NEW YORK STATE OF OPPORTUNITY

Bureau of Labor Market Information
Division of Research and Statistics

Analysis of New York State's 2012-2022 Occupational Projections by Education Level

2015 Report

A Division of the New York State Department of Labor

Analysis of New York State's 2012-2022 Occupational Projections and Wages by Education Level

Introduction

This report analyzes, by level of education, the current round of long-term occupational projections data for New York State -- covering the 2012–2022 period -- as well as the latest statewide wage data from the Occupational Employment Statistics (OES) survey.

The U.S. Bureau of Labor Statistics (BLS) compiles and publishes long-term occupational employment projections and wage data for approximately 700-800 unique job titles. Each individual occupation, in turn, is assigned separate categories for education and training:

- Education
- Work experience
- On-the-job training

Occupations are grouped by BLS in order to create estimates of the education and training needs for the labor force as a whole. In addition, this grouping process allows analysts to project the long-term outlook for occupations with similar types of education or training needs. Educational attainment data for each occupation tells us about the level of education achieved or required by current workers.

BLS's Education and Training Classification Systems

This section presents more detailed information on the categories BLS uses to assign occupations within these three categories: typical entry-level education, related work experience, and typical on-the-job training. Readers interested in more exhaustive information are referred to **Appendix 1: BLS Definitions for the Education and Training Classification System** found at the end of this report.

Entry-level Education Requirements

The first way BLS classifies occupations is by typical entry-level education. This represents the typical education level needed to enter an occupation. There are a total of eight possible assignments for this category including:

1) Doctoral or professional degree
2) Master's degree
3) Bachelor's degree
4) Associate degree
5) Postsecondary non-degree award
6) Some college, no degree
7) High school diploma or equivalent
8) Less than high school

In 2012, about 66% of U.S. employment was in job titles that required a high school diploma or less to get into the occupation. In contrast, less than 5% of overall U.S. employment was in occupations where an advanced degree -- master's or doctoral/professional -- was the typical *entry*-level education requirement. Between one and four and one in five jobs in the U.S. in 2012 required either a bachelor's (18%) or associate (4%) degree to enter the occupation.

Work Experience Requirements

The second method used by BLS to classify occupations is work experience in a related occupation. This method indicates whether work experience in a related occupation is commonly considered necessary by employers for entry into the occupation, or is a commonly accepted substitute for formal types of training. The assignments for this category are the following:

1) More than 5 years
2) 1-5 years
3) Less than 1 year
4) None

In 2012, about 86% of the employment in the U.S. was in job titles that required no work experience in a related occupation. Eleven percent of overall U.S. employment was in job titles that required less than 5 years of experience in a related job title and 3% of jobs required 5 years or more of experience. A large share of the job titles that required related work experience were in first-line supervisor and manager titles -- from general managers to head cook to agricultural managers -- that spanned a wide range of occupational groups.

Typical On-the-Job Training Requirements

The final way BLS organizes occupational educational and training requirements is by the typical on-the-job training needed to attain competency in the occupation. The six possible assignments for this category include:

1) Internship/residency
2) Apprenticeship
3) Long-term on-the-job training: more than 1 year
4) Moderate-term on the job training: 1-12 months

5) Short-term on-the-job training: 1 month or less
6) None

In 2012, more than 40% of the employment in the U.S. was in job titles that required short-term on-the-job training. Examples of job titles in this category include: retail salespersons, cashiers, office clerks, janitors and cleaners, and waiters and waitresses.

Another 33% of employment was in occupations with no on-the-job training work requirements. Job titles in this category include general and operations managers, post-secondary teachers, nursing aides, orderlies and attendants, accountants and auditors, and lawyers.

Moderate-term on-the-job training occupations employed nearly 16% of Americans in 2012. Among the largest occupations in this group were bookkeeping, accounting, and auditing clerks, maintenance and repair workers, team assemblers, computer support specialists, and medical assistants. Job titles that required apprenticeship, internship/residency, or long-term on-the-job training together accounted for slightly more than 10% of U.S. employment in 2012.

Education and Training Requirements in New York State

The balance of this report focuses on 2012-2022 employment projections and current wage data for New York State using the education assignments presented above. It is important to note, however, that instead of using typical *entry-level* education for this analysis, this report looked at the *most common* educational attainment held by persons in the occupation. Also, the s*ome college, no degree* category was combined with the *postsecondary non-degree award* category, making for a total of seven distinct education categories used in this analysis.

See **Appendix 2: List of Occupations and Education Assignments** at the end of this report for a list of occupations and their *typical* educational assignment. For example, registered nurses usually take one of three education paths: a bachelor's degree in nursing, an associate degree in nursing, or a diploma from an approved nursing program. National data compiled by the BLS from the U.S. Census Bureau's American Community Survey (ACS) covering the 2010-2011 period indicate that 38.1% of registered nurses have an associate degree, but an even greater share (46.0%) hold a bachelor's degree. For this analysis, registered nurses were included as part of the bachelor's degree group. ACS data were used for all other educational assignments used in this occupational analysis.

Data Analysis

The long-term occupational projections presented here are widely used for planning and preparation of educational programs, developing career information and studying long-range job trends. Two of the most important data elements in the projections series data include expected employment change over the study period (e.g., 2012 to 2022) and total annual openings (due to growth and replacement needs) over that period. These two data elements as well as current wages for the almost 800 occupations analyzed were sorted by education category and then aggregated.

The wage data presented in this report come from the Occupational Employment Statistics (OES) survey, which is a semiannual mail survey of employers. The survey measures occupational employment and occupational wage rates for wage and salary workers in nonfarm establishments, by industry. Statewide OES wage data are based on responses from approximately 52,000 employers, which are collected over a three-year period. Data from this survey were used to calculate both the average (arithmetic mean) and median occupational wage by education category reported here.

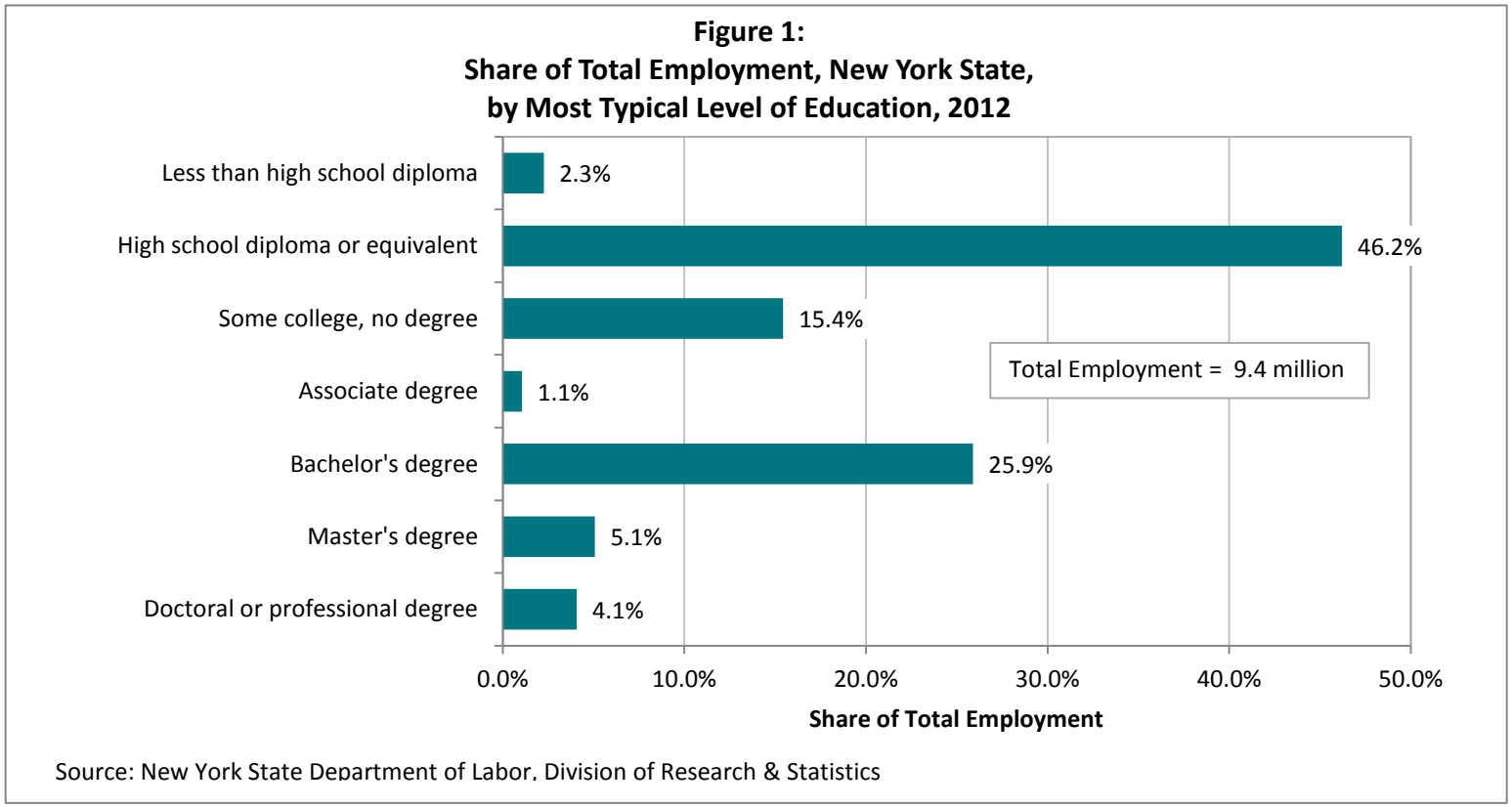
Specific data elements presented by education level in this report include:

- Share of Total Employment, 2012 (see Figure 1)
- Projected Numeric Change in Employment, 2012-2022 (see Figure 2)
- Projected Percentage Change in Employment, 2012-2022 (see Figure 3)
- Projected Total Annual Openings, 2012-2022 (see Figure 4)
- Mean and Median Occupational Wage, 2014 (see Figure 5)

For Additional Information

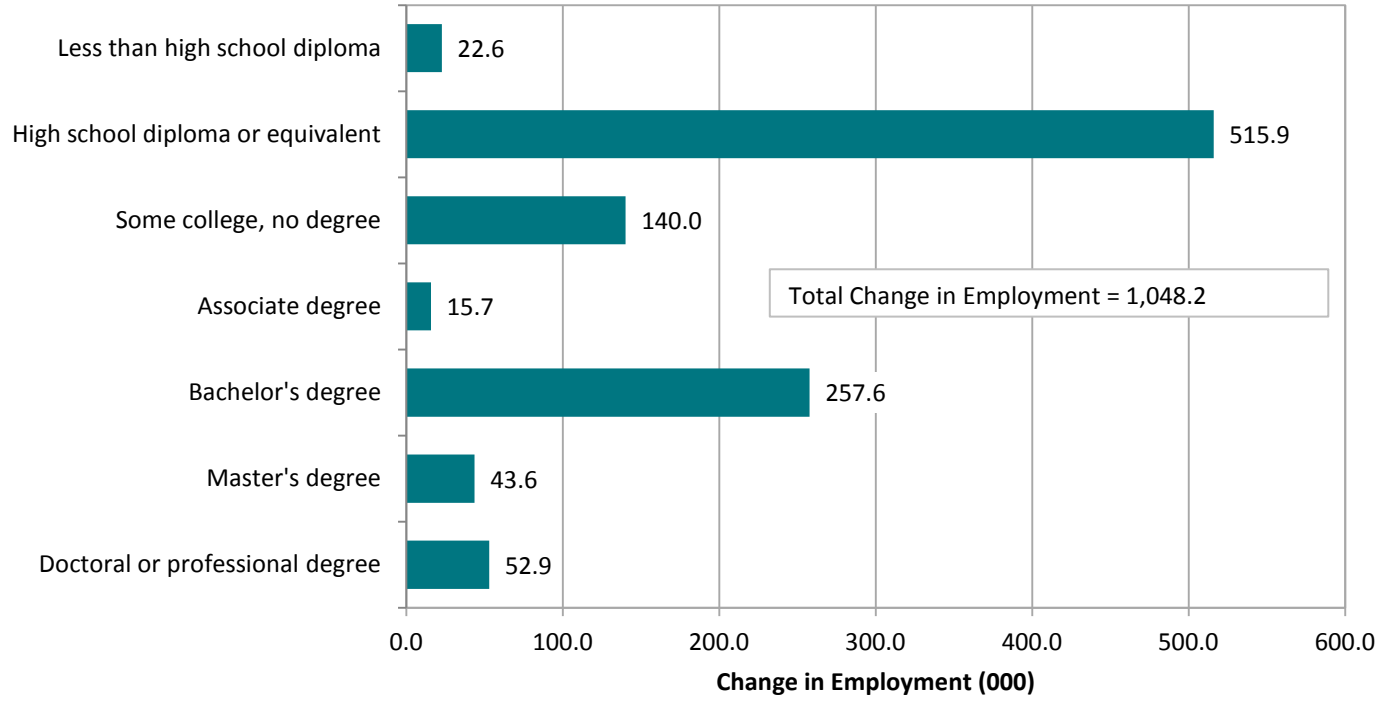
We hope that you find the information in this report useful. Should you have questions or require additional information regarding this analysis, please contact the New York State Department of Labor's statewide labor market analyst, Kevin Jack. He can be reached via email at Kevin.Jack@labor.ny.gov or by phone at (518) 457-3800.

In addition, our statewide labor market information web site (www.labor.ny.gov/stats/index.shtm) includes a variety of economic statistics that describe the state's labor market and complement this analysis.



- Almost half (46%) of overall employment in New York State is in occupations where a high school diploma was the most typical educational credential.
- About 35% of the employed in New York State are in job titles where a bachelor's degree or higher are most typical. This includes 26% with a bachelor's degree and another 9% where graduate and professional degrees are most typical.
- About 15% of overall employment in the state is in occupations where some college, no degree or postsecondary non-degree award (e.g., certificate) is most common.

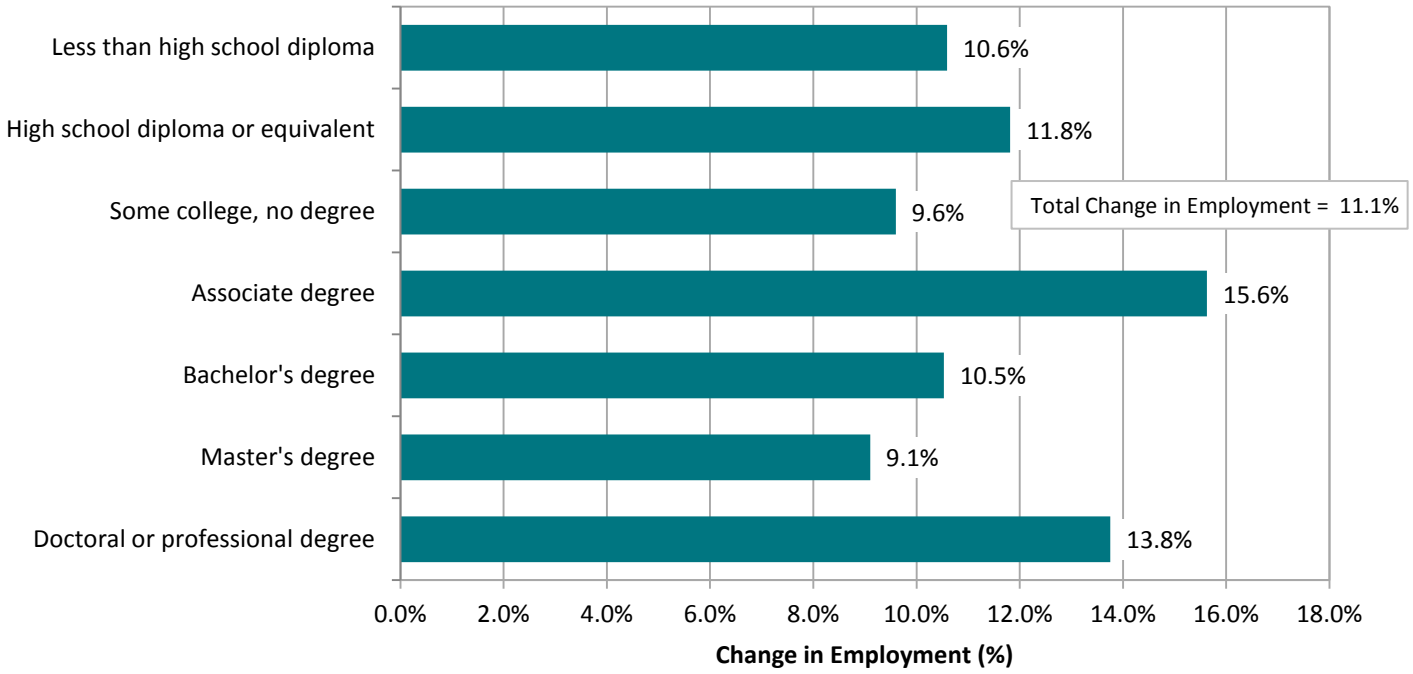
Figure 2:
Projected Numeric Change in Employment Growth, New York State, by Most Typical Level of Education, 2012 to 2022



Source: New York State Department of Labor, Division of Research & Statistics

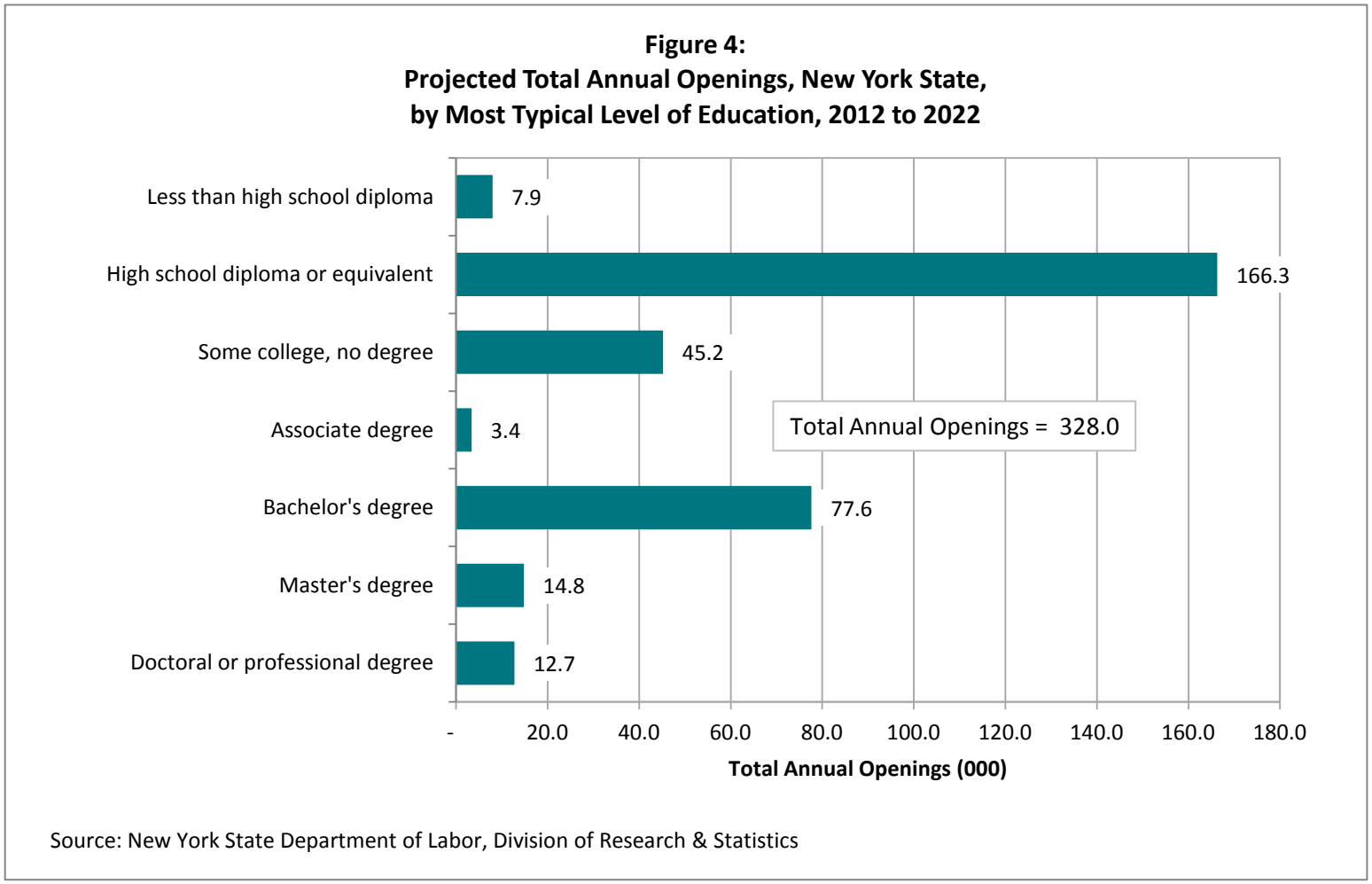
- Employment in New York State is expected to grow by about 1,048,200 between 2012 and 2022.
- The groups with the largest net job growth in 2012-2022 are high school or equivalent (+515,900) and bachelor's degree (+257,600). Together, they account for almost 74% of net job growth in 2012-2022.
- Jobs where graduate and professional degrees are most typical are projected to grow by a combined 96,500 in 2012-2022.
- Occupations where some college, no degree is most common are expected to grow by 140,000 in 2012-2022.

Figure 3:
Projected Percent Change in Employment, New York State, by Most Typical Level of Education, 2012 to 2022



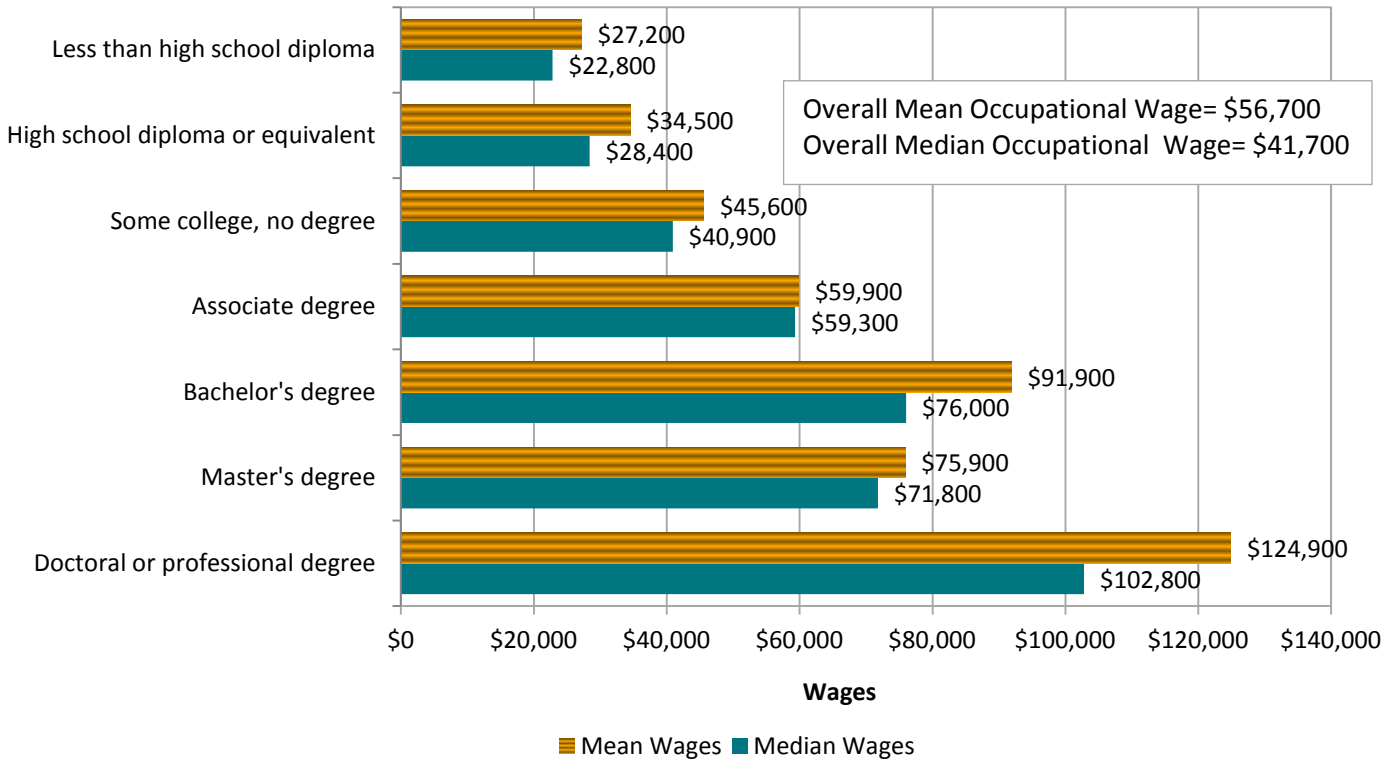
Source: New York State Department of Labor, Division of Research & Statistics

- The overall job count in New York State is projected to grow by 11.1% in 2012-2022. Generally speaking, the most rapid growth is projected to occur in those occupational groups in which an associate degree or better is most typical.
- On a percentage basis, the fastest-growing occupational groups that require degree completion include: associate degree (+15.6%), doctoral/professional degree (+13.8%), and bachelor's degree (+10.5%).
- Of the three occupational groups in which less than associate degree is most typical, projected job growth is: less than high school (+10.6%), high school or equivalent (+11.8%), and some college, no degree (+9.6%)



- Of New York State's more than 328,000 annual openings in 2012-2022. About 70% stem from replacement needs, and the other 30% is due to growth.
- Almost two-thirds (67%) of total openings require less than an associate degree. Another 25% of annual openings are in groups where an associate or bachelor's degree is most typical.
- The high school or equivalent group has, by far, the most expected annual openings (166,300). Occupations where a bachelor's degree is most typical have the second largest number of annual openings (77,600).

Figure 5:
Mean and Median Occupational Wage, New York State,
by Most Typical Level of Education, 2010



Source: New York State Department of Labor, Division of Research & Statistics

- For each education group, mean occupation wages are higher than the corresponding median wage.
- These data support the idea that more education leads to higher wages. Doctoral/professional degree occupations had the highest median wage ($124,900), and bachelor's degree jobs had the second highest median ($91,900).
- Median wages drop off sharply among jobs requiring less than an associate degree.

Report

Appendices

Appendix 1:
BLS Definitions for the Education and Training Classification System

(Adapted from U.S. Bureau of Labor Statistics, Office of Occupational Statistics and Employment Projections)

Typical education needed for entry: This category best describes the typical level of education that most workers need to enter the occupation. Occupations are assigned one of the following eight education levels:

Doctoral or professional degree: Completion of a doctoral degree (Ph.D.) usually requires at least 3 years of full-time academic work beyond a bachelor's degree. Completion of a professional degree usually requires at least 3 years of full- time academic study beyond a bachelor's degree. Examples of occupations for which a professional degree is the typical form of entry-level education include lawyers, physicians and surgeons, and dentists.

Master's degree: Completion of this degree usually requires 1 or 2 years of full-time academic study beyond a bachelor's degree. Examples of occupations in this category include statisticians, physician assistants, and educational, vocational, and school counselors.

Bachelor's degree: Completion of this degree generally requires at least 4 years, but not more than 5 years, of full-time academic study beyond high school. Examples of occupations in this category include budget analysts, dietitians, and civil engineers.

Associate degree: Completion of this degree usually requires at least 2 years but not more than 4 years of full-time academic study beyond high school. Examples of occupations in this category include mechanical drafters, respiratory therapists, and dental hygienists.

Postsecondary non-degree award: These programs lead to a certificate or other award, but not a degree. The certificate is awarded by the educational institution and is the result of completing formal postsecondary schooling. Certification -- which is issued by a professional organization or certifying body -- is not included here. Some postsecondary non-degree award programs last only a few weeks, while others may last 1 to 2 years. Examples of occupations in this category include nursing aides, emergency medical technicians (EMTs) and paramedics, and hairstylists.

Some college, no degree: This category signifies the achievement of a high school diploma or equivalent plus the completion of one or more postsecondary courses that did not result in a degree or award. Examples of occupations in this category are actors and computer support specialists.

High school diploma or equivalent: This category signifies the completion of high school or an equivalent program resulting in the award of a high school diploma or an equivalent, such as the General Educational Development (GED) credential. Examples of occupations in this category include social and human service assistants and pharmacy technicians.

Less than high school: This category signifies the completion of any level of primary or secondary education that did not result in the award of a high school diploma or equivalent. Examples of occupations in this category include janitors and cleaners, cashiers, and carpet installers.

Work experience in a related occupation: For some occupations, work experience in a related occupation may be a typical method of entry. The majority of occupations in this category are first-line supervisors or managers of service, sales, and production occupations. Although work experience in a related occupation is beneficial for all occupations, this metric is meant to capture work experience that is commonly considered necessary by employers, or is a commonly accepted substitute for other, more formal types of training or education. Occupations are assigned one of the following four categories that deal with length of time spent gaining related work experience:

More than 5 years: This is assigned to occupations if more than 5 years of work experience in a related occupation is typically needed for entry. Examples include construction managers and computer and information systems managers.

1 to 5 years: To enter occupations in this category, workers typically need 1-5 years of work experience in a related occupation. Examples include marketing managers and database administrators.

Less than 1 year: Examples of occupations that typically need less than 1 year of work experience in a related occupation include restaurant cooks and industrial truck and tractor operators.

None: Typically, no work experience in a related occupation is needed. Examples are audiologists and actuaries.

Typical on-the-job training needed to attain competency in the occupation: This category encompasses any additional training or preparation that is typically needed, once employed in an occupation, to attain competency in the skills needed in that occupation. Training is occupation-specific rather than job-specific; skills learned can be transferred to another job in the same occupation. Occupations are assigned one of the following six training categories:

Internship/residency: An internship or residency is training that involves preparation in a field such as medicine or teaching, generally under supervision in a professional setting, such as a hospital or classroom. This type of training may occur before one is employed. Completion of an internship or residency program is commonly required for state licensure or certification in fields including medicine, counseling, architecture, and teaching. This category does not include internships that are suggested for advancement. Examples of occupations in the internship/residency category include physicians and surgeons and marriage and family therapists.

Apprenticeship: An apprenticeship is a formal relationship between a worker and sponsor that consists of a combination of on-the-job training and related occupation-specific technical instruction in which the worker learns the practical and theoretical aspects of an occupation. Apprenticeship programs are sponsored by individual employers, joint employer-and-labor groups, and employer associations. The typical apprenticeship program provides at least 144 hours of occupation-specific technical instruction and 2,000 hours of on-the-job training per year over a 3-to-5 year period. Examples of occupations in the apprenticeship category include electricians and structural iron and steel workers.

Long-term on-the-job training: More than 12 months of on-the-job training or, alternatively, combined work experience and formal classroom instruction, are needed for workers to develop the skills to attain competency. Training is occupation specific rather than job specific; therefore, skills learned can be transferred to another job in the same occupation. This on-the-job training category also includes employer-sponsored training programs. Such programs include those offered by fire and police academies and schools for air traffic controllers and flight attendants. In other occupations—nuclear power reactor operators, for example—trainees take formal courses, often provided at the jobsite, to prepare for the required licensing exams. This category excludes apprenticeships. Examples of occupations in

the long-term on-the-job training category include opticians and automotive service technicians and mechanics.

Moderate-term on-the-job training: Skills needed for a worker to attain competency in an occupation that can be acquired during 1 to 12 months of combined on-the-job experience and informal training. Training is occupation-specific rather than job-specific; therefore, skills learned can be transferred to another job in the same occupation. This on-the-job training category also includes employer-sponsored training programs. Examples of occupations in the moderate-term category include school bus drivers and advertising sales agents.

Short-term on-the-job training: Skills needed for a worker to attain competency in an occupation that can be acquired during 1 month or less of on-the-job experience and informal training. Training is occupation-specific rather than job specific; therefore, skills learned can be transferred to another job in the same occupation. This on-the-job training category also includes employer sponsored training programs. Examples of occupations in the short-term category include retail salespersons and maids and housekeeping cleaners.

None: There is no additional occupation-specific training or preparation typically required to attain competency in the occupation. Examples of occupations that do not require occupation-specific on-the-job training include geographers and pharmacists.

Appendix 2:
List of Occupations and Education Assignments

Less than high school diploma

Agricultural Equipment Operators
Agricultural Workers, All Other
Cement Masons and Concrete Finishers
Dishwashers
Drywall and Ceiling Tile Installers
Farmworkers and Laborers, Crop, Nursery, and Greenhouse
Farmworkers, Farm, Ranch, and Aquacultural Animals
Graders and Sorters, Agricultural Products
Grounds Maintenance Workers, All Other
Helpers, Construction Trades, All Other
Helpers--Brickmasons, Blockmasons, Stonemasons, and Tile and Marble Setters
Helpers--Carpenters
Helpers--Electricians
Helpers--Painters, Paperhangers, Plasterers, and Stucco Masons
Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters
Helpers--Roofers
Landscaping and Groundskeeping Workers
Maids and Housekeeping Cleaners
Packers and Packagers, Hand
Pesticide Handlers, Sprayers, and Applicators, Vegetation
Plasterers and Stucco Masons
Pressers, Textile, Garment, and Related Materials
Roofers
Sewing Machine Operators
Tapers
Terrazzo Workers and Finishers
Tree Trimmers and Pruners

High school diploma or equivalent

Adhesive Bonding Machine Operators and Tenders
Aircraft Cargo Handling Supervisors
Aircraft Structure, Surfaces, Rigging, and Systems Assemblers
Ambulance Drivers and Attendants, Except Emergency Medical Technicians
Amusement and Recreation Attendants
Animal Breeders
Animal Control Workers
Animal Trainers
Assemblers and Fabricators, All Other
Automotive and Watercraft Service Attendants
Automotive Body and Related Repairers
Automotive Glass Installers and Repairers
Automotive Service Technicians and Mechanics
Baggage Porters and Bellhops
Bakers
Bartenders
Bicycle Repairers
Boilermakers
Brickmasons and Blockmasons
Bridge and Lock Tenders
Building Cleaning Workers, All Other
Bus and Truck Mechanics and Diesel Engine Specialists
Bus Drivers, School or Special Client
Bus Drivers, Transit and Intercity
Butchers and Meat Cutters
Buyers and Purchasing Agents, Farm Products
Cabinetmakers and Bench Carpenters
Captains, Mates, and Pilots of Water Vessels
Cargo and Freight Agents
Carpenters
Carpet Installers
Cashiers
Chefs and Head Cooks
Chemical Equipment Operators and Tenders
Chemical Plant and System Operators
Childcare Workers
Cleaners of Vehicles and Equipment
Cleaning, Washing, and Metal Pickling Equipment Operators and Tenders
Coating, Painting, and Spraying Machine Setters, Operators, and Tenders
Coil Winders, Tapers, and Finishers
Coin, Vending, and Amusement Machine Servicers and Repairers
Combined Food Preparation and Serving Workers, Including Fast Food
Commercial Divers
Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic

High school diploma or equivalent (continued)

Computer-Controlled Machine Tool Operators, Metal and Plastic
Concierges
Construction and Related Workers, All Other
Construction Laborers
Continuous Mining Machine Operators
Control and Valve Installers and Repairers, Except Mechanical Door
Conveyor Operators and Tenders
Cooks, All Other
Cooks, Fast Food
Cooks, Institution and Cafeteria
Cooks, Private Household
Cooks, Restaurant
Cooks, Short Order
Cooling and Freezing Equipment Operators and Tenders
Costume Attendants
Counter and Rental Clerks
Counter Attendants, Cafeteria, Food Concession, and Coffee Shop Couriers
and Messengers Crane and
Tower Operators Crossing
Guards
Crushing, Grinding, and Polishing Machine Setters, Operators, and Tenders
Cutters and Trimmers, Hand
Cutting and Slicing Machine Setters, Operators, and Tenders
Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic
Demonstrators and Product Promoters
Dental Laboratory Technicians
Derrick Operators, Oil and Gas
Dining Room and Cafeteria Attendants and Bartender Helpers
Dispatchers, Except Police, Fire, and Ambulance
Door-to-Door Sales Workers, News and Street Vendors, and Related Workers
Dredge Operators
Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic
Driver/Sales Workers
Earth Drillers, Except Oil and Gas
Electric Motor, Power Tool, and Related Repairers
Electrical and Electronic Equipment Assemblers
Electrical and Electronics Installers and Repairers, Transportation Equipment
Electrical and Electronics Repairers, Commercial and Industrial Equipment
Electrical and Electronics Repairers, Powerhouse, Substation, and Relay
Electrical Power-Line Installers and Repairers
Electricians
Electromechanical Equipment Assemblers
Electronic Home Entertainment Equipment Installers and Repairers
Elevator Installers and Repairers
Engine and Other Machine Assemblers
Entertainment Attendants and Related Workers, All Other
Etchers and Engravers
Excavating and Loading Machine and Dragline Operators
Explosives Workers, Ordnance Handling Experts, and Blasters
Extraction Workers, All Other
Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic
Extruding and Forming Machine Setters, Operators, and Tenders, Synthetic and Glass Fibers
Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders
Fabric Menders, Except Garment
Fallers
Farm Equipment Mechanics and Service Technicians
Farm Labor Contractors
Farmers, Ranchers, and Other Agricultural Managers
Fence Erectors
Fiberglass Laminators and Fabricators
File Clerks
First-Line Supervisors of Construction Trades and Extraction Workers
First-Line Supervisors of Farming, Fishing, and Forestry Workers
First-Line Supervisors of Food Preparation and Serving Workers
First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand
First-Line Supervisors of Housekeeping and Janitorial Workers
First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers
First-Line Supervisors of Mechanics, Installers, and Repairers
First-Line Supervisors of Personal Service Workers
First-Line Supervisors of Production and Operating Workers
First-Line Supervisors of Retail Sales Workers
First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators
Fishers and Related Fishing Workers
Floor Layers, Except Carpet, Wood, and Hard Tiles

High school diploma or equivalent (continued)

Floor Sanders and Finishers
Food and Tobacco Roasting, Baking, and Drying Machine Operators and Tenders
Food Batchmakers
Food Cooking Machine Operators and Tenders
Food Preparation and Serving Related Workers, All Other
Food Preparation Workers
Food Servers, Nonrestaurant
Food Service Managers
Forest and Conservation Workers
Forging Machine Setters, Operators, and Tenders, Metal and Plastic
Foundry Mold and Coremakers
Funeral Attendants
Furnace, Kiln, Oven, Drier, and Kettle Operators and Tenders
Furniture Finishers
Gaming and Sports Book Writers and Runners
Gaming Cage Workers
Gaming Change Persons and Booth Cashiers
Gaming Dealers
Gaming Service Workers, All Other
Gaming Surveillance Officers and Gaming Investigators
Gas Compressor and Gas Pumping Station Operators
Gas Plant Operators
Glaziers
Grinding and Polishing Workers, Hand
Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic
Hazardous Materials Removal Workers
Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic
Heating, Air Conditioning, and Refrigeration Mechanics and Installers
Heavy and Tractor-Trailer Truck Drivers
Helpers--Extraction Workers
Helpers--Installation, Maintenance, and Repair Workers
Helpers--Production Workers
Highway Maintenance Workers
Hoist and Winch Operators
Home Appliance Repairers
Home Health Aides
Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop
Hotel, Motel, and Resort Desk Clerks
Hunters and Trappers
Industrial Machinery Mechanics
Industrial Truck and Tractor Operators
Inspectors, Testers, Sorters, Samplers, and Weighers
Installation, Maintenance, and Repair Workers, All Other
Insulation Workers, Floor, Ceiling, and Wall
Insulation Workers, Mechanical
Janitors and Cleaners, Except Maids and Housekeeping Cleaners
Jewelers and Precious Stone and Metal Workers
Laborers and Freight, Stock, and Material Movers, Hand
Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic
Laundry and Dry-Cleaning Workers
Lay-Out Workers, Metal and Plastic
Library Technicians
Lifeguards, Ski Patrol, and Other Recreational Protective Service Workers
Light Truck or Delivery Services Drivers
Loading Machine Operators, Underground Mining
Locker Room, Coatroom, and Dressing Room Attendants
Locksmiths and Safe Repairers
Locomotive Engineers
Locomotive Firers
Log Graders and Scalers Logging
Equipment Operators Logging
Workers, All Other Machine
Feeders and Offbearers
Machinists
Mail Clerks and Mail Machine Operators, Except Postal Service
Maintenance and Repair Workers, General
Maintenance Workers, Machinery
Manufactured Building and Mobile Home Installers
Material Moving Workers, All Other
Meat, Poultry, and Fish Cutters and Trimmers
Mechanical Door Repairers
Medical Appliance Technicians
Metal Workers and Plastic Workers, All Other
Metal-Refining Furnace Operators and Tenders
Meter Readers, Utilities
Milling and Planing Machine Setters, Operators, and Tenders, Metal and Plastic
Millwrights
Mine Cutting and Channeling Machine Operators
Mining Machine Operators, All Other
Mixing and Blending Machine Setters, Operators, and Tenders
Mobile Heavy Equipment Mechanics, Except Engines
Model Makers, Metal and Plastic
Models

High school diploma or equivalent (continued)

Molders, Shapers, and Casters, Except Metal and Plastic
Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic
Motor Vehicle Operators, All Other
Motorboat Mechanics and Service Technicians
Motorboat Operators
Motorcycle Mechanics
Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic
New Accounts Clerks Nonfarm
Animal Caretakers Nuclear Power
Reactor Operators
Nursing Aides, Orderlies, and Attendants
Office Clerks, General
Office Machine Operators, Except Computer
Operating Engineers and Other Construction Equipment Operators
Ophthalmic Laboratory Technicians
Order Clerks
Outdoor Power Equipment and Other Small Engine Mechanics
Packaging and Filling Machine Operators and Tenders
Painters, Construction and Maintenance
Painters, Transportation Equipment
Painting, Coating, and Decorating Workers
Paper Goods Machine Setters, Operators, and Tenders
Paperhangers
Parking Enforcement Workers
Parking Lot Attendants Parts
Salespersons Patternmakers,
Metal and Plastic
Paving, Surfacing, and Tamping Equipment Operators
Personal Care Aides
Personal Care and Service Workers, All Other
Pest Control Workers
Petroleum Pump System Operators, Refinery Operators, and Gaugers
Photographic Process Workers and Processing Machine Operators
Pile-Driver Operators
Pipelayers
Plant and System Operators, All Other
Plating and Coating Machine Setters, Operators, and Tenders, Metal and Plastic
Plumbers, Pipefitters, and Steamfitters
Police, Fire, and Ambulance Dispatchers
Postal Service Clerks
Postal Service Mail Carriers
Pourers and Casters, Metal
Power Distributors and Dispatchers
Power Plant Operators
Prepress Technicians and Workers
Print Binding and Finishing Workers
Printing Press Operators
Production Workers, All Other
Protective Service Workers, All Other
Psychiatric Aides
Pump Operators, Except Wellhead Pumpers
Rail Car Repairers
Rail Transportation Workers, All Other
Rail Yard Engineers, Dinkey Operators, and Hostlers
Railroad Brake, Signal, and Switch Operators
Railroad Conductors and Yardmasters
Rail-Track Laying and Maintenance Equipment Operators
Receptionists and Information Clerks
Recreational Vehicle Service Technicians
Refractory Materials Repairers, Except Brickmasons
Refuse and Recyclable Material Collectors
Reinforcing Iron and Rebar Workers
Retail Salespersons
Riggers
Rock Splitters, Quarry
Rolling Machine Setters, Operators, and Tenders, Metal and Plastic
Roof Bolters, Mining
Rotary Drill Operators, Oil and Gas
Roustabouts, Oil and Gas
Sailors and Marine Oilers
Sawing Machine Setters, Operators, and Tenders, Wood
Security and Fire Alarm Systems Installers
Security Guards
Segmental Pavers
Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders
Septic Tank Servicers and Sewer Pipe Cleaners
Service Unit Operators, Oil, Gas, and Mining
Sewers, Hand
Shampooers
Sheet Metal Workers
Ship Engineers
Shipping, Receiving, and Traffic Clerks
Shoe and Leather Workers and Repairers
Shoe Machine Operators and Tenders
Signal and Track Switch Repairers
Slaughterers and Meat Packers
Stationary Engineers and Boiler Operators
Stock Clerks and Order Fillers

High school diploma or equivalent (continued)

Stonemasons
Structural Iron and Steel Workers
Structural Metal Fabricators and Fitters
Subway and Streetcar Operators
Surveying and Mapping Technicians
Switchboard Operators, Including Answering Service
Tailors, Dressmakers, and Custom Sewers
Tank Car, Truck, and Ship Loaders
Taxi Drivers and Chauffeurs
Teacher Assistants
Team Assemblers
Telecommunications Line Installers and Repairers
Telemarketers
Telephone Operators
Tellers
Textile Bleaching and Dyeing Machine Operators and Tenders
Textile Cutting Machine Setters, Operators, and Tenders
Textile Knitting and Weaving Machine Setters, Operators, and Tenders
Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders
Textile, Apparel, and Furnishings Workers, All Other
Tile and Marble Setters
Timing Device Assemblers and Adjusters
Tire Builders
Tire Repairers and Changers
Tool and Die Makers
Tool Grinders, Filers, and Sharpeners
Traffic Technicians
Transportation Inspectors
Transportation Security Screeners (Federal Only)
Transportation Workers, All Other
Transportation, Storage, and Distribution Managers
Upholsterers
Ushers, Lobby Attendants, and Ticket Takers
Waiters and Waitresses
Water and Wastewater Treatment Plant and System Operators
Weighers, Measurers, Checkers, and Samplers, Recordkeeping
Welders, Cutters, Solderers, and Brazers
Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders
Wellhead Pumpers
Woodworkers, All Other
Woodworking Machine Setters, Operators, and Tenders, Except Sawing

Some college, no degree

Administrative Services Managers
Agricultural Inspectors
Air Traffic Controllers
Aircraft Mechanics and Service Technicians
Airfield Operations Specialists
Avionics Technicians
Bailiffs
Barbers
Bill and Account Collectors
Billing and Posting Clerks
Bookkeeping, Accounting, and Auditing Clerks
Brokerage Clerks
Camera and Photographic Equipment Repairers
Choreographers
Communications Equipment Operators, All Other
Computer Operators
Computer, Automated Teller, and Office Machine Repairers
Construction and Building Inspectors
Correctional Officers and Jailers
Correspondence Clerks
Court, Municipal, and License Clerks
Credit Authorizers, Checkers, and Clerks
Customer Service Representatives
Dancers
Data Entry Keyers
Dental Assistants
Dietetic Technicians
Electronic Equipment Installers and Repairers, Motor Vehicles
Embalmers
Emergency Medical Technicians and Paramedics
Executive Secretaries and Executive Administrative Assistants
Fire Inspectors and Investigators
Firefighters
First-Line Supervisors of Correctional Officers
First-Line Supervisors of Fire Fighting and Prevention Workers
First-Line Supervisors of Office and Administrative Support Workers
First-Line Supervisors of Police and Detectives
First-Line Supervisors of Protective Service Workers, All Other
Flight Attendants
Forest Fire Inspectors and Prevention Specialists
Gaming Managers
Gaming Supervisors
Hairdressers, Hairstylists, and Cosmetologists
Health Technologists and Technicians, All Other
Healthcare Support Workers, All Other

Some college, no degree (continued)

Human Resources Assistants, Except Payroll and Timekeeping
Information and Record Clerks, All Other
Insurance Claims and Policy Processing Clerks
Interviewers, Except Eligibility and Loan
Legal Secretaries
Library Assistants, Clerical
Licensed Practical and Licensed Vocational Nurses
Loan Interviewers and Clerks
Makeup Artists, Theatrical and Performance
Manicurists and Pedicurists
Massage Therapists
Media and Communication Equipment Workers, All Other
Medical Assistants
Medical Equipment Preparers
Medical Equipment Repairers
Medical Records and Health Information Technicians
Medical Secretaries
Medical Transcriptionists
Model Makers, Wood
Motion Picture Projectionists
Musical Instrument Repairers and Tuners
Office and Administrative Support Workers, All Other
Opticians, Dispensing
Patternmakers, Wood
Payroll and Timekeeping Clerks
Pharmacy Aides
Pharmacy Technicians
Police and Sheriff's Patrol Officers
Postal Service Mail Sorters, Processors, and Processing Machine Operators
Postmasters and Mail Superintendents
Precision Instrument and Equipment Repairers, All Other
Procurement Clerks
Production, Planning, and Expediting Clerks
Psychiatric Technicians
Radio, Cellular, and Tower Equipment Installers and Repairs
Reservation and Transportation Ticket Agents and Travel Clerks
Residential Advisors
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive
Skincare Specialists
Slot Supervisors
Statistical Assistants
Surgical Technologists
Telecommunications Equipment Installers and Repairers, Except Line Installers
Transit and Railroad Police
Transportation Attendants, Except Flight Attendants
Travel Agents
Veterinary Assistants and Laboratory Animal Caretakers
Watch Repairers
Word Processors and Typists

Associate degree

Aerospace Engineering and Operations Technicians
Agricultural and Food Science Technicians
Architectural and Civil Drafters
Cardiovascular Technologists and Technicians
Chemical Technicians
Civil Engineering Technicians
Construction Managers
Cost Estimators
Dental Hygienists
Diagnostic Medical Sonographers
Drafters, All Other
Electrical and Electronics Drafters
Electrical and Electronics Engineering Technicians
Electro-Mechanical Technicians
Engineering Technicians, Except Drafters, All Other
Environmental Engineering Technicians
Funeral service managers, directors, morticians, and undertakers
Geological and Petroleum Technicians
Industrial Engineering Technicians
Mechanical Drafters
Mechanical Engineering Technicians
Nuclear Medicine Technologists
Occupational Therapy Aides
Occupational Therapy Assistants
Physical Therapist Aides
Physical Therapist Assistants
Radiation Therapists
Radiologic Technologists and Technicians
Respiratory Therapists
Respiratory Therapy Technicians
Semiconductor Processors
Veterinary Technologists and Technicians

Bachelor's degree

Accountants and Auditors
Actors
Actuaries
Adult Basic and Secondary Education and Literacy Teachers and Instructors
Advertising and Promotions Managers
Advertising Sales Agents

Bachelor's degree (continued)

Aerospace Engineers
Agents and Business Managers of Artists, Performers, and Athletes
Agricultural Engineers
Airline Pilots, Copilots, and Flight Engineers
Animal Scientists
Appraisers and Assessors of Real Estate
Architects, Except Landscape and Naval
Architectural and Engineering Managers
Art Directors
Artists and Related Workers, All Other
Athletes and Sports Competitors
Athletic Trainers
Atmospheric and Space Scientists
Audio and Video Equipment Technicians
Biochemists and Biophysicists
Biological Scientists, All Other
Biological Technicians
Biomedical Engineers
Broadcast News Analysts
Broadcast Technicians
Budget Analysts
Business Operations Specialists, All Other
Camera Operators, Television, Video, and Motion Picture
Career/Technical Education Teachers, Middle School
Cartographers and Photogrammetrists
Chemical Engineers
Chemists
Chief Executives
Child, Family, and School Social Workers
Civil Engineers
Claims Adjusters, Examiners, and Investigators
Coaches and Scouts
Commercial and Industrial Designers
Commercial Pilots
Community and Social Service Specialists, All Other
Compensation and Benefits Managers
Compensation, Benefits, and Job Analysis Specialists
Compliance Officers
Computer and Information Research Scientists
Computer and Information Systems Managers
Computer Hardware Engineers
Computer Occupations, All Other
Computer Programmers
Computer Support Specialists
Computer Systems Analysts
Conservation Scientists
Court Reporters
Craft Artists
Credit Analysts
Credit Counselors
Database Administrators
Designers, All Other
Desktop Publishers
Detectives and Criminal Investigators
Dietitians and Nutritionists
Directors, Religious Activities and Education
Editors
Electrical Engineers
Electronics Engineers, Except Computer
Elementary School Teachers, Except Special Education
Eligibility Interviewers, Government Programs
Emergency Management Directors
Engineers, All Other
Entertainers and Performers, Sports and Related Workers, All Other
Environmental Engineers
Environmental Science and Protection Technicians, including Health
Environmental Scientists and Specialists, including Health
Fabric and Apparel Patternmakers
Fashion Designers
Film and Video Editors
Financial Analysts
Financial Examiners
Financial Managers
Financial Specialists, All Other
Fine Artists, Including Painters, Sculptors, and Illustrators
First-Line Supervisors of Non-Retail Sales Workers
Fish and Game Wardens
Fitness Trainers and Aerobics Instructors
Floral Designers
Food Scientists and Technologists
Forensic Science Technicians
Forest and Conservation Technicians
Foresters
General and Operations Managers
Geoscientists, Except Hydrologists and Geographers
Graphic Designers
Health and Safety Engineers, Except Mining Safety Engineers and Inspectors
Health Educators
Healthcare Practitioners and Technical Workers, All Other
Healthcare Social Workers
Human Resources Managers
Human Resources, Training, and Labor Relations Specialists, All Other
Hydrologists
Industrial Engineers

Bachelor's degree (continued)

Industrial Production Managers
Information Security Analysts, Web Developers, and Computer Network Architects
Insurance Appraisers, Auto Damage
Insurance Sales Agents
Insurance Underwriters
Interior Designers
Interpreters and Translators
Judicial Law Clerks
Kindergarten Teachers, Except Special Education
Landscape Architects
Legal Support Workers, All Other
Legislators
Life, Physical, and Social Science Technicians, All Other
Loan Officers Lodging
Managers Logisticians
Management Analysts
Managers, All Other
Marine Engineers and Naval Architects
Market Research Analysts and Marketing Specialists
Marketing Managers
Materials Engineers
Materials Scientists
Mathematical Science Occupations, All Other
Mathematical Technicians
Mechanical Engineers
Media and Communication Workers, All Other
Medical and Clinical Laboratory Technicians
Medical and Clinical Laboratory Technologists
Medical and Health Services Managers
Meeting, Convention, and Event Planners
Mental Health and Substance Abuse Social Workers
Merchandise Displayers and Window Trimmers
Microbiologists
Middle School Teachers, Except Special and Career/Technical Education
Mining and Geological Engineers, Including Mining Safety Engineers
Multi-Media Artists and Animators
Music Directors and Composers
Musicians and Singers
Network and Computer Systems Administrators
Nuclear Engineers
Nuclear Technicians
Occupational Health and Safety Specialists
Occupational Health and Safety Technicians
Occupational Therapists
Operations Research Analysts
Paralegals and Legal Assistants
Personal Financial Advisors
Petroleum Engineers
Photographers
Physician Assistants
Preschool Teachers, Except Special Education
Private Detectives and Investigators
Probation Officers and Correctional Treatment Specialists
Producers and Directors Proofreaders
and Copy Markers Property, Real
Estate, and Community Association Managers
Public Address System and Other Announcers
Public Relations and Fundraising Managers
Public Relations Specialists
Purchasing Agents, Except Wholesale, Retail, and Farm Products
Purchasing Managers
Radio and Television Announcers
Radio Operators
Real Estate Brokers
Real Estate Sales Agents
Recreation Workers
Recreational Therapists
Registered Nurses
Religious Workers, All Other
Reporters and Correspondents
Sales and Related Workers, All Other
Sales Engineers
Sales Managers
Sales Representatives, Services, All Other
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products
Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products
Securities, Commodities, and Financial Services Sales Agents
Self-Enrichment Education Teachers
Set and Exhibit Designers
Social and Community Service Managers
Social and Human Service Assistants
Social Science Research Assistants
Social Workers, All Other
Sociologists
Software Developers, Applications
Software Developers, Systems Software
Soil and Plant Scientists
Sound Engineering Technicians
Survey Researchers
Surveyors
Tax Examiners and Collectors, and Revenue Agents
Tax Preparers

Bachelor's degree (continued)

Teachers and Instructors, All Other
Technical Writers
Title Examiners, Abstractors, and Searchers
Tour Guides and Escorts
Training and Development Managers
Training and Development Specialists
Travel Guides
Umpires, Referees, and Other Sports Officials
Vocational Education Teachers, Postsecondary
Wholesale and Retail Buyers, Except Farm Products
Writers and Authors
Zoologists and Wildlife Biologists

Master's degree

Anthropologists and Archeologists
Archivists
Audio-Visual and Multimedia Collections Specialists
Career/Technical Education Teachers, Secondary School
Clergy
Counselors, All Other
Curators
Economists
Education Administrators, All Other
Education Administrators, Elementary and Secondary School
Education Administrators, Postsecondary
Education Administrators, Preschool and Childcare Center/Program
Education, Training, and Library Workers, All Other
Educational, Guidance, School, and Vocational Counselors
Farm and Home Management Advisors
Geographers
Graduate Teaching Assistants
Health Diagnosing and Treating Practitioners, All Other
Historians
Home Economics Teachers, Postsecondary
Instructional Coordinators
Librarians
Marriage and Family Therapists
Mental Health Counselors
Museum Technicians and Conservators
Nursing Instructors and Teachers, Postsecondary
Orthotists and Prosthetists
Political Scientists
Postsecondary Teachers, All Other
Recreation and Fitness Studies Teachers, Postsecondary
Rehabilitation Counselors
Secondary School Teachers, Except Special and Career/Technical Education
Social Scientists and Related Workers, All Other
Special Education Teachers, Middle School
Special Education Teachers, Preschool, Kindergarten, and Elementary School
Special Education Teachers, Secondary School
Speech-Language Pathologists
Statisticians
Substance Abuse and Behavioral Disorder Counselors
Therapists, all other
Urban and Regional Planners

Doctoral or Professional degree

Administrative Law Judges, Adjudicators, and Hearing Officers
Agricultural Sciences Teachers, Postsecondary
Anesthesiologists
Anthropology and Archeology Teachers, Postsecondary
Arbitrators, Mediators, and Conciliators
Architecture Teachers, Postsecondary
Area, Ethnic, and Cultural Studies Teachers, Postsecondary
Art, Drama, and Music Teachers, Postsecondary
Astronomers
Atmospheric, Earth, Marine, and Space Sciences Teachers, Postsecondary
Audiologists
Biological Science Teachers, Postsecondary
Business Teachers, Postsecondary
Chemistry Teachers, Postsecondary
Chiropractors
Clinical, Counseling, and School Psychologists
Communications Teachers, Postsecondary
Computer Science Teachers, Postsecondary
Criminal Justice and Law Enforcement Teachers, Postsecondary
Dentists, All Other Specialists
Dentists, General
Economics Teachers, Postsecondary
Education Teachers, Postsecondary
Engineering Teachers, Postsecondary
English Language and Literature Teachers, Postsecondary
Environmental Science Teachers, Postsecondary
Epidemiologists
Family and General Practitioners
Foreign Language and Literature Teachers, Postsecondary

Doctoral or Professional degree (continued)

Forestry and Conservation Science Teachers, Postsecondary
Geography Teachers, Postsecondary
Health Specialties Teachers, Postsecondary
History Teachers, Postsecondary
Industrial-Organizational Psychologists
Internists, General
Judges, Magistrate Judges, and Magistrates
Law Teachers, Postsecondary
Lawyers
Library Science Teachers, Postsecondary
Life Scientists, All Other
Mathematical Science Teachers, Postsecondary
Mathematicians
Medical Scientists, Except Epidemiologists
Natural Sciences Managers
Obstetricians and Gynecologists
Optometrists
Oral and Maxillofacial Surgeons
Orthodontists
Pediatricians, General
Pharmacists
Philosophy and Religion Teachers, Postsecondary
Physical Scientists, All Other
Physical Therapists
Physicians and Surgeons, All Other
Physicists
Physics Teachers, Postsecondary
Podiatrists
Political Science Teachers, Postsecondary
Postsecondary Teachers
Prosthodontists
Psychiatrists
Psychologists, All Other
Psychology Teachers, Postsecondary
Social Sciences Teachers, Postsecondary, All Other
Social Work Teachers, Postsecondary
Sociology Teachers, Postsecondary
Surgeons
Veterinarian

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