hudson Valley population, by race/ethnicity, 2010 and 2014

<table>
<thead>
<tr>
<th>Total LHV Population</th>
<th>2010</th>
<th>2014</th>
<th>% Change</th>
</tr>
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<tr>
<td>White</td>
<td>819,295</td>
<td>831,897</td>
<td>2.7%</td>
</tr>
<tr>
<td>Asian</td>
<td>298,338</td>
<td>288,675</td>
<td>-3.3%</td>
</tr>
<tr>
<td>Black</td>
<td>171,987</td>
<td>164,285</td>
<td>-4.5%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>79,001</td>
<td>72,532</td>
<td>-8.2%</td>
</tr>
<tr>
<td>Other</td>
<td>27,456</td>
<td>24,703</td>
<td>-9.7%</td>
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</table>

Figure 2: Top places of birth for the foreign-born population in the Lower Hudson Valley, 2014

<table>
<thead>
<tr>
<th>Caribbean/Latin America</th>
<th>Est. 2014 Population</th>
<th>Asian/Pacific Islander</th>
<th>Other</th>
<th>Est. 2014 Population</th>
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</thead>
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<td>Mexico</td>
<td>24,625</td>
<td>India</td>
<td>Italy</td>
<td>10,489</td>
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<td>Dominican Republic</td>
<td>23,924</td>
<td>Philippines</td>
<td>Ireland</td>
<td>5,512</td>
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<td>Korea</td>
<td>Germany</td>
<td>4,803</td>
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<td>Ecuador</td>
<td>18,615</td>
<td>China/Hong Kong</td>
<td>UK, not specified</td>
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<td>Guatemala</td>
<td>9,017</td>
<td>Pakistan</td>
<td>Poland</td>
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<td>Haiti</td>
<td>8,384</td>
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<td>Colombia</td>
<td>6,659</td>
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<tr>
<td>Peru</td>
<td>6,423</td>
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<td>Guyana/British Guiana</td>
<td>4,396</td>
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</tr>
<tr>
<td>El Salvador</td>
<td>4,128</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Honduras</td>
<td>3,115</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brazil</td>
<td>3,100</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 3: Lower Hudson Valley population, by age, 2010 and 2014

<table>
<thead>
<tr>
<th>Lower Hudson Valley</th>
<th>2010</th>
<th>2014</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 25</td>
<td>448,104</td>
<td>455,016</td>
<td>1.5%</td>
</tr>
<tr>
<td>25–39 years</td>
<td>238,279</td>
<td>239,093</td>
<td>0.3%</td>
</tr>
<tr>
<td>40–59 years</td>
<td>401,511</td>
<td>402,844</td>
<td>0.3%</td>
</tr>
<tr>
<td>60+ years</td>
<td>256,518</td>
<td>282,604</td>
<td>10.2%</td>
</tr>
</tbody>
</table>
**Figure 4:** English language ability for Lower Hudson Valley residents, by race, 2014

<table>
<thead>
<tr>
<th>Race</th>
<th>English Only</th>
<th>Bilingual</th>
<th>Other Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>89%</td>
<td>10%</td>
<td>1%</td>
</tr>
<tr>
<td>Black</td>
<td>86%</td>
<td>13%</td>
<td>1%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>23%</td>
<td>62%</td>
<td>21%</td>
</tr>
<tr>
<td>Asian and PL</td>
<td>27%</td>
<td>62%</td>
<td>10%</td>
</tr>
<tr>
<td>Other</td>
<td>75%</td>
<td>25%</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 5:** English language ability for Lower Hudson Valley residents, by educational attainment, 2014

<table>
<thead>
<tr>
<th>Educational Attainment</th>
<th>English Only</th>
<th>Bilingual</th>
<th>Other Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than HS/HSE</td>
<td>65%</td>
<td>25%</td>
<td>11%</td>
</tr>
<tr>
<td>HS/HSE</td>
<td>72%</td>
<td>21%</td>
<td>7%</td>
</tr>
<tr>
<td>Some college, no degree</td>
<td>77%</td>
<td>20%</td>
<td>2%</td>
</tr>
<tr>
<td>Associate</td>
<td>74%</td>
<td>23%</td>
<td>3%</td>
</tr>
<tr>
<td>Bachelor</td>
<td>77%</td>
<td>21%</td>
<td>2%</td>
</tr>
<tr>
<td>Postgraduate</td>
<td>79%</td>
<td>20%</td>
<td>1%</td>
</tr>
</tbody>
</table>

All figures in this section were generated from an NYCLMIS analysis of the Census Bureau's American Community Survey Public Use Microdata 5-Year Sample, 2010-2014.
Appendix D: Additional Middle-Skill Fields for Consideration

The researchers looked at several other middle-skill areas that ultimately were not selected for in-depth examination, but are worth further consideration. All of these other fields present middle-skill career opportunities with value in the Lower Hudson Valley labor market.

Utilities In the course of the research, the project partners had a conversation with Consolidated Edison (Con Ed) about its middle-skill workforce needs. While jobs with Con Ed and other utility companies may not be plentiful, they offer good middle-skill career opportunities, especially for individuals who are technically inclined. For example, Con Ed employs people in middle-skill occupations in technical areas that can lead to careers with an organization that still very much has a “develop and promote from within” culture.

Con Ed conducts a rigorous assessment for all entry-level jobs. The utility reports that many candidates do not score well enough on the mathematics portion of the assessment to be considered for employment. The utility hires people with a high school diploma but prefers people with an associate degree for many of its entry-level positions, as people with this credential tend to have the skills and knowledge to both perform the entry-level job and be promoted easily. The stakeholders should continue to work with Con Ed and other utilities to provide them with a pipeline of qualified workers, and to offer students and job seekers good career opportunities with these promote from within employers.

Manufacturing Manufacturing employment has declined over the last 10 years, but the businesses that remain have become more sophisticated, and often require workers with advanced skills. There are niches within manufacturing that warrant further attention. Some of the community colleges have developed expertise with this sector, and there may be additional opportunities, especially for a customized approach.

Clinical Health Care fields Health Care is large and growing in the Lower Hudson Valley. Although health information management was the focus area within this sector in this New Skills at Work project, some clinical fields warrant further attention from the Stakeholders.

- **Medical Assistant.** While program capacity for certificate and associate degree programs in this field is robust, some offerings may be in need of updating. The role of a Medical Assistant is changing, becoming a hybrid clinical/administrative job. Educational institutions should make sure that they are current with the changes to Medical Assistants’ scope of practice. Although no State license is required to work as a Medical Assistant, most employers prefer a certification
from an industry-recognized credentialing organization, and some are preferred over others. Specifically, the American Association of Medical Assistants (AAMA)’s Certified Medical Assistant (CMA) appears to be the preferred certification, although any recognized certification is better than none.

- **Certified Dental Assistant.** There is labor market demand for Certified Dental Assistants, but, based on feedback from experts in the field, this demand does not extend to Dental Hygienists, which would be the next step on the career path for dental assistants. For this reason, and also because of high program start-up costs, it was not selected for this project.

At the time local program capacity was researched, there were no offerings in the Lower Hudson Valley that prepared students for the State-licensed Certified Dental Assistant. Certification is required for certain tasks, such as taking dental impressions and patient medical histories, and it has market value. Dental assistants who are not certified cannot perform the full range of tasks included in certification. Because equipment and associated startup costs for an independent training program may be prohibitively high, interested stakeholders should explore a partnership with New York Medical College, which is on track to start a new DDS program in Valhalla in the fall of 2016.

- **Physical Therapist Assistant.** This is a State-licensed occupation and SUNY Orange County Community College is the only institution near the Lower Hudson Valley region, including Rockland Community College, that prepare students to work in this field, but their collective capacity is small (71 students in 2014). The stakeholders may want to consider whether additional capacity is needed, especially with an aging population in the area.

- **Occupational Therapy Assistant.** This is also a State-licensed occupation. There are a few community colleges in and around the Lower Hudson Valley region, including Rockland Community College, that prepare students to work in this field, but their collective capacity is small (71 students in 2014). The stakeholders may want to consider whether additional capacity is needed, especially with an aging population in the area.

- **Laboratory Technician.** There is labor market demand for this occupation, but programs are expensive and complicated to set up, and salaries are often low.

- **Anesthesia Technologist.** There might be a need for an associate degree program in this occupation. There is a new requirement for licensing/certification and no local education capacity. However, it is not clear whether the number of projected job openings warrant additional investments in capacity.

- **Physical Therapist Assistant.** This is a State-licensed occupation and SUNY Orange County Community College is the only institution near the Lower Hudson Valley with a program accredited by the American Physical Therapist Association. With modest annual openings and high education requirements, more research is needed to determine where, and to what extent, additional capacity is warranted. Physical Therapist is the next step in this career path, and it increasingly requires a doctorate in order to practice. This is a giant leap from the associate degree required for Physical Therapist Assistants.