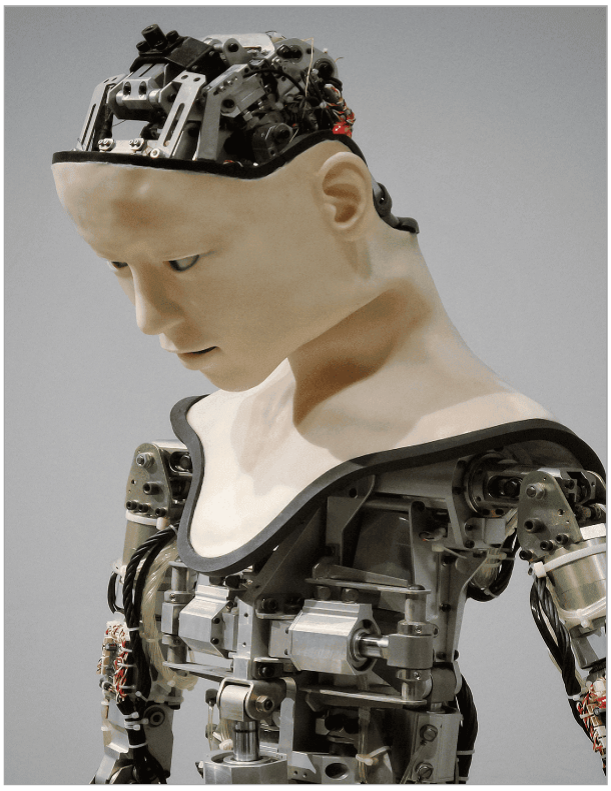
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Report - June 2018

State of Work: The Coming Impact of Automation on New York

Millions of jobs in New York State will feel the effects of automation in the coming decades. These jobs are not necessarily disappearing, but they are transforming, as artificial intelligence, machine learning, and advanced robotics tackle more roles in the workplace. Policymakers should act now to help New Yorkers prepare for the changes that are coming to the world of work.

by Matt A.V. Chaban

It has taken decades for New York State's economy to rebound from the effects of offshoring and globalization. From Buffalo and Rochester to Binghamton and Riverhead, the state has shed hundreds of thousands of jobs—particularly in manufacturing and related industrial sectors—and upstate job growth has been comparatively slow. Yet in the years ahead, New York State will need to contend with an even more powerful and fast-moving economic force: automation.

Machine learning, robotics, and artificial intelligence are poised to bring about massive changes to a much larger swath of the economy in the years ahead, sweeping not just through factory floors but office towers, hospital wards, and main streets. Automation has the potential to displace workers in a growing range of occupations, as varied as bookkeepers and x-ray technicians, paralegals and food prep workers. The result is that both traditional and emerging industries will be transformed, with significant effects on New York's workforce.

This research provides the first comprehensive look at the automation potential of every occupation statewide and in each of New York's ten regions.

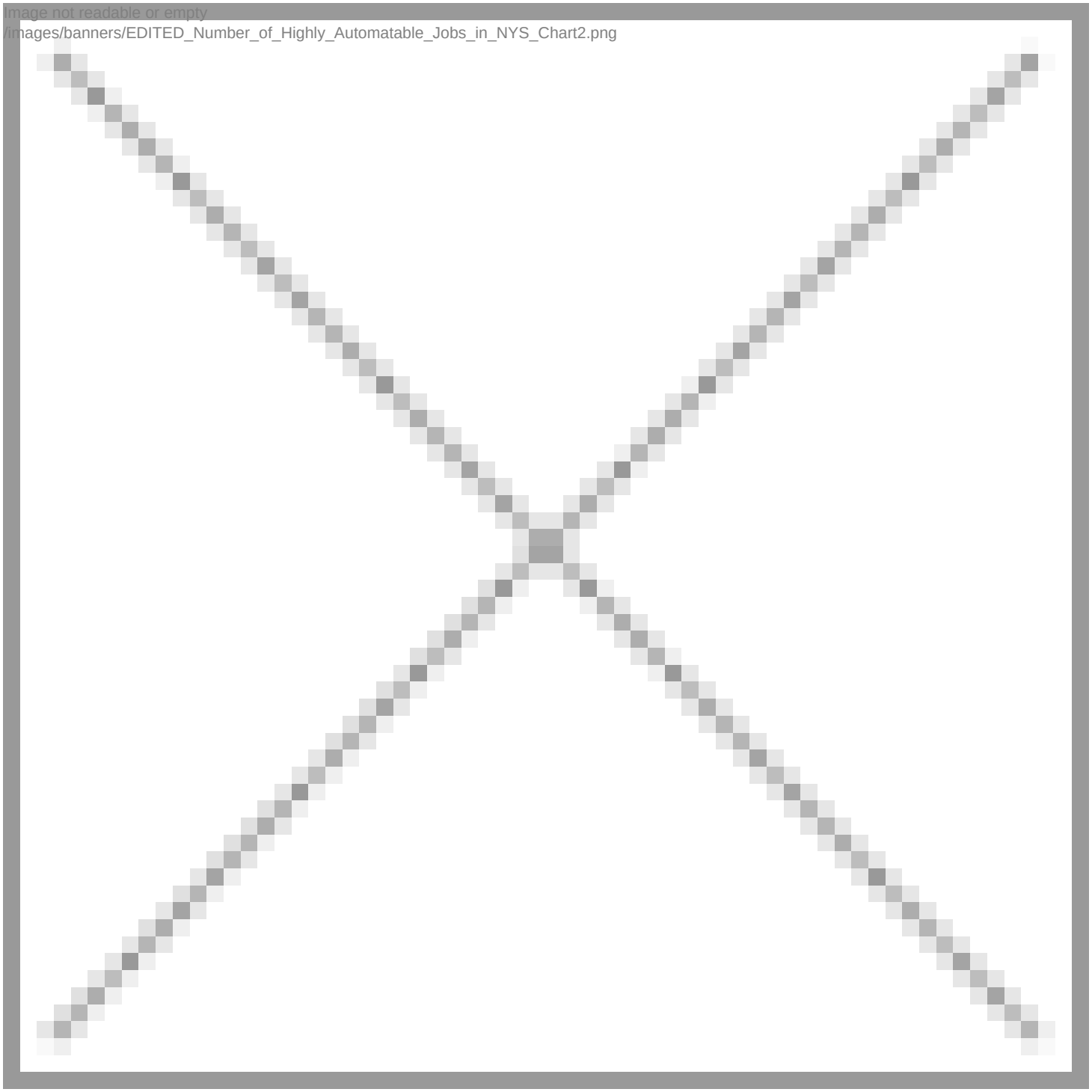
Our study finds that New York State is less susceptible to automation than the nation as a whole. But it also reveals that more than 1.2 million jobs in the state, about 12 percent of the state's workforce, could be largely automated using technology that exists today. (These are jobs in which 80 percent or more of their associated tasks could be done by machines.)

To be clear, automation is not expected to eliminate all, or even most, of these jobs. Indeed, this analysis shows that there are only about 24,740 jobs in the state that are 100 percent automatable. As with other major economic transformations—such as the Industrial Revolution, the dawn of electricity, and the Internet age—some jobs will disappear,

many will be created, and in the end, most will simply change.

There is immense potential for jobs across New York to be transformed. Statewide, the equivalent of 41.2 percent of all job tasks could be performed by machines in the coming decade. On this score, New York is actually better off than the nation, where 51 percent of all job tasks could be done by machines, according to an analysis by the McKinsey Global Institute on which this report is based. (This is not to suggest that 41 percent of jobs in the state will be eliminated; that is simply the scope of job responsibilities that could change as more of today's work—whether taking orders, entering data, or even driving—is done by machines.)

The potential for automation is spread fairly evenly across the state. Of all regions, the automation potential is highest in Western New York, where 44.5 percent of all job tasks could be done using existing technology. Other regions with high automation potential include Central New York (44.4 percent), the North Country (44.3 percent), the Mohawk Valley (43.8 percent), and Long Island (43.7). New York City has the lowest potential for automation, as detailed by the Center in a January report; just 39 percent of jobs in the five boroughs stand a high likelihood of being automated. But other regions also have a comparatively lower potential for automation, such as the Capital Region (42 percent) and the Hudson Valley (42.2 percent).[1]



This research—part of our Middle Class Jobs Project, a research initiative funded by Fisher Brothers and Winston C. Fisher—also finds that the jobs that offer New Yorkers a foothold in the economy and a gateway to the middle class are the ones most threatened by automation.

Such is the case with the state's roughly 155,000 food preparers and servers, including fast food workers, the largest group whose tasks are highly susceptible to automation (87 percent of their job tasks could be automated). It's also the case for the state's 124,000 accounting and bookkeeping clerks (86 percent automation potential), and the 181,000 who drive tractor trailers, delivery trucks, and buses (78 to 85 percent automation potential). Additionally, there are 112,000 stock clerks and 34,000 dishwashers whose jobs are all roughly 86 percent automatable.

Even among the state's 20,000 chief executives, computers will be able to perform 25 percent of their work in the coming

decades. That's a notch more vulnerable than the state's 211,000 janitors, since machines are predicted to do only 22 percent of all custodial tasks—although "smart" mops could well become part of the job.

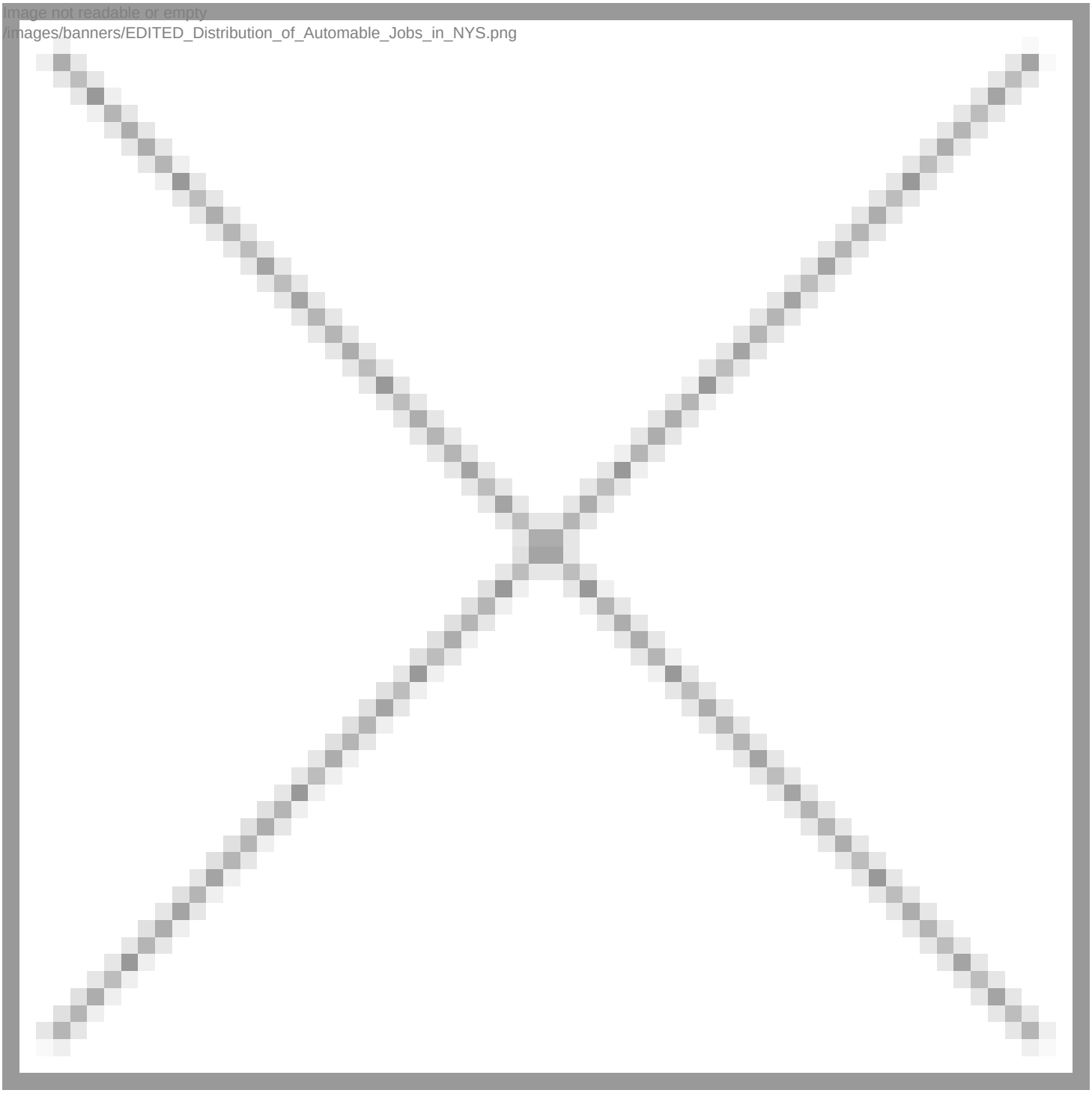
We also conclude that the strongest effects are on lower- and middle-income jobs—the first rungs of the state's economic ladder—where the impact of automation is likely to be significant. Among the 100 most automatable occupations in the state with at least 1,000 workers, 68 percent make less than $40,000 per year, while 31 percent make between $40,000 and $80,000 annually, and only one of those positions—crane operators— makes more. In total, the equivalent of $186 billion wages could be impacted by automation.

Precisely because it will be difficult to predict exactly which jobs will be impacted by automation and where, policymakers, business leaders, and educators across New York have all the more reason to start preparing now. In many parts of the state, the same communities that have struggled with the loss of industrial and manufacturing jobs are likely to confront even greater challenges in the years ahead. Meanwhile, areas that have benefited from new jobs in industries like restaurants and retail will not be immune to the forces of automation. Preparing New York State for the future of work is a job that starts today.

Automation and the Empire State

- Only about 24,740 positions are 100 percent automatable in New York State. These include packaging and filling machine operators (14,880), ophthalmic laboratory technicians (3,190), and meat packers (950).
- At the same time, nearly 1.2 million jobs could have 80 percent or more of their tasks performed by machines in the next two to four decades. Among these are bakers, bicycle mechanics, mail clerks, and fast food workers.
- For roughly 3.3 million jobs, or 34 percent of New York State's labor force, at least half of the work can be done by machines.
- New York is better positioned than many other U.S. states. Overall, about 41.2 percent of all work could be automated in New York State. This compares to 51 percent nationally.
- Among the state's regions, Western New York fares the worst, with 44.5 percent of work able to be done by machines. Central New York is a close second, at 44.4 percent. New York City fares best, with 39 percent of work being automatable, followed by the Capital Region at 42 percent.
- The most highly automatable jobs statewide are food preparation and service workers (154,570 positions, 86.7 percent automatable); bookkeeping, accounting and auditing clerks (123,720, 85.6 percent); stock clerks and order fillers (111,940, 86.4 percent); and restaurant cooks (65,330, 84 percent).
- Among the largest jobs that are highly resistant to automation are home health aides (190,490 positions, 10.8 percent automatable); teacher assistants (131,800, 19.9 percent); accountants and auditors (124,740, 12.3 percent); and freight, stock, and material movers and hand laborers (110,190, 6.7 percent).
- Only four of the 50 fastest growing jobs in the state over the next decade are highly automatable: food preparation and serving workers, including fast food; computer-controlled machine tool operators; restaurant cooks; and cement masons and concrete finishers. However, these four occupations account for more than 64,000 new positions and nearly 5 percent of all projected job gains by 2024.
- The equivalent of $186 billion in wages could be impacted by automation.
- Among the 100 most automatable occupations in the state with at least 1,000 workers, 68 percent make less than $40,000 per year, while 31 percent make between $40,000 and $80,000 annually, and only one of those positions makes more than $80,000.

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The effects of automation will be felt in every corner of the state, although some regions rely more heavily on highly automatable jobs. In evaluating the likelihood that a machine could perform each job's component tasks, this analysis reveals which occupations are most likely to be augmented and supplanted in the decades to come. One key factor in determining automatability is the prevalence of work that is highly routine, whether physically or cognitively. Where job tasks are more variable—relying on interpersonal relationships and quick judgement calls—humans continue to have the edge.

The effects of automation may no longer be confined to the factory floor, but production occupations remain the most susceptible to displacement. That's a major reason why Western New York—where manufacturing still accounts for almost 1 in 10 jobs—is the state's most vulnerable region.

The average job in the nine regions excluding New York City is about 10 percent more likely to be automated than it is in the

five boroughs, although rates for every region remain below the national average. New York City—with a large number of workers in high-touch healthcare jobs, managerial positions, customer service, and the creative economy—is the region of the state least vulnerable to the effects of automation. That said, more than one-third of the state's most highly automatable jobs are in New York City: more than 454,000 in total.

However, four regions across the state are home to more than 100,000 highly automatable jobs, and all ten regions have at least 20,000 jobs that are highly automatable. This includes 182,650 in Long Island; 116,330 in the Hudson Valley; 105,200 in Western New York; 80,470 in the Finger Lakes; 72,770 in the Capital Region; 57,800 in Central New York; 40,990 in the Southern Tier; and 22,080 in the North Country. The most automatable jobs in each region are relatively consistent statewide, as the breakdown below reveals. Close to 2 percent of the state's workforce is employed in food preparation and serving jobs, including fast food, and those jobs are spread across the entire state. The same goes for jobs filling orders or driving delivery trucks. As a result, automation is likely to transform not only those regions with a traditional reliance on manufacturing, but other parts of the state that have seen the service sector expand significantly over the past two decades.

Automation in New York State, Region by Region

Region	Jobs (2016)	Automation Potential	Jobs with ?80% automatability	Share of jobs ?80%	Jobs with ?50% automatability	Share of jobs ?50%	Wages Affected by Automation
CAPITAL REGION	550,700	42%	72,770	13%	190,110	35%	$9,598,990,193
CENTRAL NEW YORK	354,630	44%	57,800	16%	134,170	38%	$5,878,231,585
FINGER LAKES	591,220	43%	80,470	14%	210,310	36%	$9,664,733,982
HUDSON VALLEY	928,090	42%	116,330	13%	320,170	34%	$17,141,977,479
LONG ISLAND	1,324,970	44%	182,650	14%	495,930	37%	$26,116,619,141
MOHAWK VALLEY	188,470	44%	28,810	15%	69,270	37%	$2,815,388,075
NEW YORK CITY	4,439,750	39%	454,010	10%	1,364,650	31%	$91,874,507,312
NEW YORK STATE*	9,858,400	41%	1,205,320	12%	3,315,870	34%	$185,991,146,330

Region	Jobs (2016)	Automation Potential	Jobs with ?80% automatability	Share of jobs ?80%	Jobs with ?50% automatability	Share of jobs ?50%	Wages Affected by Automation
NORTH COUNTRY	149,630	44%	22,480	15%	53,960	36%	$2,263,374,319
SOUTHERN TIER	278,790	43%	40,990	15%	104,140	37%	$4,472,712,733
WESTERN NEW YORK	667,530	45%	105,220	16%	253,590	38%	$10,900,905,448

(*All statewide data is for 2017, regional data 2016, the most recent years available.)

Capital Region

- The 55,700 jobs in the Capital Region have an automation potential of 42 percent. That is the second-lowest rate among New York State's ten regions, though still above the statewide average of 41.2 percent (which is heavily weighted by New York City).
- There are 72,770 highly automatable jobs (where at least 80 percent of work can be done by machines), or 13.2 percent of all occupations. There are 190,110 jobs where at least half the work can be done by machines.
- The region's three largest occupations are retail sales (17,560 jobs, 47 percent automatable), office clerks (14,070, 61 percent), and cashiers (13,010, 49 percent).
- The largest highly automatable jobs are combined food preparation and serving workers, including fast food (9,390 jobs, 87 percent automatable); bookkeeping, accounting and auditing clerks (8,000, 86 percent); and stock clerks and order fillers (6,290, 86 percent).
- Roughly $9.6 billion in annual wages could be impacted by automation in the Capital Region.

Central New York

- The 354,630 jobs in Central New York have an automation potential of 44.4 percent. That is the second-highest rate in the state.
- There are 57,800 highly automatable jobs (where at least 80 percent of work can be done by machines), or 16.3 percent of all positions. This is the highest level in the state. There are 134,170 jobs, or 37.8 percent of the total, that are 50 percent automatable or more, and 206,390, or 58.2 percent, where roughly a third of the work can be automated. These are also among the highest levels in the state.
- The region's three largest occupations are retail sales (13,050 jobs, 47 percent automatable), cashiers (8,660, 49 percent), and customer service representatives (8,340, 29 percent).
- The largest highly automatable jobs are combined food preparation and serving workers, including fast food (7,460 jobs, 87 percent automatable); bookkeeping, accounting and auditing clerks (5,290, 86 percent); and stock clerks and order fillers (5,130, 86 percent).
- Nearly $5.9 billion in annual wages could be impacted by automation in the Central Region.

Finger Lakes

- The 591,220 jobs in the Finger Lakes region have an automation potential of 42.9 percent. That is the fourth-lowest rate in the state.
- There are 80,470 highly automatable jobs (where at least 80 percent of work can be done by machines), or 13.6 percent of all positions. There are 210,310 jobs, or 35.6 percent, that are at least half automatable.
- The region's three largest occupations are retail sales (19,000 jobs, 47 percent automatable), followed by secretaries and administrative assistants (16,570, 54 percent), and cashiers (13,680, 49 percent).
- The largest highly automatable occupations are combined food preparation and serving workers (10,920 jobs, 87 percent automatable); bookkeeping, accounting, and auditing clerks (7,260, 86 percent); and stock clerks and order fillers (6,690, 86 percent).
- Approximately $9.7 billion in annual wages could be impacted by automation in the Finger Lakes region.

Hudson Valley

- The 928,090 jobs in the Hudson Valley region have an automation potential of 42.2 percent. That is the third-lowest rate in the state.
- There are 116,330 highly automatable jobs (where at least 80 percent of work can be done by machines), or 12.5 percent of all positions. This is the second-lowest rate in the state. Some 320,170 jobs, or 34.5 percent, are at least half automatable.
- The region's three largest occupations are retail sales (37,920 jobs, 47 percent automatable), followed by cashiers (23,240, 49 percent), and janitors (22,030, 22 percent).
- The largest highly automatable occupations are stock clerks and order fillers (16,350 jobs, 86 percent automatable); combined food preparation and serving workers, including fast food (15,100, 87 percent); and bookkeeping, accounting, and auditing clerks (12,850, 86 percent).
- Just over $17.1 billion in annual wages could be impacted by automation in the Hudson Valley region.

Long Island

- The 1.32 million jobs in the Long Island region have an automation potential of 43.7 percent. That is the fifth-highest rate among the state's 10 regions.
- There are 182,650 highly automatable jobs (where at least 80 percent of work can be done by machines), or 13.8 percent of all positions. There are 495,930 jobs, or 37.4 percent, that are at least half automatable, and 772,910 jobs that are at least 30 percent automatable—equal to 58.3 percent of Long Island's workforce.
- Although Long Island is fairly resilient when it comes to highly automatable work—perhaps due to a relative lack of manufacturing and production jobs—it has the third-highest share of jobs statewide that are at least 50 percent automatable, led by a large number of entry-level and lower-skilled office jobs.
- The region's three largest occupations are retail sales (53,830 jobs, 47 percent automatable), followed by secretaries and administrative assistants (34,300, 54 percent), and general office clerks (28,790, 61 percent).
- The largest highly automatable occupations are combined food preparation and serving workers, including fast food (23,440 jobs, 87 percent automatable), bookkeeping, accounting, and auditing clerks (22,000, 86 percent), and stock clerks and order fillers (20,340, 86 percent).
- Just over $26.1 billion in annual wages could be impacted by automation on Long Island.

Mohawk Valley

- The 188,470 jobs in the Mohawk Valley region have an automation potential of 43.8 percent. That is the fourth-highest rate in the state.
- There are 28,810 highly automatable jobs (where at least 80 percent of work can be done by machines), or 15.3 percent of all positions. There are 69,270 jobs, or 36.8 percent, that are at least half automatable, and 107,500 jobs are at least 30 percent automatable, 57 percent of all jobs in the region.
- The region's three largest occupations are retail sales (6,290 jobs, 47 percent automatable), followed by combined food preparation and serving workers, including fast food (4,490, 87 percent), and personal care aides (4,470, 24 percent).
- The largest highly automatable occupations are combined food preparation and serving workers (4,490, 87 percent automatable), bookkeeping, accounting, and auditing clerks (3,210, 86 percent), and tractor-trailer truck drivers (2,280, 81 percent).
- The Mohawk Valley is one of only two regions (the other is Western New York) where one of the three largest occupations is also among the most highly automatable (in this case, food prep and serving workers).
- Approximately $2.8 billion in annual wages could be impacted by automation in the Mohawk Valley region.

New York City

- The 4.4 million jobs in New York City have an automation potential of 39 percent. That is the lowest rate in the state, and three percentage points lower than the Capital Region, which ranks second. Overall, New York City is somewhat more resilient to automation than the rest of the state.
- There are 454,010 highly automatable jobs (where at least 80 percent of work can be done by machines), or 10.2 percent of all positions. There are 1.36 million jobs, or 30.7 percent, that are at least half automatable, and 2.24 million jobs are at least 30 percent automatable (50.5 percent of all jobs in the city). Each of these is the lowest rate in its category,
- The city's three largest occupations are retail sales (132,880 jobs, 47 percent automatable), followed by home health aides (129,090, 11 percent), and janitors and cleaners (106,810, 22 percent).
- The largest highly automatable occupations are: bookkeeping, accounting, and auditing clerks (55,040, 86 percent automatable), combined food prep and serving workers (49,540, 87 percent), and stock clerks and order fillers (40,320, 86 percent).
- Approximately $91.8 billion in wages would be impacted by automation in the five boroughs.

North Country

- The 149,630 positions in the North Country region have an automation potential of 44.3. That is the third-highest rate in the state.
- There are 22,480 highly automatable jobs (where at least 80 percent of work can be done by machines), or 15 percent of all positions. There are 53,960 jobs, or 36.1 percent, that are at least half automatable, and 88,260 jobs are at least 30 percent automatable, 59 percent of all regional jobs. The latter is the highest rate in the state.
- The region's three largest occupations are retail sales (6,050 jobs, 47 percent automatable), followed by cashiers (4,140, 41 percent), and correctional officers and jailers (3,990, 42 percent).
- The largest highly automatable occupations are: combined food preparation and serving workers, including fast food (2,760, 87 percent automatable); bookkeeping, accounting, and auditing clerks (2,420, 86 percent); and stock clerks and order fillers (1,880, 86 percent).

- Approximately $2.3 billion in annual wages could be impacted by automation in the North Country region.

Southern Tier

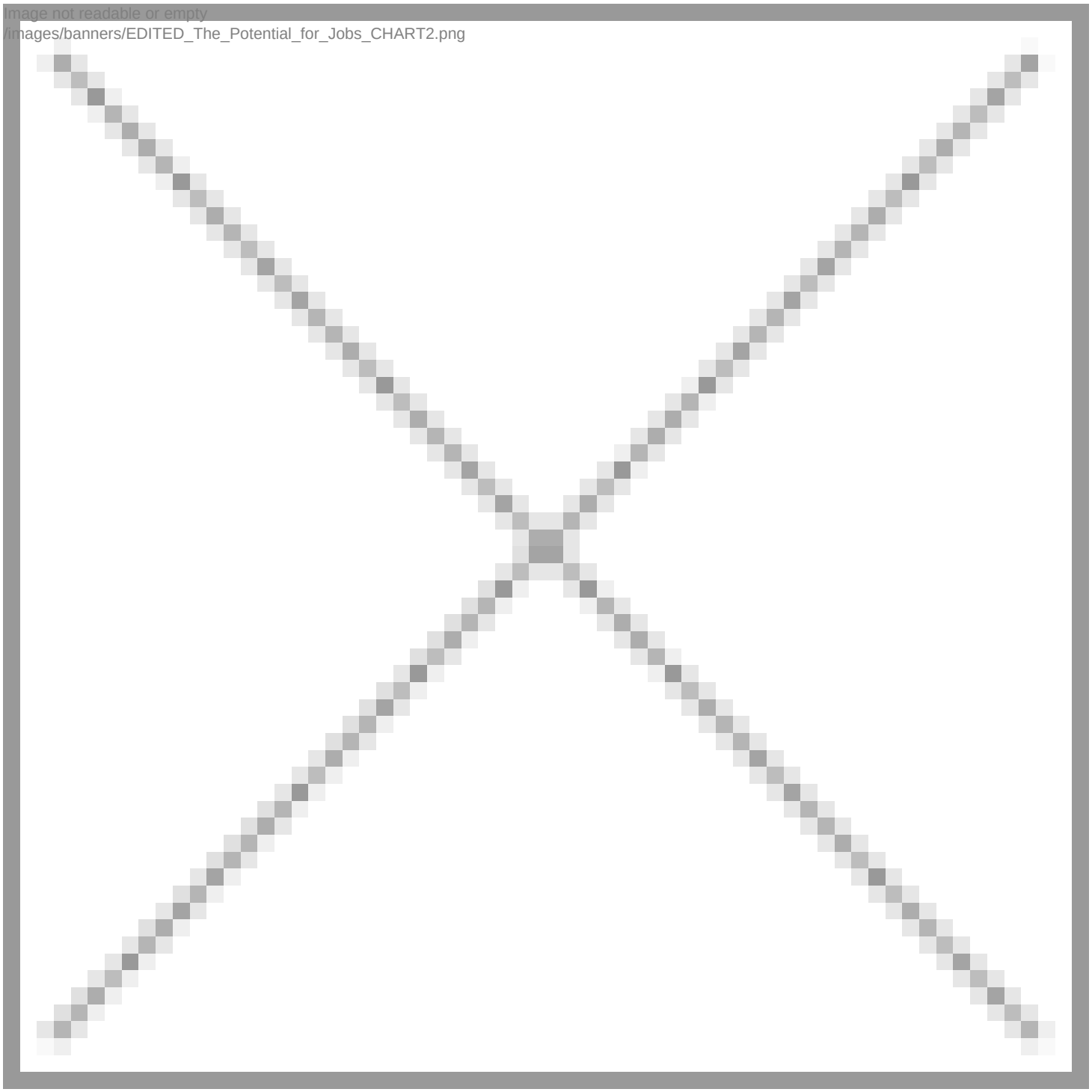
- The 278,790 positions in the Southern Tier region have an automation potential of 43.2 percent. That is the fifth-highest rate among the state's 10 regions.
- There are 40,990 highly automatable jobs (where at least 80 percent of work can be done by machines), or 14.7 percent of all positions. There are 104,140 jobs, or 37.4 percent, that are at least half automatable, and 157,790 jobs are at least 30 percent automatable, comprising 56.6 percent of all regional jobs.
- The region's three largest occupations are retail sales (8,150 jobs, 47 percent automatable), followed by secretaries and administrative assistants (8,070, 54 percent), and cashiers (7,110, 49 percent).
- The largest highly automatable occupations are: combined food preparation and serving workers, including fast food (4,980, 87 percent automatable); bookkeeping, accounting, and auditing clerks (4,270, 86 percent), and stock clerks and order fillers (3,860, 86 percent).
- Almost $4.5 billion in annual wages could be impacted by automation in the Southern Tier region.

Western New York

- The 667,530 positions in the Western New York region have an automation potential of 44.5 percent. That is the highest rate in the state, though only just above Central New York (44.4 percent) or the North Country (44.3 percent).
- There are 105,220 highly automatable jobs (where at least 80 percent of work can be done by machines), or 15.8 percent of all positions. There are 253,590 jobs, or 38 percent, that are at least half automatable, and 391,210 jobs are at least 30 percent automatable, comprising 58.6 percent of all regional jobs.
- At each of these tiers, Western New York's share of automatable work ranks among the highest in the state: it has the second-highest share of jobs that are at least 80 percent automatable (after Central New York), the highest share that are at least 50 percent automatable, and the second-highest share that are at least 30 percent automatable (after the North Country region).
- The region's three largest occupations are retail sales (23,820 jobs, 47 percent automatable), followed by cashiers (17,330, 49 percent) and combined food preparation and serving workers, including fast food (14,790, 87 percent).
- The largest highly automatable occupations are: combined food preparation and serving workers (14,790, 87 percent automatable), stock clerks and order fillers (8,950, 86 percent), and bookkeeping, accounting, and auditing clerks (8,820, 86 percent).
- Western New York is one of only two regions (the other being the Mohawk Valley) where one of the three largest occupations—food preparation and serving workers—is also among the most highly automatable.
- Another potential factor in the high level of automation in Western New York is that it is still heavily reliant on manufacturing. Today, 9.1 percent of the workforce, roughly 60,570 people, is in production jobs. That is more than twice the number in the Capital region (4 percent), Long Island (3.8 percent), and the Hudson Valley (3.4 percent). New York City still has the most production jobs in the state, around 90,820, but those jobs comprise just 2 percent of the workforce in the five boroughs.
- Among Western New York's largest and most vulnerable production occupations are packaging and machine filling operators (2,420 jobs, 100 percent automatable), machinists (2,950, 80 percent automatable), and welders (1,520, 92 percent automatable).
- Roughly $10.9 billion in annual wages could be impacted by automation in the Western New York region.

[*Additional details about automatable jobs can be found here:* **Statewide** | **Capital Region** | **Central New York** | **Finger Lakes** | **Hudson Valley** | **Long Island** | **Mohawk Valley** | **New York City** | **North Country** | **Southern Tier** | **Western New York**]

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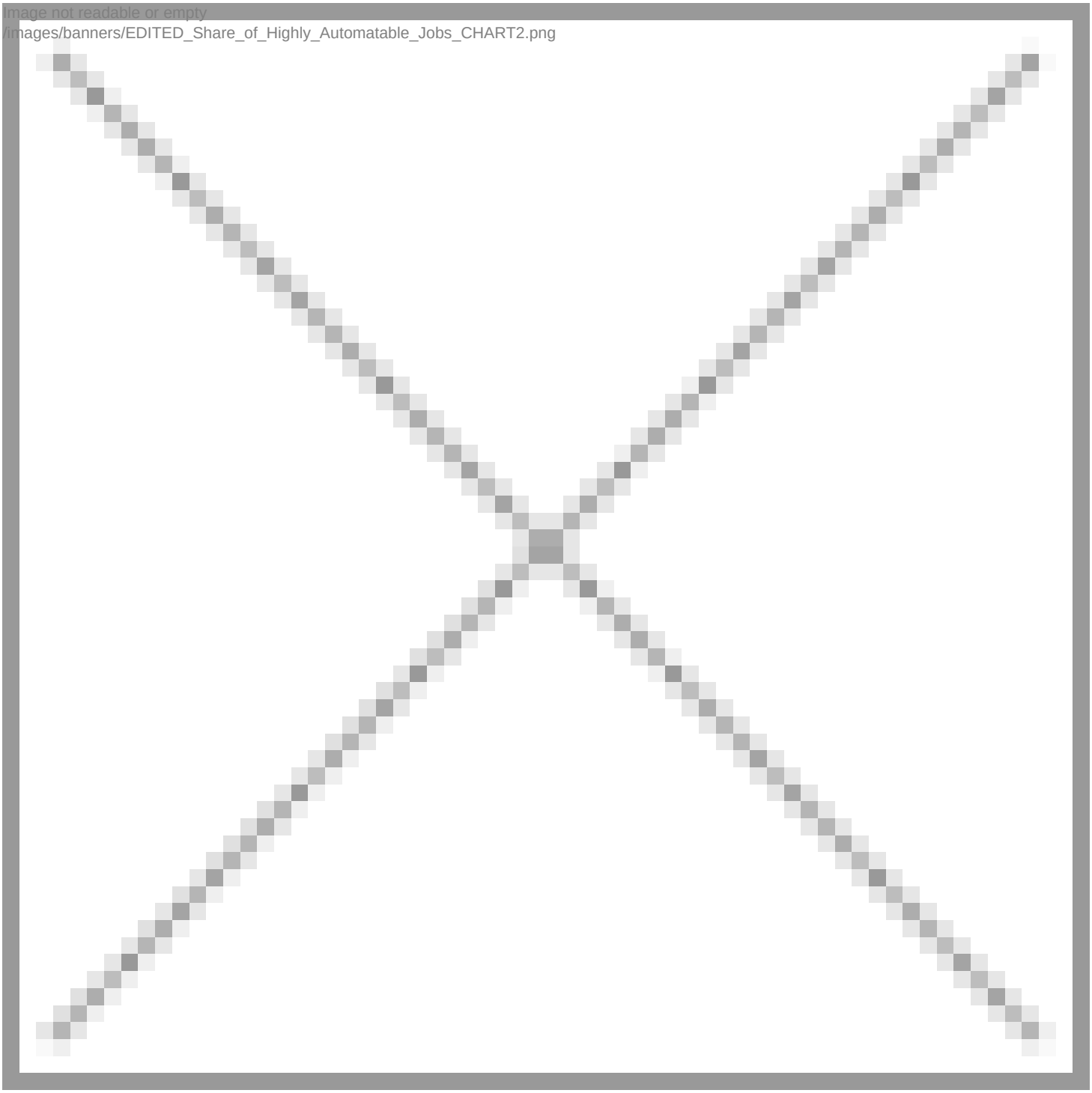


While some regions are more dependent on certain fields for employment, every region of the state has large numbers of workers in similar occupations. In addition to food preparation and serving jobs, including fast food, which are prevalent statewide and highly automatable, there are thousands of New Yorkers in every region employed in personal care, which is quite resilient to automation; retail, which is only somewhat durable; and bookkeeping, which is rather vulnerable. All of these jobs may change significantly as new technology is developed and adopted, but most workplaces will still need help with this work, and someone will have to perform it. The result is that the skills required to access even entry-level opportunities may increase, even as humans continue to hold most of the jobs that exist today.

Many of the state's most automatable occupations are also expected to add jobs over the next decade, although an increased pace of technology adoption could change this. Such trends may appear to counter the headlines of kiosk-filled McDonald's restaurants and Shake Shacks and autonomous Tesla-built tractor trailers, although some of these changes are already underway. The tipping point for many jobs may well be more than a decade out; however, the growth of jobs in highly vulnerable industries only underscores the urgent need to prepare the state's workforce for the changes to come.

There are some regional variations. The persistence of manufacturing jobs, which account for 9 percent of all jobs in Western New York and 6 percent in Central New York, could help explain why both are relatively more vulnerable than New York City (2 percent), the Capital Region (4 percent), and the Hudson Valley (3.4 percent). Long Island's large share of jobs that are at least 50 percent automatable may have some correlation with a higher number of office administrative positions, which are almost one in five jobs in Nassau and Suffolk counties. That compares to one in six on average in the state and in New York City. The five boroughs also employ a lower number of workers in transportation fields (4.9 percent) than is typical in the rest of the state (5.3 percent).

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Indeed, all manner of factors, not just economic or technical, could determine whether a business decides to replace some or all of its workers with machines. It is not just a matter of how soon fully autonomous dishwashers can be developed, but if it would be worth paying to buy and maintain such a machine when most human dishwashers make minimum wage. In other cases, the complexity of job tasks is a key determinant: while accounting clerks, whose job tasks consist largely of routine data entry, are highly vulnerable to automation, accountants are the second-largest highly resilient occupation in the state.

There are also political factors—powerful unions have kept subway and train conductors employed despite automatability rates approaching 95 percent—and social ones. There are some 151,380 waiters in the state, the 11th largest profession, and just over three quarters of their work (76.9 percent) is automatable. Yet many people go out to eat as a special treat and value the human connection that a server provides, and restaurants may find that humans are more effective at upselling a

second round of drinks than any robot. However, some venues and businesses, like airport terminals and fast food outlets, have demonstrated a willingness to make this shift, leading to the even higher automatability of fast food workers and the heightened risks for the entry-level positions with the lowest barriers to entry.

Although relatively few of the fastest growing occupations in New York State are highly automatable, the vast majority of growing fields will experience major changes. The average automation potential of the 50 fastest growing occupations is nearly 39 percent. This approaches the statewide average and is a reminder of just how much most jobs will change—with two in five job tasks able to be done by machines instead of people in the near future.

Jobs in Major Occupational Categories That Are at Least Half Automatable

Region	Production	Share	Food Prep	Share	Office Administration	Share	Transportation	Share	Tota
NEW YORK STATE*	347,500	3.5%	708,390	7.2%	1,575,070	16.0%	501,000	5.1%	9,829,1
NEW YORK CITY	90,820	2.0%	309,350	7.0%	715,240	16.1%	216,670	4.9%	4,439,7
LONG ISLAND	51,940	3.8%	97,520	7.1%	246,750	18.0%	73,090	5.3%	1,367,6
HUDSON VALLEY	32,730	3.4%	70,130	7.3%	151,050	15.8%	52,600	5.5%	956,88
WESTERN NEW YORK	60,570	9.1%	46,180	6.9%	109,350	16.4%	37,350	5.6%	667,53
CAPITAL REGION	22,870	4.0%	40,500	7.1%	94,120	16.4%	28,420	5.0%	573,35
CENTRAL REGION	21,750	6.1%	29,690	8.4%	63,090	17.8%	22,170	6.3%	354,63

(*All statewide data is for 2017, regional data 2016, the most recent years available.)

As a result, New Yorkers will require a new level of tech fluency to be prepared for the jobs of tomorrow, many of which will become augmented by computers, robots, artificial intelligence, and machine learning. For example, retail workers may need to manage Internet-connected point-of-sale and inventory management systems and build advanced customer profiles, while personal care workers may need to update client records using their smartphones or set up remote doctor visits via FaceTime.

Critical thinking, adaptability, and the ability to learn new tools will be crucial for most workers in the future—as it should be now for the policymakers, educators, and business leaders responsible for preparing for the coming world of work. The promise of automation is as great as any perceived peril, but only if New Yorkers are ready to tackle these new and evolving

occupations.

- A college credential is already essential for most good jobs in today's economy, and it will be even more so in tomorrow's. As more and more occupations begin to require higher levels of tech fluency, workers will need the critical thinking and learning skills to succeed in an automated and augmented workplace. But today more than 7.6 million New Yorkers over 25 lack a college credential, and graduation rates at community colleges across the state remain alarmingly low, with three-year graduation rates at just 25 percent. Policymakers and educators need to do more to **boost college success** in New York, ensuring that a lot more of the New Yorkers who enroll in SUNY and CUNY colleges are able to earn a credential. We recommend that Governor Cuomo and the Legislature establish a statewide Student Success Fund, which would empower SUNY and CUNY to implement and expand programs that help students overcome barriers to earning a credential. State officials should also consider additional investments in the college success programs that are already working, like CUNY ASAP; flexible funding for low-income students that tackles the non-tuition barriers to college completion; and reform of Tuition Assistance Program rules to ease the path for part-time students, so those who are working and studying simultaneously can get a boost.
- For many other New Yorkers in the middle of their working lives, **upskilling will become even more essential**. Governor Cuomo's bold new $175 million investment in the state's workforce development system can help to seed and scale up programs aimed at retraining workers for the jobs of the future by providing flexible funding to local workforce development organizations. In order to help New York adjust to the coming wave of automation, this investment will have to be sustained over time. Meanwhile, employers, business associations, educational institutions, and workforce provides will need to work more closely together at the local level to assess the changing needs of their regional economies. In response to shifting employer demands, new programs should help mid-career workers learn new technical skills and earn industry-recognized credentials that will help them advance. This means making an investment in life-long learning for all New Yorkers, whether it's to help them keep the jobs they have as requirements change or access new opportunities that are poised to grow.
- For any training program or credential to be worthwhile, **skills-building organizations and educational institutions should align their programs with the needs of employers**. Companies eager for workers with a specific skillset should also take a role, both by investing in partnerships with workforce development providers and schools, and by informing their curricula. Programs like the IBM-led P-TECH model are slowly expanding, but this approach should be integrated into public schools statewide. This six-year high school provides basic education as well as work experience in growing fields like tech and healthcare, and often leads to jobs right out of school. Likewise, New York State has an enormous opportunity to continue expanding apprenticeship programs, especially in growing fields like healthcare, tech, advanced manufacturing, and the creative economy
- Existing federal, state and local programs aimed at helping workers adjust to economic shifts—such as trade adjustment assistance for off-shored jobs—could be updated to include workers displaced by automation. A new bill introduced by Senator Kirsten Gillibrand, the **TAA for Automation Act**, would do just that. Congress should pass this legislation and consider other ways that existing programs can be expanded to include automation preparation.
- Preparing for automation is a challenge facing the entire country, which means that leaders in Washington will need to consider ways to **reimagine the social safety net** for a world in which more people will be working in contingent labor and many adults will need to balance work and family responsibilities with the need for additional training and education.
- This new way of working requires a new way of thinking, and educators will need to start early. Critical-thinking, problem-solving, and adaptability will become just as important to students as courses in STEAM, so they can learn to adapt to a workplace in flux. **Career exploration and work-study opportunities** for all students will be more important than ever, including hands-on career exploration in middle school and more internships in high schools statewide.

Photo Credit: Franck V./Unsplash

[1] All statewide calculations are based on the Center for an Urban Future's analysis of 2017 data from the New York State Department of Labor. All regional data is from 2016, the most recent year available.

The Automatability of New York State's 20 Largest Jobs

Occupation	Automation Potential	Workers	Median Salary	Job Growth (2014-2024)
RETAIL SALESPERSONS	46.8%	324,170	$22,300	10.3%
SECRETARIES AND ADMINISTRATIVE ASSISTANTS, EXCEPT LEGAL, MEDICAL, AND EXECUTIVE	53.6%	214,520	$39,660	10.0%
JANITORS AND CLEANERS, EXCEPT MAIDS AND HOUSEKEEPING CLEANERS	22.4%	211,280	$29,890	14.5%
OFFICE CLERKS, GENERAL	61.5%	197,740	$31,770	8.3%
CASHIERS	48.6%	192,630	$20,180	2.2%
HOME HEALTH AIDES	10.8%	190,490	$23,930	45.3%
REGISTERED NURSES	28.9%	189,840	$81,400	17.1%
PERSONAL CARE AIDES	23.6%	174,700	$24,460	31.1%

Occupation	Automation Potential	Workers	Median Salary	Job Growth (2014-2024)
GENERAL AND OPERATIONS MANAGERS	22.8%	165,860	$124,970	17.1%
CUSTOMER SERVICE REPRESENTATIVES	29.3%	160,050	$36,890	14.0%
COMBINED FOOD PREPARATION AND SERVING WORKERS, INCLUDING FAST FOOD	86.7%	154,570	$20,490	28.5%
WAITERS AND WAITRESSES	76.9%	151,380	$23,370	12.4%
TEACHER ASSISTANTS	19.9%	131,800	$26,910	8.1%
ACCOUNTANTS AND AUDITORS	12.2%	124,740	$82,090	21.4%
BOOKKEEPING, ACCOUNTING, AND AUDITING CLERKS	85.6%	123,720	$43,020	-1.7%
FIRST-LINE SUPERVISORS OF OFFICE AND ADMINISTRATIVE SUPPORT WORKERS	22.1%	119,090	$63,450	13.7%
SECURITY GUARDS	39.4%	114,180	$30,700	16.7%

Occupation	Automation Potential	Workers	Median Salary	Job Growth (2014-2024)
STOCK CLERKS AND ORDER FILLERS	86.4%	111,940	$23,670	9.1%
LABORERS AND FREIGHT, STOCK, AND MATERIAL MOVERS, HAND	6.7%	110,190	$26,890	12.1%
MAINTENANCE AND REPAIR WORKERS, GENERAL	25.2%	106,260	$42,770	15.0%

The 20 Largest Highly Automatable Occupations in New York State

Occupation	Automation Potential	Workers	Median Salary	Job Growth
COMBINED FOOD PREPARATION AND SERVING WORKERS, INCLUDING FAST FOOD	86.7%	154,570	$20,490	28.5%
BOOKKEEPING, ACCOUNTING, AND AUDITING CLERKS	85.6%	123,720	$43,020	-1.7%

Occupation	Automation Potential	Workers	Median Salary	Job Growth
STOCK CLERKS AND ORDER FILLERS	86.4%	111,940	$23,670	9.1%
COOKS, RESTAURANT	84.0%	65,330	$27,120	25.9%
FOOD PREPARATION WORKERS	91.4%	63,850	$23,030	15.9%
HEAVY AND TRACTOR-TRAILER TRUCK DRIVERS	81.4%	60,850	$46,560	14.1%
BILLING AND POSTING CLERKS	87.6%	35,160	$40,500	19.5%
DISHWASHERS	85.6%	33,570	$20,930	5.5%
DINING ROOM AND CAFETERIA ATTENDANTS AND BARTENDER HELPERS	86.2%	32,530	$20,550	24.0%
COUNTER ATTENDANTS, CAFETERIA, FOOD CONCESSION, AND COFFEE SHOP	88.1%	30,790	$21,040	22.3%

Occupation	Automation Potential	Workers	Median Salary	Job Growth
DRIVER/SALES WORKERS	81.4%	23,400	$21,230	16.9%
PAINTERS, CONSTRUCTION AND MAINTENANCE	89.8%	21,250	$47,240	18.3%
BUS DRIVERS, TRANSIT AND INTERCITY	85.4%	21,160	$58,510	16.7%
WORD PROCESSORS AND TYPISTS	90.4%	17,410	$39,740	-13.7%
COOKS, INSTITUTION AND CAFETERIA	90.0%	16,680	$31,910	16.0%
LAUNDRY AND DRY-CLEANING WORKERS	89.1%	16,370	$20,700	6.4%
COOKS, FAST FOOD	88.5%	16,250	$20,600	1.0%
INDUSTRIAL TRUCK AND TRACTOR OPERATORS	91.7%	14,890	$37,820	13.1%

Occupation	Automation Potential	Workers	Median Salary	Job Growth
PACKAGING AND FILLING MACHINE OPERATORS AND TENDERS	100.0%	14,880	$28,220	13.4%
DATA ENTRY KEYERS	86.4%	13,570	$33,270	1.2%

The 20 Largest Least Automatable Occupations in New York State

Occupation	Automation Potential	Workers	Median Salary	Job Growth
HOME HEALTH AIDES	11%	190,490	$23,930	45.3%
TEACHER ASSISTANTS	20%	131,800	$26,910	8.1%
ACCOUNTANTS AND AUDITORS	12%	124,740	$82,090	21.4%
LABORERS AND FREIGHT, STOCK, AND MATERIAL MOVERS, HAND	7%	110,190	$26,890	12.1%
ELEMENTARY SCHOOL TEACHERS, EXCEPT SPECIAL EDUCATION	15%	81,290	$75,900	3.5%

Occupation	Automation Potential	Workers	Median Salary	Job Growth
MAIDS AND HOUSEKEEPING CLEANERS	18%	69,730	$28,390	15.9%
SECONDARY SCHOOL TEACHERS, EXCEPT SPECIAL AND CAREER/TECHNICAL EDUCATION	20%	67,230	$78,810	3.4%
CHILDCARE WORKERS	19%	64,260	$27,400	10.9%
MARKET RESEARCH ANALYSTS AND MARKETING SPECIALISTS	13%	60,130	$73,480	26.4%
LANDSCAPING AND GROUNDSKEEPING WORKERS	9%	58,580	$30,850	6.9%
SOFTWARE DEVELOPERS, APPLICATIONS	8%	52,730	$108,680	29.3%
FINANCIAL ANALYSTS	11%	50,790	$103,920	12.6%
LICENSED PRACTICAL AND LICENSED VOCATIONAL NURSES	16%	49,250	$47,420	18.1%

Occupation	Automation Potential	Workers	Median Salary	Job Growth
POLICE AND SHERIFF'S PATROL OFFICERS	19%	49,190	$73,310	6.3%
MANAGEMENT ANALYSTS	4%	48,600	$93,630	22.2%
SUBSTITUTE TEACHERS	20%	47,680	$33,080	3.6%
PRESCHOOL TEACHERS, EXCEPT SPECIAL EDUCATION	8%	43,690	$32,550	7.3%
PERSONAL FINANCIAL ADVISORS	12%	36,320	$134,980	25.2%
FIRST-LINE SUPERVISORS OF NON-RETAIL SALES WORKERS	20%	32,970	$100,370	6.6%
HEALTH SPECIALTIES TEACHERS, POSTSECONDARY	17%	32,220	$108,830	25.3%

CAPITAL REGION

The Automatability of the Capital Region's Dozen Largest Jobs

Occupation	Automation Potential	Workers	Median Salary
RETAIL SALESPERSONS	46.8%	17,560	$23,690
OFFICE CLERKS, GENERAL	61.5%	14,070	$33,660
CASHIERS	48.6%	13,010	$20,510

Occupation	Automation Potential	Workers	Median Salary
SECRETARIES AND ADMINISTRATIVE ASSISTANTS, EXCEPT LEGAL, MEDICAL, AND EXECUTIVE	53.6%	12,910	$38,380
REGISTERED NURSES	28.9%	11,620	$63,980
JANITORS AND CLEANERS, EXCEPT MAIDS AND HOUSEKEEPING CLEANERS	22.4%	10,760	$25,080
CUSTOMER SERVICE REPRESENTATIVES	29.3%	10,490	$34,100
COMBINED FOOD PREPARATION AND SERVING WORKERS, INCLUDING FAST FOOD	86.7%	9,390	$20,540
GENERAL AND OPERATIONS MANAGERS	22.8%	8,410	$97,370
BOOKKEEPING, ACCOUNTING, AND AUDITING CLERKS	85.6%	8,000	$40,520
WAITERS AND WAITRESSES	76.9%	7,870	$24,330
PERSONAL CARE AIDES	23.6%	7,210	$25,290

The Largest Highly Automatable Occupations in the Capital Region

Occupation	Automation Potential	Workers	Median Salary
COMBINED FOOD PREPARATION AND SERVING WORKERS, INCLUDING FAST FOOD	86.7%	9,390	$20,540
BOOKKEEPING, ACCOUNTING, AND AUDITING CLERKS	85.6%	8,000	$40,520
STOCK CLERKS AND ORDER FILLERS	86.4%	6,290	$24,750
HEAVY AND TRACTOR-TRAILER TRUCK DRIVERS	81.4%	5,370	$41,970
FOOD PREPARATION WORKERS	91.4%	3,830	$22,740
COOKS, RESTAURANT	84.0%	3,240	$25,840

Occupation	Automation Potential	Workers	Median Salary
DISHWASHERS	85.6%	2,220	$20,860
COUNTER ATTENDANTS, CAFETERIA, FOOD CONCESSION, AND COFFEE SHOP	88.1%	1,950	$20,380
BILLING AND POSTING CLERKS	87.6%	1,900	$37,340
WORD PROCESSORS AND TYPISTS	90.4%	1,660	$37,650
INDUSTRIAL TRUCK AND TRACTOR OPERATORS	91.7%	1,600	$37,080
DRIVER/SALES WORKERS	81.4%	1,690	$28,880

CENTRAL NEW YORK

The Automatability of Central New York's Dozen Largest Jobs

Occupation	Automation Potential	Workers	Median Salary
RETAIL SALESPERSONS	46.8%	13,050	$22,010
CASHIERS	48.6%	8,660	$20,180
CUSTOMER SERVICE REPRESENTATIVES	29.3%	8,340	$33,750
JANITORS AND CLEANERS, EXCEPT MAIDS AND HOUSEKEEPING CLEANERS	22.4%	8,200	$26,980
SECRETARIES AND ADMINISTRATIVE ASSISTANTS, EXCEPT LEGAL, MEDICAL, AND EXECUTIVE	53.6%	7,680	$36,060
COMBINED FOOD PREPARATION AND SERVING WORKERS, INCLUDING FAST FOOD	86.7%	7,460	$20,210
OFFICE CLERKS, GENERAL	61.5%	7,430	$29,190
REGISTERED NURSES	28.9%	6,350	$62,420
TEACHER ASSISTANTS	19.9%	6,010	$25,890

Occupation	Automation Potential	Workers	Median Salary
LABORERS AND FREIGHT, STOCK, AND MATERIAL MOVERS, HAND	6.7%	5,690	$29,970
BOOKKEEPING, ACCOUNTING, AND AUDITING CLERKS	85.6%	5,290	$38,960
GENERAL AND OPERATIONS MANAGERS	22.8%	5,260	$90,660

The Largest Highly Automatable Occupations in Central New York

Occupation	Automation Potential	Workers	Median Salary
COMBINED FOOD PREPARATION AND SERVING WORKERS, INCLUDING FAST FOOD	86.7%	7,460	$20,210
BOOKKEEPING, ACCOUNTING, AND AUDITING CLERKS	85.6%	5,290	$38,960
STOCK CLERKS AND ORDER FILLERS	86.4%	5,130	$22,900
HEAVY AND TRACTOR-TRAILER TRUCK DRIVERS	81.4%	4,660	$47,640
COOKS, RESTAURANT	84.0%	2,410	$24,410
FOOD PREPARATION WORKERS	91.4%	2,380	$21,400
COUNTER ATTENDANTS, CAFETERIA, FOOD CONCESSION, AND COFFEE SHOP	88.1%	2,000	$20,810
DISHWASHERS	85.6%	1,600	$20,180
BILLING AND POSTING CLERKS	87.6%	1,590	$36,550
PACKAGING AND FILLING MACHINE OPERATORS AND TENDERS	100.0%	1,310	$31,440
DINING ROOM AND CAFETERIA ATTENDANTS AND BARTENDER HELPERS	86.2%	1,310	$20,380
DRIVER/SALES WORKERS	81.4%	1,300	$22,470

FINGER LAKES

The Automatability of the Finger Lakes's Dozen Largest Jobs

Occupation	Automation Potential	Workers	Median Salary
RETAIL SALESPERSONS	46.8%	19,000	$21,960
SECRETARIES AND ADMINISTRATIVE ASSISTANTS, EXCEPT LEGAL, MEDICAL, AND EXECUTIVE	53.6%	16,570	$36,220
CASHIERS	48.6%	13,680	$20,180
CUSTOMER SERVICE REPRESENTATIVES	29.3%	12,490	$33,730
REGISTERED NURSES	28.9%	12,270	$62,050
JANITORS AND CLEANERS, EXCEPT MAIDS AND HOUSEKEEPING CLEANERS	22.4%	11,780	$24,700
COMBINED FOOD PREPARATION AND SERVING WORKERS, INCLUDING FAST FOOD	86.7%	10,920	$20,390
OFFICE CLERKS, GENERAL	61.5%	10,820	$30,400
WAITERS AND WAITRESSES	76.9%	9,720	$24,180
GENERAL AND OPERATIONS MANAGERS	22.8%	8,280	$101,540
TEACHER ASSISTANTS	19.9%	8,270	$23,600
PERSONAL CARE AIDES	23.6%	8,050	$24,090

The Largest Highly Automatable Occupations in the Finger Lakes

Occupation	Automation Potential	Workers	Median Salary
COMBINED FOOD PREPARATION AND SERVING WORKERS, INCLUDING FAST FOOD	86.7%	10,920	$20,390
BOOKKEEPING, ACCOUNTING, AND AUDITING CLERKS	85.6%	7,260	$38,120
STOCK CLERKS AND ORDER FILLERS	86.4%	6,690	$23,530

Occupation	Automation Potential	Workers	Median Salary
HEAVY AND TRACTOR-TRAILER TRUCK DRIVERS	81.4%	4,700	$43,250
FOOD PREPARATION WORKERS	91.4%	3,670	$21,850
COOKS, RESTAURANT	84.0%	3,450	$25,320
DISHWASHERS	85.6%	2,260	$20,200
BILLING AND POSTING CLERKS	87.6%	2,160	$35,100
PACKAGING AND FILLING MACHINE OPERATORS AND TENDERS	100.0%	2,010	$33,070
COUNTER ATTENDANTS, CAFETERIA, FOOD CONCESSION, AND COFFEE SHOP	88.1%	1,680	$20,260
DRIVER/SALES WORKERS	81.4%	1,640	$21,150
COOKS, FAST FOOD	88.5%	1,600	$20,540

HUDSON VALLEY

The Automatability of the Hudson Valley's Dozen Largest Jobs

Occupation	Automation Potential	Workers	Median Salary
RETAIL SALESPERSONS	46.8%	37,920	$23,180
CASHIERS	48.6%	23,240	$20,270
JANITORS AND CLEANERS, EXCEPT MAIDS AND HOUSEKEEPING CLEANERS	22.4%	22,030	$28,760
SECRETARIES AND ADMINISTRATIVE ASSISTANTS, EXCEPT LEGAL, MEDICAL, AND EXECUTIVE	53.6%	21,260	$39,890
REGISTERED NURSES	28.9%	19,340	$83,160
OFFICE CLERKS, GENERAL	61.5%	18,960	$31,650
WAITERS AND WAITRESSES	76.9%	17,140	$20,650

Occupation	Automation Potential	Workers	Median Salary
TEACHER ASSISTANTS	19.9%	17,140	$29,140
STOCK CLERKS AND ORDER FILLERS	86.4%	16,350	$24,530
PERSONAL CARE AIDES	23.6%	16,140	$27,370
GENERAL AND OPERATIONS MANAGERS	22.8%	15,860	$111,930
COMBINED FOOD PREPARATION AND SERVING WORKERS, INCLUDING FAST FOOD	86.7%	15,100	$20,570

The Largest Highly Automatable Occupations in the Hudson Valley

Occupation	Automation Potential	Workers	Median Salary
STOCK CLERKS AND ORDER FILLERS	86.4%	16,350	$24,530
COMBINED FOOD PREPARATION AND SERVING WORKERS, INCLUDING FAST FOOD	86.7%	15,100	$20,570
BOOKKEEPING, ACCOUNTING, AND AUDITING CLERKS	85.6%	12,850	$46,630
HEAVY AND TRACTOR-TRAILER TRUCK DRIVERS	81.4%	6,230	$53,610
COOKS, RESTAURANT	84.0%	5,890	$27,770
FOOD PREPARATION WORKERS	91.4%	5,810	$22,550
BILLING AND POSTING CLERKS	87.6%	4,150	$40,040
DISHWASHERS	85.6%	3,120	$20,690
DINING ROOM AND CAFETERIA ATTENDANTS AND BARTENDER HELPERS	86.2%	2,850	$20,310
PAINTERS, CONSTRUCTION AND MAINTENANCE	89.8%	2,480	$48,640
OPERATING ENGINEERS AND OTHER CONSTRUCTION EQUIPMENT OPERATORS	88.2%	2,280	$69,400

Occupation	Automation Potential	Workers	Median Salary
COOKS, INSTITUTION AND CAFETERIA	90.0%	1,980	$35,310

LONG ISLAND

The Automatability of Long Islands's Dozen Largest Jobs

Occupation	Automation Potential	Workers	Median Salary
RETAIL SALESPERSONS	46.8%	53,830	$23,220
SECRETARIES AND ADMINISTRATIVE ASSISTANTS, EXCEPT LEGAL, MEDICAL, AND EXECUTIVE	53.6%	34,300	$39,060
OFFICE CLERKS, GENERAL	61.5%	28,790	$31,930
JANITORS AND CLEANERS, EXCEPT MAIDS AND HOUSEKEEPING CLEANERS	22.4%	27,720	$30,030
CASHIERS	48.6%	27,610	$21,000
REGISTERED NURSES	28.9%	27,400	$89,380
CUSTOMER SERVICE REPRESENTATIVES	29.3%	25,010	$39,840
PERSONAL CARE AIDES	23.6%	24,870	$26,430
GENERAL AND OPERATIONS MANAGERS	22.8%	24,620	$123,720
COMBINED FOOD PREPARATION AND SERVING WORKERS, INCLUDING FAST FOOD	86.7%	23,440	$21,110
BOOKKEEPING, ACCOUNTING, AND AUDITING CLERKS	85.6%	22,000	$46,100
TEACHER ASSISTANTS	19.9%	21,940	$26,090

The Largest Highly Automatable Occupations on Long Island

Occupation	Automation Potential	Workers	Median Salary
COMBINED FOOD PREPARATION AND SERVING WORKERS, INCLUDING FAST FOOD	86.7%	23,440	$21,110

Occupation	Automation Potential	Workers	Median Salary
BOOKKEEPING, ACCOUNTING, AND AUDITING CLERKS	85.6%	22,000	$46,100
STOCK CLERKS AND ORDER FILLERS	86.4%	20,340	$24,020
HEAVY AND TRACTOR-TRAILER TRUCK DRIVERS	81.4%	9,210	$56,350
COOKS, RESTAURANT	84.0%	8,530	$28,020
FOOD PREPARATION WORKERS	91.4%	7,520	$25,700
BILLING AND POSTING CLERKS	87.6%	6,950	$43,190
COUNTER ATTENDANTS, CAFETERIA, FOOD CONCESSION, AND COFFEE SHOP	88.1%	4,400	$20,800
DISHWASHERS	85.6%	4,050	$22,140
DRIVER/SALES WORKERS	81.4%	4,010	$20,800
DINING ROOM AND CAFETERIA ATTENDANTS AND BARTENDER HELPERS	86.2%	3,720	$20,800
WORD PROCESSORS AND TYPISTS	90.4%	3,610	$42,580

MOHAWK VALLEY

The Automatability of the Mohawk Valleys's Dozen Largest Jobs

Occupation	Automation Potential	Workers	Median Salary
RETAIL SALESPERSONS	46.8%	6,290	$21,890
COMBINED FOOD PREPARATION AND SERVING WORKERS, INCLUDING FAST FOOD	86.7%	4,490	$20,210
PERSONAL CARE AIDES	23.6%	4,470	$24,100
REGISTERED NURSES	28.9%	4,610	$62,650
HOME HEALTH AIDES	10.8%	4,690	$24,720

Occupation	Automation Potential	Workers	Median Salary
SECRETARIES AND ADMINISTRATIVE ASSISTANTS, EXCEPT LEGAL, MEDICAL, AND EXECUTIVE	53.6%	4,260	$34,110
JANITORS AND CLEANERS, EXCEPT MAIDS AND HOUSEKEEPING CLEANERS	22.4%	4,070	$24,950
CASHIERS	48.6%	5,090	$20,180
OFFICE CLERKS, GENERAL	61.5%	3,660	$27,510
NURSING ASSISTANTS	44.2%	3,340	$26,930
CUSTOMER SERVICE REPRESENTATIVES	29.3%	3,230	$27,060
BOOKKEEPING, ACCOUNTING, AND AUDITING CLERKS	85.6%	3,210	$38,110

The Largest Highly Automatable Occupations in the Mohawk Valley

Occupation	Automation Potential	Workers	Median Salary
COMBINED FOOD PREPARATION AND SERVING WORKERS, INCLUDING FAST FOOD	86.7%	4,490	$20,210
BOOKKEEPING, ACCOUNTING, AND AUDITING CLERKS	85.6%	3,210	$38,110
HEAVY AND TRACTOR-TRAILER TRUCK DRIVERS	81.4%	2,280	$37,690
STOCK CLERKS AND ORDER FILLERS	86.4%	2,020	$23,590
FOOD PREPARATION WORKERS	91.4%	1,200	$20,720
MACHINE FEEDERS AND OFFBEARERS	100.0%	1,100	$32,870
COOKS, RESTAURANT	84.0%	980	$26,810
DISHWASHERS	85.6%	790	$20,180
COOKS, INSTITUTION AND CAFETERIA	90.0%	670	$26,980

Occupation	Automation Potential	Workers	Median Salary
BILLING AND POSTING CLERKS	87.6%	660	$33,200
HELPERS--PRODUCTION WORKERS	97.0%	610	$23,590
COUNTER ATTENDANTS, CAFETERIA, FOOD CONCESSION, AND COFFEE SHOP	88.1%	570	$20,290

NEW YORK CITY

The Automatability of New York City's Dozen Largest Jobs

Occupation	Automation Potential	Workers	Median Salary
RETAIL SALESPERSONS	46.8%	132,880	$21,840
HOME HEALTH AIDES	10.8%	129,090	$23,720
JANITORS AND CLEANERS, EXCEPT MAIDS AND HOUSEKEEPING CLEANERS	22.4%	106,810	$34,390
OFFICE CLERKS, GENERAL	61.5%	105,660	$33,170
SECRETARIES AND ADMINISTRATIVE ASSISTANTS, EXCEPT LEGAL, MEDICAL, AND EXECUTIVE	53.6%	92,200	$42,740
SECURITY GUARDS	39.4%	80,780	$30,280
PERSONAL CARE AIDES	23.6%	79,790	$23,770
GENERAL AND OPERATIONS MANAGERS	22.8%	78,060	$156,440
CASHIERS	48.6%	75,510	$21,840
REGISTERED NURSES	28.9%	73,610	$92,570
WAITERS AND WAITRESSES	76.9%	68,750	$28,640
ACCOUNTANTS AND AUDITORS	12.2%	68,200	$88,520

The Largest Highly Automatable Occupations in New York City

Occupation	Automation Potential	Workers	Median Salary
BOOKKEEPING, ACCOUNTING, AND AUDITING CLERKS	85.6%	55,040	$45,670
COMBINED FOOD PREPARATION AND SERVING WORKERS, INCLUDING FAST FOOD	86.7%	49,540	$21,840
STOCK CLERKS AND ORDER FILLERS	86.4%	40,320	$23,010
COOKS, RESTAURANT	84.0%	33,510	$27,960
FOOD PREPARATION WORKERS	91.4%	28,400	$23,510
DINING ROOM AND CAFETERIA ATTENDANTS AND BARTENDER HELPERS	86.2%	18,550	$21,840
BUS DRIVERS, TRANSIT AND INTERCITY	85.4%	15,900	$61,030
HEAVY AND TRACTOR-TRAILER TRUCK DRIVERS	81.4%	15,740	$47,480
DISHWASHERS	85.6%	14,310	$22,600
BILLING AND POSTING CLERKS	87.6%	13,560	$44,080
COUNTER ATTENDANTS, CAFETERIA, FOOD CONCESSION, AND COFFEE SHOP	88.1%	11,950	$22,450
COOKS, FAST FOOD	88.5%	9,840	$21,840

NORTH COUNTRY

The Automatability of the North Country's Dozen Largest Jobs

Occupation	Automation Potential	Workers	Median Salary
RETAIL SALESPERSONS	46.8%	6,050	$21,650
CASHIERS	48.6%	4,140	$19,690
CORRECTIONAL OFFICERS AND JAILERS	41.7%	3,990	$64,730
REGISTERED NURSES	28.9%	3,630	$65,550

Occupation	Automation Potential	Workers	Median Salary
JANITORS AND CLEANERS, EXCEPT MAIDS AND HOUSEKEEPING CLEANERS	22.4%	3,440	$26,470
SECRETARIES AND ADMINISTRATIVE ASSISTANTS, EXCEPT LEGAL, MEDICAL, AND EXECUTIVE	53.6%	3,270	$34,060
PERSONAL CARE AIDES	23.6%	3,140	$24,330
WAITERS AND WAITRESSES	76.9%	2,810	$19,520
COMBINED FOOD PREPARATION AND SERVING WORKERS, INCLUDING FAST FOOD	86.7%	2,760	$19,630
OFFICE CLERKS, GENERAL	61.5%	2,750	$28,270
TEACHER ASSISTANTS	19.9%	2,590	$21,410
BOOKKEEPING, ACCOUNTING, AND AUDITING CLERKS	85.6%	2,420	$35,990

The Largest Highly Automatable Occupations in the North Country

Occupation	Automation Potential	Workers	Median Salary
COMBINED FOOD PREPARATION AND SERVING WORKERS, INCLUDING FAST FOOD	86.7%	2,760	$19,630
BOOKKEEPING, ACCOUNTING, AND AUDITING CLERKS	85.6%	2,420	$35,990
STOCK CLERKS AND ORDER FILLERS	86.4%	1,880	$22,270
HEAVY AND TRACTOR-TRAILER TRUCK DRIVERS	81.4%	1,430	$35,460
FOOD PREPARATION WORKERS	91.4%	1,340	$22,090
COOKS, RESTAURANT	84.0%	1,080	$24,100
DRIVER/SALES WORKERS	81.4%	750	$20,450

Occupation	Automation Potential	Workers	Median Salary
DISHWASHERS	85.6%	740	$19,540
BILLING AND POSTING CLERKS	87.6%	680	$34,970
COOKS, FAST FOOD	88.5%	670	#N/A
COOKS, INSTITUTION AND CAFETERIA	90.0%	650	$28,180
WORD PROCESSORS AND TYPISTS	90.4%	600	$34,570

SOUTHERN TIER

The Automatability of the Southern Tier's Dozen Largest Jobs

Occupation	Automation Potential	Workers	Median Salary
RETAIL SALESPERSONS	46.8%	8,150	$22,040
SECRETARIES AND ADMINISTRATIVE ASSISTANTS, EXCEPT LEGAL, MEDICAL, AND EXECUTIVE	53.6%	8,070	$38,060
CASHIERS	48.6%	7,110	$20,180
JANITORS AND CLEANERS, EXCEPT MAIDS AND HOUSEKEEPING CLEANERS	22.4%	7,070	$24,710
REGISTERED NURSES	28.9%	5,410	$60,470
OFFICE CLERKS, GENERAL	61.5%	5,280	$27,070
COMBINED FOOD PREPARATION AND SERVING WORKERS, INCLUDING FAST FOOD	86.7%	4,980	$20,270
PERSONAL CARE AIDES	23.6%	4,410	$24,620
TEACHER ASSISTANTS	19.9%	4,370	$21,390
GENERAL AND OPERATIONS MANAGERS	22.8%	4,320	$83,180
BOOKKEEPING, ACCOUNTING, AND AUDITING CLERKS	85.6%	4,270	$37,060

Occupation	Automation Potential	Workers	Median Salary
CUSTOMER SERVICE REPRESENTATIVES	29.3%	4,110	$28,290

The Largest Highly Automatable Occupations in the Southern Tier

Occupation	Automation Potential	Workers	Median Salary
COMBINED FOOD PREPARATION AND SERVING WORKERS, INCLUDING FAST FOOD	86.7%	4,980	$20,270
BOOKKEEPING, ACCOUNTING, AND AUDITING CLERKS	85.6%	4,270	$37,060
STOCK CLERKS AND ORDER FILLERS	86.4%	3,860	$23,560
HEAVY AND TRACTOR-TRAILER TRUCK DRIVERS	81.4%	2,900	$38,110
FOOD PREPARATION WORKERS	91.4%	2,520	$20,800
COOKS, RESTAURANT	84.0%	1,510	$23,880
DISHWASHERS	85.6%	1,470	$20,180
PACKAGING AND FILLING MACHINE OPERATORS AND TENDERS	100.0%	1,060	$35,200
COUNTER ATTENDANTS, CAFETERIA, FOOD CONCESSION, AND COFFEE SHOP	88.1%	920	$20,420
DRIVER/SALES WORKERS	81.4%	800	$22,760
WELDERS, CUTTERS, SOLDERERS, AND BRAZERS	91.9%	760	$36,790
INDUSTRIAL TRUCK AND TRACTOR OPERATORS	91.7%	760	$37,740

WESTERN NEW YORK

The Automatability of Western New York's Dozen Largest Jobs

Occupation	Automation Potential	Workers	Median Salary
RETAIL SALESPERSONS	46.8%	23,820	$21,130
CASHIERS	48.6%	17,330	$20,180
COMBINED FOOD PREPARATION AND SERVING WORKERS, INCLUDING FAST FOOD	86.7%	14,790	$20,180
SECRETARIES AND ADMINISTRATIVE ASSISTANTS, EXCEPT LEGAL, MEDICAL, AND EXECUTIVE	53.6%	13,880	$34,200
JANITORS AND CLEANERS, EXCEPT MAIDS AND HOUSEKEEPING CLEANERS	22.4%	13,710	$26,110
CUSTOMER SERVICE REPRESENTATIVES	29.3%	13,580	$33,540
REGISTERED NURSES	28.9%	13,550	$70,530
OFFICE CLERKS, GENERAL	61.5%	13,060	$29,010
WAITERS AND WAITRESSES	76.9%	11,860	$22,130
GENERAL AND OPERATIONS MANAGERS	22.8%	10,820	$90,840
PERSONAL CARE AIDES	23.6%	9,670	$24,340
TEACHER ASSISTANTS	19.9%	9,570	$22,590

The Largest Highly Automatable Occupations in Western New York

Occupation	Automation Potential	Workers	Median Salary	
COMBINED FOOD PREPARATION AND SERVING WORKERS, INCLUDING FAST FOOD	86.7%	14,790	$20,180	12,819

Occupation	Automation Potential	Workers	Median Salary	
STOCK CLERKS AND ORDER FILLERS	86.4%	8,950	$23,310	7,733
BOOKKEEPING, ACCOUNTING, AND AUDITING CLERKS	85.6%	8,820	$37,950	7,551
HEAVY AND TRACTOR-TRAILER TRUCK DRIVERS	81.4%	6,050	$43,310	4,925
COOKS, RESTAURANT	84.0%	4,220	$24,680	3,545
FOOD PREPARATION WORKERS	91.4%	3,930	$20,770	3,590
DISHWASHERS	85.6%	3,350	$20,280	2,869
BILLING AND POSTING CLERKS	87.6%	2,880	$36,960	2,524
DINING ROOM AND CAFETERIA ATTENDANTS AND BARTENDER HELPERS	86.2%	2,790	$20,640	2,405

Occupation	Automation Potential	Workers	Median Salary	
PACKAGING AND FILLING MACHINE OPERATORS AND TENDERS	100.0%	2,420	$31,080	2,420
COOKS, FAST FOOD	88.5%	2,410	$21,380	2,134
COUNTER ATTENDANTS, CAFETERIA, FOOD CONCESSION, AND COFFEE SHOP	88.1%	2,310	$20,180	2,036

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